

# EM Resident

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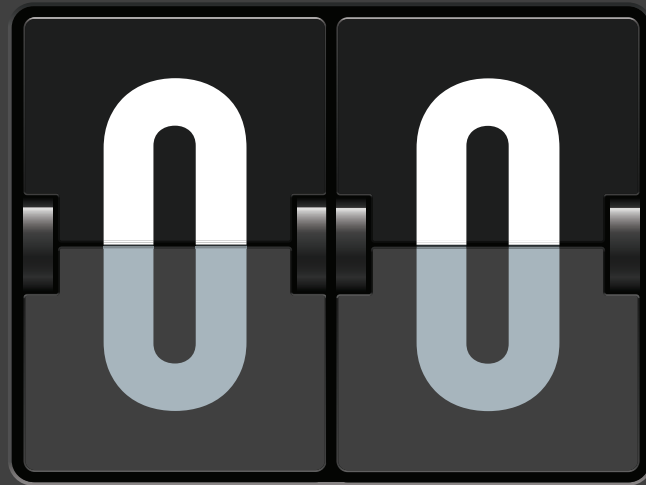
VOL 42 / ISSUE 4



**An Insider's  
Insight**  
*International EM*

**The July Effect**  
*Myth or Reality*





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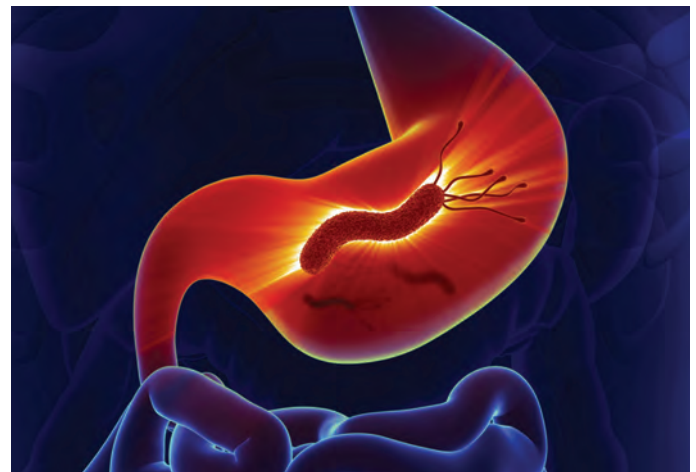
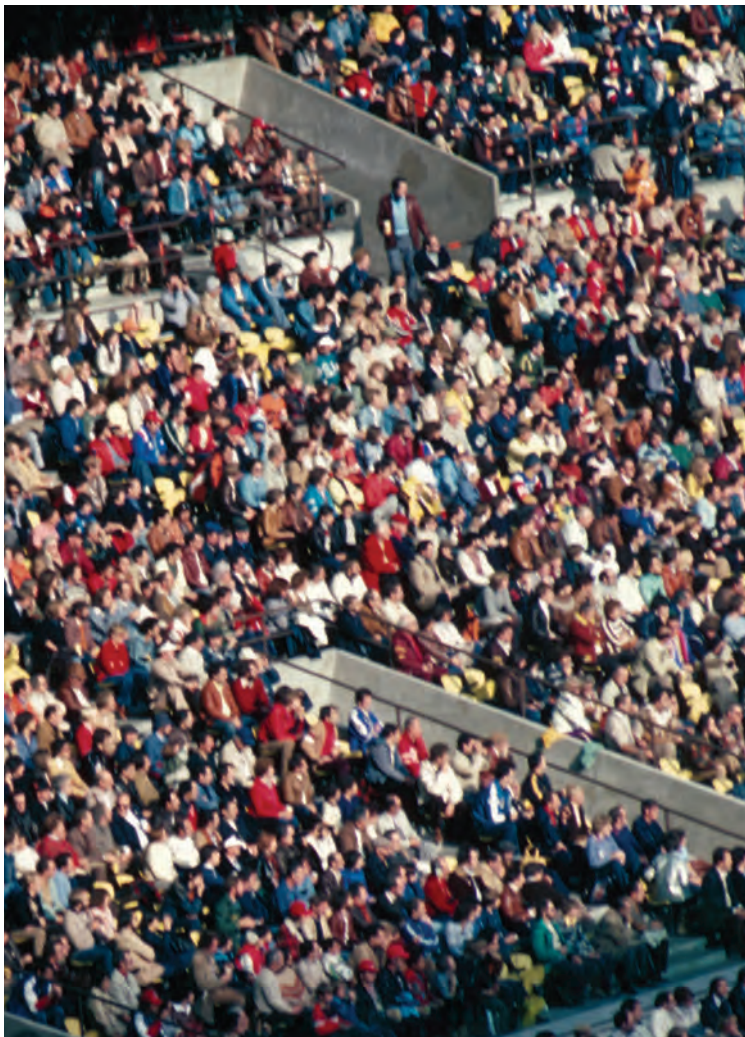


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# One Year Gone

## Reflections on EMRA One Year Out of Residency

**W**ith this month, I have now officially been an attending emergency physician for one year. Residency graduation seems like it was just yesterday, and yet now I've been out "on my own" for 12 months, and when I'm not busy representing EMRA, I've been working mainly in a community-based high-volume ED.

Whatever stage you are in training, I expect at some point you have been told how much we all learn in our first year out of residency. That first year is a tightrope walk as we attempt to apply the clinical skills learned in training, while working to continue medical education, all the while balancing an attending's salary (which disappears fast after taxes, loans, insurance, and retirement savings are taken into account).

This article also marks about the 18-month halfway point of my term serving as your EMRA president. My goals when I was elected to this position were to grow and strengthen EMRA in size, value to members, and impact on our specialty and our patients. Thanks to the seemingly tireless efforts of our dedicated EMRA staff and volunteer leaders, I am proud to see what EMRA has accomplished in the past 18 months, and what we are poised to achieve.

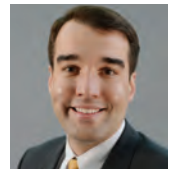
EMRA has grown in size, now topping 13,000 diverse individuals, including international members, students, residents, fellows, and alumni. More than membership growth, what impresses me most is our expanding opportunities for our members and the benefits EMRA provides (the creation of our Emmy Award-winning documentary "24/7/365,"

expansion of fall and spring awards, regional meeting grants, and growing educational offerings are just a few examples). **None of our impressive accomplishments are the work of any one individual, but rather the result of our organization serving as a catalyst for the passion and ideas our members continue to bring to EMRA.** As my time at the helm of our incredible organization begins to wind down, I hope you will consider becoming more involved in shaping the path EMRA takes in the years ahead.

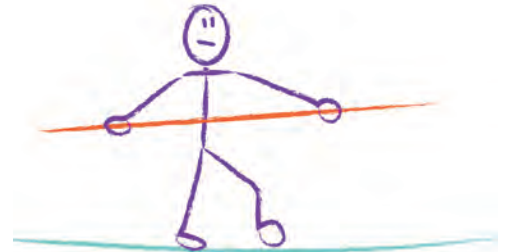
***EMRA is seeking dedicated members to serve on our Board of Directors. Elections to the Board will take place during the ACEP15 in Boston in October.*** As any current or past Board member will tell you, the work can be intense, but the lifelong relationships you will make, and the opportunity to make a lasting contribution to our specialty are truly priceless. I encourage you to consider seeking an open position on our Board (details and position descriptions are on [EMRA.org](http://EMRA.org)), or encourage a colleague that you know would be an asset to our organization to do the same. EMRA is working to be on the front lines, addressing issues such as resident wellness, protecting the future of GME, and delivering educational content in formats aligned with learner needs. If you feel we should also be focusing on something else, that's all the more reason to take on a leadership role to share your ideas and experience.

As October draws near, I am proud and excited to pass the torch of EMRA leadership to Dr. Ramnik Dhaliwal. Ricky

Matt Rudy, MD  
EMRA President  
University Hospital  
Augusta, GA



That first year is a  
tightrope walk



hit the ground running from Day 1 as EMRA President-Elect and has already left his mark on EMRA, formalizing leadership development for our committee and division chairs and working closely with staff as we prepare for our next strategic plan review, which will take place with our newly elected Board during our winter strategic planning meeting and retreat.

Time flies, especially when you're having fun. **My time with EMRA has been and will continue to be one of the highlights of my personal and professional life.** While I'm looking ahead, I'm not out the door yet, so please never hesitate to share your ideas on how we can make EMRA even better. Thanks for all you do for our incredible organization. ★

# NEW **Uniting Residents**

## *Programs and Mergers*

**H**ello, my fellow emergency medicine residents! I am your new representative to the Residency Review Committee – Emergency Medicine (RRC-EM), stepping into the big footprints left by my predecessor, Dr. Brandon Allen. Think of me as your liaison to the ACGME committee that accredits your residency program and makes all of us board-eligible through ABEM.

As part of my responsibilities with EMRA, I serve in two capacities with the ACGME. The first is as a resident member of the RRC-EM. In broad strokes, we review all new programs for accreditation in categorical emergency medicine and the associated subspecialties, while also ensuring compliance by ongoing programs with the RRC's program requirements. My second job is as the EM member of the Council of Review Committee Residents (CRCR), where resident members of all 28 ACGME-RRC specialty boards join to discuss issues relevant to residents in general.

### January 2015 CRCR Meeting Update

The winter semi-annual CRCR meeting concluded in mid-January. The president and chairman of the ACGME and other senior leadership were present, which truly demonstrated the value they place on resident input. A principle topic of the meeting was the program development for the recent 2015 ACGME Education Conference, an annual event where program directors and other residency program staff can meet to discuss the latest trends in GME. Central themes that repeatedly came up at the CRCR meeting were leadership, innovations in education, and resident wellness.

### January 2015 RRC-EM Meeting Update

The winter RRC meeting at the end of January consisted of two action-packed days of program reviews and discussion about the soon-to-be single accreditation system. On the first day, our committee reviewed 43 programs. As the Next Accreditation System (NAS) matures, our committee has been required to adapt to these uncharted waters. It is my great pleasure to announce that four new emergency medical services (EMS) programs have been approved for initial accreditation.

The programs are:

1. Medical College of Georgia (GA)
2. Penn State Hershey Medical Center (PA)
3. Palmetto Health (SC)
4. Carilion Clinic-Virginia Tech (VA)

In regards to the single accreditation system (initiated July 1), ACGME leaders offered an update on what to expect and proposed next steps. This system will work to bring DO and MD residencies under the same roof. DO programs applying for accreditation will have five years of eligibility to do so. Currently 56 osteopathic emergency medicine residency programs will be eligible, and they were encouraged to apply for accreditation. It remains to be seen how many programs will ultimately submit their applications and how many of those will meet the RRC's program requirements. When an osteopathic program applies for accreditation, they will be given "pre-accreditation" status, which enables the program's residents to apply to ACGME fellowships in emergency medicine. Previously this was not the case, and through this merger osteopathic-trained residents will have additional subspecialty training available to them.



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With the single accreditation system, the RRC also will be welcoming three new members to the committee. We will be utilizing the skills and expertise of one public member and two osteopathic program members.

### May 2015 RRC-EM Meeting Update

The RRC committee met again for one day in early May to review the programs on the agenda. This meeting was brief, but very productive. I was able to attend with Dr. Allen, the previous RRC rep, and had the pleasure of welcoming other new members, including the two new osteopathic members – Dr. Kevin Weaver, program director at Lehigh Valley Medical Center in Allentown, Pa., and Dr. Alan Janssen, program director at Genesys Regional Medical Center in Grand Blanc, Mich. Their insight will help as the allopathic and osteopathic EM residencies come under the banner of the ACGME in the years to come.

As part of this meeting, we were able to welcome a few new programs – one core EM program and two more EMS fellowships:

1. Crozer-Chester Medical Center Program (PA) (core EM)
2. Boston University Medical Center (MA) (EMS)
3. Johns Hopkins University School of Medicine (MD) (EMS)

If you have any questions or would like to find out more about the ACGME and how it affects you, please reach me at [rccemrep@emra.org](mailto:rccemrep@emra.org). ★

I'm writing this article inside a tent. Lying on my thinning mattress pad, I can occasionally feel a refreshingly cool and crisp mountain breeze seep in through my partially unzipped front door. From here I can just see the top of the mountain that is tomorrow's goal. It's quiet out; I feel content and at home. Times like this one make me wonder why I chose to spend eight to 10 years beyond a college degree, education consuming all of my time, while chasing a somewhat distant and intangible goal. I could have chosen to do anything with that time — anything that brings me contentment.

I have many friends who chose to complete their education with college or high school. Most of them are relatively successful in their fields, living respectable lives, and have considerably more time off than I do. **It's easy to feel envious, as I seem to nearly always find myself not lost among the immensity of a picturesque outdoor scene, but as just another scrub-clad dot quadrated within the four square blocks or so that make up our medical campus.** The walls are usually some tinge of off-white, and they will never compare to a clear blue sky and the peaceful feeling of being immersed in the great outdoors. And yet, we all chose the walls, we all come back to them... because we love it.

**Some things are more important than ourselves and our own pleasures.** Ask just about any new parent, and they can expound on the unexpected joys they find in their children, despite the persistent demands on their time. There is indeed a special bond created between us and those who depend upon us.

Recently I found myself wandering the streets of Denver on foot, biding my time before catching a redeye flight back home. I was appreciating the experience that is the Mile High City, and I semi-intentionally found myself at the main entrance to the well-known Denver Health medical facility. I watched as an indigent man crossed the street, bandages trailing



## The Level One Commitment



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from his hand as he strolled towards the bus stop. A woman with one crutch hobbled in toward the clinics, a large bag slung over her shoulder. A sign out front read, “Denver Health, **Level One Care for All.**”

That phrase struck me, reaffirming a sometimes forgotten tenet of medicine. It was more than a reference to a trauma center designation. It was a realization why we forgo many of our other goals and aspirations. We give up personal goals, the time at home, and small pleasures because we are called to something much more than serving ourselves: serving others.

That fact may be perhaps even truer in our field than in just about any other.

Long gone are the days of the old-fashioned country doctor. The weathered black bags have been traded in for computer processors and the Internet. **No longer do we go to the sick, but let the suffering come to us — we don't make house calls, we work shifts.** Despite the good that has come from modern advances in practice, there is still a special spirit that accompanies the Norman Rockwell style of physician. They represent a certain purity of action and a unified medical community driven by compassion. In the name of practicality, these days we sit in large comfortable chairs and await the next patient who comes to us. **Doctors are now better recognized for their TV shows, news appearances, or worse, their practice missteps and ethical controversies.**

That old-time sense of caring can easily become diluted and disappear. Within our departments it happens all the time. Sometimes veiled under the guise of efficiency, **it can be easy to brush aside what are perceived as undesirable complaints.** It becomes so important

to remind ourselves of what our calling is. We need to remember this mandate of “Level One Care for All.” It is our duty, right, and privilege to give our all as often as we can to help our neighbor. And that's what our profession is all about — that's why we give up our personal interests. Our specialty, indeed all of medicine, is devoted to providing the best level of care to all, whether that be here in the resource-rich United States, or globally in the most austere and remote villages. We as physicians stand together for those in need. We're here to give of ourselves and to put our personal lives on the back burner for their benefit. **There is an old-time doctor inside every one of us, and that's how it always should be.** ★





## LEGISLATIVE WRAP-UP

# ACEP Legislative Advocacy Conference

This year's iteration of the ACEP Legislative Advocacy Conference and Leadership Summit (LAC) took place May 3-6 and was exceptional. For many in emergency medicine, it is a highlight of the year. You may notice the name is new this year, but the conference's focus remains the same: LAC continues to emphasize important policy issues affecting emergency medicine and, as always, culminates in the Day on the Hill, which allows EM physicians to discuss these issues face-to-face with legislators.

Moreover, in addition to high-yield, issue-specific lectures and Capitol Hill visits, this year marked the inaugural Leadership Summit, which was a half-day of lectures and panel discussions centered on strategies for effective leadership. These messages were delivered by some of our specialty's most prominent leaders. The conference also marked the beginning of a new effort to increase resident and student involvement in ACEP's 911 Network.

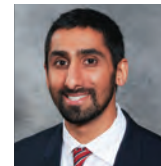
A broad array of issues was discussed at LAC this year, but our visits on Capitol Hill were targeted to specific topics.

### The SGR Repeal: A Thank-You Message

During the Hill visits, legislators were thanked for supporting the repeal of the Sustainable Growth Rate (SGR) formula. Every year for the past 13 years, ACEP has joined with other physician organizations in advocating for its repeal. The SGR was enacted in 1997 as a way to control rising Medicare costs. Unfortunately, this formula resulted in significant uncertainty regarding potential large cuts to Medicare reimbursements. Previously, Congress enacted 17 temporary patches to maintain physician payments.

The Medicare Access and CHIP Reauthorization Act (MACRA) was signed into law by President Barack Obama on April 16. The new bill repeals the outdated SGR formula that annually jeopardized physician reimbursement within the Medicare system. The bill passed with overwhelming bipartisan majorities in the Senate (92-8) and House of Representatives (392-37).

MACRA also creates a new value-based incentive program within Medicare that will replace the current PQRS system. The specifics of this new Merit-based Incentive Payment System (MIPS) will need to be clarified by CMS, but we now know 9% of your Medicare reimbursement eventually



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will depend on the quality of care delivered. Emergency medicine will have to work hard to ensure the quality metrics chosen by CMS within the MIPS system are fair and meaningful.

### Liability Reform

The Emergency Medical Treatment and Active Labor Act (EMTALA) is a cornerstone of emergency medicine. Under this law, emergency providers are required to stabilize and treat all patients, regardless of insurance status or ability to pay. For patients who require expert consultation, on-call physicians are similarly required to provide care. Many of these patients have life- or limb-threatening conditions, and physicians

rarely have more than a brief relationship with them. These physicians are bound by both the federal EMTALA mandate and professional ethics to see all patients who present to the ED, and they often must make time-sensitive decisions with limited collateral information. Combined with the frequent uninsured status of these patients, taking emergency call is a source of work with low reimbursement and high liability. This makes it difficult to find specialists willing to take call.

Legislators were asked to co-sponsor the Health Care Safety Net Enhancement Act of 2015 (H.R.836/S.884), sponsored by Rep. Charlie Dent, R-Pa., and Sen. Roy Blunt, R-Mo. This bill would give providers of EMTALA-mandated care the same liability protections afforded to federal health centers and free clinics. H.R.836 and S.884 would move tort cases involving EMTALA-related care to federal courts under the Federal Tort Claims Act. Although this would not remove all barriers, this bill would extend protection to more physicians and improve access to emergency and on-call specialty care.

### Mental Health Reform

The issue of improving mental health care in the U.S. is of increasing importance to emergency physicians. Decreasing resources and inpatient beds contribute to an increased burden on emergency services and long boarding times in emergency departments. Many outside of medicine are unaware of this worsening crisis and lack of resources. These issues, and ideas for improvement, were key topics during the first two days of LAC, and our concerns were brought to the Hill.

Legislators were asked to support future legislation aimed at expanding inpatient and emergency psychiatric services. Discussion included the growing need for psychiatric care, the dearth of inpatient psychiatric beds, and the poor reimbursement for psychiatric care. The Helping Families in Mental Health Crisis Act of 2015 (H.R.2646) sponsored by Rep. Tim Murphy, R-Pa., was introduced June 4. The key components of the legislation are to:

- Remove regulations that currently prohibit the same-day billing under

Medicaid for treatment of physical and mental health for the same patient, in the same location, on the same day;

- Ameliorate the Medicaid Institutes for Mental Disease (IMD) exclusion by giving states the option to receive federal matching payments for care of adult patients with mental illness;
- Establish federal liability protections for health professionals who volunteer at community health centers or behavioral health centers.

### Emergency Care Research

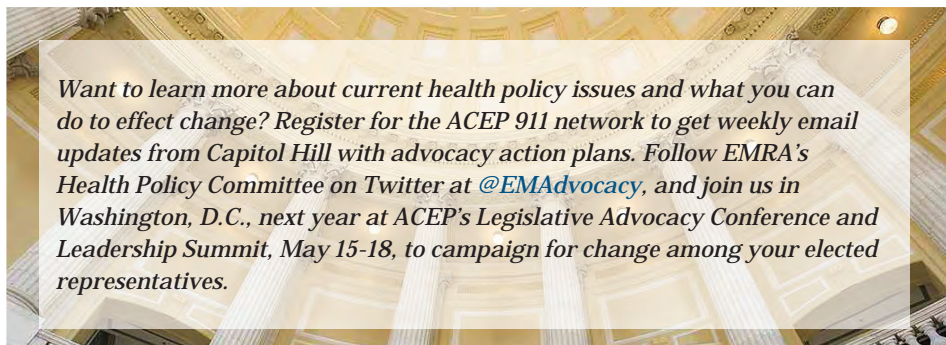
Legislators were asked to support allocation of funding to support the mission of the NIH Office of Emergency Care Research (OECR). The OECR was formed in 2012 to catalyze, coordinate and create research focused on emergency care within the 21 institutes of the National Institutes of Health. The creation of this office was an important step in furthering research in emergency medicine, and reflects increasing recognition of the importance of our specialty in the care of patients. Although it does not directly award grants, the OECR works within the NIH to promote research in the emergency setting. The OECR also promotes career development for researchers who are focused on emergency care. As budgets for these programs and others continue to decline, it is critical that we continue to advocate for their funding. In addition to supporting OECR research funding, legislators were also asked to support appropriation of federal funds to regional trauma and emergency medicine grant programs. These programs are essential for maintaining and developing regional trauma systems.

### GME

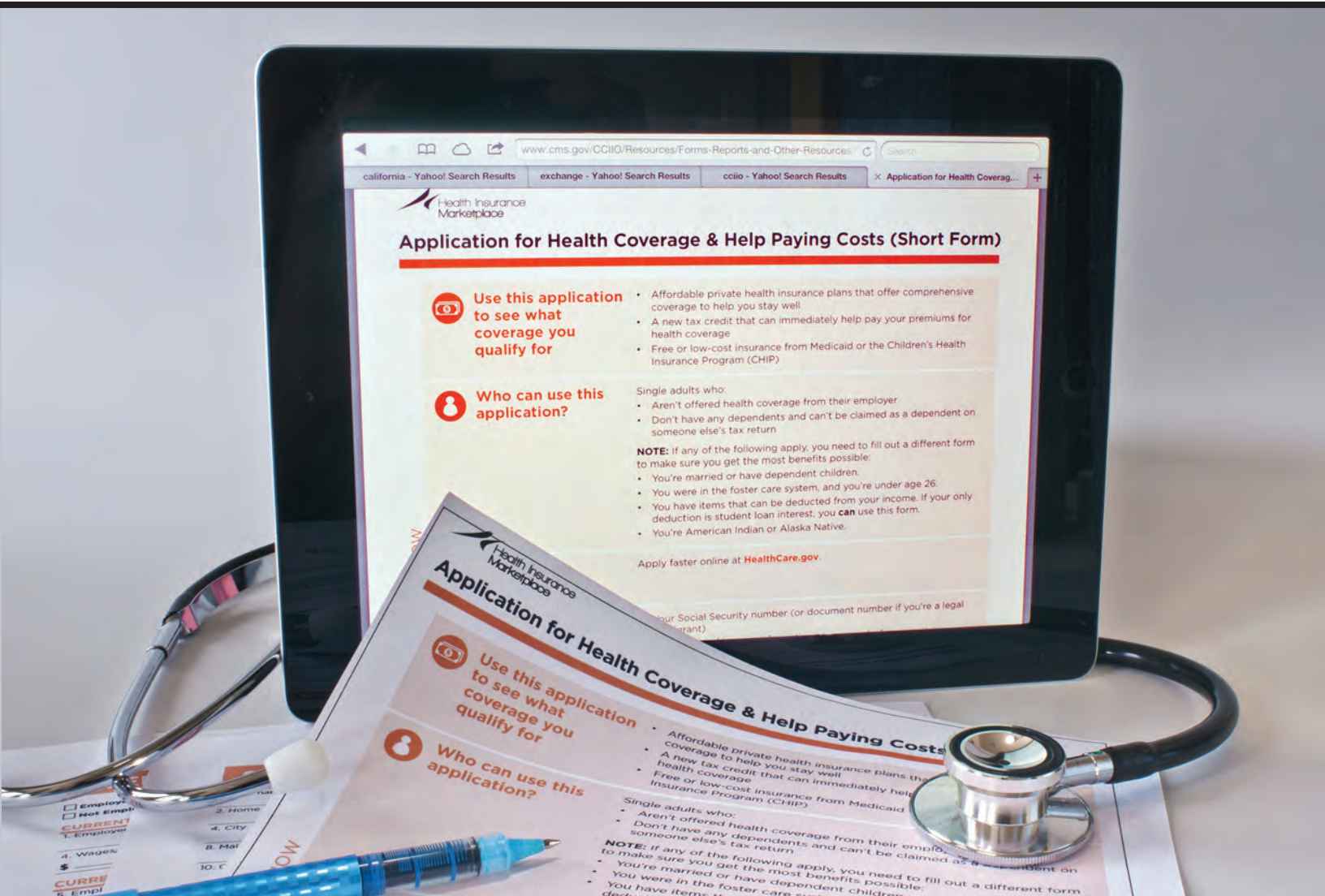
The Resident Physician Shortage Reduction Act (H.R.2124/S.1148), sponsored by Rep. Joe Crowley, D-N.Y., and Sen. Bill Nelson, D-Fla., was introduced in both the House and Senate on April 30, just prior to LAC. Legislators were asked to support these bills that would abolish the current cap on Medicare GME funding and annually increase the number of Medicare-funded GME spots by 3,000 until 2021, for a total increase of 15,000. The bill also would require a national, non-biased study of the physician workforce in order to assess the degree of shortage present in each specialty. Half of the expanded residency positions would be restricted to shortage specialties. Lastly, the bill would give priority to VA facilities, new medical school branches, and hospitals with robust electronic health records when assigning new funded residency positions. The bill has a substantial cost, so it has an uphill battle to make it out of committee in either the House or Senate.

