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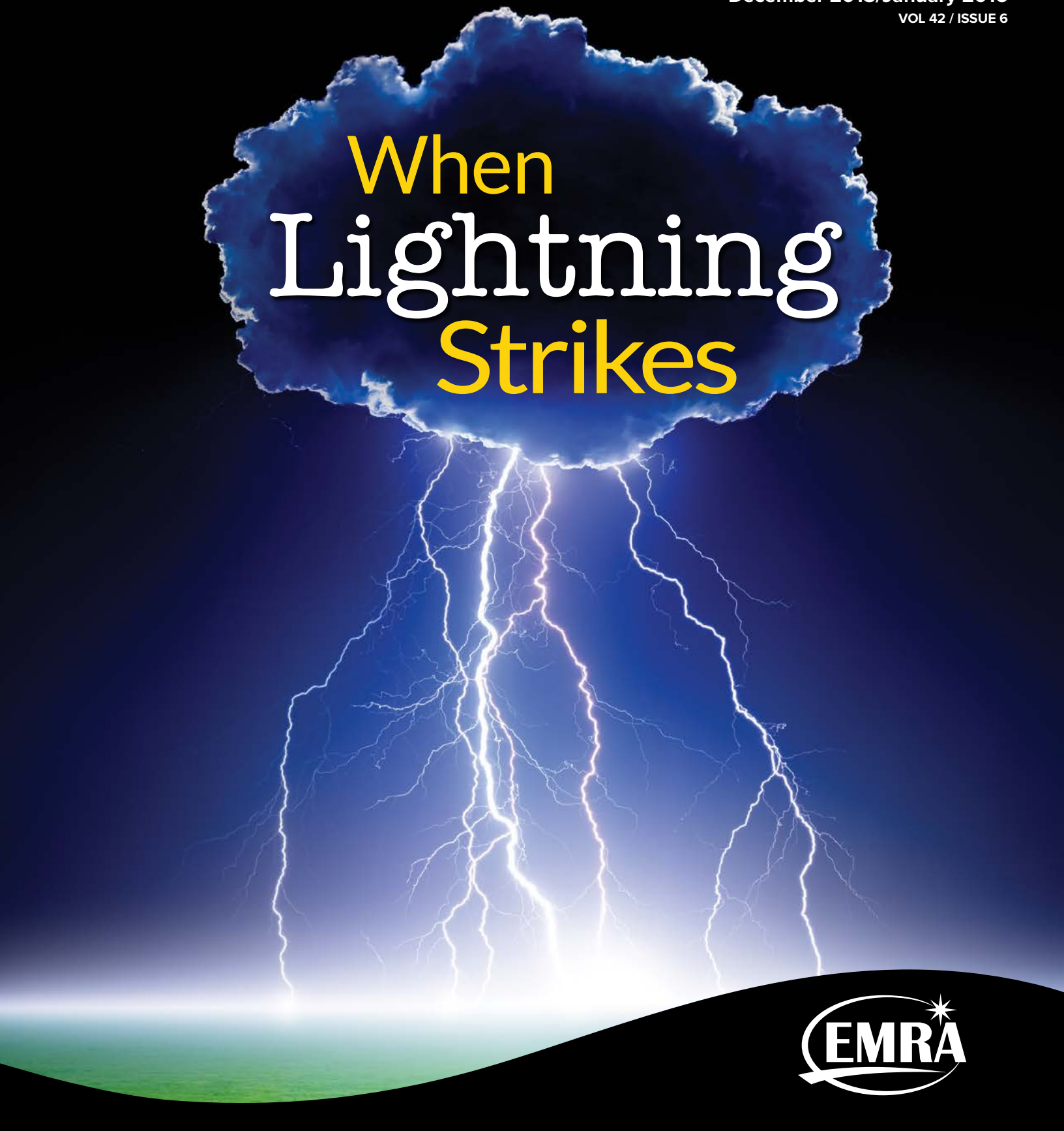
When Lightning Strikes



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MISSION STATEMENT

The Emergency Medicine Residents' Association is the voice of emergency medicine physicians-in-training and the future of our specialty.

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EM Resident (ISSN 2377-438X) is the bi-monthly magazine of the Emergency Medicine Residents' Association (EMRA). The opinions herein are those of the authors and not those of EMRA or any institutions, organizations, or federal agencies. EMRA encourages readers to inform themselves fully about all issues presented. *EM Resident* reserves the right to review and edit material for publication or refuse material that it considers inappropriate for publication.

Feeding the Roots of Emergency Medicine

Ramnik "Ricky" Dhaliwal, MD, JD
EMRA President
Hennepin County Medical Center
Minneapolis, MN

I am humbled and thrilled to begin my year of service as your new EMRA president after being involved with EMRA for a few years — joining as an intern and becoming more active throughout my five-year residency in EM/IM.

I chose emergency medicine as my career because I was drawn to its fast pace, the breadth of the practice, and its role as the gate-keeper of medicine, providing an access point for patients to be brought into the health care system. In many ways we give our patients a voice within the system, serving as the intermediary between multiple specialties, stabilizing and resolving acute problems, and then deciding who is best suited for the continuum of care.

As an organization, EMRA serves as the voice of trainees in emergency medicine. It was founded in 1974, when emergency medicine was in its infancy. Now in our 41st year, we continue to grow, supporting and representing 13,000 members around the world. With roots anchored in evidence-based medicine and quality of care, emergency medicine itself has branched out as a specialty, growing every year and allowing us to weather the ever-changing medical landscape.

EMRA must follow suit, branching out to address needs as they arise. During my presidency, I want to strengthen our sense of community, enhance leadership development, and prioritize wellness – the wellness of each individual member, of the organization as a whole, and of the specialty as a profession.

Let's start with the way we interact with our members and provide you with benefits. Over the next year we want to **leverage technology to create an EMRA community that is dynamic** and more responsive to your needs. We want to foster more member-to-member interaction and more involvement, which will in turn allow us to develop content more quickly and efficiently. We want to evaluate our strategy so we can feed the growth of the specialty.

Emergency medicine has developed substantially because of the strength of those leaders who formed the root of the emergency medicine tree. EMRA too, has been built upon individuals making time in their busy schedules to lead and foster the organization. We have entered a time of great change in the delivery of medicine in the U.S., and we need leaders who are ready to take the helm. To do this **we must continue to get each of you involved**. We are working to create opportunities for mentorship and to provide more leadership training avenues to help develop a pipeline of future leaders. We must also create an army of advocates to ensure that the shifting legislative landscape does not hurt our ability to provide the best care for our patients.

As we've all experienced, the stresses of getting into medical school, getting into residency, being a resident, and the subsequent practice of emergency medicine can be challenging. These struggles recently led 2 amazing young residents to choose suicide. That's 2 too many; **the wellness of medical students, residents, and fellows must be addressed**. EMRA's newly formed Wellness Committee will focus on wellness resources for individuals as well as residency programs. Before we can provide high-quality, compassionate care to our patients, we must first ensure we ourselves are healthy and stable. We must be vigilant as a community to look out for those around us and to understand the signs and symptoms of someone who is struggling. Let us make this a year in which we, as an EMRA community, strive to make both ourselves and our patients healthier.

The tree of emergency medicine was founded on the strong roots our predecessors planted, which have allowed it to grow by leaps and bounds. Every year a new residency class adds another ring to the ever-growing tree of emergency medicine. EMRA will continue to provide you with the resources you need to grow and for our specialty to continue to grow. We are only as strong as our membership, and I am excited for the next year and for the future of EMRA as a growing community. ✶

Abby Cosgrove, MD
Editor-in-Chief, *EM Resident*
Washington University in St. Louis
St. Louis, MO