### The ACEP 911 Network

ACEP's 911 Network effectively conveys the College's legislative and regulatory priorities and positively impacts laws and policy important to emergency medicine. This year, the 911 Network is working to integrate more residents and students by providing more structured advocacy mentorship and career development opportunities. Through its Triple E Campaign launched this spring, ACEP wants to "Expand 911 Network membership, Enhance professional development opportunities, and Engage network members through the use of performance metrics and promotion." It's a great opportunity to develop knowledge in health policy as well as skills in leadership and public speaking. Sign up today at [www.acepadvocacy.org](http://www.acepadvocacy.org). ★







# CRITICAL ACCESS

A Report on Access to Health Care for Medicaid, Medicare, and CHIP Patients Under the ACA



Kristen Swann, MD  
University of Virginia  
Charlottesville, VA

**Access to health care is slowly improving among the publicly insured, but it continues to remain an issue which is indirectly affecting emergency department use.**



**A**ccess to health care is a key issue the U.S. government targeted for improvement through the Affordable Care Act. Despite rates of private and public insurance coverage rising, availability of health care providers remains a national issue, and the distribution of access among the different insurance types is not equal.<sup>1</sup> Numerous studies have found that a distinct difference in ability to establish access to health care exists between those patients covered by Medicaid, Medicare, or CHIP, and patients who are privately insured. This issue can indirectly affect emergency department use, as they have no limit to access under EMTALA. One such study found that up to 90% of health care providers accept new patients with private insurance, but less than 75% accept new patients with public coverage such as Medicare and Medicaid.<sup>1</sup> Children with public insurance were also twice as likely to be declined as a new patient compared to privately insured children.<sup>1</sup>

The Kaiser Family Foundation found more promising data showing that 96% of Medicare patients have a usual source of primary care, and 90% are able to schedule timely appointments for both routine and specialty care, and that only a small number of Medicare patients who sought a new primary care physician had problems finding one (2%), which was comparable with privately insured adults ages 50-64. The 2012 National Electronic Health Records Survey revealed that 91% of non-pediatric physicians accept new Medicare patients, the same rate as those with private insurance, but suggests overall physician acceptance of new Medicare patients is most likely related to local market factors rather than issues regarding Medicare overall, and this differs by state, specialty, size of practice, and medical degree. Further investigation is needed.<sup>2</sup>

**Access to health care for Medicaid, Medicare, and CHIP patients varies widely across each state as well as regionally within each state, which can cause emergency department visits to rise if access to primary care is an issue.** Health care provider acceptance rates for Medicaid patients are

## Up to 90% of health care providers accept new patients with private insurance, but less than 75% accept new patients with public coverage such as Medicare and Medicaid.

less than Medicare patients and privately insured patients, and are also lower in states with lower Medicaid reimbursement rates. The National Center for Health Statistics Data Brief from March 2015 found that 95.3% of health care providers were accepting new patients in 2013, 84.7% were accepting new privately insured patients and 83.7% were accepting new Medicare patients, but only 68.9% were accepting new Medicaid patients in 2013. **This study also found regional differences between metropolitan areas, which accepted only 67.2% of new Medicaid patients, and regions outside of metropolitan areas, which accepted up to 85.7%.** These acceptance rate trends were similar for the Medicare population as well, with the metropolitan acceptance rate being 82.9% and the non-metropolitan regional rates being 91.2%. State differences were also quite varied, and ranged from a Medicare acceptance rate in Hawaii of 75.5%, to North Dakota at 95.2%. For Medicaid it ranged from a 38.7% acceptance in New Jersey, to 96.5% in Nebraska.<sup>3</sup>

New physician data from Medicare shows that less than 1% of health care providers have 'opted out' of seeing Medicare patients, and of those 1%, about 42% are psychiatrists.<sup>2</sup> **Specialties overall accepted less Medicaid patients than Medicare patients, and both were less than privately insured patients.** Psychiatry accepted 43% new Medicaid, 55% new Medicare, and 67% new private. OB/GYN accepted 75% new Medicaid, 89% new Medicare, and 96% new private. Other medical/surgical specialties accepted 76% new Medicaid, 96% new Medicare, and 94% new private patients. Among pediatric specialties, 71% participated in Medicaid and CHIP, 51% accepted all Medicaid and CHIP, 45% accepted some, and only 36% of

all specialists providing pediatric care accepted all Medicaid and CHIP covered individuals as new patients.<sup>4</sup>

This past March a recent AAMC data analysis revealed a projected shortage of non-primary care physicians between 28,200-63,700 by 2025,<sup>6</sup> which will likely only cause the publicly insured percentages of health care access to decrease.

Access to health care is slowly improving among the publicly insured, but it continues to remain an issue which is indirectly affecting emergency department use, as well as causing increased difficulty in getting our patients follow up with the appropriate primary care physician or specialist after a visit to the ED. **Studies in 2007 by the Kaiser Foundation showed that Medicare and Medicaid patients were already the highest ED users,** even compared to privately insured and uninsured patients.<sup>5</sup>

Medicaid expansion is another issue that may play a factor in access to care for those insured with Medicaid. As of May this year, Medicaid expansion for low-income adults had effect in 29 states, as well as the District of Columbia, and as of this past January, about 70 million people were enrolled. Almost two-thirds of all Medicaid and CHIP enrollees are residing in the states that implemented Medicaid expansion.<sup>6</sup> Time will tell if the expansion of Medicaid and increased enrollment will further decrease access to care.

We continue to struggle with primary care access for this patient population, which will remain a continued problem for our emergency departments as the AAMC study projected a shortage of 46,000-90,000 physicians overall by 2025, and more specifically a shortage of primary care physicians between 12,500-31,100.<sup>7</sup> ★

# Making the Most of Your EMRA Membership

## Newest Perk! Boosted ACEP Networking



Zach Jarou, MD  
EMRA Membership  
Development Coordinator  
Denver Health/  
University of Colorado  
Denver, CO

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We've recently overhauled the member benefits page on [emra.org](http://emra.org) to make it easier for our members to quickly get access to the resources that they want. Log in and find your new favorite benefit.

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With so many benefits coming with an EMRA membership, sometimes it can be difficult to know where to start. Here are a few tips to help you navigate the waters.

### Newest Benefit! Another FREE ACEP Section Membership

Did you know that ACEP offers 33 different sections of membership that allow you to connect with physician leaders who share your interest in any one of emergency medicine's many niches?

Building on that commitment to networking, EMRA and ACEP launched the newest EMRA member benefit this spring: a complementary bonus ACEP section membership.

All EMRA resident, fellow, medical student, and international members are automatically enrolled in the ACEP Young Physicians Section at no charge. But now you are also invited to join another ACEP section of your choice, at no cost. And additional section memberships are available for \$20 each (a 50 percent discount). Joining a section is easy. Simply log in to [acep.org/myacep](http://acep.org/myacep) and find the ACEP section that is right for you.

**TABLE 1. 15 Most Popular ACEP Sections Among (Non-Alumni) EMRA Members**

ACEP Section	Members
International Emergency Medicine	735
Critical Care Medicine	534
Careers in Emergency Medicine	518
Emergency Ultrasound	412
Wilderness Medicine	407
American Association of Women Emergency Physicians	335
Emergency Medical Services – Prehospital Care	252
Pediatric Emergency Medicine	232
Disaster Medicine	208
Sports Medicine	196
Emergency Medicine Research	152
Tactical Emergency Medicine	133
Emergency Medicine Practice Management and Health Policy	125
Air Medical Transport	113
Toxicology	109

Learn more at [acep.org/sections](http://acep.org/sections)

**TABLE 2. Number of EMRA Members per Committee/Division (as of July 2015)**

EMRA Committees	Members
Awards Committee	38
Editorial Committee	18
Education Committee	40
Health Policy Committee	38
Informatics Committee	12
Research Committee	15
EMRA Divisions	Members
Critical Care Division	69
EMS Division	21
International EM Division	53
Pediatric EM Division	55
Simulation Division	64
Sports Medicine	8
Toxicology	10
Ultrasound Division	40
Wilderness Medicine Division	58

Learn more at [emra.org/committees-divisions](http://emra.org/committees-divisions)

### Join an EMRA Committee or Division

In addition to taking advantage of your free ACEP section membership, there are a multitude of opportunities to get more involved with EMRA by joining one of our 15 committees and divisions.

What's the difference between committees and divisions, you ask? Conceptually, *committees* are tasked to assist the EMRA Board in carrying out its work, while *divisions* have more freedom to come up with their own projects – but at the end of the day, both will give you the opportunity to be a leader and connect with others who share your interests.

Many of EMRA's flagship products were generated by members of our hardworking, innovative committees and divisions – *what will your big idea be?* ★



Joseph M. Reardon, MD  
EMRA International Division  
Chair  
Duke University  
Durham, NC

# Q & A Blazing International Trails

## with Dr. Haywood Hall

International medicine is an ever-growing and expanding specialty within emergency medicine and other medical fields.

Amid all of the growth, many physicians have stayed true to their ideals and values of delivering quality care to those abroad and strengthening international health care systems. Dr. Haywood Hall founded the Pan American Collaborative Emergency Medicine Development Program (PACEMD) and continues to be an advocate for health care, emergency systems, and education in Mexico and Latin America.



Haywood Hall, MD  
Centro PACE  
San Miguel de Allende  
Guanajuato, Mexico

**Success  
after  
Success.**

***This Q & A with Dr. Hall, conducted by Dr. Joseph M. Reardon, offers insight into the dynamic world of international emergency medicine and PACE's contributions to its development.***

**JMR: "You were trained in emergency medicine in the United States. How did you become interested in EM in Mexico?"**

**HH:** "I'm 58 years old, but I've lived for about 150 years. I lived in Mexico until I was 8 because my parents wanted to be out of the country. I moved back to the United States and went to public school. By 10th grade, I dropped out. After that I was a musician, a piano tuner, then an electric meter reader in New York. I was reading electric meters one day in a hospital and the back of the meter was outside the emergency department, and I thought, 'Wow, what about emergency medicine?'"

"School meant nothing to me until I was going to do emergency medicine. My friend said to me, 'Man, you're smart; you can do this.' After I got my GED, I started volunteering at a hospital and got into an open admissions program at the City College of New York. I went on to Baylor for medical school, but they didn't have an EM program, so I wound up in New Mexico. I graduated from the University of New Mexico in 1991 after completing both an internal medicine and emergency medicine residency program. After several years as a full-time emergency medicine doctor, I started getting more interested in international work and thought there was something else I should do with my background. So I went down to Mexico.

"On the way to Mexico I ran into a big car accident in Sonora. It was a real disaster! It took a while for the Red Cross to get there, and when they did, they really didn't know very much. I got one guy on an ambulance and intubated him, then placed a chest tube that I made out of an ET tube; it was pretty dramatic. It was one of those real MacGyver medicine moments.

"I ended up in San Miguel de Allende and decided that was my calling – to be in Mexico and to be training people. That was around 1996. I wound up working with the Health Ministry there developing an EMS academy. I helped them set up an ultrasound course, an advanced airway course, and I brought in a nursing trauma course."



# INTERNATIONAL EMERGENCY MEDICINE

**JMR:** “How did you manage your time as you started PACE [Programa de Actualización Continua en Emergencias – Continuous Update Program in Emergencies]?”

**HH:** “I supported myself as a migrant EM worker. I would work five days on, five days off in different emergency departments for somewhere between 10 and 15 shifts a month for decades.

Somewhere around 2000, I was contacted by some medical students and residents who asked me to start a medical Spanish school, so we did. We have had about 500 people since then, and provide CME credit through the University of New Mexico.

“We trained people from emergency departments and from the Red Cross. We were developing our training center on the side, and we eventually became an American Heart Association Center. I started off with the idea that we didn’t need canned courses, but it was challenging, as the Health Ministry was very clear that they needed these courses taught.

“One of our students came and wanted to be trained in how to teach neonatal resuscitation for an emergency obstetrics course, ALSO [Advanced Life Support for Obstetrics] in Guatemala. I took it to the Health Ministry and they said, ‘You have to bring this course to all of Mexico.’ This is how the ALSO program was launched in Mexico. Back then, few emergency medicine docs had heard of this course. And after a few years of teaching ALSO the feds came out with a position paper saying that this was the model for training emergency obstetrics. We’ve trained 10,000 people in this course now.

“I originally believed this should be a nonprofit organization, and nonprofits are funded by donations or grants. The health ministry told me they couldn’t donate or give me a grant, but they could buy my



**IMAGE 1.** Dr. Hall making his medical home with the people of Mexico.

courses. It became one of the first social entrepreneur projects in Mexico, and we’ve trained over 30,000 people.

“Over time, we developed a lot of strong ties with the *Sociedad Mexicana de Medicina de Emergencias*. Then I became ambassador to Mexico for ACEP. Our focus has been on community-based training in emergency-based care, rather than the specialty, because there is poor emergency care without training at all levels.”

**JMR:** “It sounds like you have had success after success. What has been the biggest barrier to building up the PACE program?”

**HH:** “This whole thing has been challenging in many ways. All that success came at a huge price. Anything that I could have done wrong I have done wrong at some point! There was a lot of wear and tear. My income decreased a lot because I was doing a major project on the side. It was very stressful on my family. The other part is that I’ve been so far off the radar from mainstream academic medicine in the states that it gets kind of lonely

out here sometimes. Most of what I’m doing does not fit your normal mold for an emergency doc or an academic doc, so there’s a price to pay for it.”

**JMR:** “How is the residency training curriculum structured in Mexico?”

**HH:** “There’s a new residency in León. Three of the faculty there are PACE faculty. There’s a residency now in pretty much every state in Mexico. There may be somewhere near 4,000 EM trained docs now. But when I first started here there was really only one emergency medicine specialist other than myself in Guanajuato, and now there are about 30.”

**JMR:** “What is the difference between the residency structure in the Mexican system and in the US?”

**HH:** “It’s very much patterned after the U.S. It’s a three-year-long program. Remember that these docs go straight from *secundaria* [high school] to medical school.

“They started a couple of years ago a *reanimación* [intensive care] fellowship. They have a toxicology fellowship, but they don’t have a lot of other fellowships.

Pediatric emergency medicine is pretty much its own channel; up to now they have not blended very much. Even now we feel like there's a real shortage of emergency docs, and so what they have tried to do is create a program called Semi Presencial (it means 'blended learning') where they take general docs who work in emergency departments and rotate them out and circulate them in academic centers for a year to make them board-eligible. It was an attempt to increase skills and it probably has done that. I cannot say, however, that it has been as successful, in terms of acceptance by more traditionally trained specialists."

**JMR: "How do you split your time between clinical and administrative work?"**

**HH:** "I don't do much clinical work in Mexico. I have so much administrative work to do here. I have facilitated other people doing that. I do a fair amount of telemedicine nowadays, and that has worked out pretty well because I can work from anywhere."

**JMR: "Do you feel that your Mexican colleagues treat you differently because of your background?"**

**HH:** "I think that my Mexican colleagues are very qualified. They are very smart, motivated people. They have a lot of experience. Almost any of them that I can point to can teach Mexicans better than me. It's funny because there's this whole external validation where if you were trained on the outside, that means a lot to people. So I think that by being an outsider from the States and by being able to bring people down here, like Judith Tintinalli and others, we've been able to reinforce the standing of emergency medicine."

"As an international doc, and being U.S.-trained, I've been able to get into a lot of other places that might have been quite a bit harder for them to get into. It's a young specialty, and I've been able to open a lot of doors. In practice, emergency obstetrics wasn't being taught to mainstream emergency physicians here. There is a lot of third-trimester obstetrics in community hospitals. We've been able to get to the highest levels of government and work on some other projects, and I think my background has provided more support."

"Because of our success with the ALSO program we were also invited to be on a federal task force to develop training for palliative care. In Mexico, half of the people who die need some kind of palliative care and don't have access to it. Because we have been successful in the obstetrics program, we've been asked to develop a community-based palliative care program."

**JMR: "How helpful is an international EM fellowship for residents who want to pursue your type of work?"**

**HH:** "The problem with fellowships is that a lot of them are the pet project of some faculty members. You have to be very careful and realize what it is that you are trying to accomplish. The longitudinal projects to me are important, but if you just want to go hang out in a clinic somewhere, there are probably easier ways of doing that than tying yourself to another two years of training. So you want to know what the value proposition is."

"We're perfectly situated to do all kinds of stuff here and some of it is development, which is great. The *Sistema de Urgencias de Guanajuato* [Guanajuato EMS System] is here. We're starting a bit with mobile health and we could do a really fantastic



IMAGE 2. From a flyer for PACE.

¿Prefiere leer en español? Pásese a nuestra página en línea a [emresident.org](http://emresident.org), donde se puede leer un suplemento de extractos de esta entrevista en español.

*\*Editor's note: Would you prefer to read a Spanish versión? Please visit [emresident.org](http://emresident.org), where you can find a supplement from this interview in Spanish.*

project with EMS. We have endless courses that we're giving all the time. You could come in and not know Spanish AND not know ACLS and we could put you there until you eventually get it. So I think there's a really rich opportunity to do stuff, and we're very well-prepared. Most academic centers are very protective about not sending their people internationally. They need the warm bodies."

**JMR: "What would you say to residents who are worried about the security situation?"**

**HH:** "Most of us, especially us EM people, know there are a lot of micro-environments out there that can be dangerous. The vast majority of people who get into trouble are typically doing something risky. So if you look at the actual numbers, the total number of American citizens murdered in Mexico was 100 last year; 150,000 U.S. citizens cross the border every day, and there are 1 million Americans who live here. Mexico has 24 million tourists who come through a year. Is it impossible for something bad to happen? No. Emergency medicine programs are often in some city where you have to be situationally aware. It has been a much different thing along the border. However, Mexico City last year had one-third the murder rate of Washington, D.C., so the attributable risk is low."

**JMR: "What questions should students applying in emergency medicine ask about a residency program's international EM opportunities?"**

**HH:** "They need to come in waving an international emergency medicine flag. They need to say, 'You don't have that? Well, I'm not going to come here.' The



# INTERNATIONAL EMERGENCY MEDICINE

people who are in the international emergency medicine front need to take initiative, and they want that in their residency program.

“Doing rotations abroad is often a fight with the local CFO rather than what should be the overriding educational mission. Residents represent income and manpower. I would ask specifically how many people have gone abroad, where they have gone. I would not fall for the ‘We sent one person, two years ago, somewhere’ statement.”

**JMR:** “How do organizations like ACEP and IFEM [the International Federation of Emergency Medicine] support your work, and what is your vision for the future international growth of EM organizations?”

**HH:** “I was not that involved with organized emergency medicine until I realized that I wanted to do international work, and once I realized that, I realized that I needed to go and get the backup of the real experts who had been doing this

before. When I started, ACEP was the only one, and there weren’t a lot of other options. I know that AAEM (American Academy of Emergency Medicine) has been involved internationally in the past decade as well.

When I got started, ACEP had very few Latin Americans involved in the Section. The International Section was not very Latin American at all. I worked over many years to try to bring a Latin American focus, and I worked within IFEM to bring in more Latin American countries. In order to be a full member of IFEM you have to have a residency program, and you have to be recognized by the government. We’ve brought Panama, Venezuela, Ecuador, and Cuba in as IFEM members. I’ve been involved with the first IFEM International Symposium in San Miguel de Allende in 2011. We will be bringing the International Congress of EM to Mexico City in 2018. I am working on a plan for an IFEM Symposium in Cuba.”

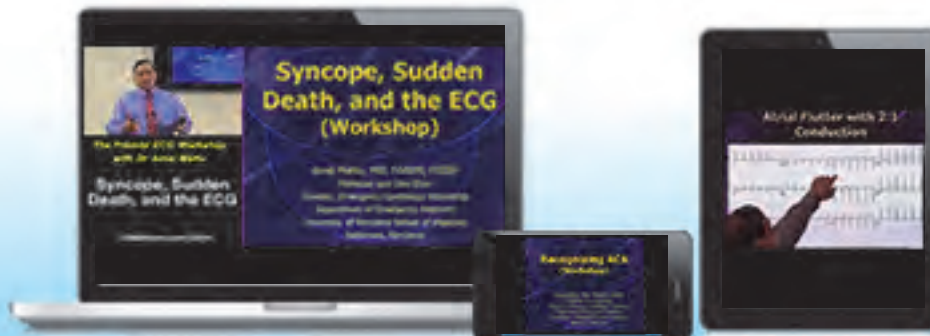
**JMR:** “Does PACEMD have opportunities for residents from the U.S.? How do residents get involved?”

**HH:** “If they want to contact us, we have set up one-month rotations. We don’t require Spanish language ability. We strongly believe people need to learn it, and they need to have it where they can at least take a history and physical. Depending on their language and clinical abilities, we place them in a variety of clinical settings. The prehospital system is run by the Red Cross and the Health Ministry allows us to place people in clinics, emergency departments, and mobile health units. There has to be a lot of flexibility on the part of the rotator. Our approach is to do a couple of hours a day of intensive Spanish where we supersaturate your receptors and then we put you into a clinical situation. It’s amazing how fast one learns like that. If people are coming to us with more than a language acquisition requirement and they have a real interest in some area, then we bend over backwards to make that work for them and figure out where to place them.” ★



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# TREATING THE Masses



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## Why Physicians Make the Difference

**It is a common misconception that mass gathering medical care is analogous to routine EMS practice.**

### Introduction to Mass Gatherings

As highly social creatures, mass gathering are an integral part of our lives. From sporting events to concerts, these events present a unique set of circumstances regarding public health and safety. A mass gathering can be defined as an event during which crowds gather and where there is a potential for a delayed response to emergencies because of limited access to patients or other features of the environment and location.<sup>1</sup> These events often strain local emergency medical services (EMS) systems as well as nearby hospitals, especially when there is poor planning and lack of medical resources. Without clear guidelines in place, many jurisdictions face a considerable challenge when presented with planning the medical care for these events. In addition, most of the ideas and recommendations presented in the literature are based on “expert opinion” as opposed to scientific evidence.<sup>2</sup> Emergency physicians, and emergency medical services (EMS) physicians in particular, are well-positioned to estimate the medical resources needed to support these large events.