Looking at the Past, Stepping into the Future

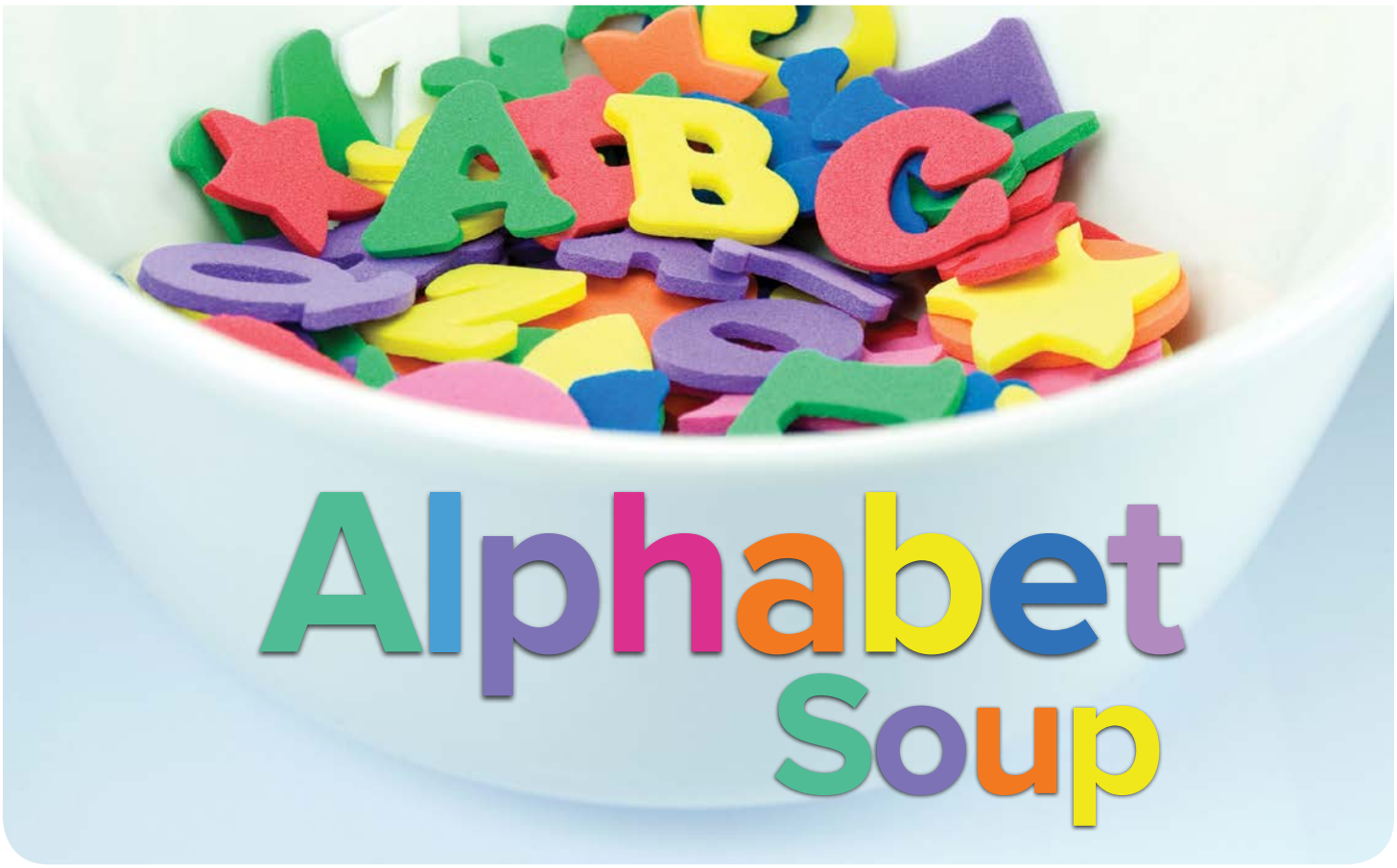
The St. Louis International Film Festival recently featured EMRA's Emmy Award-winning documentary *24/7/365: The Evolution of Emergency Medicine.* In this emotionally charged documentary, the tale of emergency medicine is brought to life by its original pioneers who, in their time, exemplified both the toughest resilience and the kindest compassion. I cannot help but think how privileged we are to be part of a specialty that was born in hospital basements by physician visionaries who cared more about their patients' health than their ability to pay, and who put more weight in the quality of their care than of their own reputation. In boldly pursuing these ideas, they began to transform the landscape of the American health care system forever. Though these heroes faced a completely uncertain future, they were united by one common goal: to take care of patients in need.

Stepping into my new role as editor-in-chief of *EM Resident* has been a whirlwind. I have spent many gratifying hours reading your exceptional submissions. Additionally, I have been brainstorming how to make *EM Resident* even more interesting, more engaging, and more exciting than it already is. The ultimate goal is to maximize EMRA member involvement (there are more than 13,000 of us!) to the best of our ability. Transforming this vision into a reality will require a great deal of work by a very dedicated and talented staff, but we are all up for the challenge… Are you? Infused with the spirit of our pioneers, it is important to recognize where we have been before we can set our sights on where we would like to go. EMRA has remained a consistent part of the emergency medicine landscape for more than 40 years, and the mere existence of a publication such as this, developed and nurtured by members of the largest and oldest independent medical resident organization in the ***world,*** is extraordinary. **The time and dedication required to excel, and to continue pushing the boundaries of our specialty, must be grounded in a desire to do what is best for our patients**. The present-day demands placed on the emergency physician – of flawless documentation, excessive box-checking, ICD-10 coding, and a constant pressure to see more patients, more quickly, and more perfectly – may only move us further away from our founders' vision, that is, further from the people. Our computers have become our lifelines, our fancy imaging modalities have become our physical exams. **Our success at the end of a shift sometimes feels decided by how many patients we have seen, instead of how many we have *helped*.**

My residency program recently participated in RightCare Action week, a movement that focuses on changing the culture of medicine from "more is better" to "right care for every patient." The goal is to focus on restoring the doctor-patient relationship. With the ability to order virtually any test or treatment at the click of a button, we often test and treat based on what we *think* our patients are concerned about and will benefit from without ever asking them in the first place. We tell patients they need CT scans, expensive medications, or to be admitted to the ICU.

During the last week of October, all patients presenting to the emergency department were given the opportunity to fill out a card that simply asked, "What is your biggest worry?" The results were astounding. The middle-aged woman with chronic back pain asking for opioids? Her biggest worry was that she wouldn't be able to lift her adult daughter with cerebral palsy into bed that night. The man with metastatic lung adenocarcinoma who presented with severe shortness of breath? His biggest worry was that he would die at home alone. **By taking the time to understand our patients' fears, motivations, and expectations, we can drastically alter the direction of their care.** We must work to preserve the doctor-patient relationship and to uphold the values of our predecessors. No matter how tired or overworked we become, we must lift the veil of modern medicine to expose the heart of patient care.

It is my hope that you find this December/January edition of *EM Resident* to be not only a source of information, but also of inspiration – that you, too, will channel the spirit of our founders and become invested in seeing this organization continue to grow and transform. There are many ways to become involved, whether by submitting an article for publication, signing up for a committee or division, or volunteering as a program representative. It is only through your sustained effort and contributions that we can achieve our goals**. Together, let us continue our humble quest to provide exceptional care to every patient, at any time, under any circumstance, and with unparalleled compassion.** ✶



Understanding ACEP's Clinical Emergency Data Registry (CEDR)

Do you wish you had accessible information on patient outcomes based on the actions you take in the emergency department? Have you ever stopped to think about how your reimbursement will be determined once you are past residency and working in the community? These may seem like unrelated questions, but **a new ACEP emergency data registry is going to change the way emergency medicine data are collected and utilized.** The goals of the registry include improving quality and effective care of patients and ensuring that EM physicians are reimbursed appropriately for the important work we do.

Some background is helpful in understanding the need for such a registry. With the 2015 repeal of the sustainable growth rate (SGR) method for determining Medicare payments for physicians, a new process for deriving reimbursement is being enacted. On April 16, 2015, President Barack Obama signed the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA). This permanently dispensed of the SGR payment system and utilizes a merit-based incentive payment system (MIPS), which is designed to shift Medicare and other reimbursements from a fee-for-service model to a pay-for-performance model and will be phased in over 5 years beginning in 2019. Between now and then, MACRA creates a period of stability with short-term physician payment updates of 0.5% per year. **Starting in 2019, physicians will have the potential to earn bonuses or take substantial cuts in their pay of +/- 4% the first year of the program, +/- 5% in 2020, +/- 7% in 2021, and +/- 9% in 2022 and beyond based on four general criteria**:

1. The quality of their care
2. Meaningful use of electronic health records (EHR)
3. Use of health care resources (e.g., not ordering excessive or unnecessary tests)
4. Activities undertaken to improve clinical practice.

Alison Smith, MD, MPH
EMRA ACEP Rep
University of Utah
Salt Lake City, UT

MIPS also allocates additional bonuses to be paid to those physicians who are top performers based on information collected and reported.

Payment adjustments will be made at the level of individual providers, but Congress has allowed groups to be considered an accountable unit for reporting data and assessing performance. ACEP, in collaboration with FigMD, has developed the **Clinical Emergency Data Registry (CEDR)**, designed for emergency medicine physicians specifically. CEDR extracts data from EHRs and group practice management systems of participating organizations/providers and will allow for the aggregation and analysis of the data for reporting to CMS and other entities. It has been approved by CMS as a qualified clinical data registry (QCDR) and provides a unified method for ACEP members to collect and submit data for the Physician Quality Reporting System (PQRS), maintenance of certification, ongoing professional practice evaluation, and other local and national quality initiatives. **The overall aim: to provide CMS and any other regulatory bodies with critical information about the way we work, the care we provide, and the effect this care ultimately has on the patients we serve.**

Stacie Jones, MPH, is the Quality and Health IT Director for ACEP. She works in ACEP's Washington, D.C., office and is one of the drivers behind the development and implementation of CEDR. In this Q-and-A, Jones addresses some of the key questions surrounding CEDR and how it will affect emergency physicians.

What is CEDR?

Jones: CEDR is the first EM specialty-wide registry at a national level, designed to measure health care quality, outcomes, practice patterns, and trends in emergency care. ACEP has developed the CEDR registry as part of its ongoing commitment to provide the highest quality of emergency care. CEDR is a QCDR designated by CMS for the 2015 performance year.

Why Does it Matter?

Jones: In the past, physicians across all specialties were paid small incentives for voluntarily reporting data on their actions and performance through a system called the Physician Quality Reporting System (PQRS). That incentivized system is going away, and **physicians can now be penalized for not reporting data**. Participation in CEDR allows emergency physicians the opportunity to get CMS credit for reporting more meaningful measures than the PQRS system of the past. Instead of being mired in an "alphabet soup" of reporting requirements, CEDR provides a single system that all EM providers who enroll can use to fulfill the requirements of multiple programs, making quality measure reporting easier and more efficient. The CEDR registry will ensure that emergency physicians, rather than other parties, are identifying which practices work best and for whom. Not only will CEDR provide a unified method for ACEP members to collect and submit PQRS data, but CEDR data will also facilitate emergency care research that will help demonstrate the value of emergency care to policymakers in Washington, D.C.

How will these data be used, and how will the availability of these data change the way emergency physicians are reimbursed?