### Challenges to Mass Gathering Medical Care

Mass gatherings pose a variety of challenges, from preplanning through execution as well as postevent analysis. The current literature concerning mass gatherings has abundant retrospective information on the medical presence and outcomes at a variety of events, but lacks a general consensus on the specific resources necessary for a prospective event. A number of models have been created in an effort to estimate the emergency medical resources required for an event based on multiple variables. Hartman, et al, identified five factors that affect patient presentation, specifically weather, attendance, ethanol presence, crowd age, and crowd intention, in an attempt to stratify events into minor, intermediate or major categories.<sup>3</sup> The Arbon model predicts patient presentations based on specific variables present at a wide range of events.<sup>4</sup> The model indicated that the patient presentation rate (PPR), often presented as the number of presenting patients per 1,000 event attendees, had a positive relationship with crowd size, relative humidity, sale of alcoholic beverages, and number of medical personnel at the event.

# Special Events Special PART 1

## SPECIAL EVENTS

Attempts to validate these models have shown they have some utility in predicting patient presentations, but fall short when predicting patient transfers to local hospitals and the requisite number and type of medical resources.<sup>2,5,6</sup>

Particular events pose unique obstacles, and these must be identified in the planning stages in order to allocate resources properly. Marathons, for example, present an unbounded and unfocused crowd with a larger number of participants than spectators, requiring careful planning of resources at optimal points along the race and mobility of care teams to augment the further distance stations.<sup>7</sup> Sporting events may present a low PPR but a higher rate of cardiac arrests, while a rock concert may have a high PPR with very few cardiac arrests.<sup>8</sup> The most common reasons for seeking medical care include dermal and musculoskeletal injuries, heat-related illness and dehydration, gastrointestinal complaints, and headaches.<sup>9,11</sup> A common patient complaint at concerts is drug overdose, and knowing the pattern of drug use in the region as well as at a particular event will allow providers to anticipate critical presentations. Predicting the prevalent complaints based on event variables may help guide planning the level of care, personnel, facility placement and equipment necessary.

Probably the most frustrating aspect of planning mass gathering medical care is the lack of standardization and guidelines in most jurisdictions. Only a handful of states have existing regulations, with no uniformity of planning or medical care. It is a common misconception that mass gathering medical care is analogous to routine EMS practice, while in reality mass gatherings present unique challenges that require special planning and often a broadened scope of practice. Sanders, et al, provided recommendations including basic first aid and life support within 4 minutes of a patient becoming ill, and advanced life support resuscitation within 8 minutes of a patient becoming ill.<sup>12</sup> The authors suggest that nonphysician medical care providers should not treat non-emergent problems or render judgment without direct supervision of a licensed physician. Standardized legislation

regarding mass gathering medical care is a necessity if participants and spectators are expected to receive uniform access to competent emergency medical care, and physicians are in a position to both write and promote such legislation.

### The Role of the Physician in Mass Gatherings

The concept of physician presence and supervision during a mass gathering is not unique. As early as 1979, physicians have been identified as a crucial element to effective and medically sound emergency medical service.<sup>13</sup> Martin Gill, et al, reported that while physician presence led to an absolute increase in patient census and transports, a decrease in the percent of patients transported was seen with likely minimal impact on local EMS and emergency department resources.<sup>14</sup> A sporting event experienced a low rate of ambulance transfers to local hospitals, and the authors concluded this finding was likely related to the ability of medical doctors to treat and discharge patients if deemed stable.<sup>15</sup> Direct physician oversight may increase treatment and release rates, as prehospital providers cannot typically perform this function.<sup>16</sup> The physician's ability to finalize disposition of patients onsite is critical to off-loading local EMS system and emergency department resources outside the event.<sup>17</sup> In addition, physician presence is invaluable at events where the transport distance and times to definitive care is considerable, allowing patients to receive a higher level of care at the time of presentation.<sup>18</sup> Beyond the obvious ability to treat patients during the event, physician oversight can be useful throughout the planning stages. The National Association of EMS Physicians' position paper on mass gathering care reviews the particulars of medical action plan.<sup>19</sup> An effective medical plan should outline the responsibilities of physicians assigned to the event, detail the scope of event medical care, and comprehensively address issues related to onsite communications, medical equipment, physician oversight, and resource allocation. It is important for a physician to be involved from the beginning of the process to facilitate protocols for non-physician personnel and help create a plan that provides patients with the highest

**By virtue of their expertise and training, emergency physicians can comfortably provide an increased level of care at such events.**

quality care possible. Without direct physician oversight, elective nontransport of patients by EMS crews is considered risky.<sup>17</sup> Sanders, et al, proposed guidelines recommending 12 physicians for every 50,000 people,<sup>12</sup> and consideration of the event type may necessitate additional physician presence.

Paramedics remain an invaluable resource at mass gatherings, and providing them with written directives unique to a particular mass gathering can allow them to manage patients who would otherwise require transfer to a hospital. Paramedic-staffed rehydration units have been used,<sup>20</sup> and at times when physician resources are limited, physicians can provide structured treat-and-release protocols utilizing over-the-counter medications.<sup>21</sup> Everyday EMS systems are inadequately equipped to evaluate and release patients, and by following usual directives many patients would require transfer, further straining the EMS system and local hospitals. By providing these protocols to address a variety of patient presentations common to a distinct type of mass gathering, paramedics may be maximally utilized and in doing so allow onsite physicians to be available for treatment of more critically ill patients.

The specialty of the physician involved in a special event should also be considered, and emergency physicians are uniquely qualified for this role. By virtue of their expertise and training, emergency physicians can comfortably provide an increased level of care at such events. A seemingly untapped resource is the presence of emergency medicine residents at mass gatherings.<sup>22</sup> Not only will their participation promote comprehensive care at events, but also it may foster an enduring commitment to participating in



prehospital care and provide community leaders to further develop the emergency medical system. By becoming involved in mass gathering medical care, emergency physicians in any stage of their career can contribute to their local EMS system and help elevate the care provided at these events.

### Practical Considerations: The Baltimore Grand Prix

The Baltimore Grand Prix was one event that thrust physician involvement in mass gathering care into the spotlight.<sup>6</sup> From 2011-2013, this mass gathering event drew crowds in excess of 100,000 to the metropolitan Baltimore area and threatened to further strain the already overtaxed emergency medical services system. The sheer scope of the event necessitated a novel approach to emergency care; simply scheduling another six ambulances to operate during the event would not meet the projected demand. Event planners and medical directors worked to create a “closed EMS system” tailored to the unique geographic and operational constraints of the Grand Prix. Thousands of spectators were located within a fenced-in barrier, and ambulances had to be prepositioned at strategic locations. Resources were allocated to

on-track emergency care, and spectator services consisted of a deployment of physician-staffed first aid stations. Finally, a standalone “race hospital” was deployed to focus on the urgent and emergent needs of Grand Prix racers and staff. The hospital was staffed with Grand Prix physicians, an X-ray machine, resuscitation equipment, and common urgent care medicines. A mobile command unit provided dispatch and communication services for responding units assigned to the event. The preplanning was instrumental in minimizing the event’s impact upon an already under-resourced EMS jurisdiction. This event clearly illustrated the diverse challenges posed by estimating resources for mass gatherings, and the success of the event was in large part due to the careful planning and coordinated interaction between EMS providers and participating physicians.

### Conclusion

Physician involvement is key to the effective planning and provision of mass gathering medical care, and participating physicians should be appropriately trained in emergency care and be comfortable while interacting with prehospital providers. Emergency medicine physicians, including residents, are well positioned to not only provide definitive medical care at events, but also to get involved in regional legislation regarding mass gathering medical care. The EMS subspecialty of emergency medicine allows physicians to obtain specific training in prehospital emergency patient care, making them highly qualified to aid and advise appropriate medical care for mass gatherings, as well as provide medical oversight of EMS activities during these events. Without consistent guidelines and close medical oversight, EMS systems are left to provide usual care instead of preparing a medical plan tailored to the needs of the event. Becoming involved in event medicine can be a rewarding way to provide high quality care as well as help shape future mass gathering medical care. ★







# Special Events Special Part 2

## AT THE STARTING LINE

### HOW TO GET INVOLVED IN MASS GATHERINGS

To execute a large event requiring medical support, one must go beyond generic written plans and protocols. The steps taken at the beginning of the planning process can mean the difference between success and failure, which translates directly to the overall safety and care of participants, spectators, medical providers, and staff. Because of their expertise and training, emergency physicians are well-suited to assist in planning for and operating at these types of gatherings as subject-matter experts and senior members of the incident command team.

Residents and medical students interested in emergency medicine often want to get involved in the various aspects of special event operations. EMS medical directors, EMS fellows, and experienced emergency physicians with an interest in prehospital or event medicine can be great mentors for newcomers wanting to learn more about what it takes to run large events.

With a mentor identified, oftentimes the best way to learn about how special events are organized is to jump right in and observe the process of planning and executing a real event from beginning



Seth Kelly, MBA, FF/EMT  
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to end. To help you get started, here is an introduction to some techniques frequently used to lay the foundation for a successful event, whether it is a road race like the Baltimore Grand Prix, a concert, cultural festival, or common sports competition. While every jurisdiction is



different, understanding these planning principles will help you learn as you work together with a mentor or members of the planning team.

### Get to Know the Team

As a resident or medical student, you will most likely be part of a larger planning organization with many players. Depending on the size of the event, this may include the event organizers as well as representatives from law enforcement, fire/rescue, emergency medical services, public works, emergency management, and even local government executive leadership.

It may go without saying, but it is important to meet the other members of the group early and in person, if possible, to build working relationships and learn about the capabilities and experiences that individuals will bring to the planning process. This will help you later, not only when roles and responsibilities are documented in the plan, but also when working together to execute the plan during the event itself.

### Ask and Gather, Then Write

It can be tempting to start with a search for standard templates and begin entering information, but most event planners spend time gathering information to ascertain all of the details needed to draft the plan. This includes an analysis of venue conditions, hazards, and resources (see “Challenges to Mass Gathering Medical Care” in Special Event Special Part 1 – Treating the Masses).

For example:


- What type of crowd will be present and are there special populations to consider?
- What will the weather be like?
- What are the venue’s characteristics with regard to attendance, facilities, supplies, and transportation access?
- What kinds of problems have been encountered with similar events in the past?
- What is necessary to ensure the safety and welfare of those staffing the event?

Along with information gathering, individuals in charge of drafting the plan often reach out to other members of the planning team or colleagues who have served in similar roles for past events, especially other physicians with experience managing patient care, protocol development, and health record reporting. Similarly, numerous published case reports are available for historical events, such as the Boston Marathon bombing, SuperBowl XLVIII, Chicago Shamrock Shuffle, and Chicago Marathon that provide insight and lessons learned.<sup>1-4</sup>

The next step is to start writing. This is the best time to use preformatted incident management templates, if applicable. Free online publications, such as the Federal Emergency Management Agency’s

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**You can work as part of the team to help ensure that any event, large or small, is executed safely and efficiently.**



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Operational Templates and Guidance for EMS Mass Incident Deployment, provide examples. The FEMA Incident Command System Resource Center (<http://training.fema.gov/emiweb/is/icsresource/index.htm>) also provides relevant planning guidance and forms.

Updating old planning documents that worked well in the past can also save time and provide a familiar format for local responders who are routinely involved in supporting these types of incidents. Fire departments, police departments, hospital emergency preparedness offices, and emergency management agencies can often provide copies of previous plans.

### Practice!

Prior to the event, the medical team (or full incident team) will often schedule time for a “tabletop” exercise or walk-through using different patient care, mass casualty, and emergency response scenarios where the plan is applied. Representative team members at all levels may be invited to participate, including those in command roles as well as medical providers and other responders who will be working at the event. Both seasoned and less experienced personnel provide valuable insight into the types of problems that can be anticipated. It is helpful if everyone has a copy of the draft plan so that specific comments and feedback can be provided in real time during the review.

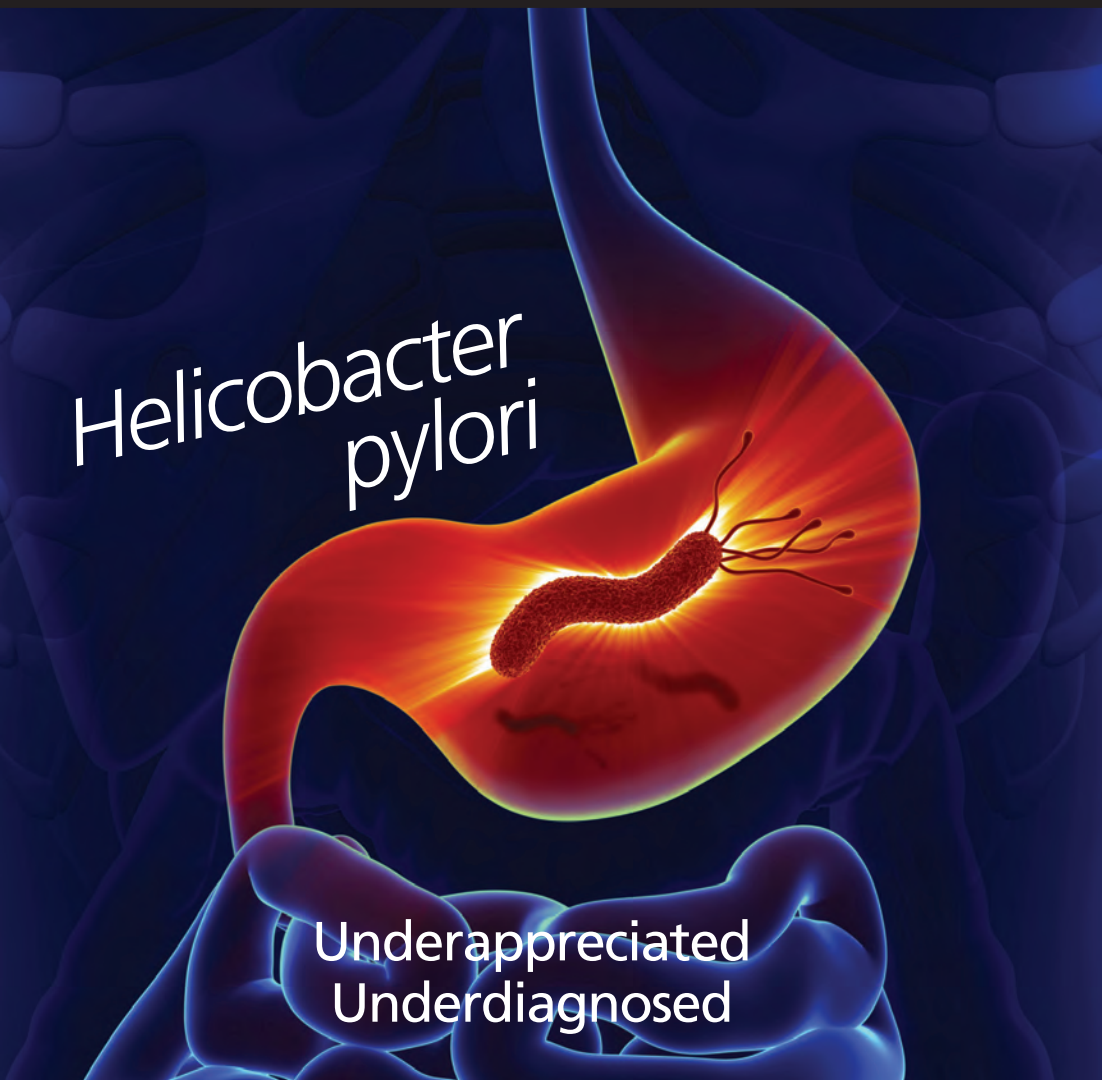
After the leadership team has worked to incorporate revisions from the practice session and secure any necessary approvals, the last step is to distribute the medical plan (as part of the larger operational plan, if applicable) and then put it into action on the day of the event.

### Perform a “Hot Wash”

Emergency physicians, residents, and medical students work with other members of the hospital team as well as prehospital fire/rescue personnel and emergency medical providers daily. Debriefing after a challenging patient case in the emergency department or critical fire/rescue event in the prehospital setting is a routine method of identifying things that went well and things that could have gone better. Special events are no different. A good after-action assessment generates valuable lessons to carry forward to the next event.

### Conclusion

The myriad planning considerations and operational decisions that need to be made can be overwhelming at first, especially for anyone new to special event planning. However, by understanding these basic concepts and pairing with a mentor to learn more about the planning process, you can work as part of the team to help ensure that any event, large or small, is executed safely and efficiently for participants, attendees, and providers, including quality medical care when it is needed. Remember, there is no one better suited for the task than you! ★



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In the emergency department, many opportunities are lost with regards to care for patients with dyspepsia.

# A *gnawing* PROBLEM

In 1984, Dr. Barry Marshall, an Australian physician, ingested a petri dish known to contain *Helicobacter pylori* in an attempt to help prove his theory that the bacteria was related to gastric ulcer disease. Within three days, he experienced severe abdominal symptoms, and within eight days, he had EGD-confirmed severe gastritis.<sup>1</sup> In 2005, he became a Nobel Laureate for his cutting-edge work. As a result of his self-sacrificing acquiescence, we are now keenly aware of the causality and prevalence of *H. pylori* in peptic ulcer disease. **Each year 20-30% of people experience dyspepsia severe enough to seek medical attention, and evidence supports that *H. pylori* is detectable in 90-100% of patients with duodenal ulcers, and 60-100% of patients with gastric ulcers.**<sup>2</sup>

## The At-Risk Population

Worldwide, *H. pylori* is estimated to affect more than 4 billion people. In fact, *H. pylori* prevalence rates have been quoted at greater than 50% across Central America, South America, Asia, and Africa.<sup>3</sup> The consequences of chronic infection are not insignificant. ***H. pylori* colonization is directly associated with both gastric and duodenal ulcers, gastric lymphoma and cancer, and GI bleeding.** The *H. pylori* prevalence in the U.S. is estimated to be 32%, with a disproportionate amount affecting lower income African-Americans and whites.<sup>4,5</sup>

In a prospective cohort of over 80,000 patients in the Southern Community Cohort Study (across 12 states in the Southeast), serum studies were performed indicating that 89% of low-income African-Americans, and 69% of low-income whites were, or had previously been, infected with *H. pylori*.



Overall, the odds of infection among African-Americans compared to whites was 3:5.<sup>6</sup> *H. pylori* infection being associated with race and socioeconomic status has been replicated across several studies. In 2013, Meltzer, et al, studied an urban emergency department population in Washington, D.C., and found the prevalence of active *H. pylori* infections to be 25%. Additionally, this article demonstrated that **age and sex were not risk factors for *H. pylori* infection**, but confirmed that race was an important risk factor. Again, according to this study, African-Americans were significantly more likely to be infected than their white counterparts.<sup>7</sup>

### The Problem

In the emergency department, many opportunities are lost with regards to care for patients with dyspepsia. The standard outpatient therapy is the oft-used empiric PPI trial. There are many caveats to the rules where, as health care providers, we often achieve the standard of care but fall short of excellence. First, while the diagnosis of dyspepsia does almost always merit a PPI trial, many patients are not appropriately screened for “red flags” or alarming features. The presence of dyspepsia plus an alarm feature (see *Table 1*) mandates a completely separate diagnostic algorithm: early endoscopy via urgent GI follow up. Second, the American College of Gastroenterology recommends an empiric proton pump inhibitor trial for populations with an *H. pylori* prevalence <10%, but in populations with a prevalence >10%, a “test and treat” strategy is recommended. Additionally, **test and treat has been demonstrated to be cost effective, and eradication is a strategy known**

**to reduce the risk for bad sequelae, including gastric cancer.**<sup>8,9,10</sup>

### Application

The prevalence cutoff point of 10% is a key consideration. Test and treat is the recommended approach in these patient populations in the primary care setting, and this can reasonably be applied to the emergency department (i.e. low socioeconomic status, predominantly African-American or immigrant populations).

Testing may be accomplished in a variety of manners, either invasively with endoscopy and biopsy, or noninvasively. Three noninvasive options are typically available: serum testing, stool testing, or C13 urease breath testing. New technology has enabled the C13 urease breath test to have real time results. Some variations on the product have a 20-minute turnaround time. This is a preferable option because of speed of results and the high sensitivity and specificity (upwards of 95%).<sup>11</sup> Another available option is the stool antigen test, which yields sensitivities above 90%. This test, however, often requires days for results, and requires that patients stop PPI use for 2-4 weeks prior to testing.<sup>12</sup> Both the urease breath test and stool antigen test are indicative of active infection. The third option is *H. pylori* serology. This option has a sensitivity of approximately 70% and is not necessarily indicative of active infection.<sup>10</sup> In general, serology is a poor option as it has lower sensitivity and specificity than the other tests available.

Treatment is accomplished via either triple or quadruple therapy. Triple therapy entails a PPI, clarithromycin, and amoxicillin or metronidazole for 10-14 days. Quadruple therapy adds bismuth and is usually reserved

**TABLE 1. Alarm Features in Dyspepsia**

Age >55 with new onset symptoms
Family history of upper GI malignancy
Early satiety
Unintended weight loss
Previously documented ulcer
GI bleeding or iron deficiency anemia
Progressive dysphasia
Odynophagia
Persistent vomiting
Palpable mass or adenopathy

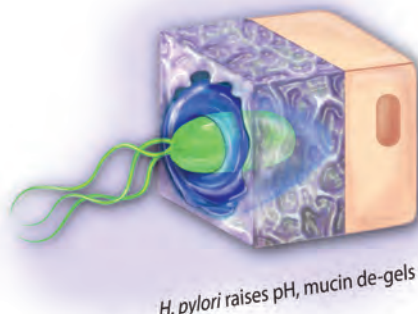
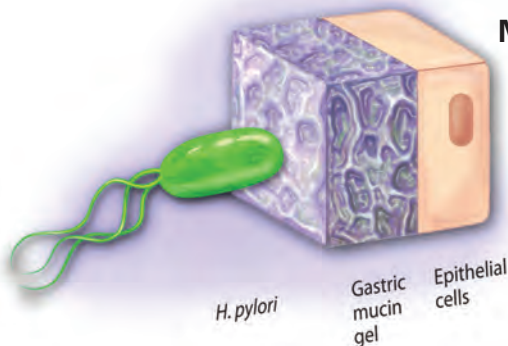
for *H. pylori* refractory to triple therapy. Both offer eradication rates between 70-90%.<sup>13</sup> It is important to note, however, that the treatment is not necessarily benign. These patients often experience severe side effects and will require close outpatient follow up.