Jones: The health care environment is transitioning from volume-based to value-based payment for care. Not only will CEDR allow emergency physicians to maximize their reimbursements under current programs such as the PQRS and the value-based modifier, but qualified clinical data registries will also play an important role under MACRA, which was the SGR repeal and replacement law passed in April 2015. Under MACRA, CMS will be rolling out a new merit-based incentive payment system over the next few years. Qualified clinical data registries will play an important role under the MIPS.

Furthermore, the use of de-identified aggregated data generated by CEDR will support national comparative benchmarks and evidence-based physician practices. **It will provide participating emergency clinicians with feedback regarding their individual- and/or ED-level performance on a range of process and outcome quality measures, benchmarked against their peers at national and regional levels.** For government policy makers, CEDR will provide further understanding of and information surrounding clinical effectiveness, patient safety, care coordination, patient experience, efficiency, and system effectiveness.

How Does this Affect Residents?

Jones: Although residents' current reimbursements are not directly tied to these programs, how their patients fare will impact the overall group performance on many of the quality measures in CEDR, and this will certainly affect residents as they get out into practice in the next few years. **The sooner residents understand how they will be reimbursed and how the actions they take affect patient outcomes, the better.**

Stacie, this is all very confusing and complicated! How can we learn more?

For more information visit acep.org/cedr or contact us at cedr@acep.org. ✶

CEDR
CLINICAL EMERGENCY DATA REGISTRY

The goals of the registry include improving quality and effective care of patients and ensuring that EM physicians are reimbursed appropriately for the important work we do.

An Incredible

Scientific Assembly
BOSTON
2015

Boston witnessed a whirlwind of activity during ACEP15, with EMRA marking key milestones.

Topping the list was the matter of representation for residents. After clear and persuasive speeches by EMRA leaders, the ACEP Council voted to double the number of council seats afforded to EMRA, from 4 spots to 8. The previous allotment of ACEP Council seats for EMRA representatives was set in 1992, when EMRA membership stood at 2,500, compared to approximately 13,000 today.

EMRA also welcomed new members to its Board of Directors in Boston. Read on as we introduce you to the new faces of leadership, and help us welcome each new board member, along with President Ricky Dhaliwal, MD, JD, who accepted the gavel from Immediate Past President Matt Rudy, MD.

ACEP15 saw standing-room-only crowds for many of the popular EMRA offerings such as the Medical Student Forum, Residency Program Fair, Job & Fellowship Fair, and more. Bringing down the house, however, was the inaugural 20 in 6 Resident Lecture Competition.

Hackathon. Technology and collaboration were on full display during Hackathon 2015, brought to you by ACEP, EMRA, Hacking Medicine at MIT, and athenahealth. Rapid ROS won the $2,000 prize for best EM solution, with a system that integrates patient questionnaires and health information into an interface delivered to care coordination teams.

Team VOXDOX snagged the Hackathon $3,000 grand prize by creating a stationary real-time speech-to-text solution using the Amazon Echo. Having an Echo situated in each patient room would allow doctors to be more hands-on with each patient and not have to turn their backs to chart or enter orders in the EHR.

Medical Student Keynote. AMA President Steve Stack, MD, FACEP (left, with Medical Student Council Chair Sean Ochsenbein) delivered the keynote address at the Medical Student Forum, urging students to decide what their "life worth living" is – and then pursue it passionately.

20 in 6. After a round of attention-grabbing lectures, three residents emerged victorious in the first-ever 20 in 6 Resident Lecture Competition, developed by the EMRA Education Committee and sponsored by EMRAP. *Pictured, from left*: Nick Governatori, MD (judge); Peter McCorkell, MD (2nd Place winner); Salim Rezaie, MD, FACEP (judge); Nikita Joshi, MD (judge); Paul Jhun, MD (judge); David Terca, MD (1st Place winner); and Aaron Heckelman, MD (People's Choice winner).

Week!

Networking. The always-popular EMRA Job & Fellowship Fair drew 1,500+ people, all intent on taking the next important step in their career.

The Emmy award-winning ***24/7/365: The Evolution of Emergency Medicine,*** brings viewers into the riveting world of emergency medicine, thanks to director Dave Thomas (from left) and executive producers Don Stader, MD, and Mark Brady, MD, MPH, MMS, DTM&H.

Waeckerle Award. During the Fall Awards Reception, EMRA was proud to honor a group of residents and physicians who together are making the profession stronger. Immediate Past President Matt Rudy (left) and President Ricky Dhaliwal (right) congratulated Steve Stack, recipient of EMRA's prestigious Joseph F. Waeckerle Alumni Award.

CPC Finalists. Congratulations to CORD CPC Competition winners (above, right) Megan Osborn, MD (Faculty Discussant); and (left) William Soars, MD (tie, Faculty Runner-up). Winners not pictured include Shireen Khan, MD (Resident Presenter); Cory Siebe, MD (Resident Runner-up); and Tim Fallon, MD (tie, Faculty Runner-up).

Resident Forum. Offering an inside track on board prep, a distinguished (and helpful) panel set the stage for the 2015 Resident Forum, which covered everything from career planning to financial management.

Residency Fair. After spending the day learning the do's and don'ts of interviewing and how to work a room, medical students put that new knowledge to good use at the EMRA Residency Program Fair.

Didn't get to join us in Boston?

Let's meet in Las Vegas for ACEP16, Oct. 16-19!

New EMRA Leaders

RAMNIK "RICKY" DHALIWAL, MD, JD
PRESIDENT

Hennepin County Medical Center
Minneapolis, MN

Hometown: Fort Collins, CO

Undergrad: George Washington University

Med school/law school (simultaneous): University of Colorado

EM/IM Residency: Hennepin County Medical Center

Top goals as EMRA president: To evaluate our future and where we're headed as an organization, to improve the sense of community within EMRA, to focus on improving wellness within emergency medicine as a specialty, and to help establish a pipeline for leaders who will guide us through the ever-changing medical landscape.

Family: My better half, Danielle, is a PICU fellow. She's way smarter than I'll ever be. I also have wonderful parents who moved here from India to give us more opportunity, and I am the middle of three children. My younger brother, Jamie, who some say looks similar to me, also serves on the EMRA board as Legislative Advisor and is an EM resident at Denver Health. My older sister, Amy, is an optometrist in the Twin Cities.

Why EMRA?: I got involved in EMRA because in our current environment of sustained, rapid change in health care, I wanted to make a difference. As emergency medicine residents we are lucky to have such a robust organization that can simultaneously be an educational resource and a staunch advocate for our members

Motto: Better busy than bored. Work hard, play hard.

When I'm not working: I'm usually with my wife, enjoying the outdoors or travelling. I like to ski, run, hike, bike – pretty much anything outside.

Favorite beer: Myrcenary (brewed in my hometown)

Favorite life hack on a night shift: I'm a '90s rock guy: Pearl Jam Pandora Channel (seriously, you should check it out!)

ABBY COSGROVE, MD
SECRETARY/*EM RESIDENT* EDITOR-IN-CHIEF
emresidenteditor@emra.org

Undergrad: Music, The College of William and Mary

Med school: University of Virginia

Residency: Washington University in St. Louis

Top goal as an EMRA board member: To expand membership involvement in *EM Resident* so that we may continue to produce a high-quality, multifaceted publication that serves as the collective voice of the future of our specialty.

Best advice you've received so far: From my husband, who always knows the right thing to say: "Pursue these efforts with passion – not perfection – as the primary motivation. The former drives us to excel; the latter drives us to despair."

Why emergency medicine? The privilege of caring for anyone, at any time, under any circumstance.

In another life, I would be: Performing WICKED on Broadway (provided I had the talent!)

Most-used app on your phone: Instagram

Guilty pleasure: Chick-fil-A

What's top on your bucket list? Sitting in the audience at The Tonight Show, watching Jimmy Fallon and Justin Timberlake perform another edition of "History of Rap."

Most awkward patient encounter: Got peed on during a pelvic exam (by an adult...)

Favorite life hack for night shifts: Dark chocolate-covered espresso beans!

How you get your exercise: Biking to and from work, running on trails

CHRISTIAN DAMEFF, MD, MS
INFORMATICS COORDINATOR
informaticscoord@emra.org

Undergrad: Philosophy, University of Arizona

Med school: University of Arizona Phoenix

Residency: Maricopa Medical Center

Top goal as an EMRA board member: Use tech to lighten resident load, enhance education, and improve patient care

Most-used app on your phone: Right now I use SonoSupport for all my ultrasound needs!

Why emergency medicine? Great procedures and diversity of pathology

Best advice you've received so far: "Brave people take chances."

Family: I'm lucky to have my beautiful wife Ashley and a wicked-cool son, Wesley.

Pets? I have a Shiba Inu named Viesa who also has a crypto-currency named after her (dogecoin.com).

How you get your exercise: Wrestling my son away from ingesting objects that will kill or maim him (he's 8 months old)

What's top on your bucket list? Aconcagua and hitching a ride to space for a day

Most awkward or dreaded patient encounter: "I swear I fell on it in the shower..."

Favorite life hack for night shifts: Yerba Mate and some Beastie Boys (turn it up to 11)

NICK GOVERNATORI, MD
ACADEMIC AFFAIRS REPRESENTATIVE
academicaffairsrep@emra.org

Undergrad: Biology and Spanish, Boston University

Med school: University of South Florida Morsani College of Medicine

Residency: Mount Sinai St. Luke's/Roosevelt; medical education fellow at Thomas Jefferson University

Favorite life hack for night shifts: Funny Cat Vines

Most-used app on your phone: EMRA Antibiotic Guide (no, but really!)