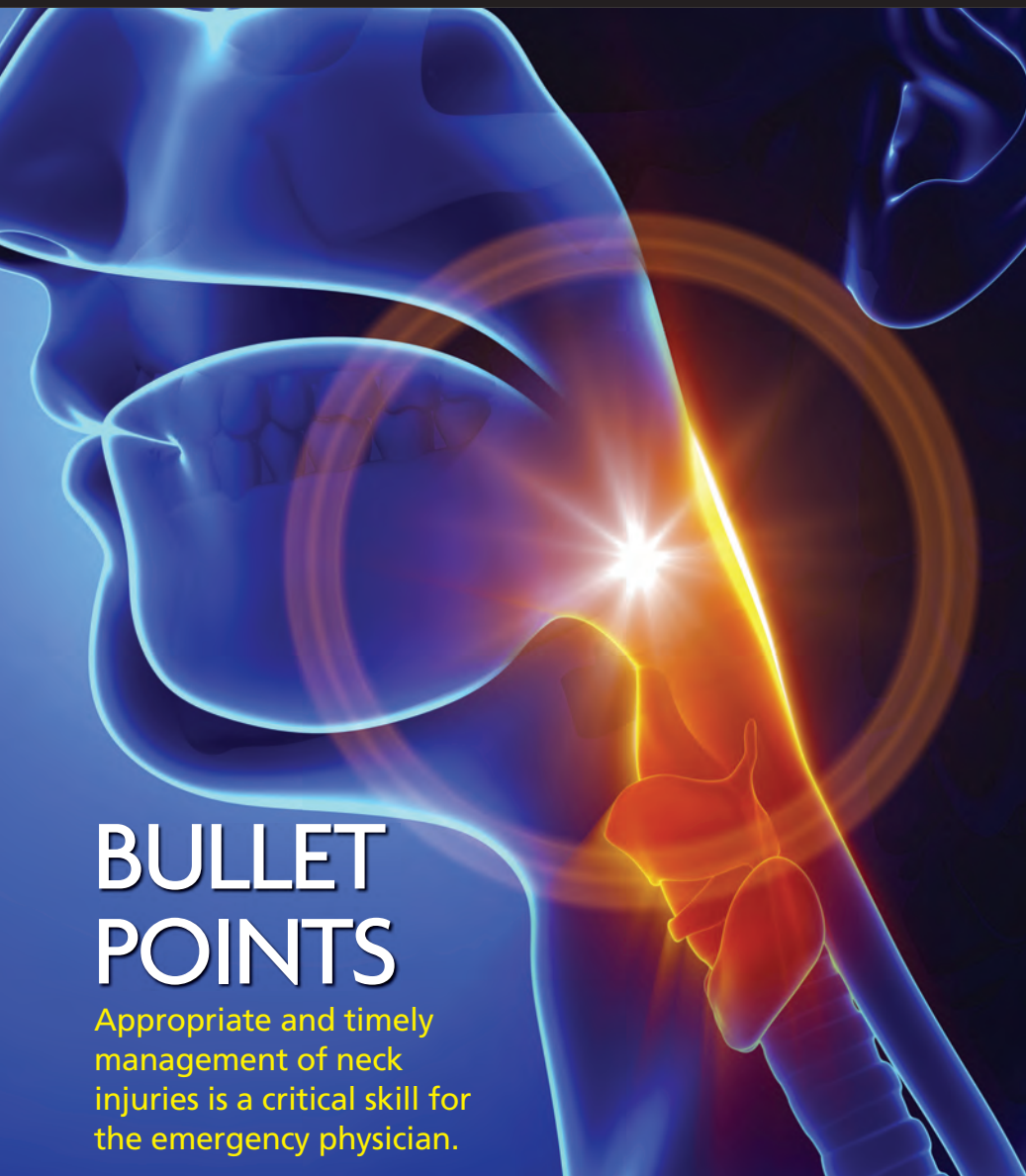
### Conclusion

***H. pylori* is more impactful than many of us realize, and as a collective (particularly those of us working with underserved populations), we should have a high index of suspicion for *H. pylori* infection in any patient presenting with dyspepsia.** Minorities, poor socioeconomic status, and immigrants are the highest risk groups. Specifically, those of us providing care to an urban, underserved population need to keep the 2013 Meltzer study in mind, taking careful note of the demonstrated 25% prevalence.

All patients deserve symptom control via a PPI or H2 blocker, but higher risk patients also merit testing. The presence of any alarm features should prompt GI follow up. With regards to antibiotics, there is no significant body of evidence for empiric treatment at this point. Those who test positive for *H. pylori* should be treated, though treatment without a positive result is not common practice, nor is it generally recommended. While point of care testing is becoming more common, very few emergency departments in the country currently have that capacity. We should familiarize ourselves with the testing options available in our institutions. If these tests are not readily available with real-time results, assuring outpatient follow up with a primary care physician is key, as these patients frequently fall into the test and treat category. ★

### H. Pylori Crossing Mucus Layer of Stomach





## BULLET POINTS

Appropriate and timely management of neck injuries is a critical skill for the emergency physician.

# Penetrating Neck Trauma



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*A 57-year-old female is brought in to the emergency department after sustaining a gunshot wound to the right face. Initial assessment reveals facial swelling and large amounts of blood in the oropharynx, though she is initially stable on a non-rebreather. Her GCS is 12 (E4 V2 M6). Given the extent and nature of her injury, there is concern for impending airway compromise, and it is decided to take the patient to the OR for emergent tracheotomy.*

For every ED physician the trauma resuscitation starts with the ABCs: airway, breathing, and circulation. The case scenario presented here may represent one of the more challenging airways you might ever encounter. The neck is the location of many vital structures. If a neck injury is missed during the initial stages of a polytrauma evaluation, it can result in increased morbidity and mortality. Penetrating neck injuries account for up to 5%-10% of all traumatic injuries.<sup>1</sup> Mortality, particularly for vascular injuries, approaches 50%.<sup>2</sup> Appropriate and timely management of neck injuries is a critical skill for the emergency physician.

### Who Needs Immediate Airway Attention?

A fundamental principle of airway management is that earlier airways are generally easier airways. In traumatic neck injuries, an earlier intubation usually means an easier intubation because there is less time for airway distortion, swelling, and patient deterioration. The criteria for emergent airway management in penetrating neck trauma are outlined in Table 1.

The ideal approach for securing the airway is controversial. Options include rapid sequence intubation, oral intubation with sedation or local airway anesthesia only, blind nasotracheal intubation, direct fiberoptic intubation, retrograde guidewire intubation, cricothyrotomy, and placement of an endotracheal tube through an open wound in the neck (should one be available). **Special caution is warranted for the patient with suspected blunt laryngeal injury, as orotracheal intubation may be impossible.** Paralysis should be avoided in these patients, and a cricothyrotomy should be considered, with the appropriate tray and tools at hand. If there is a hematoma overlying the cricothyroid membrane, performing a cricothyrotomy is contraindicated. If time permits, tracheostomy would be the best approach.

Despite the multiple serious confounders, the familiarity of the emergency physician with RSI makes it the preferred technique in the majority of penetrating neck



traumas (with appropriate scrupulous use of paralytics). Mandavia, et al, reporting on 58 patients with critical airway compromise in neck trauma, found that two-thirds of the airways were managed successfully with standard RSI. In this study, primary management of the airway via fiberoptic intubation by ENT specialists was attempted in 12 patients. Of these attempts, 3 failed this management, but then were successfully intubated using RSI.<sup>4</sup>

### How Do I Manage an Open Wound in the Neck?

Open wounds in the neck require special attention. The first question is whether it violates the platysma muscle. If not, then primary repair and ED discharge can be arranged as long as there is no concern for blunt trauma to the adjacent structures in the neck.

On the other hand, if there is violation of the platysma, further evaluation is necessary. **Avoid probing through the wound, as this may disrupt a clot.** Do not blindly attempt to clamp vessels, as this also may cause further injury.

**TABLE 1. Criteria for Emergent Airway Management in Penetrating Neck Trauma<sup>3</sup>**

Stridor
Respiratory distress
Shock
Rapidly expanding hematoma

**TABLE 2. The “Hard” and “Soft” Signs in Penetrating Neck Trauma**

Soft signs
Non-expanding hematoma
7th cranial nerve palsy
Hoarseness
Dysphasia
Subcutaneous emphysema
Hard signs
Hypotension in the ED
Thrill/bruit
Neurologic deficit
Uncontrolled bleeding
Expanding hematoma

Direct compression can be attempted to control bleeding of an open neck wound. If that fails, consider placing a Foley catheter to tamponade the bleeding. Zone 1 injuries (below the cricoid cartilage) may involve the subclavian vessels; bleeding here is notoriously difficult to control. These patients may require emergent thoracotomy for hemorrhage management.<sup>5</sup>

### Back to the Case

*Prior to tracheotomy in the OR, an attempt at blind nasotracheal intubation is made and is successful. She is then taken for CT angiography of the neck and found to have complete occlusion of the right internal carotid artery, with possible transection (Image 1). The bullet is lodged in the right lateral mass of C1. The right neck structures are distended, displaced, and swollen due to edema and extravasation (Image 2). Contrast CT head shows an acute small right MCA infarct with likely dissection. She is taken for endovascular repair and then transferred to the surgical ICU.*

**TABLE 3. Evidence and risk factors for traumatic cerebrovascular injury**

Signs and symptoms of blunt cerebrovascular injury
Arterial bleeding
Bruit
Expanding hematoma
Focal deficit
Ischemic stroke on secondary CT scan
Risk factors for blunt cerebrovascular injury
LeFort II or III fractures
C-spine fracture (C1-C3, or extending into the transverse foramen)
Diffuse axonal injury with GCS 6
Basilar skull fracture with carotid canal involvement

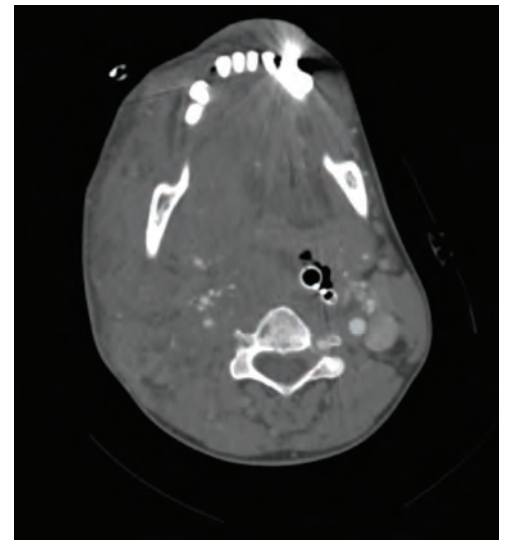
**TABLE 4. Grading cerebrovascular injuries**

Grade I	Vessel irregularity <25% of luminal diameter
Grade II	Intimal flap, intraluminal hematoma with >25% narrowing
Grade III	Pseudoaneurysm
Grade IV	Vessel occlusion
Grade V	Vessel transection

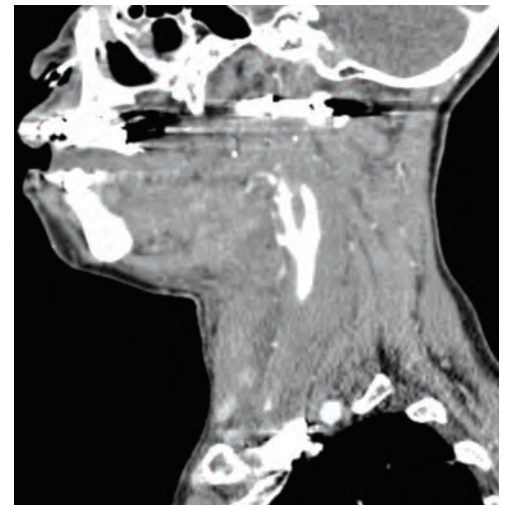
### Approaching Vascular Neck Injuries

Table 2 demonstrates some of the classically taught “hard” and “soft” signs of penetrating neck trauma. **If the patient presents with hard signs then s/he should go to the operating room as soon as possible.** However, patients presenting with soft signs can still have serious injury and will always require further diagnostic testing.

Modern CT scanners make **helical CT angiography 90%-100% sensitive.** This has overtaken conventional angiography as the diagnostic test of choice for penetrating neck trauma. A level II EAST (Eastern Association for



**IMAGE 1.** CT angiogram demonstrating the projectile path and truncation of the carotid.



**IMAGE 2.** Transverse cut of the CT angiogram which shows significant right-sided swelling with obscure vasculature and obvious displacement of the endotracheal tube.

# TRAUMA

the Surgery of Trauma) recommendation suggests that CT angiography or duplex ultrasound can be used in lieu of arteriography to rule out an arterial injury in penetrating injuries to zone 2 of the neck (between the cricoid cartilage and the angle of the mandible).<sup>6</sup>

## When Should I be Concerned for Tracheoesophageal Injury?

**Esophageal injuries often are clinically silent** but carry a high morbidity because of mediastinitis. If repaired within the first 24 hours, the survival rate is greater than 90%. When surgery is performed after 24 hours the prognosis drastically worsens, with a survival rate of approximately 65%.<sup>7</sup> **EAST guidelines state that either contrast esophagography or esophagoscopy be used to rule out an esophageal perforation that requires operative repair.** This diagnostic workup should be expeditious because morbidity increases if repair is delayed.

## What About Cerebrovascular Injuries?

Biffel, et al, found four risk factors that independently conveyed a 41% chance of blunt carotid arterial injury. These were a GCS <6, presence of a petrous bone fracture, diffuse axonal injury, and either a LeFort II or III fracture (maxillary bone fractures). In the presence of all four of the independent factors for carotid injury, the risk of blunt carotid injury increases to 93%. Additionally, certain cervical spine fractures conveyed a 39% chance of vertebral vascular injury (Table 3).<sup>8</sup>

The criteria in Table 4 were developed to guide therapy according to the EAST guidelines. Injury grades I-II should be treated with either anti platelet or no-bolus heparinization (level II recommendation). Invasive therapy should be considered for injuries greater than grade II, as they rarely resolve with observation and heparinization (level II recommendation).

## Case Resolution

*The patient survives her injury and is discharged after a prolonged ICU stay, though with residual left-sided hemiparesis resulting from her arterial injury.*

## Learning Points

- Avoid paralytics if you suspect laryngeal edema.
- Avoid probing an open neck wound, as this may disrupt a clot.
- Acute surgical management of penetrating neck trauma is dependent on the hard and soft signs.
- Suspect tracheoesophageal injury, even in the asymptomatic patient.
- Vascular injuries are more common than injuries to other structures.
- CT angiography is a good starting point for stable penetrating injuries to all neck zones.
- Don't forget the ABCs; always stabilize prior to imaging studies. ★

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## A Summary of 2 Seminal Studies of Tranexamic Acid in Trauma

### Does TXA MATTER When Your Patients **CRASH**?

The past decade has ushered in significant advances in the care of patients with traumatic injuries due, in part, to a war that continues to smolder in the Middle East. Among these are extensive innovations in hemostatic dressings and the reinvigoration of the tourniquet as a viable first-line option for severe hemorrhage in the prehospital setting. **On the cutting edge of EMS trauma management is the rediscovery of a drug that has existed for decades: tranexamic acid (TXA).** Despite first approval in 1986 as an antifibrinolytic, and subsequent approval for cyclic heavy menstrual bleeding (as Lysteda, an oral medication, in 2009), and

dental hemorrhage in hemophiliacs (as Cyklokapron, an injectable or topical medication), it continues to be investigated as an adjunct for reducing intraoperative hemorrhage and improving trauma outcomes. Level I evidence in the form of double-blinded placebo-controlled trials supports the use of tranexamic acid in these FDA-approved instances. When used for heavy menstrual bleeding, oral TXA has been tolerated well, and has been associated with significant improvements in both menstrual blood loss and health-related quality of life.<sup>1,2</sup> Likewise, when used in hemophiliacs undergoing dental procedures, TXA was found to improve control of gingival hemorrhage.<sup>3</sup>



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Considering the safety and efficacy demonstrated in these instances, it seems reasonable that the drug's utility could be extrapolated towards trauma.

In contemporary literature, the most talked-about trials regarding the use of TXA in trauma patients include the CRASH-2 trial and the MATTERS study.

**CRASH-2 (Clinical Randomisation of an Antifibrinolytic in Significant Haemorrhage-2)** Published in 2010 in *The Lancet*, the CRASH-2 trial<sup>4,5</sup> (*Table 1*) aimed to determine the effect of the early administration of TXA on death, vascular occlusive events, and blood transfusion

**TABLE 1. Study Parameters of the CRASH-2 Trial**

CRASH-2: Clinical Randomisation of an Antifibrinolytic in Significant Haemorrhage-2	
<b>Design</b>	Double-blinded, randomized, placebo-controlled trial
<b>Population</b>	n=20,211 (civilians; average age= 35, 85% male)
<b>Pt Inclusion</b>	Adult trauma patients with significant hemorrhage [SBP<90mmHg, HR > 100 BPM or both] or considered to be at risk of significant hemorrhage. Within 8 hours of injury.
<b>Sites</b>	274 hospitals in 40 countries
<b>Site Inclusion</b>	Definitive trauma care for a sufficiently large number of trauma patients; hospital doctors substantially uncertain regarding the effect of TXA in the management of bleeding trauma patients; necessary research infrastructure to conduct the trial.
<b>Protocol</b>	<i>Experimental:</i> 1g TXA over 10 minutes + 1 g over 8 hour infusion <i>Control:</i> Matching placebo (0.9% saline)
<b>Outcome</b>	<i>Primary:</i> Death in hospital within 4 weeks of injury, subdivided by baseline characteristics: estimated hours since injury, SBP, GCS, type of injury. <i>Secondary:</i> Vascular occlusive events, surgical intervention, blood transfusion requirements while the patient was hospitalized, within 28 days of randomization
<b>Analyses</b>	Intention-to-treat. Primary outcomes reported as RRs with 99% Cis, and two-sided p-values. Binary outcomes reported as RRs with 95% Cis, and two-sided p-values. Heterogeneity ion treatment effects across subgroups assessed with chi-squared tests.
<b>Funding</b>	Publicly funded using generic drug.
<b>Criticisms</b>	Management of trauma patients at participating hospitals was not stipulated. Simple entry criteria allowed participating doctors to use clinical judgment when deciding whether or not to enroll patients into the trial. Risk of non-fatal vascular occlusive events with TXA may be under-reported, as specificity was emphasized over sensitivity in reporting. External validity unclear as many of the patients arose from middle-income and low-income countries. Additionally, only half of the patients actually received a transfusion, with a similarly low percentage requiring an operation.

**It seems reasonable that the drug’s utility could be extrapolated towards trauma.**

requirements in bleeding trauma patients. Primary outcome data were available for 20,127 (99.6%) of the randomized patients. 99.1% of patients were known to have completed the loading dose and 94.2% of patients completed the maintenance dose.

**All-cause mortality was significantly reduced with TXA;** relative risk of death was 0.91 (p=0.0035). Deaths from multiorgan failure, head injury, or other causes did not significantly differ between treatment groups. Vascular occlusive events (fatal or non-fatal) did not differ significantly (TXA 1.7%; Placebo 2.0%). Mortality differences between geographic regions of the test sites were not found to be statistically different (X<sup>2</sup>=1.445; p=0.70).

Subgroup analyses on death due to bleeding were also performed. **The risk of death due to bleeding on Day 0 was significantly reduced with TXA**

(RR 0.80, p=0.003). The effect of TXA on death due to bleeding varies according to time from injury to treatment (p<0.0001), even after adjustment for interactions between other baseline characteristics and treatment (Table 2). No substantial reduction in blood transfusion requirements was identified.

**MATTERs (Military Application of Tranexamic Acid in Trauma Emergency Resuscitation)**

Published in 2012 in *Archives of Surgery*, the MATTERs trial<sup>6</sup> (Table 3) aimed to characterize contemporary use of TXA in combat injury and to assess the effect of its administration on total blood product use, thromboembolic complications, and mortality. While **the UK Defence Medical Service has used TXA since 2009** as part of a massive transfusion protocol, the US Combat Casualty Care program had previously deferred its use altogether.

Of the 896 patients with a combat injury requiring transfusion, 32.7% received IV TXA within one hour of the injury. Statistically significant reduction in 48-hour (p=.004) and in-hospital mortality (p = .03), but not 24-hour mortality, was found with TXA administration. In the massive transfusion group, this correlation was even stronger (48-hour mortality p=.003; in-hospital mortality p=.004). At 30-days, survival in the TXA group was also better than the no-TXA group (p=.006). In the massive transfusion group, this relationship persisted with even greater absolute risk reductions (p=.004) (Table 4).

In the overall cohort, a GCS score of 8 or lower, hypotension, and the presence of coagulopathy were independently associated with mortality. In the massive transfusion group, a GCS score of 8 or lower and an injury severity score of 15 or higher were associated with mortality, while TXA use was independently associated with survival (OR 7.228, p<.001).

The percentage of patients with hypocoagulopathy on admission to the ICU following TXA administration was reduced as compared to no-TXA in both the overall cohort and massive transfusion subgroup (p<.05). The combination of this finding along with the highest mortality benefits observed after 48 hours suggests that TXA likely functions not only as an antifibrinolytic, but perhaps also as an anti-inflammatory, due to its non-immediate effects.

**What does this mean for the use of TXA in the prehospital setting?**

These studies have appreciable shortcomings, but it is generally agreed

**TABLE 2. Results of CRASH-2 trial (Relative risk (RR) of bleeding mortality with TXA. Benefit is greatest when TXA is administered within the first hour of injury.)**

Results: RR of Bleeding Mortality with TXA	
Overall (Day 0):	RR 0.80 (p=0.003)
Overall (Total):	RR 0.85 (p=0.0077)
Time Elapsed from Injury to TXA	
<1 hr:	RR 0.68 (p=0.0001)
1–3 hrs:	RR 0.79 (p=0.03)
>3 hrs:	RR 1.44 (p=0.004)



that their primary outcomes hold internal validity. Additionally, while the generalizability of these studies may be contended, the data remains compelling. In short, the following conclusions can be drawn from these two trials.

CRASH-2 demonstrated a reduction in all-cause mortality, but especially in death due to bleeding. When considering the impact of TXA, the greatest benefits were associated with early administration of the drug (< 1 hour). Vascular occlusive events did not differ in incidence between treatment and control groups.<sup>4,5</sup> In this trial, the number needed to treat (NNT) with TXA was 67 patients.

MATTERs also revealed a reduction in all-cause mortality past 48 hours in patients receiving TXA. The greatest benefit from TXA was identified in patients with severe injuries requiring massive transfusion.<sup>6</sup> In this study, with patients of a reportedly higher acuity than the CRASH-2 trial, the NNT was 7.

Taken in concert, these findings suggest that **the greatest benefit of this drug might be in its use as an adjunct for severely injured and bleeding patients, especially when administered early.** As EMTs and paramedics are frequently the first healthcare providers to make contact with civilian trauma patients, the use of TXA may have a reasonable niche in the world of EMS.

While these studies have failed to demonstrate an increased risk of thromboembolic events, both have limitations to this data. Consequently, a reasonable approach to implementation of TXA might include an assessment of a patient's thrombotic risk factors.

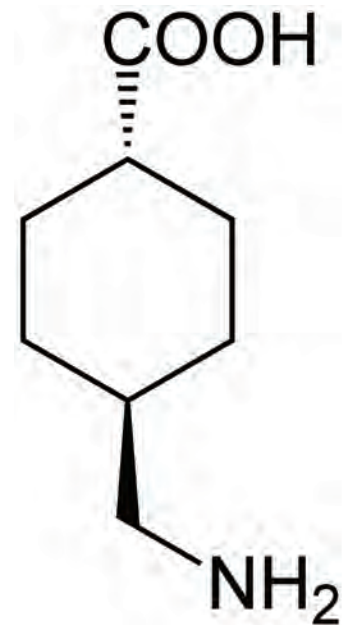
At this time, **TXA has become a Class I recommendation in the U.S. military's Tactical Combat Casualty Care guidelines,**<sup>7</sup> indicating that there is evidence (currently Level B) and/or general agreement that a given procedure

**TABLE 4. Results of MATTER Study**  
(Absolute risk reduction (ARR) in all-cause mortality with TXA. Benefit is greatest in subgroup of patients receiving massive transfusion (>10 units PRBC per 24 hours.)

Results: ARR in All-Cause Mortality with TXA	
Overall	
<24h	ARR 2.8% (p=.20)
<48h	ARR 7.6% (p=.004)
In-Hospital	ARR 6.5% (p=0.3)
Massive Transfusion Subgroup	
<24h	ARR 5.2% (p=.17)
<48h	ARR 13.1% (p=.003)
In-Hospital	ARR 13.7% (p=.004)

**TABLE 3. Study Parameters of the MATTER Study**

MATTERs: Military Application of TXA in Trauma Emergency Resuscitation	
<b>Design</b>	Retrospective observational cohort study
<b>Population</b>	n=896 (military combat injuries)
<b>Pt Inclusion</b>	Adult coalition military personnel and host national who received at least 1 unit of PRBCs within 24 hours of admission following combat-related injury from 1/6/09–12/31/10.
<b>Site</b>	Role 3 Echelon surgical hospital in southern Afghanistan
<b>Protocol</b>	TXA was administered to patients requiring emergency blood products or patients with evidence of hyperfibrinolysis. Standard dosing regimen consisted of 1g IV bolus, repeated as felt indicated by the managing clinician.
<b>Outcome</b>	<i>Primary:</i> 24 hour, 48 hour, and in-hospital mortality (within 30 days at the hospital in Afghanistan or any point throughout the aeromedical evacuation chain). <i>Secondary:</i> Transfusion requirements and coagulation parameters (PT, aPTT). Incidence of thrombotic events.
<b>Analyses</b>	Comparison performed by chi-square test. Differences in means by t-test. Continuous variables dichotomized at the time of admission. Thrombotic risk analysis by adjusted OR with 95% CI and p<.05. Mantel-Cox log-rank test and Kaplan-Meier life table analysis to report survival in treatment and nontreatment groups. Subgroup analysis of massive transfusion recipients (patients receiving >10 units PRBCs in 24 hours).
<b>Funding</b>	Office of the US Air Force Surgeon General. No financial disclosures reported.
<b>Criticisms</b>	The number of venous thrombotic events in the study is too small to assess any independent risk of TXA. Furthermore, the retrospective nature of the study impeded data collection regarding venous thrombotic events. Clinical practice guidelines for TXA use were not introduced until the later part of the study period, so variations may exist in the use of the medication throughout the study. An immediate mortality bias may exist. Inclusion of host national patients (with hospital courses shorter than 30-days) limits this outcome data.



**TXA likely functions not only as an antifibrinolytic, but perhaps also as an anti-inflammatory.**

or treatment is useful and effective. Additionally, multiple EMS agencies in the U.S. have begun to implement TXA in their treatment protocols.

As trauma management continues to evolve, the role of TXA may yet blossom. Ongoing surveillance of trauma outcomes by EMS systems employing this medication will be integral in defining the role that TXA should or should not play in the future of prehospital trauma care. ★

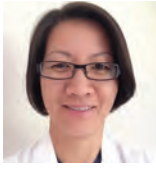


# Undoing the Twist

## OVARIAN TORSION IN THE PEDIATRIC POPULATION



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*It's the start of your afternoon community pediatrics shift and you are seeing a 7-year-old girl who started having acute RLQ pain followed by vomiting. She is afebrile, but pale with a tender RLQ. Her appendix is not visualized by ultrasound, but the right ovary is enlarged with a few peripherally displaced follicles. There is minimal flow peripherally and no color flow in the center. The patient is transferred to the closest tertiary health care center with pediatric surgery capabilities and undergoes diagnostic laparoscopy, where torsion is confirmed. Detorsion without ovarian excision results in a full recovery.*

### Incidence

Few studies describe the characteristics and incidence of ovarian torsion in the pediatric population, and there is no national data regarding demographics of this pathology. The largest study population is 82 patients in one study.<sup>1</sup>

One cited estimate of ovarian torsion in adult women is 2.7%. Pediatric patients

account for approximately 15% of all cases of ovarian torsion.<sup>2</sup> One study in the journal *Pediatrics* estimated the incidence at 4.9 per 100,000, based on a sample of patients from the Healthcare Cost and Utilization Project Kids' Inpatient Database.<sup>3</sup> Immediately pre-menarchal girls seem to be the predominant age group, but 13% of cases in the aforementioned review were



under 11 years of age, with a mean age of 14.5 years old. The bottom line is that ovarian torsion is rare, but should still be considered in your differential.

### Clinical Presentation

Ovarian torsion is the twisting of the ovary on its vasculature, leading to obstruction of venous outflow, edema of the ovary and vascular pedicle, and compromise of the arterial blood supply. This ultimately results in ovarian necrosis if it persists.

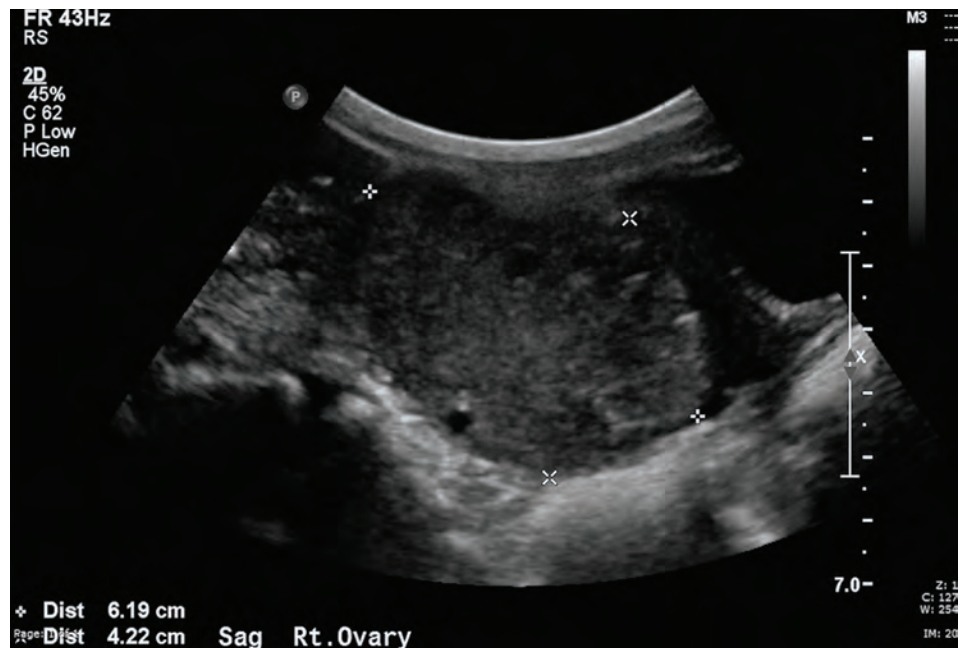
In terms of presentation, there are case reports and retrospective reviews with small numbers of patients that describe sudden onset abdominal pain associated with nausea and vomiting as the most consistent presentation of torsion.<sup>1</sup> **The pain from torsion is usually constant, but patients may have intermittent pain from spontaneous torsion with subsequent spontaneous detorsion.** This presentation may account for up to 50% of all patients.<sup>1</sup> Associated symptoms may include urinary complaints such as frequency and dysuria.<sup>4</sup> Sterile pyuria has also been noted in the urine specimens of girls with ovarian torsion.<sup>5</sup>

**Duration of symptoms can exceed 24-48 hours**, so prolonged abdominal pain does not rule out torsion.<sup>1</sup> Fortunately, **there is data that prolonged symptoms prior to presentation are not indicative of necrosis.**<sup>4</sup> A majority of patients will have abdominal tenderness, most likely seen in the right lower quadrant, but some patients may not present with tenderness, or only with nonspecific tenderness and pain.<sup>1</sup> Torsion is more common on the right side than the left, by a 3:2 ratio. This is believed to be due to the sigmoid colon on the left limiting movement of the fallopian tube and ovary on that side.<sup>6, 7</sup>

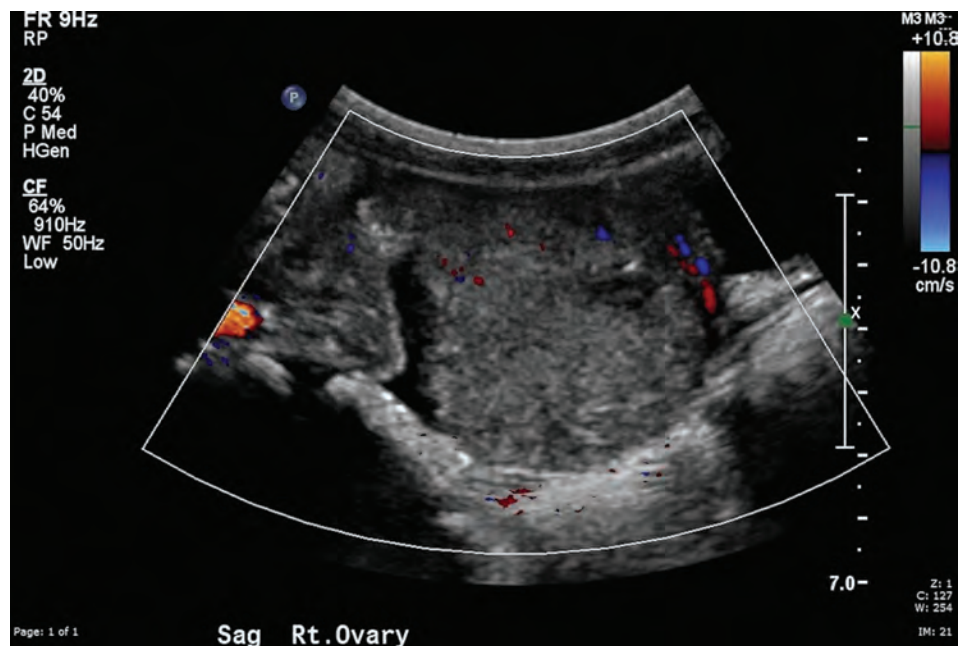
### Ovarian Masses and Association with Malignancy

Predisposing factors for ovarian torsion include sudden movements, abrupt changes in abdominal pressure, benign or malignant masses, cysts, as well

## Ovarian torsion is rare, but should still be considered in your differential.



**FIGURE 1.** Ultrasound image of right ovary, with measurements indicating its size. This ovary is enlarged, measuring at about 4 cm by 6 cm.



**FIGURE 2.** A color flow Doppler image of the right ovary.

as elongation of the fallopian tubes or supporting ligaments.<sup>7,8</sup>

In terms of masses, in the cohort of Guthrie, et al, only 58% of the ovaries were abnormal.<sup>3</sup> In younger children with masses, ovarian torsion occurs more from benign cysts or benign neoplasms such as cystic teratomas. In neonates and older children, follicular or luteal cysts are more commonly the inciting causes. These are related to the circulation of higher levels of hormones from either maternal influence or puberty, respectively.<sup>8</sup>

A retrospective study by Anders and Powell noted that 12 of 22 patients with ovarian torsion had normal ovaries on laparoscopy.<sup>4</sup> It is estimated that 40-50% of patients likely have normal ovaries that torse. Another retrospective review from Italy looked at 127 cases finding that torsion occurred in 56.7% of ovaries with functional lesions, 23.3% in the context of a normal adnexa, and 20% on ovaries

with benign neoplasm. A literature review in the same paper, spanning some 3000 cases, quotes the rate of malignant neoplasms at 1%, and the same review shows an increase in conservative surgery, defined as not performing oophorectomy.<sup>9</sup> When malignancy is the cause of a torsed ovary, it is primarily in postmenopausal women.

The best available evidence shows **ovarian torsion is infrequently associated with malignancy**; estimates are as low as 0.5-1.8%.<sup>3</sup> This is based both on population studies as well as pathological correlates, and it may be reassuring to parents.<sup>3,9,10</sup> A possible explanation is that malignancy, as well as PID or endometriosis, is associated with adhesions and inflammation, which may render the ovary relatively immobile.<sup>8</sup>

### Diagnostic Imaging

Transabdominal ultrasound using the urinary bladder as an acoustic window

is the most useful imaging study for the diagnosis of ovarian torsion in children. Ultrasound yields a positive predictive value of 87%, and a specificity of 93%.<sup>11</sup> It is often abnormal, with **the most common finding being that of an enlarged ovary due to edema and venous engorgement**, or the presence of an adnexal mass.<sup>11,12</sup> The ultrasound images obtained from the child in the case description exemplify the same characteristics. Figures 1 and 2 represent the right ovary without and with color flow, respectively, and Figures 3 and 4 represent the left ovary. The right ovary is enlarged to 6x4 cm (comparatively, the normal left ovary is only about 2 cm), and there is absence of flow in the middle of the ovary.

Sometimes, the twisted vessels in the ovarian pedicle appear as a whirlpool.

**Because the ovaries receive dual arterial supply from the ovarian and uterine arteries, presence of flow on the ultrasound does not rule out ovarian torsion.** Even in the case here, the right ovary has some scant peripheral flow. A high resistive index compared to the contralateral side can be a subtle clue to abnormalities in blood flow.

Common CT findings are somewhat nonspecific and include an adnexal mass that may be in the midline or rotated toward the contralateral side of the pelvis. There may also be deviation of the uterus to the side of the affected ovary.<sup>11</sup> It is worth mentioning that the gold standard for diagnosis is not any type of imaging, but laparoscopy. Therefore, if the imaging is inconclusive or negative but your suspicion is high, it is worth giving the surgeons a call.

### Treatment

We are taught that ovarian torsion is a time-sensitive diagnosis, but in the study by Anders and Powell, prolonged duration of symptoms was not significantly associated with ovarian necrosis, and mean time of symptoms prior to getting treatment was 76 hours for children with both resected and unresected ovaries.<sup>4</sup>

**The treatment for ovarian torsion is laparoscopy.** There are two described approaches: surgical resection of the

**...patients may have intermittent pain from spontaneous torsion with subsequent spontaneous detorsion.**





# The gold standard for diagnosis is not any type of imaging.

entire affected adnexa or laparoscopic detorsion without resection and oophorectomy, with or without tissue biopsy. The incidence and risk factors associated with recurrence are unknown.<sup>13</sup> Resection of the entire adnexa has obvious impact on fertility, even more concerning due to the possibility of recurrence or bilateral torsion. Though rare, both have been described.<sup>14</sup>

Resection used to be the preferred approach due to concerns about missing malignant pathology, risk of thromboembolic complications such as pulmonary embolus, or concern that a severely ischemic, black-blue ovary may not be viable.<sup>1,3,6</sup> We have already discussed the low rate of malignancy. Similarly, several studies show that **the necrotic appearance of a twisted ischemic ovary does not correlate with lack of function of the ovary post detorsion.**<sup>6,7,15</sup> As for thromboembolism, the only reported case of PE in the pediatric age group involved a thrombosis of the right common iliac vein after left ovarian detorsion and cystectomy.<sup>16</sup> There are two cases of PE described in adults after bilateral salpingo-oophorectomy, not related to torsion.<sup>9</sup> It seems more of a theoretical concern compared to the more widespread concern of decreased fertility post-resection.

Whenever possible, premenopausal women with a viable ovary and no suspicion of malignancy should have detorsion and oophorectomy performed without ovarian resection. However, if there is concern of malignancy, salpingo-oophorectomy should instead be performed. There is always a risk of irreversible ischemic changes to the adnexa despite detorsion and postoperative care instructions should



FIGURE 3. Ultrasound image of left ovary, with measurements indicating a normal size.

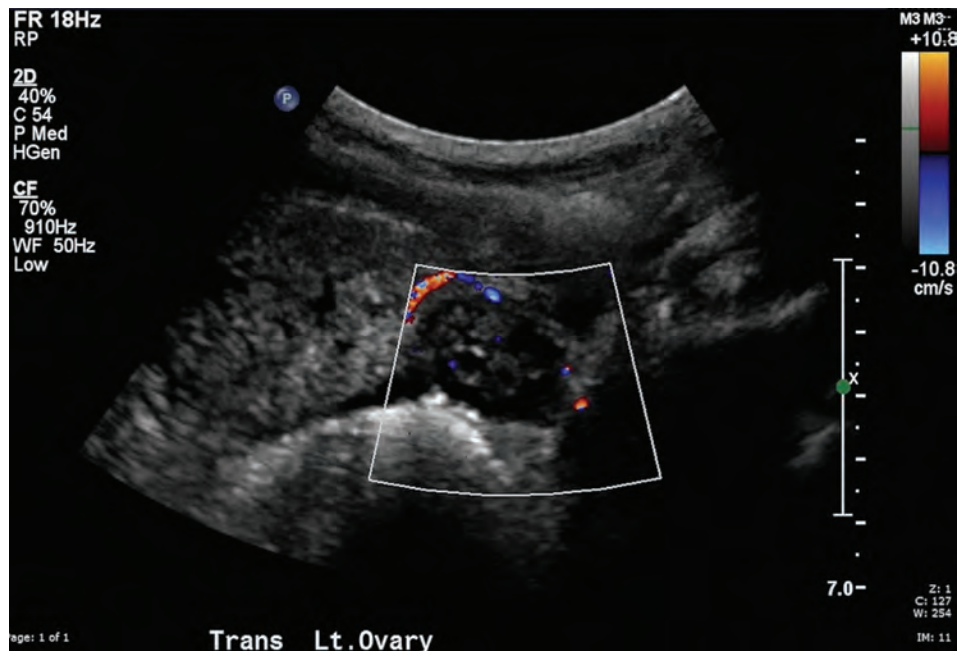


FIGURE 4. Color flow Doppler image of the left ovary.

include signs and symptoms of peritonitis from a retained necrotic ovary.<sup>13</sup> Thus, the standard of care currently is laparoscopy with detorsion of the ovary. Studies have shown good functional outcomes without significant complications.

## Add This Diagnosis to Your Differential

In summary, ovarian torsion is rare and the presentation can be nonspecific,

which makes ovarian torsion a dangerous entity that can go easily unrecognized with grave consequences for the child. Multiple cases of delayed diagnosis of ovarian torsion, often requiring multiple visits to clinics and emergency departments, have been reported.<sup>17</sup> Repeat visits for abdominal pain, particularly in a short span of time, should prompt consideration for torsion. ★



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# CHASING Clots

*An 85-year-old female with a history of hypertension and chronic obstructive pulmonary disease (COPD) presents with sudden onset of dyspnea on exertion. She was taken off of warfarin three months ago for a prior PE that had occurred two years ago. She currently denies any chest pain, nausea, vomiting, hemoptysis, fevers, or syncope. Vital signs show a blood pressure of 190/90, a heart rate at 95, a respiratory rate of 18, and an oxygen saturation of 93% on 4L nasal cannula, though she is not in any respiratory distress. Other than mild bilateral pitting edema, her exam is normal. Labs are sent, and pending. Her differential is still quite broad; how can focused bedside thoracic and cardiovascular ultrasound assist in making a diagnosis?*

## Thoracic Ultrasound

Most providers are aware that thoracic ultrasound can assess for presence of a pneumothorax using the high frequency probe over a non-dependent intercostal space on the anterior chest wall. Here in normal lung pleural sliding can be seen, sometimes called “ants marching”. Absence of pleural sliding is the most sensitive finding for pneumothorax. Similarly, it can examine the “seashore sign” on M-mode imaging to exclude the diagnosis, or witness a “barcode or stratosphere sign” to confirm the presence of a pneumothorax. The specificity can range from 60-99%.<sup>1</sup> However, the negative predictive value for lung sliding is 99.2-100%, which indicates that if lung sliding is present then pneumothorax is ruled out in the plane where sliding is visualized.<sup>1</sup> Multiple views in each hemithorax must be used to completely evaluate for absence of a pneumothorax.

Pulmonary edema resulting from decompensated heart failure or other fluid-overloaded states can be detected using the low frequency probe over multiple bilateral intercostal spaces, looking for the presence of B-lines. The B-lines are comet tail artifacts that are

created when air and fluid interface at the alveolar interstitial membrane in the lungs. These B-lines are considered pathological when greater than three lines are present in a given interspace, and are suggestive of interstitial edema. This finding touts a sensitivity of 97%, and specificity of 95%.<sup>2</sup> Both evaluation of pneumothorax and pulmonary edema are useful in the workup of acute dyspnea.

## Focused Cardiac Ultrasound

A focused cardiac ultrasound can also be used for the workup and evaluation of dyspnea and PE. A low frequency phased array transducer can assess for pericardial effusion and evaluate the left ventricular (LV) systolic function. All windows (parasternal long and short, apical, and subcostal) should be utilized. The apical four chamber view will allow the clinician to evaluate the right and left heart side-by-side and will also permit use of color Doppler to assess for any abnormalities of the atrioventricular valves (tricuspid and mitral).

If there is a pretest concern for PE, or if the diagnosis has already been established, you may be able to see signs of right heart strain on cardiac ultrasound. **Dilation of the right ventricle (RV) and hypokinesis of the free wall are the most likely findings to**

**suggest RV strain.** Examples of RV dilation and strain in both systole and diastole are demonstrated in Figures 1 and 2. McConnell’s sign consists of right ventricular dilation and hypokinesis with sparing of the apex and is a distinct echocardiographic finding in acute PE. This is most often seen in massive PEs. This sign has low sensitivity but up to 94% specificity for the diagnosis of PE.<sup>3,4</sup> The presence of paradoxical septal motion, which is expressed as bowing of the interventricular septum into the LV outflow tract, is best observed in the parasternal short view, but can also be seen in the long axis (*Figure 3*). Occasionally, the severity of RV dilation can lead to valvular dysfunction, usually tricuspid regurgitation (*Figure 4*). Overall, the echocardiogram is a useful tool in patients with moderate to high risk for PEs. **Findings of right heart strain have been shown in multiple studies to predict an increase in in-hospital mortality.**

## Pulmonary Embolism: Risk Stratification

PE severity is based on the extent of pulmonary artery occlusion and the underlying cardiopulmonary reserve of the patient. Patients with massive PEs have hemodynamic instability and

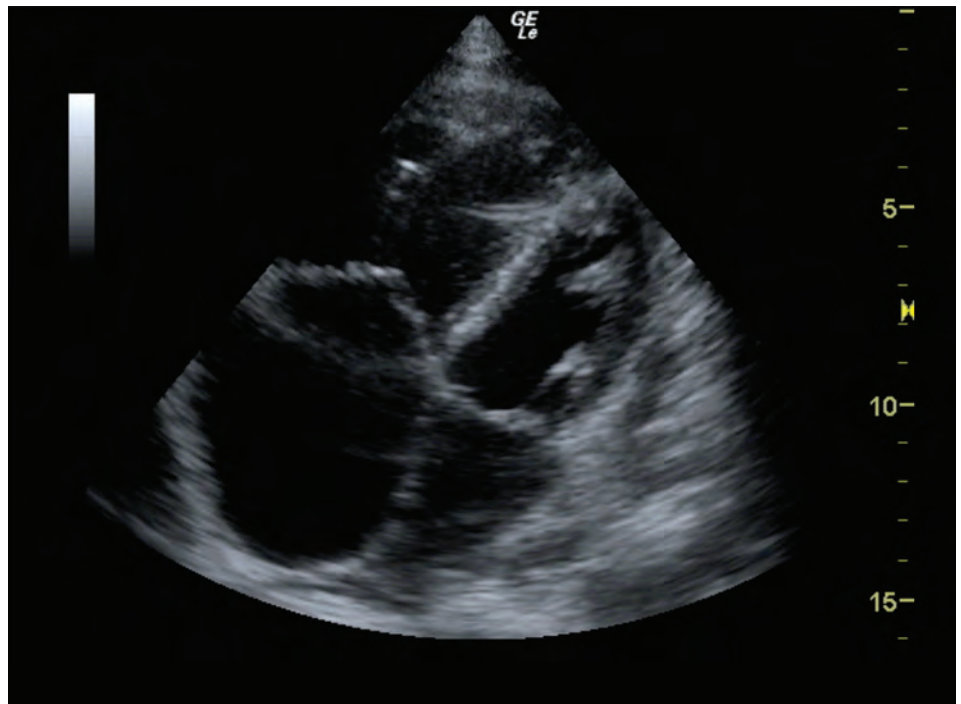


# Ultrasound-Based Risk Stratification of Patients with Acute PE

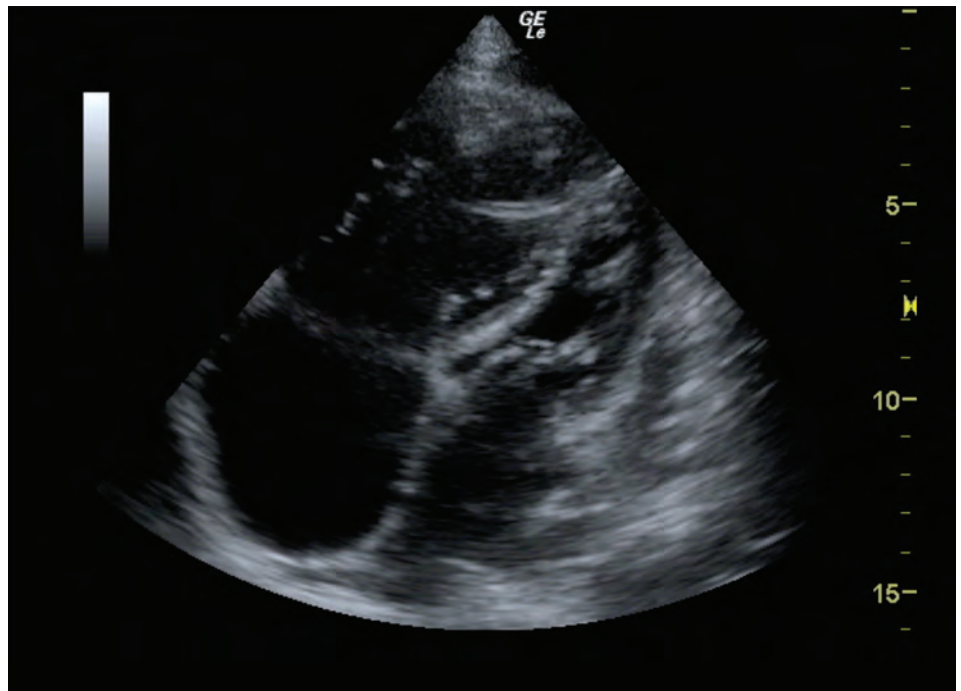
are often treated with systemic tissue-plasminogen activator (t-PA), catheter-directed t-PA, or surgical thrombectomy. There are 150,000 cases of PE diagnosed annually; most of these patients are normotensive (SBP >90 mmHg), and only a small population have massive PEs.<sup>5-7</sup> Of the patients diagnosed with PE, 3% die within 48 hours, 10-15% die of PE within 30 days, and 40% of the survivors develop RV systolic dysfunction or pulmonary hypertension.<sup>5-7</sup>

When considering prognostic markers in acute PE, **RV dysfunction is more predictive of clinical deterioration than other markers.** The most common cause of death within 30 days is RV failure.<sup>8</sup> The importance of RV dysfunction for normotensive patients with PE was evaluated by Kucher, et al. They selected patients from the International Cooperative Pulmonary Embolism Registry (ICOPER) and investigated those patients who had echocardiograms performed within 24 hours of their diagnosis. In their study, normotensive patients with RV systolic hypokinesia were compared to patients with normal RV function to assess the 30-day survival rate.