Best advice you've received so far: "Live through this and you won't look back."

Most awkward (or dreaded) patient encounter: Bending over to pick up my pen and ripping a huge hole in my scrubs – right in the... lap area.

What's top on your bucket list? A trip to the moon.

Pets? Cat named Bob – a stray that I thought was actually a bobcat when I first found him. He is a "Hemingway" cat with no tail and 26 (+/-2) toes.

How you get your exercise: Tennis, bowling, doing squats while I brush my teeth

TIFFANY JACKSON,MD
VICE-SPEAKER OF THE COUNCIL
vicespeaker@emra.org

Undergrad: Microbiology, Xavier University of Louisiana

Med school: Mercer University School of Medicine

Residency: University of Alabama at Birmingham

Most-used app on your phone: I love Priceline app. I believe in working hard (production) and playing hard (production capacity). As a resident, I take pride in bidding in dollar increments to get 4/5-star hotels for under $100.

Best advice you've received so far (any kind of advice, on any topic): "Listen young grasshopper, our job is mentally hard, physically and spiritually demanding, so try to have a little fun!"

Family: My boys, the loves of my life! I have a wonderful husband and son.

My attempt to stay balanced: Nighttime Dr. Seuss books or Netflix, daytime mediation, and a little exercise in between.

What's on your bucket list? Great seats when the Saints WIN the Super Bowl. Please contain your laughter, there is always next year.

ALICIA KURTZ, MD
PRESIDENT-ELECT
presidentelect@emra.org

Undergrad: Business Administration major, Spanish and Asian Pacific Studies minors, Loyola Marymount University

Med school: Stritch School of Medicine, Loyola University Chicago

Residency: UCSF Fresno

Top goal as an EMRA board member: Improving what we often refer to as the "pipeline for leadership" in EMRA. I got my start as a program rep on the Rep Council and through involvement in the Education Committee. Improving our communication with members about these opportunities to get involved and helping those who are motivated find ways to succeed is a huge priority for me.

What's on your bucket list? Skydiving, and eating at the French Laundry in Napa

Other: I am a self-declared expert in all things Trader Joe's. I love travel, pretending I know how to surf (I definitely don't), trying new things, flip flops, really good food, and doing handstands in the pool. (I am awesome at that last one.)

Above Average / Below Sea Level

Matthew Karp, MD
UCSF-Fresno Department of Emergency Medicine
Fresno, CA

Dutch Lessons for U.S. Health Care

The Netherlands' health care system rests on the shoulders of the huisarts, who handle 95% of all episodes of care.

*A 51-year-old female with hypertension calls EMS for palpitations. The crew arrives on the north side of town to a large, somewhat worn apartment complex. A family of 8 is crowded around a TV watching football. The crew takes a detailed history, exam, and performs an ECG. It is discovered that her blood pressure medicines have changed recently, and she has forgotten a dose. The patient has a systolic blood pressure of 204, and her ECG is normal. The crew gives her a dose of her losartan and contacts her primary care doctor, who happens to be on call this evening. The doctor agrees with not transporting her to the hospital and will call her in an hour to make sure she is doing well, and may make a house call later that evening if she isn't. The crew packs its equipment and discusses the plan with the patient. "*Dankuvel,*" the husband says, as he shakes each crewmember's hand.*

I encountered the case above in May of 2015, while on a ride-along with Ambulance Amsterdam. **It was a completely pedestrian occurrence.** I was working at Onze Lieve Vrouwe Gasthuis, the hospital nearest center Amsterdam. Their *spoedeisende hulp* (emergency room; literally "speedy help") sees about 47,000 patients a year – making it the largest and busiest emergency department in the Netherlands,[1] consistently ranked as one of the best hospitals in North Holland.[2] In 2012, 19.9% of all ambulance deployments in the Netherlands were classified as "first aid without transport," meaning help was rendered on the scene, but the patient did not require transportation to the hospital.[3] The decision to transport is largely left to the nurses staffing the ambulance and the primary care doctor on call – the result of a system that is heavily invested in primary care.

Health care in the Netherlands is in many ways similar to the U.S. It has ranked No. 1 in Europe between 2008 and 2014 by the Euro Health Consumer Index, which ranks systems based on outcomes, accessibility, and other measures. It has never finished out of the top three since the index was first published in 2005.[4] Although the Netherlands has excellent outcomes and happy patients, it is not cheap – health care costs the second most per GDP among industrialized nations, or 12.9% in 2013.[5] Per capita, they spent $6,145.[6] The United States is the only country to surpass these numbers, spending 17.1% of GDP and $9,146 per capita.[5,6]

Superficially, **the insurance system is similar to that initiated under the Affordable Care Act in the United States**: It relies on mandatory insurance purchased from private insurers, with no exclusions for pre-existing conditions. However, the health care delivery system in the Netherlands excels in both quality and patient satisfaction, ostensibly due to prioritization of affordable, accessible primary care.

The Netherlands' health care system rests on the shoulders of the *huisarts* (literally house doctor, or general practitioner), who handle 95% of all episodes of care.[7] Every patient must choose a primary care doctor, whom they can see for free, usually within a few days. Most have an "advice hour" during which patients can call and discuss care, perhaps saving a visit. Some *huisarts* continue to make house calls for those too immobile or ill to leave the house. After hours, there are on-call physician advice lines, as well as a *huisartsenpost* for walk-in visits at almost every hospital.

In addition to being accessible, the system is affordable for the average Dutch person. Everyone over age 18 living in the Netherlands is required to buy insurance. The average premium was $1,210 per year in 2014,[8,9] and subsidies are available for those who qualify. Additionally, the system is supported by a tax on employers of 7.75% on incomes up to $56,575.[8] After recent reforms, the patient is responsible for up to a $396 deductible annually.[8] **The system in every way is designed to motivate people to choose the appropriate care for their needs.**

This focus on primary care makes a carefully considered hands-off approach to patient care possible. Dutch physicians are generally reluctant to order a single unneeded laboratory test, imaging study, or medication. For example, we saw a healthy 21-year-old male with two days of intermittent epigastric pain, normal stools, normal vitals, and a benign abdomen. I proposed some basic blood work and a stool guaiac to check for evidence of a bleeding ulcer. "They don't look anemic," was the response (which was true). "They can see their doctor tomorrow if it is still bothering them. The *huisart* can order the blood work, urea breath test, ultrasound, or whatever else they think may be indicated." This was a common occurrence and accepted practice in the emergency room; it freed a remarkable amount of time to deal with actual emergencies.

Back home in California, if I ask my patients to follow up with their doctor, they sometimes laugh. They often have wait times of 1-2 months. Why do my patients not have adequate access to primary care, despite the fact that most are insured? In the United States, not all health insurance is created equal.

My home emergency department saw 110,600 patients in 2014, 53% of whom were insured by Medi-Cal (California's Medicaid program).[10] The Affordable Care Act drove a large expansion in the Medi-Cal program, and currently about 12 million Californians are insured under the program, though the state auditor recently criticized the state for being unable to guarantee enough medical providers for the program.[11] A relatively small number of doctors (35% across all specialties) see 80% of the Medi-Cal patients.[12] On self-reported surveys 57% of primary care providers claim they accept new Medi-Cal patients; however, when research assistants called a sample of these practices and posed as Medi-Cal patients, they were able to schedule appointments with only 33% of them.[13] **Why won't more providers see these patients?**

Reimbursements under Medi-Cal are notoriously low; California ranks 48th in Medicaid reimbursement rates.[14] Under the current fee schedule, a 15-minute visit with an "expanded problem focus" (CPT 99213) pays $24. At that rate, it is very difficult for a physician to pay staff and to keep the lights on, let alone make a living wage.[15] **The system is failing to provide accessible primary care to millions of our patients, and this often drives them to the ED.**

It is a rational decision in response to existing incentives for Medi-Cal patients to come to the emergency room for their medical care. Patients in the Medi-Cal program pay up to $1 copay to see a primary care doctor, but there are few who will see them.[16] They pay $5 to visit an emergency room, and that is only if the hospital determines they used the emergency room for a non-emergent service (otherwise the cost is $0).[16] **While patients can be turned away at will by primary care doctors, under EMTALA, we emergency physicians are required by law to see them.**

If a primary care doctor orders a follow-up test after a visit, it often needs a "Treatment Authorization Request" which adds, on average, a 12-business-day delay, not counting mailing time, processing, and weekends/holidays.[17] This is significantly longer than with other insurance payers, and it requires both the patient and physician to jump through paperwork hoops – with the continual possibility that the request may be denied. In the emergency room, tests get done within a few hours. A decision to wait 12 hours for a minor complaint is completely rational, given the

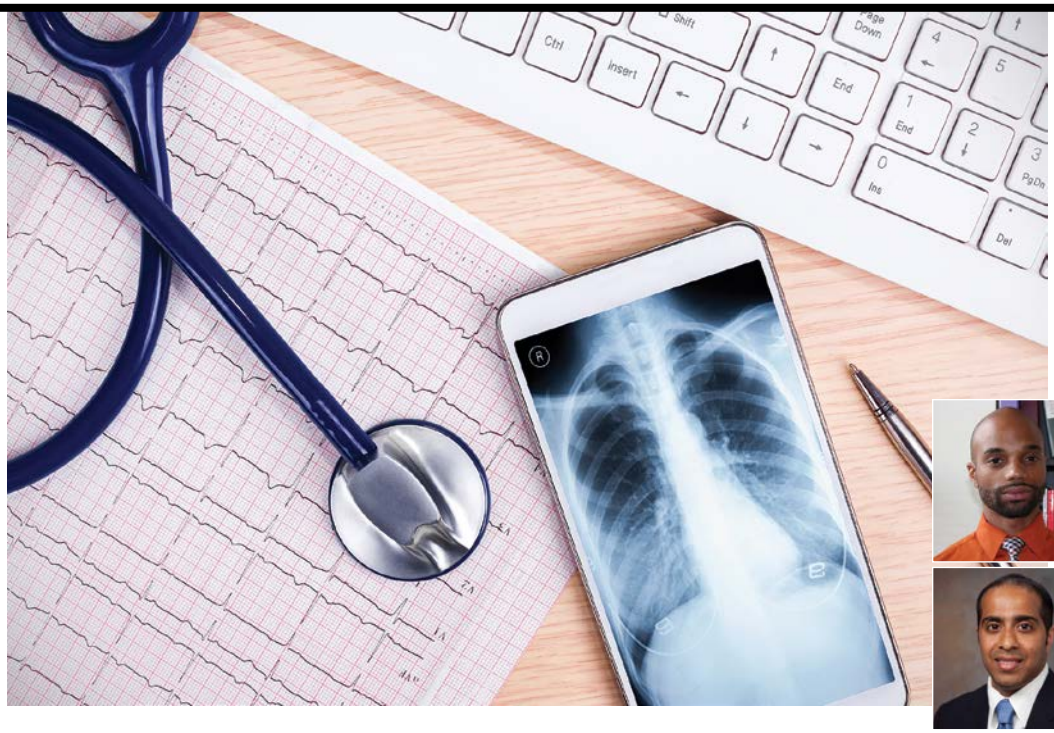
above analysis. **A visit to the emergency room is ultimately cheaper, easier, and faster for patients. If we were in our Medi-Cal patients' shoes, we would likely make the same decisions about where to access care, no matter how long the ED wait times are.**

This lack of available primary care leads to many hidden costs; over-testing is one of them. This is not necessarily due to medico-legal concerns; San Joaquin Valley juries tend to be sympathetic to physicians, and my patients (for better or worse) have even more trouble accessing the legal system than the medical one. In the past 20 years there have only been approximately $30,000 in payouts from EM physicians.[18] We order a lot of tests because we fear missing a deadly disease process – we aim to rule out and treat diseases that will cause significant morbidity or mortality in the next 24-48 hours. **We want to make sure the patient makes it to the follow-up appointment, where the primary care doctor can take a look at the problem with the advantage of the tincture of time and the ability to schedule return visits, and attempt various therapies.**

My fear, my tests, and my admissions go up exponentially the longer patients have to wait for follow-up. It is our duty to rule out acute emergencies, but what about the patients who cannot get in to see their doctor for another month? Can we order enough tests to make sure they are "set" for an entire month? If we miss a new diagnosis of ulcerative disease in a 21-year-old male and don't start him on treatment, what happens to him in the next month? Does he become severely anemic and require a blood transfusion? Does he perforate? Just how long must we, as emergency physicians, tide people over, order more tests, or admit a young man for an endoscopy, just because we're trying to offset inadequate follow-up? The emergency physician is placed in an expensive and dangerous trap. **The system we have is expensive, and it is bad for patients and doctors.**

It can be practice-changing to work in an environment with easy and prompt access to primary care, like the Netherlands. It made judiciousness in testing and treatment a virtue, not a liability. It allowed everyone from prehospital personnel to emergency physicians to focus on true emergencies. And the Dutch patients are satisfied with this approach: easy access to doctors and follow-up, quicker emergency room visits, and less unnecessary poking and prodding from phlebotomists and CT techs.

None of this is to say what works in the Netherlands will necessarily work here. We are a very different country than a largely homogeneous and healthy population living on reclaimed sea floor. But it is fascinating to look at what they have done and consider the possibilities. What does it look like if a health care system invests in physicians before tests? What if we actually reasonably reimbursed primary care providers, or offered incentives for appointments made within a week of request? Might our patients be a bit healthier? Could we stop trying to compress a one-month work-up into 15 minutes? And might both patients and physicians be just a little more satisfied with the whole thing? ✶



Overall, the initial adoption of EHRs in hospital EDs has been successful.

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Emergency Health Care Goes "HITECH"

IT in the Emergency Environment

Emergency Health Care and the Stimulus Package

In 2009, President Barack Obama signed the American Recovery and Reinvestment Act (ARRA) of 2009, also known as the Stimulus Package.[1] The ARRA allotted $27 billion for the adoption and meaningful use of health information technology (HIT) to improve the delivery of health care, engage patients, decrease cost, and decrease medical errors. The Health Information Technology for Economic and Clinical Health (HITECH) Act is the dedicated legislation within the ARRA that outlines the plan for adoption of HIT. **The use of HIT in the emergency department can assist in the safe management of critically ill patients and retrieval of important information.** HIT can also help limit medical errors that might occur due to the ED's fast pace and frequent interruptions. ACEP has supported this government initiative, and it is essential for EM physicians to take an active role in introducing HIT to emergency health care.

The HITECH Act

The George W. Bush administration established the Office of the National Coordinator (ONC) for Health Information Technology under the Department of Health and Human Services. The leader of this office is the National Coordinator. To help guide the National Coordinator, there are two committees composed of stakeholders with experience in HIT, some of whom are physicians. The first committee is the Health Information Technology Policy Committee (HITPC). This committee's purpose is to aid in the development of the strategic plan to implement HIT and identify the need for standards and certification criteria. The second committee that assists the National Coordinator is the Health Information Technology Standards Committee (HITSC). Its purpose is to recommend standards, implementation specifications, and certification criteria for the adoption of HIT in health care.

Medicare & Medicaid Electronic Health Records Incentive Program

Electronic health records (EHR) aid in patient care by storing patient information so that it can be easily retrieved, reviewed, and transferred. Its other advantages over traditional paper records are the ability to assist in quality assurance projects, collect data for research purposes, easily back up patient records, and provide the user with clinical decision support systems. For this reason, a large component of the ONC's strategic plan involves the effective adoption of EHRs into clinical workflows. To accomplish this, the ONC developed the Electronic Health Records Incentive Program. It provides monetary incentive for eligible providers, including professionals and hospitals that can demonstrate meaningful use of EHRs. Medicare and Medicaid both offer their own incentive programs; however, providers can only participate in one program. The Centers for Medicare & Medicaid Services (CMS) is in charge of the Medicare incentives, and each state is in charge of its own Medicaid incentive programs. **Unfortunately, hospital-based professionals, including emergency physicians, pathologists, and**

anesthesiologists, are not eligible for incentives.

Eligible hospitals and professionals in the CMS EHR Incentive Program must use EHRs to record and report electronic clinical quality measures (eCQM) in order to receive incentive payments. These measures are deemed by the ONC to be of meaningful use because adherence can improve the quality of health care and help to demonstrate the potential use of EHRs. The final year to enter into the incentive programs for incentive payment was 2014. **Now, in 2015, eligible providers must attest to the meaningful use of EHRs in order to avoid Medicare payment penalties.**[2,3]

The 3 Stages of the EHR Incentive Program

Through the EHR Incentive Program, the ONC has developed a three-stage plan to help providers adopt and demonstrate meaningful use of EHRs. Emergency medicine providers have been involved in the development, design, and implementation of EHRs and other forms of HIT into emergency health care.

Stage 1 focused on capturing and sharing structured data on patients such as demographics, vital signs, medications, and allergies. Initially, hospitals were collecting eCQM information on all ED patients, which included information of low value from patients treated and discharged. ACEP believed this would make data difficult to interpret. Also, the initial CQM guidelines did not give hospitals incentives to implement a certified computerized provider order entry (CPOE) in the emergency department. ACEP felt this to be an issue, as the ED is a setting with large numbers of time-sensitive CPOE for critically ill patients, and so asked that ED throughput be considered as an eCQM metric. CMS incorporated ACEP's feedback and required eCQM be collected on ED admitted patients, along with median door-to-discharge and door-to-admission data.[4,5]

Stage 2 utilizes advanced clinical processes to exchange patient information between providers, and to encourage patient engagement. For example, Stage 2 requires providing patients with online access to medical records within four days of its becoming available to the eligible provider. This impacts EM physicians because it gives us an opportunity to interact with our patients and further educate them about their health information.