At 30 days the survival rate in patients with RV hypokinesia was 83.7% (95% CI, 79.3%-87.0%), and for those without RV hypokinesia it was 90.6% (95% CI 88.0%-92.6%). After adjusting for other predictors of mortality including cancer, heart failure, COPD, age greater than 70, and systolic blood pressure less than 100 mm Hg, RV hypokinesia remained an



**FIGURE 1.** RV dilation and strain during systole. Right heart is to the left of the image and left heart is to the right.



**FIGURE 2.** RV dilation and strain during diastole, with visible bowing of the interventricular septum.

Echocardiogram is a useful tool in patients with moderate to high risk for PEs.

## ULTRASOUND

independent predictor of 30-day mortality (hazard ratio 1.94, 95% CI 1.23-3.06).<sup>8</sup>

Echocardiography in conjunction with findings of right ventricular strain on ECG was evaluated in a prospective study of 386 normotensive patients performed by Vanni, et al. Echocardiographic

evidence of right ventricle strain was defined as a right bundle branch block, S1Q3T3 pattern, or a T-wave inversion in leads V1-4. Echocardiographic RV dysfunction was defined as paradoxical septal systolic motion, end-diastolic diameter >30 mm or RV/LV ratio >1, or

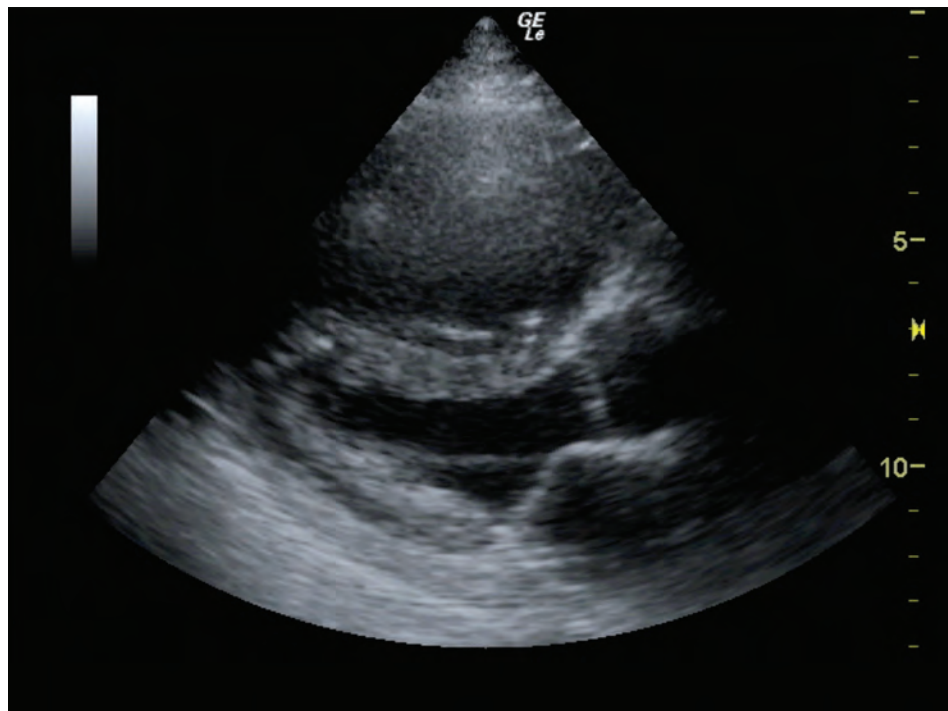


FIGURE 3. RV dilation with septal bowing of the interventricular septum into the LV outflow tract.

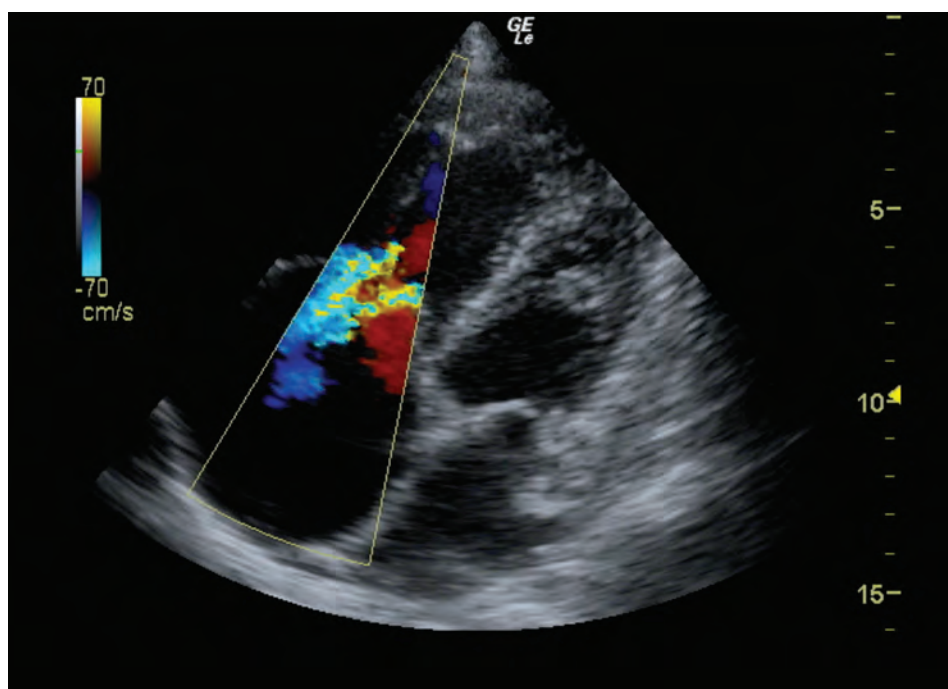


FIGURE 4. Evidence of tricuspid regurgitation on Doppler color flow, in a setting of increased RV load.

pulmonary hypertension with RV/RA gradient greater than 30 mmHg. They found that patients with either RV strain on ECG or echocardiographic evidence of RV dysfunction had an increased risk of in-hospital clinical deterioration or death. However, **those patients with RV strain on both echocardiography and ECG had the highest incidence of death or deterioration** (hazard ratio 8.47, 95% CI 2.43-29.47).<sup>9</sup> Patients without either of these findings had a less than 2% incidence of in-hospital death or deterioration, indicating that **clinicians can use a combination of ECG and echocardiography to identify a low-risk group of normotensive patients with acute PE.**

Ultrasound and ECG findings should also be interpreted in conjunction with laboratory tests typically performed for evaluation of PE (brain natriuretic peptide and troponin).<sup>10</sup> Kline, et al. investigated the use of a test panel composed of ECG, pulse-ox, and troponin, and compared it to RV dysfunction on echocardiogram.<sup>11</sup> The study was used to explore the utility of the proposed prognostic panel in cases where prompt availability of echocardiogram is lacking. This study revealed that the panel had prognostic equivalence to echocardiogram in terms of predicting adverse outcomes at 6 months for normotensive patients with acute PE.<sup>11</sup> This further reinforces the utilization of a panel of tests in addition to echocardiography as a means of risk stratifying patients suffering from acute PE.

### Case Conclusion

*Our patient's labs reveal an elevated troponin, NT pro-BNP, and D-dimer. Her ECG has no ischemic changes. A focused cardiac ultrasound reveals a dilated, hypokinetic RV with sparing of the apex – a positive McConnell's sign. Her IVC is dilated and plethoric, suggestive of extremely high right atrial pressures. CT scan reveals extensive bilateral pulmonary emboli and evidence of right heart strain. She is started on heparin and admitted to the MICU for further monitoring, and after several days she is discharged home after being restarted on oral anticoagulation. ★*





# Describing Scribes

## Improving Efficiency and Satisfaction in the ED

*Editor's Note: EM Resident is launching this new series, "What I Wish I Knew," to help residents and medical students benefit from the wisdom of experienced physicians. If you have a topic you'd like to see addressed in "What I Wish I Knew," please email [emresidenteditor@gmail.com](mailto:emresidenteditor@gmail.com).*

career path. Whether these volunteer experiences provide adequate exposure can be debated. **In an ideal world, these future colleagues would be able to watch as we care for patients, face the daily challenges intrinsic to clinical practice, as well as make the life-and-death decisions that are fundamental to emergency medicine.**

We have all dealt with the inherent complexities associated with using electronic medical records (EMRs) in the emergency department. With federal incentives for early adoption at stake, many health care institutions dove into EMRs in the mid-2000s. Faced with the dilemma of now having to treat a computer in addition to patients, emergency physicians added a new member to their team – the medical scribe. At the time, the main goal of a scribe was to help the physician more efficiently document in the new electronic systems.

### Who Are Medical Scribes?

Undergraduate students from pre-medical programs made up the majority of employees in most of the early scribe groups. In contrast to short-term, volunteer shadowing experiences, medical scribes work closely with either an individual physician or a core group of physicians for an extended period of time. As a scribe, future medical students have what is considered by many to be a



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more valuable opportunity to experience one-on-one patient encounters firsthand. Previously short-lived encounters are now daily, full-time, paid, and possibly benefit-earning employment opportunities.

Today, although a significant number of scribes aspire to attend medical school, the field draws candidates from several other pre-health care programs, including EMT, RN, PA, and CNP. New college graduates have been drawn to the field as well, filling their "gap" year before applying to these professional schools. More recently, programs have seen a small percentage of applicants who are looking at full-time careers as medical scribes. Programs must contend with a significant attrition rate on an annual basis. This becomes a naturally replenishing cycle, as scribes "graduate" and new employees look forward to the same advancement.

### What Qualifies a Scribe for Work in the ED?

This is a complicated question. First, it is important to recognize that scribes are not allowed to take part in patient care. **According to the Joint Commission,**

**M**ost EM residents and medical students interested in EM have seen or heard about medical scribes. Very few have had the opportunity to work side by side with one during their training. Like many things outside of clinical care, we receive little education, if any, on how to work with (or around!) medical scribes. With some foundational knowledge, you can decide if in the future partnering with a scribe will benefit your practice.

### Why Are Scribes Becoming Common in EM?

The majority of medical students have volunteered their time shadowing a practicing physician. These clinical experiences are used to both validate the students' interest in medicine and show admissions committees they have had adequate exposure to medicine to make an informed choice about their

## WHAT I WISH I KNEW

**a medical scribe is an unlicensed person hired to record information in the EMR under the direction of a physician or licensed practitioner.<sup>1</sup>**

Scribes cannot independently translate information or make decisions while gathering and recording information in the patient's chart. Realistically, medical scribes should not have direct contact with the patient or enter information into the chart that is not readily available through direct observation of the patient encounter with the provider or through direct dictation.

Various stakeholders perform medical scribe training: individual providers, specific institutions, scribe companies, and scribe certification programs. Irrespective of where training occurs, it typically includes standards of professionalism, EMR basics, medical terminology, and an introduction to the common documentation templates used in the ED.

Independent, self-sufficient scribe programs perform training that is provider or institution specific. The recruiting, hiring, and training in this model is labor-intensive with significant up-front costs. Scribe companies generally perform training in order to supply a stable workforce to a clinical partner (an affiliated ED or health care system). In general, these companies also have fee-based programs that lease scribes to non-affiliated EDs. This model requires very few resources to bring scribes into an ED, but is more expensive than independent programs. Recently, scribe certification programs through technical schools,

community colleges, and online sources have become available to candidates. However, unless the scribe is considering long-term employment in the field and has been unable to locate employment, tuition costs may be an unnecessary expense.

### **What Is a Scribe's Role in the ED?**

The primary role of a scribe in the ED is to allow providers to be more effective. This manifests as improvements in patient-centered care, patient flow, efficient documentation, and provider satisfaction.

Despite the chaotic environment, patients are at the center of every ED visit. Emergency physicians strive to rapidly establish rapport with patients while quickly gathering historical and exam findings that will lead to the diagnosis and appropriate treatment. Medical scribes join the emergency physician in the patient room and document the information that is gathered during the interview. During the exam, the physician conveys findings for the scribe to record in real-time. **A provider who has experience working with a scribe is able to "announce" these findings in a manner that keeps the patient engaged and informed, while alleviating fear about abnormal findings.**

The constant flow of information during the encounter positions the physician to move into the assessment and plan phase of an ED visit in front of the patient. There has been some data to support improved patient satisfaction with this style of

communication. The physician is able to talk through the anticipated plan with the patient while the scribe records the details in the EMR.

Emergency physicians are under constant pressure to oversee their busy departments while attempting to maintain continued patient flow. Tasks begin to grow at the beginning of each shift, and each adds to the complexity of an individual patient's visit and ultimately decreases the provider's efficiency to resolve any one specific item. This inherent inefficiency increases the risk of error. **The average emergency physician spends approximately one-third of his/her shift documenting in an EMR.** This does not include navigating through the record as a "chart biopsy." An experienced medical scribe can pull relevant information from the chart to be scrutinized, thus freeing the physician to focus on the patient or other tasks. Medical scribes are able to further improve patient flow by entering discharge and follow up information, completing work or school forms, and pulling diagnosis-specific patient information under the direction of the provider.

Even junior residents recognize the pressure to be accurate and compliant with documentation guidelines. Documentation requirements are constantly changing, and the ever-present software "upgrades" that alter familiar workflows can inhibit efficient documentation. When these EMR issues are combined with an expectation to treat two or more patients per hour, **the ability to efficiently document at the time of visit is unrealistic.** Many emergency physicians in busy centers need to stay several hours after seeing the last patient to complete their medical records. **There is growing data to support that scribes not only decrease the amount of time physicians spend documenting a patient encounter, but that the documentation quality is improved.** This translates into providers spending more time with patients and less time during and after a shift doing charts.

It is no secret that the practice of emergency medicine is fast-paced,



**The primary role of a scribe in the ED is to make you more effective as a provider.**





requiring minute-to-minute life and death decisions with limited information. Scribes will not change the fundamental pressures we face on a daily basis, but they do provide support with many of the administrative and clerical tasks that add stress. Several studies support marked improvements in provider satisfaction after the addition of medical scribes, and there is growing data to suggest this is maintained even with slight increases in patient volumes.<sup>2-5</sup>

### How Can I Make the Most of the Provider/Scribe Relationship?

#### 1. Follow the rules.

Recognize the limitations of the provider/scribe team. The Joint Commission is cognizant of this partnership. They are aware of the benefits to patients and providers, but they look closely for any evidence

of abuse. Particular concerns focus on the scribe documenting under the provider's login, failure to document the required statement attesting to the use of a scribe, evidence of the scribe performing clinical duties, and any indication that the scribe is entering orders for the provider.

Scribe documentation should outline who performed the service and who documented the service. Notes should include the name, title, and signature of the person entering the information in the medical record; attestations are required by both the scribe and provider. The suggested attestation statements according to ACEP are:<sup>6</sup>

- Scribe: I personally scribed for (name), MD/PA/CNP on (date and time). Electronically signed by scribe (name) on (date and time).

- Practitioner: Portions of this note were transcribed by scribe (name). I, Dr. (name) personally performed the history, physical exam, and medical decision making; and confirmed the accuracy of the information in the transcribed note. Authenticated and electronically signed by Dr. (name) on (date and time).

#### 2. Set expectations with your scribe.

Whether you hire your own scribe or work with a pool of scribes, it is crucial to set them up for success. **The reality is that no matter how much training a scribe has, we are expecting him/her to understand a patient encounter as a provider would.** In many respects, an experienced scribe will understand medicine at the level of a highly functioning fourth-year medical student or a good intern.

## WHAT I WISH I KNEW

Understanding a decision or recognizing the shades of gray that influence an experienced physician's decisions are not clear to even a seasoned scribe. Take the time to outline your preferences, documentation style, how often you document serial reassessments, how you document your review and interpretation of diagnostics, procedures, and contact with consultants.

### 3. **Act natural.**

After residency, most of us are used to seeing patients independently. It may feel unusual to have another person in the room other than the patient and his/her family. Just proceed as normal. When you introduce yourself, introduce the scribe as part of your team. You may want to let patients know that your scribe will help you spend more

time with them during the ED visit by freeing you from paperwork. Take the opportunity to refocus your efforts on the patient; remember, scribes are there to help manage the data, empowering you to concentrate on the patient.

### 4. **Think out loud.**

As you progress through the visit, use the scribe as a way to kill two birds with one stone. Feel free to talk the patient through your differential diagnosis, then your assessment and your plan. The more you verbalize, the more the scribe can document in the EMR, and often you can walk out of the room with the vast majority of your encounter already documented.

While you are talking with the patient, use the scribe as a resource for other information. Ask him/her to pull up

various images (x-rays, ECG, etc.). Most mobile computers in the ED have this capability. Patients appreciate seeing their broken bones, but many like to see their normal images as well – scribes can do this easily for you.

### 5. **Allow your scribe to be an extension of you.**

This is a benefit that often goes overlooked until you work with a scribe. While you are wrapping up with a patient, checking on a new arrival, or fielding a call from a consultant, you are not available to the ED staff. During these times, scribes can often act an intermediary between you and the rest of the team. Scribes are able to pass along simple messages, convey to nurses the plan you discussed with a patient, or simply let people know you went to grab a cup of coffee. The scribe typically wears multiple hats.

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**Although all of us entered medicine to focus on patients, even junior residents recognize the pressure to be accurate and compliant with documentation guidelines.**

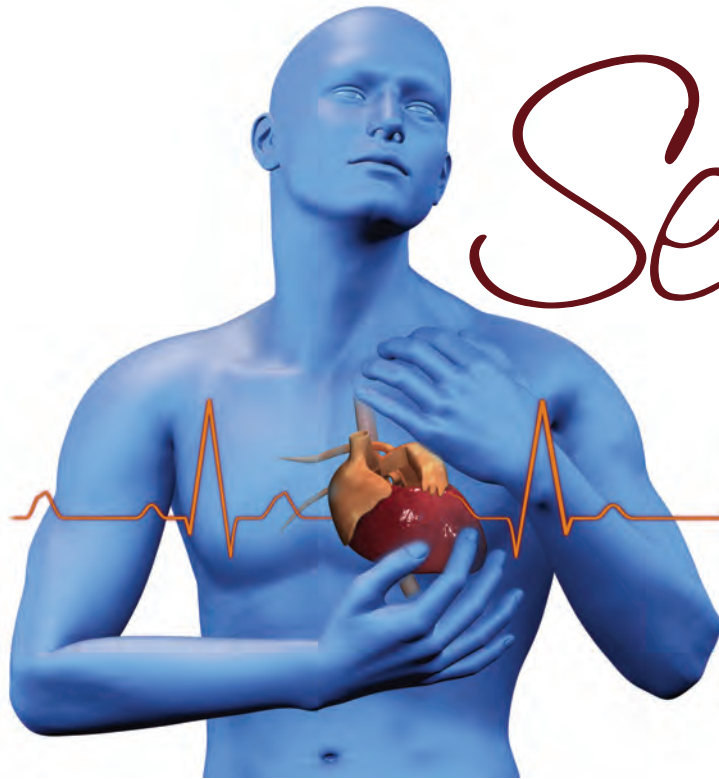


Ultimately, the medical scribe can be a significant asset to emergency physicians. **These extremely capable and interested individuals allow us to focus on the patient and are associated with substantially improved provider satisfaction.** More complete and timely documentation has the potential to improve your efficiency and your productivity. As you become comfortable with the process, you will feel the weight of documentation lifted from your shoulders. In many cases, your documentation will more accurately reflect the time and effort you spend with a patient. This can easily translate into improved billing and coding.

Although medical transcriptionists have been a part of medicine for decades, medical scribes are relatively new to health care. With the growing burden of documentation, constantly changing regulations, and complicated EMRs, medical scribes can now be found in a variety of settings. Scribes are in the ED, but are becoming more common in both the outpatient and inpatient settings as well. Hopefully, the group you join has come to appreciate the value of medical scribes, and you will be able to reap the benefits of more time with patients and less onerous documentation. ★



Farzon A. Nahvi, MD  
Bellevue/NYU Medical Center  
New York City, NY



# Seeker

## Chest Pain and Answers

*It's just easier to blame lawyers and algorithms.*

"It started about an hour ago," he stammered. Sweating profusely and taking deep, splinted breaths between sentences, he described a great chest pain story. "Yeah, I'd say it's like a... a...a crushing pain right in the middle, like an elephant's standing on me." He asked for morphine, which I didn't hesitate to provide. It wasn't until about 15 minutes into his workup – when he began cursing at my suggestion that we "wait a minute before we give any more pain meds" – that I began to suspect this eloquent, well-dressed man might just be drug-seeking. A normal workup and a more detailed chart review confirmed this hunch, but also revealed something much more fascinating: Over the course of a few years, this man had been to our ED about a dozen times – an excellent actor, he repeated the same story each time. Yet each time he presented, a completely different plan was pursued. Same man, same story, same professed risk factors, completely different plans. **My drug-seeking patient had inadvertently become his own randomized controlled study.**

Character though he was, my patient didn't reveal as much about himself as he did about the providers in our ED. During previous visits, one doctor admitted him to telemetry for serial troponins. Another

discharged him after only an EKG, while yet another pursued ACS, an aortic dissection, and a PE. Often he got aspirin, sometimes aspirin and heparin, sometimes neither (to his credit, he did somehow always manage to get morphine). More interestingly, the more I thought about it, the more I realized none of these doctors were wrong. Each plan was defensible. Yet how could it be, in our era of litigious and evidence-based medicine, that something as straightforward as "chest pain, rule out ACS" could be pursued along so many different paths?