Stage 3 is still under development and will be ready for optional implementation in 2017, with required implementation in 2018. ACEP continues to be embedded in this process to ensure that the voice of the emergency physician is heard and that HIT is continually improving. **ACEP still believes that HIT can improve the delivery of emergency health care, but wants to ensure there are systems in place to address concerns.**

In 2013, the Informatics Section and Quality Improvement and Patient Safety Section of ACEP published an article stating recommendations to address the potential hazards of HIT in the ED. **Some of the safety concerns include alert fatigue, poor data interfaces, and communication errors.**[6] In a letter to Andrew Slavitt, the acting administrator of CMS, then-ACEP President Michael J. Gerardi, MD, explained these concerns and expressed how they are not addressed in the current draft of Stage 3. ACEP is asking CMS and the ONC to require hospital quality assessment and performance improvement programs to capture HIT-related safety events and address them in a structured, timely fashion. ACEP is also asking for CMS and the ONC to include this in the certification of EHR systems so that EHR vendors will be obligated to make safety improvements to their EHR systems.[7]

Update on the Adoption of EHRs

The Centers for Disease Control and Prevention recently published a report on the adoption of EHRs by emergency and outpatient departments. The report included data collected from the 2006-2011 National Hospital Ambulatory Medical Care Survey. In 2011, 84% of hospital EDs had adopted an EHR system; 87% of EDs claimed their EHR could record patient history and demographic information, 43% could provide warnings of drug interactions and contraindications, 63% could order prescriptions, 40% could provide guideline based reminders, and 65% could list patient problems.[8]

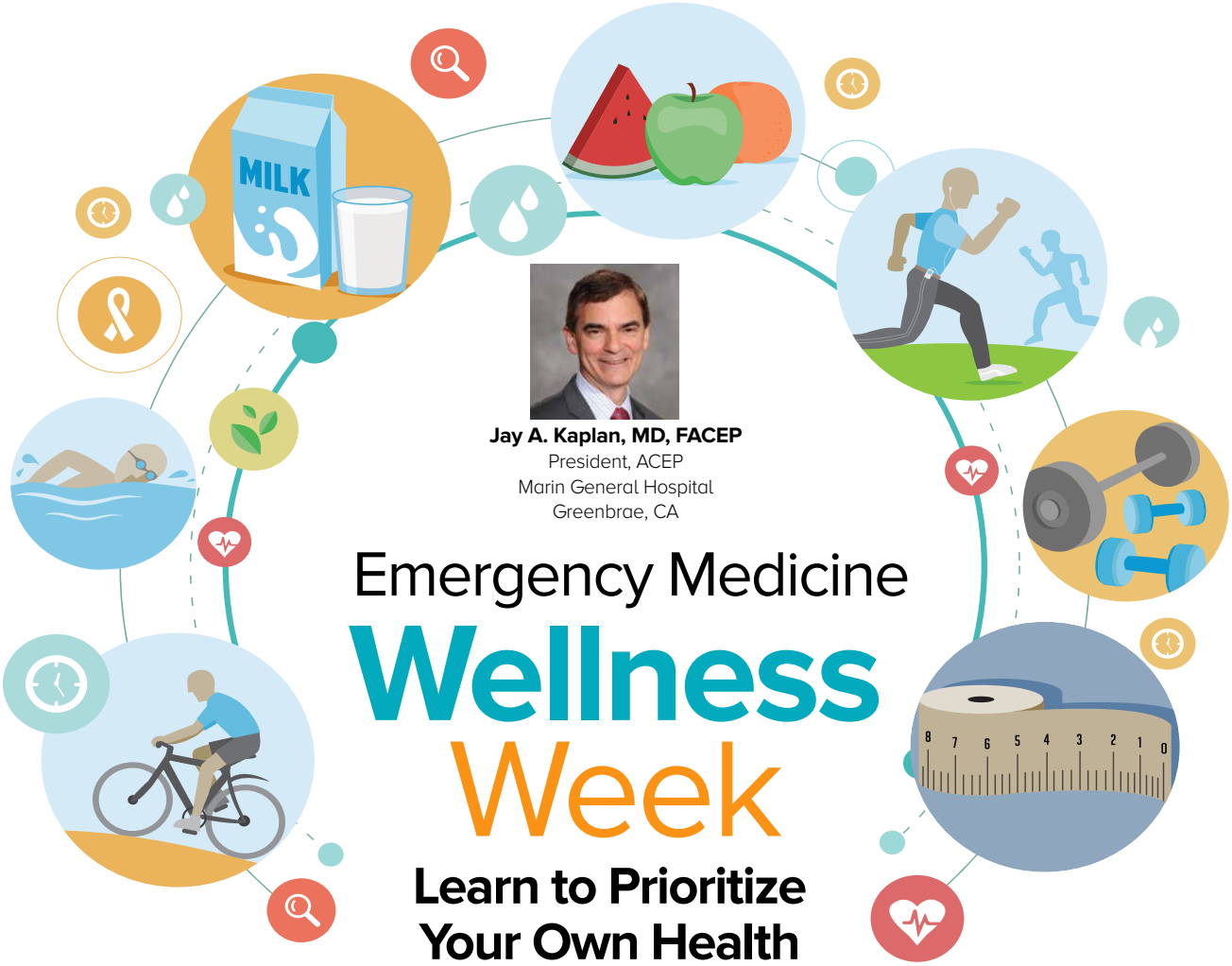
As of Dec. 31, 2014, 94% of eligible hospitals in the United States had been compensated for their participation in the CMS EHR incentive programs, and 9 out of 10 hospitals had adopted certified EHRs.[9] Six states had 100% participation of all eligible hospitals: Alabama, Delaware, Georgia, Maine, Vermont, and Wyoming.[11] Overall, the initial adoption of EHRs in hospital EDs has been successful; future focus should be placed on optimizing and achieving the intended goals of EHRs.

HIT and Our Role as EM Residents

The EMRA Informatics Committee is the interest group that investigates the use of technology for the improvement of health care systems. We parallel ACEP's support for the implementation of HIT and believe it will improve health care quality, efficiency, and safety. We encourage all EM residents to become involved in the effective introduction of HIT to emergency health care systems.

You can develop or join a committee that makes recommendations on how to improve your current EHR system, or work to increase the number of lectures on HIT and informatics in your didactic curriculum. As residents, we are the future of emergency medicine, and we will have to function in a clinical workflow that is strongly influenced by HIT. By getting involved now, we will be in a better position to further develop and introduce new forms of HIT to our field. ✶

It is essential for EM physicians to take an active role in introducing health care information technology to emergency health care.



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Emergency Medicine Wellness Week

Learn to Prioritize Your Own Health

ACEP as a representative organization of 34,000 physicians has a dual focus: On the one hand we promote the value of our specialty to our patients and those in government and industry who provide payment for our services; at the same time we work hard at creating a fulfilling work environment and satisfying career for our members who work 24/7/365. As emergency physicians, we care a lot about our patients. That's why we chose this specialty. But all too often we are so busy caring for others, we forget to care about ourselves. That's why this year we invite you to participate in the first Emergency Medicine Wellness Week™, Jan. 24-30, 2016.

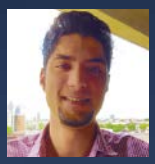
The purpose of our inaugural Emergency Medicine Wellness Week™ is to remind all emergency physicians and staff to take the time to self-renew while working the long and at times very difficult hours we do. We want this week to be about action rather than just ideas. Everyone makes resolutions around the New Year; we hope this week will help us and our colleagues make commitments to become healthier, less burned out, and more resilient.

The ACEP website will have all the information you'll need. First step will be to fill out an anonymous pledge card selecting your areas of focus for the week. We want you to print it out and stick it on your refrigerator, your mirror, anywhere you'll see it every day. We'll provide you with suggestions in 3 major areas:

1. **Physical**
   - Eat healthy
   - Drink water, not soda
   - Exercise
2. **Connection**
   - Spend time with family and friends
   - Connecting to your spiritual self
   - Do 1 community project
3. **Career enhancement**
   - Recognize and decrease burnout
   - Develop a new networking contact
   - Plan your next career move

Or you can make your own pledge. You can sign up to receive daily messages about wellness for that week. These messages not only will help you keep on track, but also — and more important – will introduce you to resources to help improve your wellness that week and beyond.

At the end of the week, we'll ask you how you did. We'd like to tally up total distance walked by all participants that week and the total amount of weight lost. We also want to learn what worked for you. Primarily, at the end of the week, we want you to feel better – about yourself, about your family/friends, about your patients, and about your work. We'd like you to remember, once again, why you chose medicine, and emergency medicine, for your life's work – and to be proud and happy with that decision. So mark the week on your calendar, and watch for emails about our first Emergency Medicine Wellness Week™! Sign up, make your selection, and make a change in your life for the better, if only for 1 week. Spend a week taking care of you. ✶



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When Lightning Strikes

A 54-year-old male is brought in by ambulance after being struck by lightning while wiring a house with grounding poles. He was awake at the scene and does not believe he lost consciousness, but reports a transient episode of bilateral lower extremity weakness. Upon arrival to the ED he complains of persistent bilateral thigh numbness. His primary survey is intact, though he is noted to be mildly tachycardic. He has a punctuate abrasion on the right upper lip and on the volar aspect of the right forearm. His EKG shows isolated T-wave inversions in leads III and aVF. (Figure 1). His creatinine is 1.3, a CK is 764, and his troponin is normal. He is hydrated and admitted for observation. His CK peaks at 1708, but he remains stable overnight and is discharged home the next day.

Background

Electrical shock is a relatively common occurrence with a wide range of severity, ranging from simple static shocks to severe, high-voltage lightning capable of causing immediate death. A basic understanding of electrical injury is important to understanding the injury patterns it causes. Circuits may consist of either an alternating current or a direct current, and injuries are often divided into high voltage (>1,000 volts) or low voltage (< 1,000 volts). The hertz encountered in most home circuits cycles with a frequency that matches the muscle cell's ability to contract and relax, thereby potentially causing tetany. This increases the duration of contact and current delivery. Thoracic muscle tetany involving the diaphragm and intercostal muscles can result in respiratory arrest. The repetitive nature of an alternating current also increases the likelihood of current delivery to the myocardium during the vulnerable recovery period of the cardiac cycle, which can precipitate ventricular fibrillation. In contrast, lightning is a direct current, which usually causes a single violent muscle contraction, often thrusting the victim away from the source.