This question is even more remarkable in light of how constricted we often feel as emergency room doctors. **The phrase "I don't really want to chase X, but our hands are tied, so let's just go ahead and order the Y," is, unfortunately, part of our ED colloquium.** We often lament the unnecessary workups we feel we have to pursue for patients perceived as low risk, but here I was staring at a patient's chart that screamed, "Do what you want! Some very good doctors chose very different paths, and they all make sense!"

The answer, as I see it, is that our litigious and evidence-based instincts kick in only *after* we have already decided on the path we're going to pursue. For example, once we've decided that we're concerned

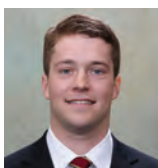
about a PE, we feel compelled to pursue it. We complain about it, lament our disputatious society and medical literature, kick and scream, and curse the lawyers and algorithms. But if we were never really concerned about a PE to begin with, **neither lawsuits nor guidelines should scare us** into working it up. We only felt compelled to pursue it because we actually are concerned about it. Thus if we're really being honest, we are our own worst enemies. **It is our own consciences that force our hands, making us pursue undesired workups;** it's just easier to blame lawyers and algorithms.

My patient ended up being discharged, with NYPD encouragement, sooner than initially expected (that's another story), but the episode resonated. While my patient was obviously not truly a randomized controlled study, and there may be many interpretations of his chart review, I took a lot away from the experience. Even as veteran attending physicians lament that we young doctors are slaves to algorithms, and as we young doctors complain that we're all slaves to the lawyers, my malingering thespian tried his best to prove us all wrong. **We are all slaves only to our own judgments, doing what we believe we have to do for our patients** – even if sometimes we don't like to admit it. ★



# THE JULY EFFECT

## Is the Emergency Department Safe?



Benjamin Wurst, OMS-3  
West Virginia School of  
Osteopathic Medicine  
Lewisburg, WV

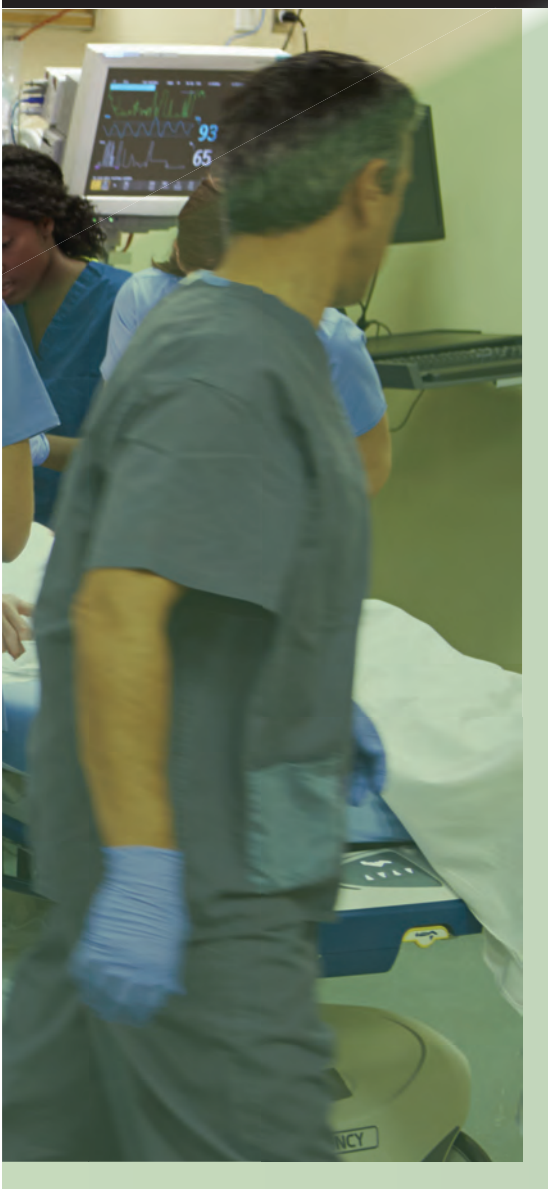


Joshua Davis, MS3  
Sidney Kimmel Medical College  
at Thomas Jefferson University  
Philadelphia, PA

**M**edia outlets have been stepping up their game with increasingly captivating headlines. When we see titles like “Viagra Con Man Hit with a Stiff Sentence,” we don’t think twice. We get it; this stuff sells. But lately **“Don’t get sick in July”** articles have been catching our eye.

As we all know, the month of July marks the beginning of the academic year. With every new year comes new residents, and with new residents comes very little clinical experience. According to these articles, the month of July sees the highest number of medication errors, longer lengths of stay, and decreased quality of care because of the massive influx of inexperienced physicians — hence the term the “July effect.”





The concept is controversial and debatable. Does a July effect exist at all? Does it exist in EM? If so, what can we do about it?

### History of the July Effect

The term was first reported in 1990,<sup>1</sup> and the similar “killing season” in Great Britain was identified soon thereafter.<sup>2</sup> **A 2010 *Journal of General Internal Medicine* study showed a 10% increase in fatal preventable adverse drug events across all hospital departments during the month of July.**<sup>3</sup> The study compared teaching hospitals with non-teaching hospitals and attributed their results to the arrival of new residents. It makes sense: New physicians using different computer systems and following different hospital

**“With every new year comes new residents, and with new residents comes very little clinical experience.”**

protocols are probably more likely to make medication errors.

However, an equal number of studies have found no difference on patient safety events in July. Considering that studies with no effect are less likely to be published, we question whether the increase in errors actually exists, or if it is some artifact based on the type of observation. In light of the heterogeneity of results reported and the fact that most of the studies are observational in nature, it is hard to conclusively determine the July effect does exist. A 2011 review on the topic, though, did note that while there was significant heterogeneity, the studies that did find evidence for the July effect tended to be higher quality studies than those that did not.<sup>4</sup> It is possible, therefore, that the July effect exists, but the evidence to date is not convincing.

### Is Emergency Medicine Affected?

If we accept that the July effect is a possibility, we then ask: **Does the July effect happen in emergency medicine?** Studies, again, are conflicted. A 2010 study from the *Journal of Trauma* concluded an increased risk of error without an effect on mortality.<sup>5</sup> On the other hand, a different study from 2009 showed no changes in outcome during July.<sup>6</sup> These conflicting results are not surprising. Because the outcomes associated with the July effect are highly variable, and EM lacks the detailed patient outcome reporting of other specialties, we suspect future studies in the ED will continue to disagree.

In our opinion, **emergency medicine is less susceptible to the July phenomenon** than other specialties for several reasons. First, delivery of care in the ED requires a large team of nurses and house staff, increasing the possibility of catching errors before patients are affected. Second, acute interventions, such as for stroke or MI patients, usually fall into standardized protocols with little variation from hospital to hospital. These protocols have been drilled into our heads by the

time we begin residency, and this repetition translates to less errors. Finally, the practice of consulting specialists to ensure the best care likely plays a dramatic role in improving outcome and decreasing errors.

Some may argue, though, that having so many people involved in care diffuses responsibility for both commission and reporting of errors. Also, communication among the increased number of team members may play a role in errors in the ED, as more than half of all sentinel events in hospitals are consistently attributed to errors in communication.<sup>7</sup> While these concerns may be valid, they represent systemic patient safety issues in EM, which occur throughout the year. They would, therefore, not contribute to an increase or decrease in errors in the month of July, but instead would be seen year-round.

If we accept the limited evidence that the July effect does exist in EM, what can we do about it? The first step is to improve our reporting of adverse patient safety events in EM. This is very difficult because of the many stresses and hectic nature of the ED, but it is the only way to ensure we are not harming patients by the care we give. “First, do no harm” is a central tenet of the practice of medicine, and reporting patient safety events allows us to ensure we meet that tenet.

The next step would be to use high-quality studies to examine the existence of the July effect in EM. Large sample sizes and appropriate controls are necessary. The studies to date have failed to consistently identify evidence for the existence of the July effect, and many of them have lacked the quality necessary to allow us to draw firm conclusions.

Overall, there is currently no convincing evidence of the July effect in EM; however, that does not stop it from appearing in mainstream media outlets. Regardless of what the headlines say, **you’re probably just as safe in the ED during the month of July as any other time of year.** ★

# empower

Sharing Our Stories

Brian J. Levine, MD, FACEP

## Your Time, Your Legacy



**Medical School:** University of Vermont

**Residency:** Christiana Care Health System  
(formerly Medical Center of Delaware)

**Current Position:** EM residency program director and aeromedical transport program associate medical director, Christiana Care Health System; associate professor of emergency medicine, Jefferson Medical College

Every time you use the EMRA *Antibiotic Guide* (or its accompanying app), you're tapping into the work of editor-in-chief Brian Levine and his team. It makes the teacher in him very happy.

"I've worked on the *Antibiotic Guide* for a while now, and it's something I love doing because it's always evolving and there's always new information to share," he said. "Plus I get my residents involved, and they get to learn things from a different perspective."

Levine, who also contributes to the EMRA Medical Student Survival Guide and is a frequent author and speaker, has amassed dozens of honors throughout his career (his CV includes a laundry list of recognition like "Top Emergency Physician" and "Outstanding Didactic Instructor of the Year" and "Joseph F. Waeckerle Founder's Award"). *EM Resident* visited with him to find out what lessons are most helpful when building and sustaining your career.

### Ⓜ Why is it important to do "extra stuff" outside of the emergency department?

I think it allows you to maintain passion in emergency medicine. If I just did clinical practice four days a week, 8-12 hours a day, I would not build or maintain my passion. I think you have to find what fits your personality and what gives you energy and enthusiasm – and then go do that. I try to instill volunteering among my residents as well. I think as physicians we're obligated to give back to the community. Our residency contributes volunteers for cancer camp every summer, with 6- to 8-year-old kids who have a totally different set of worries in their world.

### Ⓜ What has been your favorite volunteer experience?

I think the EMRA Antibiotic Guide and the app really required me to develop a lot of different mental skills and built me up as a leader, from coordinating with our own residents to working with the editors and then the peer reviewers and finally the staff at EMRA. That whole multistep process, done with each new book edition, really teaches me how to communicate, collaborate, sometimes motivate – to be a leader.

### Ⓜ Who gave you your best career advice? What was it?

I had juvenile rheumatoid arthritis that caused me to wear braces at 8 years old, and I was angry at the world. But I had some really great physicians who I admired. The way I was treated was so caring and so ingratiating that I wanted to be like all of them. In high school and college I learned that you need to know how to help people with a variety of ailments and treat them appropriately – not just for their conditions, but for who they are as people. That's what my doctors had done for me. That's the backdrop of my desire to go into medicine.

### Ⓜ What's the most exciting thing on the horizon?

I love teaching medical students and residents. I think when you teach you really learn more and you become a much better physician. I think teaching makes you appreciate where you were and where you're going. It keeps you young, it makes you smarter – and you have to learn how to read people and relate to them. You have to teach in a nonthreatening manner so the student learns. Students are sponges for material, and if you can pass along information in a way that makes them love to learn like you love to teach, it just grows from there.



🔊 **If you were just starting your residency now, what would you do differently?**

If I was applying to residency in 2015 I probably wouldn't get in! It has become so competitive. But I wouldn't do anything different in residency itself. I enjoyed my time at Christiana. It's such a unique program with so many mentors from so many backgrounds. Of the residencies I looked at, there were a couple of medical school-style residencies that were high in academia and a couple that had a community slant. When I interviewed here and talked to the residents, they were so confident that they could go anywhere in the world and handle anything, because they had gotten such a broad scope of experience through the program. I thought to myself, "That's a true emergency medicine experience. I want that." When I became a faculty member here, I wanted to take those great things I learned and make them better. Slowly over the course of 15 years, it has become part of my dream of making one of the best programs in the country even stronger. We want to continue to produce graduates who are recognized as leaders, great emergency physicians, community advocates — it's the whole picture, a well-rounded experience. That is still the fire inside of me.

🔊 **How will things change during the next decade?**

Medical education for the past 100 years has been fairly stagnant, and now — finally — schools are recognizing that you have to change your tune and adapt to the explosion of knowledge. Now it is much more interactive and patient-centered. Teaching students how to absorb the ever-changing world of medical education, which evolves so rapidly, is a new challenge. Students are much more savvy and electronic. They're the full definition of millennial, and millennials get ragged on a lot. Because they learn in a different fashion they often get dismissed, but we as teachers have to change our approach. Teaching methods are so archaic that it affects the way students interact and learn. They get bored and then they appear uninterested, which isn't actually the case. Students today are definitely a different breed; they come in with a different set of goals and expectations, and they were just brought up differently. We have to take that into account.

## RANDOM INSIGHTS

**Why the drums?** It's physical, fun and luckily I was born with some skills! In general, if I hear a song, I can play it on drums quickly.

**Best song to play on drums:** Everybody learns Tom Sawyer by Rush.

**Neil Peart or Charlie Watts?** Neil Peart kills Charlie and the world knows it!

**Ever met Billy Joel, you both being "Lawnguylanduhs" and all?** Ha — nevuh!

## LESS MUSIC-Y BUT STILL RANDOM INSIGHTS

**Last non-textbook you read:** Pleasure reading? Hahahaha! I am seriously reading "Ghost Rider" by Neil Peart.

**Favorite city you've visited:** Cape Town was awesome — a mixture of old, new, young, vibrant, beautiful.

**What goes on pizza:** Meat of any kind works. Nothing like NY pizza or bagels — can't get that stuff in Delaware!

**How you get your exercise:** Banging on the drums, hitting the treadmill.

**Most-used app on your phone:** The EMRA *ABX Guide* — duh! Someecards is hysterical, though.

🔊 **Best time management tip**

That is a challenge we all struggle with. The problem is, if you enjoy something people continue to hand you more responsibility. So the first thing is... learn to say no. Only accept the activities that will add to your passion. It's all about having an appropriate amount of activities that you can give 100 percent toward. It's using Google calendar appropriately and sticking to your schedule. It's being a Type A person who is responsible and organized. It's surrounding yourself with people who can help you. I've learned to dish off certain responsibilities. But it's not just about responsibilities; you need to be a whole person. I do some volunteer work, and I'm a drummer in a band. *(Editor's note: Code Blue, the all-EM physician band, launched in the early 2000s and plays rock covers from the '80s and '90s, currently averaging one gig every month.)* If you're finding yourself getting overloaded, either try to drop something or pass it off to someone who can give it the attention it needs. There's no magic formula, unfortunately. It's difficult to learn and nobody else can really teach you. You have to know how you yourself handle different things. It's a certain amount of trial and error. If you're doing things that you enjoy, it adds to the total picture of who you are and allows you to wear many different hats. So it really comes down to who you are internally.

🔊 **Best tip for surviving a shift during full moon**

Be prepared for anything. Besides all the foreign bodies in inappropriate places, my most exciting case was several years ago when a guy got bit in the face by a poisonous snake and blew up like the Michelin man. He was about 30, and he was hand-feeding a poisonous snake that bit him on the arm first, and then he tried again to feed it and the snake bit him in the face. Thank God his girlfriend had an additional brain cell: She convinced him to come to the ED, but he didn't think it was that big a deal at first. It almost killed him. When we saw him, we knew this wasn't going to be good. We used up so much antivenin, that we had to get it flown in from the Philadelphia Zoo. But he walked out of the hospital a few days later vowing he would get another exotic pet.

🔊 **Most awkward encounter with a patient**

When I went into a room with an 80-year-old guy and a woman in her 20s and I said, "You must be the granddaughter." He gave me the angriest stare and said, "I am her husband!" So now I only say, "How are you related to the patient?" So now I do a lecture on the art of the schmooze. Deep down we all want our patients to do well and we're there to serve them, but sometimes the things you see make you want to react: laugh, get angry, whatever. But you have to maintain that semblance of separation. And you have to gain their trust instantly — I think the research shows people will judge you within the first 15 seconds. So there are a lot of little social cues you have to learn on your own or at least have someone guide you. It's the art of emergency medicine. ★

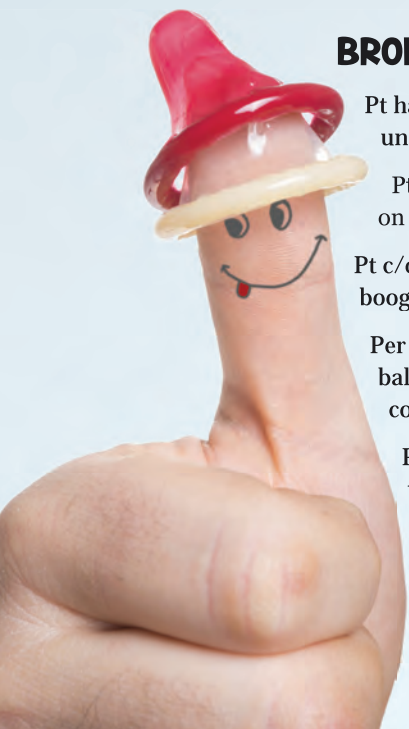


## The Patient Did What?!

From time to time, patients will present with chief complaints that make you think you've seen or heard it all. Foreign objects, guilty consciences, uninformed but Google-savvy patients, and a healthy dose of melodrama can all add up to a pretty big challenge for your poker face and professional demeanor.

No matter what you've seen, you're not alone in it – so hit us with your best stories! (No patient identifiers, please. Privacy is paramount.) **What wild, wacky or head-scratching situations have you encountered on shift lately?**

Do you have stories to share?  
Email  
[emresidenteditor@gmail.com](mailto:emresidenteditor@gmail.com)  
or submit online at  
[www.emresident.org/submit](http://www.emresident.org/submit).



### **BROKEN FINGERNAIL** (from New York, NY)

Pt has a foreign body on the shaft of the penis that he placed under the skin and sewed himself up; now it is painful.

Pt reports needing certification letter he is male, because on his birth certificate sex was mistakenly written female.

Pt c/o CP & SOB; also, “the rockin’ pneumonia and the boogie-woogie blues.”

Per mother, pt picked up a condom and blew it like a balloon. Incident happened at a high school campus; condom is possibly used.

Pt states he has died already previously and he sees through dead people. Called 911 because he was cold.



### **ELDERLY FUN**

(from New Brunswick, NJ)

A 70-year-old male presented to the ED because he had a dildo stuck in his rectum.

He was “playing around with a prostitute” while his wife was away.

The dildo was still vibrating.



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## FINDING THE JOY OF MEDICINE THROUGH ADVANCE DIRECTIVES



Hashim Zaidi, MD, was on a beach in Thailand when his program director emailed about a contest designed to promote professional satisfaction among physicians. With only 48 hours until the deadline, Zaidi drew on his EMS background and his experiences at a VA hospital to develop an idea that has won the grand prize in Geneia's Joy of Medicine Challenge.

The concept that will promote such joy? Raising awareness of advance directives.

"For me, the most difficult situations I've faced as a care provider have dealt with end-of-life care," said Zaidi, now a resident at Northwestern University. "It takes the joy out of medicine when we don't know what the patient might want or the family can't agree or we don't feel like we're providing the right type of care. I wanted to address that."

Zaidi's idea is to embed advance directives into driver's license records, in much the same way as organ donation details are included. Not only would it cause people to think about end-of-life care ahead of time,

### Annals of Emergency Medicine Boosts Its Influence

The Annals of Emergency Medicine has achieved its highest-ever Impact Factor score, jumping 8% to 4.676. Annals remains the No. 1 journal in the emergency medicine space, first out of 24 journals. Equally impressive is the Citation Half-Life of 9.6 years, which is the median age of articles cited over the past two years. This half-life is an indication of the enduring value and impact of Annals articles. Additionally, the gap between Annals and the next ranked journal, Resuscitation, increased this year. When compared to the next emergency medicine competitor, Annals has a 133% higher Impact Factor score, which is an increase over last year, when Annals had a 97% higher Impact Factor score than its nearest direct EM competitor.

but also it would remove a lot of stress and guesswork when patients arrive in the ED.

"In the last six months of life, 75 percent of people will go through an ED," Zaidi said. "With advance directives already on file, patients will get the kind of medical approach they've requested, providers will know what the patient wants, and the cost and care burden will decrease."

As one of three finalists selected, Zaidi presented his idea in more detail at MATTER's 2015 meeting, and in June he won the grand prize of \$5,000 in Geneia consulting resources to further develop his concept.

The Joy of Medicine win marks another milestone for Zaidi, who previously won an Institute of Medicine prize for building VaxNation.org, an open-source database for scheduling, tracking, and spreading awareness of immunizations.

## Apply Now for a Seat on the EMRA Board of Directors

Have you been looking for ways to expand your experience and influence? Getting involved in EMRA leadership activities could be exactly the opportunity you need.

Serving as an EMRA board member is demanding yet rewarding. You must be ready to take on "extra" work in addition to your clinical and administrative duties during residency. In return, you get to travel, grow your network, and hone your leadership skills.

EMRA is now seeking applicants for:

- President-Elect
- Vice-Speaker of the Council
- Secretary/Editor
- Academic Affairs Rep.
- Informatics Coordinator

Applications for the EMRA Board of Directors are due Sept. 27. Find more information at [emra.org/leadership/board-of-directors/Election-Information](http://emra.org/leadership/board-of-directors/Election-Information).

## UPCOMING EVENTS

Aug  
7-22

ACEP Teaching Fellowship  
Dallas, TX

Aug  
28

SimWars Team Registration  
Deadline

Sept  
27

EMRA Board Applications  
Deadline

Oct  
23-25

Hackathon 2015  
Boston, MA

Oct  
24

EMRA Medical Student Meet-Up  
Boston, MA

Oct  
25

EMRA Residency Program Fair  
Boston, MA

Oct  
26

EMRA Job & Fellowship Fair  
Boston, MA

Oct  
26-29

ACEP15  
Boston, MA



# EMRA EVENTS

### MEDICAL STUDENTS

Sunday, October 25  
EMRA Residency Fair

### RESIDENTS

Monday, October 26  
EMRA Job & Fellowship Fair

### NEW THIS YEAR!

Monday, October 26  
EMRA Resident Lunch & Board Prep Session

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# Rash and Fever



PHOTO COURTESY OF LAWRENCE STACK, MD

## The Patient

A 12-day-old healthy male is brought to the emergency department by his parents because of a blistering groin rash and fever that started 24 hours ago. His Tmax over that time period was 101.7F. The parents report that the patient also has become increasingly fussy and has not eaten well over the past day. The patient has a normal birth history, is gaining weight well, and has no other issues. Examination is remarkable for a fussy but consolable child with a temperature of 101.3 and the rash seen in the image provided.

*What is the diagnosis?*

Lawrence B. Stack, MD  
Vanderbilt University  
Nashville, TN

R. Jason Thurman, MD  
TriStar Skyline Hospital  
Nashville, TN

See the  
**DIAGNOSIS**  
on page 50

# The Diagnosis

## Bullous Impetigo

The clinical findings in this patient are consistent with bullous impetigo. The differential diagnosis includes insect envenomation, thermal burns, allergic contact dermatitis, or other bullae-producing dermatologic conditions. There were no known exposures in this patient, and the acute fever points to an infectious etiology for this rash. Bullous impetigo results from infection with epidermolytic toxin A-producing *Staphylococcal aureus* (which also causes staphylococcal scalded skin syndrome). Manifestations include flaccid bullae containing clear yellow or slightly turbid fluid with an erythematous halo arising from normal skin. The bullae form most commonly in intertriginous areas, such as the groin, as in this patient. Given this patient's age and fever, a full septic workup is indicated. This patient was admitted and treated with ampicillin, gentamycin, and vancomycin and ultimately did well.



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## Leave a Legacy in Emergency Medicine

Donate a brick paver to the EMF Plaza at the new ACEP headquarters and leave a legacy in emergency medicine.



In 2016, ACEP is moving to a dynamic new headquarters in Irving, TX. To ensure that emergency medicine research always has a home in this new building, you can donate to the EMF Plaza, a beautiful collection of personalized brick pavers in the courtyard and leading up to the building's entrance. By donating, you will have an enduring symbol of your commitment to emergency medicine and will literally lay the groundwork for future research projects that bring about the highest quality care for your patients.

For \$250, residents will have a personalized brick in the EMF Plaza, receive a brick certificate, and be recognized in EMF's newsletter, *SCOPE*, and *ACEP Now*.



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# Board Review

## QUESTIONS

Provided by *PEER VIII*. *PEER (Physician's Evaluation and Educational Review in Emergency Medicine)* is ACEP's gold standard in self-assessment and educational review. These questions are from the latest edition of *PEER VIII*. For complete answers and explanations, visit [emresident.org](http://emresident.org) (Features section).

To learn more about *PEER VIII*, or to order it, go to [www.acep.org/bookstore](http://www.acep.org/bookstore).

- In the evaluation of a patient with tinnitus, which of the following findings suggests a benign etiology?
  - Bruit in lower neck
  - Facial nerve weakness
  - Nystagmus
  - Pulsatile nature
- Which of the following poisoning–antidote therapeutic pairings is correct?
  - Anticholinergic–atropine
  - Beta-blocker–octreotide
  - Calcium-channel blocker—insulin
  - Opioid–flumazenil
- Which of the following statements regarding urinary tract infections in pediatric patients is correct?
  - Pathogens vary with patient age
  - Presence of fever does not change the significance of the illness
  - Urinary frequency and dysuria are the typical complaints
  - Urinary tract infections are rare in the pediatric population
- Which of the following is a contraindication to the performance of arthrocentesis?
  - Cellulitis overlying the site of needle insertion
  - Daily aspirin use
  - Possible septic arthritis
  - Urethritis and likely gonococcal arthritis
- Which of the following is more characteristic in a patient with community-acquired pneumonia compared to health care–associated pneumonia?
  - Antibiotic use within the past 90 days
  - Home infusion therapy
  - Long-term hemodialysis
  - Outpatient elective arthroscopy 2 weeks earlier



# RISK MANAGEMENT PITFALLS

## Pain Management in the Emergency Department



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❶ **“I thought the patient was just seeking pain medication to get high.”**

Drug-seeking behavior is a difficult problem in the ED, and it is one to which there is not a simple answer. If serious concern exists, an attempt may be made to validate the patient's claims (eg, calling the primary provider, reviewing pharmacy dispensing records, etc), but this is often unsuccessful, and the individual solution may rest with the clinician's judgment or departmental policy.

❷ **“I didn't want to give pain medication because I didn't want to mask the examination findings.”**

Appropriate analgesia does not compromise physical examination findings for serious injury and may, in fact, improve the ability to localize painful stimuli. This has been demonstrated reproducibly in the ED setting.

❸ **“The patient felt better with pain medication, so I didn't pursue further diagnostic testing.”**

While analgesia may improve comfort, careful attention must still be paid to historical elements (eg, high-energy motor vehicle collision) or examination findings (eg, abdominal tenderness) that may be concerning for serious pathology. A focused examination after analgesia may reveal whether abnormal findings can be evoked in an otherwise comfortable patient.

❹ **“There was no radiographic abnormality, so I didn't think the patient needed pain medication.”**

Pain is a subjective experience, and many causes of pain (particularly neuropathic pain) may not provide objective evidence of the level of discomfort.

❺ **“I didn't consider regional anesthesia”**

Regional anesthesia is an increasingly popular means of achieving analgesia and decreasing the amount of systemic analgesia required. It is useful to have a repertoire of familiar and useful techniques to augment some scenarios (eg, dental blocks for dental injuries, digital blocks for finger injuries, etc).

❻ **“The patient was agitated, and I didn't consider pain as the etiology.”**

Many times patients are unable to communicate their discomfort adequately (eg, intubated or demented patients). Painful conditions should be considered as a cause of increased agitation or delirium.

❼ **“The vital signs were normal, so I decided the patient was not in pain.”**

Vital sign abnormalities are not a reliable indicator of pain. In addition to medications that may blunt a response (eg, beta-blockers), each patient's experience and physiologic response may be different, and some patients may experience significant pain without producing abnormal vital signs.

❽ **“The patient had opioid dependence, so I used an agonist-antagonist.”**

Some partial agonists (eg, buprenorphine) bind with more affinity than complete agonists. In a patient on a chronic long-acting opioid agonist (eg, methadone), introduction of a partial agonist may displace complete agonists at the receptor site and precipitate a relative withdrawal.

❾ **“I had to keep giving him pain medication because he wouldn't calm down.”**

Anxiolysis is an important part of pain control and limiting “wind-up” phenomenon. Often, this can be accomplished by nonpharmacologic means (eg, discussing the patient's concern, covering a wound, distracting a child, or immobilizing a limb).

❿ **“The patient was fine when she left for x-ray, but when she returned, she was screaming in pain.”**

ASplinting with radiolucent materials prior to transport or manipulation for imaging helps decrease the pain precipitated by mobilization. In addition, it is reasonable to provide additional analgesia in anticipation of painful procedures or transport. ★

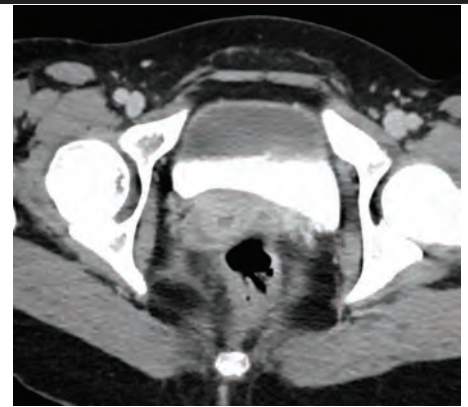


# RISK MANAGEMENT PITFALLS

## Ovarian Torsion



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- 1 “The patient was only 6 years old; I didn’t consider a gynecologic cause for her pain.”**  
Although gynecologic causes of abdominal pain are uncommon in children, ovarian torsion can occur at any age. The differential diagnosis for any patient with concerning symptoms needs to include ovarian torsion, regardless of age. Even premenarchal patients need a pelvic ultrasound, which can be done transabdominally.
  - 2 “Since the patient was previously found to have an ovarian cyst, I didn’t think we needed to reimaging her.”**  
Ovarian cysts are known to predispose patients to ovarian torsion, especially when intermediate in size (eg, 5 cm). A patient with a previous history of an ovarian cyst and acute pelvic pain must be evaluated for ovarian torsion, and repeat ultrasound is indicated.
  - 3 “She had right lower quadrant pain with vomiting, a low-grade fever, and was tender on examination. It sounded like a classic case of appendicitis, so I called the surgeon. I was surprised when they called from the operating room to tell me that her ovary was torsed.”**  
Ovarian torsion is frequently misdiagnosed as acute appendicitis because there is significant overlap between the clinical presentations of these 2 disorders. Before making the clinical diagnosis of appendicitis in a female, ovarian torsion should first be excluded with a pelvic ultrasound.
  - 4 “She told me that the pain had been coming and going and that she’d had similar episodes of pain previously, so I didn’t think it was anything serious.”**  
Many patients with ovarian torsion will report previous episodes of similar pain. Intermittent torsion has been well-described, and patients can have spontaneous detorsion and may not seek medical attention until they have an episode that is prolonged or more severe than they have previously experienced. A history of prior pain should actually raise your suspicion for ovarian torsion and trigger further investigation.
  - 5 “She seemed to be in a fair amount of pain, but she didn’t have any tenderness on examination. I discharged her, and when she came back the next day, my partner diagnosed her with ovarian torsion.”**  
The hallmark of ovarian torsion is abdominal pain; all other symptoms and findings can be variable. A patient with ovarian torsion may not have a significant amount of tenderness on examination, but it may be possible to palpate a pelvic mass when there is a large cyst or teratoma predisposing to the torsion. The clinical history should be enough to raise the suspicion of ovarian torsion even in the absence of physical findings, and further evaluation with ultrasound is indicated, especially in the patient with ongoing pain.
  - 6 “She had an elevated CRP and her WBC count was up, so I ordered a CT to look for appendicitis. I wasn’t expecting the radiologist to call and tell me that the scan showed she had a pelvic mass.”**  
Elevated WBC and CRP are nonspecific and may be seen in many different
- causes of abdominal pain, including ovarian torsion. Although they are statistically higher in appendicitis than in ovarian torsion, they are not useful in differentiating the etiology in an individual patient. Ultrasound should always be considered in the pediatric female with lower abdominal pain, since it is noninvasive, does not expose the patient to radiation, and has reasonable diagnostic accuracy for appendicitis as well as other causes of pain.
- 7 “I ordered the ultrasound, but the ovary had Doppler flow, so I thought the ovary couldn’t be torsed.”**  
Doppler flow is not sensitive to exclude ovarian torsion, and it may actually be present in as many as two-thirds of patients with ovarian torsion. Abnormal venous flow may be more sensitive than lack of arterial flow, but it is not always reported. The ultrasound diagnosis of ovarian torsion is usually made on the basis of a combination of findings, none of which have high sensitivity individually.
  - 8 “The ultrasound showed a significant ovarian enlargement, but it was bilateral, so I didn’t think it could be torsion.”**  
Ovarian enlargement in ovarian torsion is a common finding and likely has the highest sensitivity of the various possible ultrasound abnormalities. Bilateral torsion is rare, but not unheard of. Any concerning ultrasound findings in the setting of a suspicious clinical history should trigger a consultation with gynecology. Diagnostic laparoscopy is the definitive diagnostic modality and should be considered in patients without a clear diagnosis after imaging. ★

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**Urbana:** Mercy Memorial Hospital services the SW Ohio region's residents in Champaign County, the facility treats approximately 18,000 emergency pts./yr. Desirable residential areas in Dayton are easily accessible. EMP is a physician owned/managed group with open books, equal voting, equal equity ownership, funded pension, comprehensive benefits and more. Contact Ann Benson ([careers@emp.com](mailto:careers@emp.com)), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

**Lancaster: LOAN REPAYMENT PROGRAM!** Located 30 minutes SE of Columbus, Fairfield Medical Center sees 55,000 emergency patients per year. Modern facility, excellent back up, and dedicated partners make this a great place to live and work. Outstanding partnership opportunity with physician owned/managed group offering open books, equal voting, equal equity ownership, funded pension (13.27% in addition to pay), CME/expense account (\$8,000/yr.) plus comprehensive health benefits and more, including \$60,000 loan

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**Cincinnati:** Mercy Hospital-Anderson is located in a desirable suburban community and has been named a "100 Top Hospital" ten times. A great place to work with excellent support, the renovated ED sees 43,000 emergency pts./yr. Outstanding partnership opportunity includes performance pay, equal equity ownership, equal voting, funded pension (13.27% in addition to gross earnings), open books, comprehensive benefits and more. Contact Ann Benson ([careers@emp.com](mailto:careers@emp.com)), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

**Cincinnati Region:** We are pleased to announce our newest affiliation with the Mercy Health System in eastern and western Cincinnati. Nine respected community hospitals seeing 14,000-60,000 emergency pts./yr. are in locations are proximate to desirable residential areas. Outstanding partnership opportunity includes performance pay, equity ownership, equal voting, open books, funded pension (13.27% in addition to gross earnings), CME/business expense account (\$8,000/yr.), family health/dental/vision plan, occurrence malpractice, short and long-term disability, life insurance, 401k, flex spending program, and more. Contact Ann Benson ([careers@emp.com](mailto:careers@emp.com)), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

**Concord, Madison and Willoughby: LOAN REPAYMENT PROGRAM!** Lake Health is situated in the eastern Cleveland Suburbs. TriPoint Medical Center was built in 2009 and treats 31,000 emergency pts./yr. The Madison Medical Campus hosts a freestanding ED seeing 12,000 pts./yr. West Medical Center is a state-of-the-art acute care

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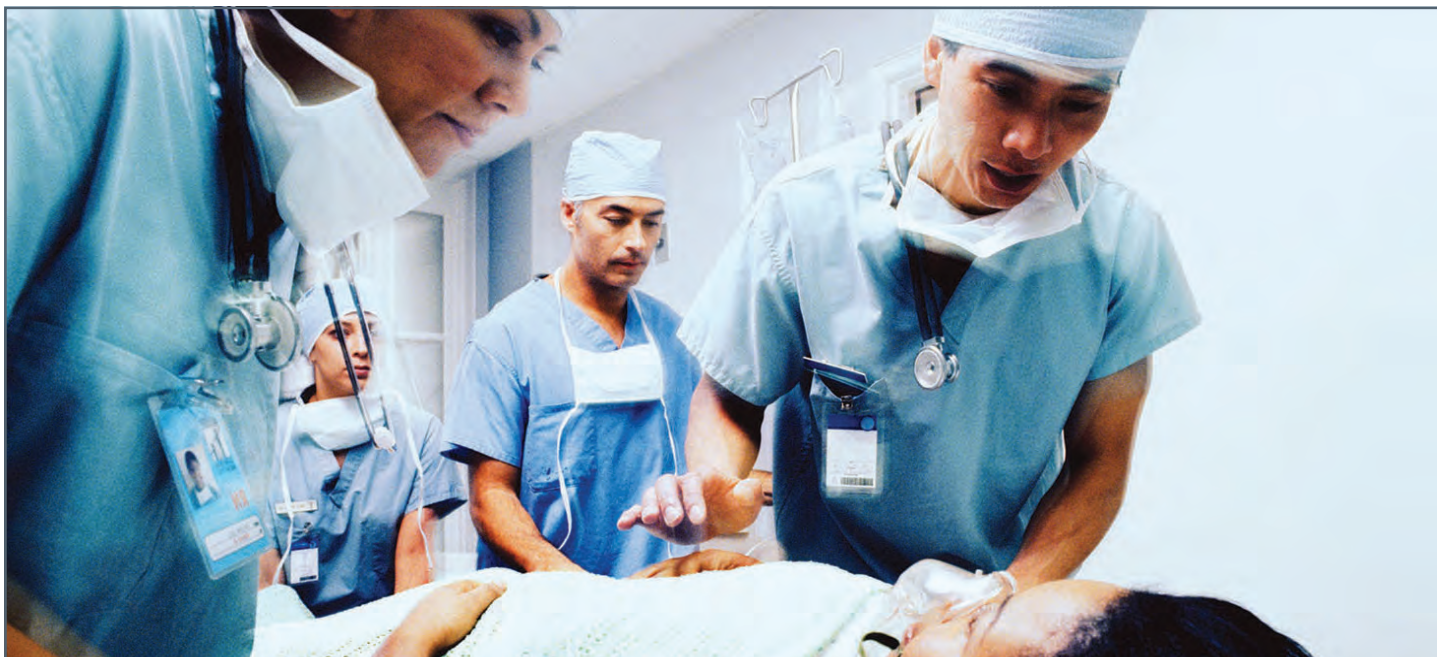
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**Presbyterian Healthcare Services (PHS)** is New Mexico's largest, private, non-profit healthcare system and named one of the "Top Ten Healthcare Systems in America." Over 600 providers are employed by PHS and represent almost every specialty. PHS is seeking BP/BC Emergency Medicine trained physicians to work in our Emergency Medicine department in Albuquerque and Ruidoso, NM.

Albuquerque thrives as New Mexico's largest metropolitan center with a population of 700,000. Albuquerque has been listed as one of the best places to live in the United States by Newsweek, U.S. News & World Report, Money and Entrepreneur Magazines! Albuquerque is considered a destination city for most types of outdoor activities with 310 days of sunshine.

Ruidoso is a mountain community at seven thousand feet altitude with snow skiing in the winter and horse racing in the summer. The community is best surveyed from the Chamber website at [ruidosonow.com](http://ruidosonow.com). We currently have six Family Practitioners, one General Surgeon, one Radiologist, two Internists, two Obstetrician/Gynecologists, three Orthopedic Surgeons as part of a group practice with Podiatrists, two inpatient Hospitalists that cover 24/7, four Emergency Room physicians and four nurse practitioners. We are part of the Presbyterian Healthcare Services network and are a twenty-five bed Critical Access Hospital. Emergency Medicine physicians will enjoy a flexible work schedule with 12 hour shifts and midlevel support.

These opportunities offer a very competitive salary, sign on bonus, relocation; CME allowance; 403(b) w/contribution and match; 457(b); health, life, AD&D, disability ins, life; dental; vision; pre-tax health and child care spending accounts, occurrence type malpractice ins, etc.

For more information regarding Albuquerque, contact Kelly Herrera, [kherrera@phs.org](mailto:kherrera@phs.org); 505-923-5662; For more information regarding Ruidoso, contact Tammy Duran, [tduran2@phs.org](mailto:tduran2@phs.org); 505-923-5567.

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hospital serving 37,000 ED pts./yr. Outstanding partnership opportunity includes \$60,000 bonus/loan repayment, performance pay, equity ownership, equal voting, funded pension (\$35,000/yr.), open books, comprehensive benefits and more. Contact Ann Benson ([careers@emp.com](mailto:careers@emp.com)), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

### OKLAHOMA

**Tulsa:** Brand new, state-of-the-art, 85-room ED opened Fall 2014! Saint Francis Hospital is a modern 971-bed regional tertiary care center seeing 96,000 ED patients per year, with broad pathology, high acuity, modern facilities and supportive environment. Outstanding partnership opportunity includes profit sharing, equity ownership, funded pension, open books, full benefits and more. Contact Ann Benson ([careers@emp.com](mailto:careers@emp.com)), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

### OREGON

**Salem:** Partnership opportunity with independent, democratic, and well established group at 95K annual volume Salem Hospital, Level II trauma center with excellent specialty support. New ED built in 2009, EPIC EMR with scribes, extensive leadership opportunities. Benefits include flexible scheduling, CME stipend, malpractice, medical, 401K, and more. Must be EM BC/BP. Salem is located 45 minutes south of Portland, in the heart of Oregon's wine country. We love it here and you will too. Send CV, cover letter and recent photo to [sepspc@salemhealth.org](mailto:sepspc@salemhealth.org) or call us at 503-561-5634.

### PENNSYLVANIA

**Sharon:** Sharon Regional Health System has an extremely supportive administration/medical staff, newer ED, and full service capabilities making this a great place to work with 37,000 patients treated annually. Small city setting offers beautiful housing and abundant recreation less than an hour from Pittsburgh and Cleveland. Outstanding partnership opportunity includes profit sharing, equity ownership, funded pension, open books, full benefits and more. Contact Ann Benson ([careers@emp.com](mailto:careers@emp.com)), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

**Pittsburgh and suburbs, Canonsburg, Connellsville, New Castle and Erie:** Allegheny Health Network and Emergency Medicine Physicians have formed Allegheny Health Network Emergency Medicine Management (AHNEMM), which offers a professional arrangement unlike that previously available in the region. Equal equity ownership/partnership, equal profit sharing and equal voting will now be available to the emergency physicians at Allegheny General Hospital in Pittsburgh, Allegheny Valley Hospital in Natrona Heights, Canonsburg Hospital in Canonsburg, Forbes Regional Hospital in Monroeville, Highlands Hospital in Connellsville, Jameson Hospital in New Castle, and Saint Vincent Hospital in Erie. Comprehensive compensation package includes performance bonuses, funded pension (13.27% in addition to gross earnings), CME/business expense account (\$8,000/yr.), family health/dental/vision plan, occurrence malpractice, short and long-term disability, life insurance, 401k, flex spending program, and more. Contact Jim Nicholas ([jnicholas@emp.com](mailto:jnicholas@emp.com)), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

**Ellwood City and Indiana:** Allegheny Health Network Emergency Medicine Management (AHNEMM) is pleased to announce our newest affiliations with The Ellwood City Hospital (TECH) west of Pittsburgh, and Indiana Regional Medical Center northeast of Pittsburgh (IRMC). TECH sees 12,000 emergency pts./yr. and is in a smaller community





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that affords easy access the north-Pittsburgh's most desirable suburbs. IRMC sees 45,000 ED pts./yr. and is situated in a nice college town. AHNEMM offers equal equity ownership/partnership, equal voting and the opportunity to be part of a progressive EM group. Comprehensive compensation package includes funded pension (13.27% in addition to gross earnings), CME/business expense account (\$8,000/yr.), family health/dental/vision plan, occurrence malpractice, short and long-term disability, life insurance, 401k, flex spending program, and more. Contact Jim Nicholas ([jnicholas@emp.com](mailto:jnicholas@emp.com)), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

### RHODE ISLAND

**Westerly:** The Westerly Hospital is a 125-bed community hospital situated in a beautiful beach community in SE RI, 45 minutes from Providence and 1.5 hours from Boston. Modern, well-equipped ED sees 26,000 pts./yr. Outstanding partnership opportunity includes performance pay, equity ownership, funded pension, open books, comprehensive benefits and more. Contact Ann Benson ([careers@emp.com](mailto:careers@emp.com)), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

### WEST VIRGINIA

**Wheeling:** Ohio Valley Medical Center is a 250-bed community teaching hospital with an AOA approved Osteopathic EM and EM/IM residency program. Enjoy teaching opportunities, full-specialty back up, active EMS, and two campuses seeing 27,000 and 20,000 pts./yr. Outstanding partnership opportunity includes performance pay, equal equity ownership, funded pension, open books, comprehensive benefits and more. Contact Ann Benson ([careers@emp.com](mailto:careers@emp.com)), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

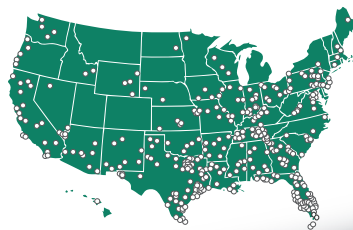


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Join a growing team of Emergency Medicine staff Physicians at Geisinger Wyoming Valley Medical Center (GWV) located in Wilkes-Barre, Pa. Practice state-of-the-art medicine with excellent sub-specialty backup and additional coverage through the department's Advanced Practice Providers, Pharmacists, and Scribes. With over 54,000 visits annually, Physicians at GWV enjoy its high acuity, hands-on environment.

The Emergency Department at GWV houses a total of 32 beds including: 24 acute, 3 trauma, and 5 acute/isolation. In addition, providers have access to 24 hour imaging services, point-of-care lab services, pharmacist coverage, and care management all within the department. The hospital is currently an accredited Level II Trauma Center and holds a Level I Heart Attack Program.

### **Geisinger-Shamokin Area Community Hospital\***

Join a growing team of Emergency Medicine staff Physicians and Advanced Practice Providers at Geisinger-Shamokin Area Community Hospital (G-SACH), located in Coal Township, Pa.

Practice state-of-the-art medicine in a facility that handles over 18,000 visits annually. Teaching opportunities exist with 3rd year EM residents rotating through the department. G-SACH is a licensed 70-bed community hospital with 45 acute, 15 skilled and 10 gero-psychiatry beds. Enjoy the latest in surgical and health information technology.

*\*G-SACH is a campus of Geisinger Medical Center, Danville.*

### **Geisinger-Bloomsburg Hospital**

Join a growing team of Emergency Medicine staff Physicians and Advanced Practice Providers at Geisinger-Bloomsburg Hospital (G-BH), located in Bloomsburg, Pa.

Geisinger-Bloomsburg Hospital's Emergency Department, which was recently renovated, houses 13 beds and handles approximately 16,500 visits annually. At the hospital, surgery, OB, hospitalists, a psych unit, and radiology with ultrasound, CT, x-ray, and MRI are available 24 hours a day. Geisinger Medical Center (GMC), located in Danville, Pa., is just miles down the road for complicated cases, trauma, STEMI, and pediatrics.

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