The physics of lightning are far different from man-made electricity. Unlike generated electricity, which is a voltage phenomenon, lightning is a current phenomenon.[1] Probably the most important difference between lightning and high-voltage electrical injuries is the duration of exposure to the current, which also affects the path it takes.[2] A bolt of lightning has a massive current, usually ranging from 5,000 all the way up to 200,000 amperes, the typical range being between about 10,000 and 50,000. Since these currents are only applied for 10 to 100 ms, energy transfer to the body is therefore limited.[3]

There are several paths through which lightning may strike an individual. A direct strike is when a lightning bolt makes direct contact with the victim. While most people think first of this mechanism when considering lightning injuries, it is by far the least common. **Most frequently, people are injured through ground currents created by a nearby strike.** In this mechanism, lightning's subterranean current will preferentially enter a human above ground, typically passing from one leg through the other. This occurs because the resistance of human tissue is usually far less than the resistance encountered underground. Splash strikes and contact injuries make up the rest of lighting-related injuries and have the most potential for large-scale mortality. In splash strikes, the massive electrical current is transferred to a single object so quickly that portions of it branch out (or "splash") through the air and strike other targets, like in a short-circuit. In contact injuries, individuals in contact with a highly conductive substance (such as a metal rod or structure) that has been struck receive portions of the current discharged in the strike.[4]

Incidence

Estimates regarding risk and epidemiology of lightning-related injuries vary according to the source. About 70% of lightning strikes worldwide are non-fatal, and the annual total number of deaths worldwide is estimated to be between 1,000 and 24,000.[5-7] However, lightning does represent a major weather-related health risk, and was second only to floods in terms of mortality between 1962 and 2002.[5] It has been estimated that the lifetime risk of any one individual being struck by lightning in a year is low (ranging from 1 in 240,000 to 1 in 960,000), though **when accounted for an average length lifespan, the odds of being struck at some point significantly increase to about 1 in 3-12,000.**[5,8]

In the United States, lightning deaths are highest in Florida and Texas, where topography is generally flat and populations are higher. In contrast to worldwide mortality rates, in the United States fatality from lightning strikes is only about 10%. The total number of fatalities has been declining, down from about 330 per year in the 1940s, to 25-50 per year since 2000. As of Nov. 1 this year, only 26 lightning-related fatalities have been reported in the U.S.[5,9]

Scene Safety and Prevention

While there truly are no 100% secure places to hide during a lightning storm, risk can be significantly reduced by staying inside a large building, away from windows. Living structures tend to have metal piping and wiring within the walls that will deflect current away from the occupants, so long as the occupants are not in contact with the internal structure. While a basement tends to be safer, it is recommended that individuals stay away from bare concrete, as it often contains rebar or other metal reinforcing elements that increase the likelihood of electrical current transmission. If a solid structure is not available, a hard-topped vehicle offers the second most effective means of shelter - again so long as the occupant is not in contact with a conductive substance.

Many lightning injuries occur while participating in outdoor activities where adequate shelter is not available. **The highest individual risk is seen in those participating in boating and water sports or mountaineering.** If along a ridgeline, it is suggested that climbers move to lower ground with less exposure and attempt to stay dry. For those on large bodies of water, it is recommended they return to shore as soon as there is evidence of an impending electrical storm. If this is not possible, the safest location is below deck, if that is an option. Similarly, it is suggested that those participating in scuba activities also return to shore, but, if unable, diving to the deepest safe depth for the longest safe period of time is the recommendation. **Many people recommend the 30-30 rule for outdoor safety: If the time from flash to bang is 30 seconds or less, seek shelter for at least the next 30 minutes, or until the storm has clearly passed.**[5]

Cardiac Arrest from Lightning Injuries

Mortality from cardiac arrest is lower in lightning strike victims than in the general population.[3] **The cause of sudden death from a lightning strike is due to both cardiac and respiratory arrest, with the initial rhythm classically being asystole caused by the simultaneous depolarization of all myocardial cells.** Ventricular fibrillation can also occur, though it is more common in alternating current electrical injuries. In one small study, only direct strikes created echocardiographic abnormalities, which were at times severe (ejection fraction <15%), though recoverable.[10] Troponin elevations may be detected, unless the strike is limited to the lower extremities, as often occurs in a ground strike.

EKG Changes

Initial findings on EKG may include ST elevation, atrial fibrillation, or a prolonged QT interval (more common with direct strikes), but **the most common findings are a new right bundle branch block and T wave inversions.**[10,11] Most of these findings resolve within 3-14 days, but may be present as long as 12 months. It is important to note that delayed onset of symptoms and EKG changes have been reported as far out as 3 days.[10] Discharged patients should be counseled to return should they experience new chest pain or shortness of breath. Labile blood pressure and autonomic instability are possible after lightning strikes.[12] According to the Wilderness Medical Society practice guidelines for the prevention and treatment of lightning injuries, it is a Grade IC recommendation to obtain a screening EKG and echocardiogram on high-risk patients.[13] *(Table 1)*

TABLE 1. High-Risk Patients[13]

Suspected direct strike
Loss of consciousness
Focal neurologic complaint
Chest pain or dyspnea
Cranial burns, leg burns, or burns >10% TBSA
Major trauma
Pregnancy

Black Tags and Triage

Lightning strike patients should be approached with a "reverse triage" system, since these cardiac arrest victims typically have a higher survival rate than the general population. Direct electrical injury because of lightning is similar to a single direct current defibrillation. This high-current, high-voltage strike creates a cardiac stunning effect because of massive depolarization, after which the heart often starts spontaneously beating. In addition to cardiac depolarization, the sudden electrical stun can temporarily paralyze the medulla's respiratory center, leading to prolonged apnea, even in the presence of circulatory recovery.[14] If these patients' airways are not secured or breathing not assisted, secondary arrest from hypoxia may occur. For this reason, **the standard "START" triage algorithm that would suggest a "black" designation for patients not spontaneously breathing is discouraged**. It is a grade 1C recommendation to resuscitate victims without vital signs.[14]

Neurologic Manifestations

Neurologic symptoms can range from transient to life-threatening. One particularly striking finding occasionally seen is keraunoparalysis. This is a transient paralysis that preferentially affects the lower limbs. It is thought to be the result of

overstimulation of the autonomic nervous system resulting in vascular spasm, and it typically resolves within a few hours. **Keraunoparalysis can mimic a spinal injury, thus spinal precautions should be maintained and appropriate imaging studies performed as indicated.** There are more serious neurologic injuries associated with lightning strikes, including lightning-induced intracranial hemorrhage and hypoxic-ischemic encephalopathy. Progressive myelopathy can also result in delayed weakness months after the initial injury.[15]

Skin

The rarely-seen Lichtenberg figure is a unique skin finding that is pathognomonic for lightning injury. It is often described as "ferning" or "feathering" on the skin and generally appears within 1 hour and lasts less than 24 hours. While there are some theories, the exact mechanism for how this finding develops is still not certain. No treatment is required; however, further evaluation for other injuries is warranted. **Burns are also common with lightning injuries and can occur from direct electrical injury, superheating of metals in contact with the body, or from vaporization of sweat or water on the skin surface.** Typically, most burns are superficial and tend to heal quickly. They can be treated with routine burn care.[16]

Other Concerns

The most frequently encountered injury associated with lightning strikes is tympanic membrane rupture, which may be present in up to 60% of cases.[17] Uncomplicated ruptures usually heal spontaneously and can be managed conservatively. Ocular injury can also occur, with the lens being the most commonly affected eye structure. Cataract development may occur between 2 days and 4 years after the injury.[18] Sensorineural deafness is also common after a lightning strike, but it is usually transient.[17] It is a grade 1C recommendation to perform an evaluation for tympanic membrane integrity in all lightning strike victims. For any patient with hearing loss, follow-up with an otolaryngologist should be arranged.

With the massive direct current seen in lightning injuries, **it is not uncommon for the victim to suffer secondary traumatic injuries**, either from being thrown or from massive sudden contraction of large muscle groups. This often leads to long bone injuries and head trauma. A full trauma assessment should be performed on any lightning strike victim.

Post-strike psychiatric and cognitive dysfunction can also occur, and are typically divided into functional or behavioral categories. Functional deficits include abnormalities in memory and concentration, including a reduced capacity for problem solving. Behavioral problems include depression, sleep disturbances, emotional lability, and aggressive behavior. These syndromes typically develop in days to weeks after a lightning strike.[19]

Lightning and Pregnancy

Very little data exists regarding lightning strikes in pregnant patients, but it is estimated that fetal mortality approaches 50%. The fetus is likely at higher risk than the mother because it is surrounded by highly conductive amniotic fluid.[20] Lightning strikes have been reported to cause uterine rupture and induction of labor. As a result, it is a grade 1C recommendation that **pregnant women greater than 20 weeks' gestation who have been struck by lightning should be evacuated to a hospital for lightning-associated injury screening and fetal monitoring**. In general, pregnancies less than 20 weeks are not considered viable and do not require fetal monitoring.

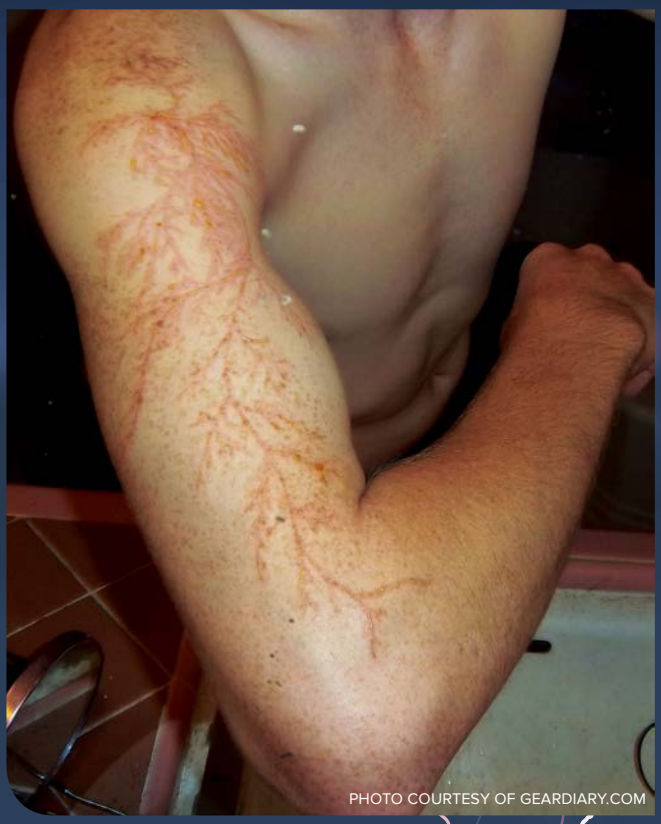
The Disposition

Patients suffering a direct lightning strike, or those with an abnormal screening EKG or echocardiogram, should be monitored with telemetry for a minimum of 24 hours.[10] This a grade IC recommendation according to the Wilderness Medical Society practice guidelines for the prevention and treatment of lightning injuries. Other injuries and findings should be addressed at the physician's discretion, and as per standard management.

Conclusion

While often overlooked as a rare disease entity, lightning-related injuries are among the more common weather-related health hazards. A basic understanding of the associated findings and injury patterns is essential for any emergency practitioner, especially those who work in high-strike areas or with high-risk patient populations. ✶

Lichtenberg figures (as shown) can appear on the skin following a lightning strike; science hasn't determined the exact mechanism of this development.



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PAIN IN THE NECK

Cervical Spine Imaging in Pediatric Trauma

A 4-year-old boy is brought to the emergency department after a high-speed motor vehicle collision. He was the restrained backseat passenger of a vehicle that was rear-ended at 50 mph while stopped in traffic. On your initial examination, vital signs are significant only for tachycardia. GCS is 15, and he has no other obvious distracting injuries. He has a cervical collar in place and is crying hysterically. You find it difficult to discern if he has any midline cervical spine tenderness and begin to wonder: Does this patient need cervical spine imaging? If so, what type of imaging should be obtained? Can I apply the same clinical decision rules that I use in my adult patients?

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Age-related anatomic differences and injury patterns, as well as difficulties with the physical exam, make clearing the cervical spine (C-spine) one of the most challenging aspects of pediatric trauma care. While cervical spine injuries (CSIs) are relatively rare in this patient population (<1%), they can be associated with significant morbidity and mortality.[1] As an emergency physician, you must be proficient in evaluating pediatric patients for traumatic CSI.

Background

The pediatric C-spine remains underdeveloped until at least 8 years of age, at which time it begins taking on characteristics of an adult C-spine.[2] Young children in particular have larger and heavier craniums relative to their body size, resulting in a higher center of gravity and fulcrum for cervical motion (C2-C3 versus C5-C6 in adolescents and adults).[3] In addition, their paraspinal musculature is underdeveloped, ossification centers have not yet formed, and interspinous ligaments have greater laxity. **These characteristics place young children at a dangerously increased risk for higher level CSI and ligamentous disruption**. Not surprisingly, 60-80% of all pediatric spine injuries occur in the C-spine, compared to adults, in whom CSIs comprise only 30-40% of all spine injuries.[4]

The most common causes of pediatric CSI include motor vehicle collisions (MVCs), falls, pedestrian accidents, and bicycle collisions, with MVCs spanning all ages but much more commonly causing significant CSI in young pediatric patients. Older children and adolescents are additionally at risk for sports-related CSI, diving incidents, and accidents involving other forms of motorized transportation.[5]

When evaluating a pediatric trauma patient, it is also important to consider any other congenital or acquired comorbidity that may predispose them to CSI. Specifically, children with Down syndrome are at increased risk for C1/C2 subluxation due to their relative atlantoaxial instability and articular mobility. Isolated congenital vertebral anomalies such as os odontoideum (separation of the odontoid process from the body C2) can cause serious CSI from even minor trauma. Juvenile rheumatoid arthritis and osteogenesis imperfecta, as well as other rare predisposing medical conditions — Klippel-Feil syndrome, Larsen syndrome, and Morquio syndrome — should also raise one's suspicion for CSI in the appropriate clinical setting.[6]

Decision Rules

Clinical decision rules such as the NEXUS criteria and the Canadian C-spine Rule are frequently utilized in adult trauma. Unfortunately, the Canadian C-spine study excluded all patients younger than age 16 and has not been validated in the pediatric population.[7] On the other hand, the NEXUS study included 3,065 patients under the age of 18. In a subset analysis, the NEXUS criteria had a 100% sensitivity and a 19.9% specificity for detecting clinically significant CSI in pediatric victims of blunt trauma.[1]

TABLE 1. NEXUS Criteria for C-spine Imaging

No focal neurologic deficit
No midline spinal tenderness
No altered level of consciousness
No intoxication
No distracting injury presents

Of these 3,065 patients, only 30 (0.98%) were found to have CSI. Of the 30 injured patients, only four were under the age of 9, and none were under 2 years of age. Thus, almost all of the pediatric CSIs in NEXUS occurred in older children. This could be explained by the fact that CSIs in young children are either extremely rare, or that they are extremely lethal. Most experts, including the study authors, conclude that **it is reasonable to endorse the use of the NEXUS criteria in pediatric patients over the age of 8**. For younger pediatric patients, for now, clinical acumen may need to play a larger role.

Imaging

Once it is determined that further evaluation of the C-spine is warranted, the imaging modality must be selected. CT is not always the answer! In children who have a relatively benign mechanism but fail NEXUS, or who warrant imaging at the provider's discretion, **plain films are often adequate to rule out clinically significant CSI**. A two-view (AP and cross-table lateral) series of the C-spine provides 80% sensitivity. Particularly in a patient population at risk for high CSI, adding an odontoid view increases the sensitivity to approximately 90%.[8] That being said, the biggest challenge in using radiograph to rule out C-spine fracture is obtaining adequate films. Plain films must fully evaluate the entire cervical spine through the C7/T1 junction. Of note, there is little evidence to support the use of flexion/extension films to rule out ligamentous injury in this patient population. If clinically suspected, it is prudent to obtain more advanced imaging.[9]

Despite concern for radiation exposure, CT of the C-spine does have a role in the following circumstances: inadequate plain films, suspicious findings on radiograph, fracture or displacement seen on radiograph, or if there is a high clinical suspicion based on mechanism, history, or physical examination.[10,11] The sensitivity and specificity for CT is approximately 98% for a clinically significant C-spine fracture.[12,13] Despite this increased sensitivity and specificity compared to radiograph, a 2004 study published in *Emergency Radiology* reviewed CT scans of over 600 pediatric patients under the age of 5 undergoing evaluation for cervical spine trauma. In this study, four CSIs were identified both on plain film and on CT. **There were no instances where CT scan detected new fractures or dislocations that were not evident on plain films**.[14]

Magnetic resonance imaging (MRI) also has a place in the acute evaluation of the pediatric C-spine. SCIWORA (Spinal Cord Injury without Radiographic Abnormality) is a commonly used term to describe objective findings consistent with spinal cord injury despite normal plain films or CT scan. Since MRI is significantly more sensitive in revealing spinal cord injury, ligamentous injury, and disc herniation, it should be considered for any patient with neurologic symptoms or significant persistent neck pain. Even transient neurologic symptoms should be evaluated, as up to 25% of affected children will go on to develop permanent neurologic symptoms.[15] While there are obvious downsides to MRI — cost, time to obtain the study, and need for sedation in younger children — **when it comes to diagnosing spinal cord injury, the benefits far outweigh the risk**. Any trauma patient with a neurologic deficit should be transferred to a pediatric trauma center for early pediatric neurosurgical consultation.

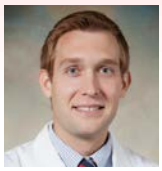
Conclusion

As an emergency physician, you will be called upon to evaluate pediatric patients for traumatic CSI. The good news is that CSIs are quite rare in the pediatric population. The bad news is they can be associated with significant morbidity. While the use of clinical judgment is paramount for very young pediatric patients, the NEXUS Criteria for C-spine imaging has been widely accepted for older children. If a patient fails NEXUS but you still have a high clinical suspicion for CSI, consider plain films as an alternative to the higher radiation exposure of computerized tomography. If any neurologic deficit is present despite normal radiograph or CT, MRI is the imaging modality of choice. ✶

It is reasonable to endorse the use of the NEXUS criteria in pediatric patients over the age of 8.

CAN'T-MISS ECG

Wolff-Parkinson—Wait!



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A healthy 28-year-old male with no past medical history presents to the emergency department with palpitations and dizziness. Vital signs are within normal limits except for a recorded heart rate of 220 bpm. An ECG is obtained (Figure 1).

Questions to Consider

1. What is the rhythm?
2. What treatment options must you consider?

There is a concern for atrial fibrillation (AF) with pre-excitation from an accessory pathway. Defibrillation pads are placed on the patient, and the decision is made to electrically cardiovert. A post-cardioversion ECG confirms the suspected diagnosis of AF with Wolff-Parkinson-White (WPW) (Figure 2).

Discussion

The first step in managing this potentially critical patient is to correctly identify the presenting rhythm. Ask yourself three simple questions:

1. Is the rate fast or slow?
2. Is the rhythm regular or irregular?
3. Is the QRS complex wide or narrow?

By asking yourself these simple questions off the bat, **you will diagnose this rhythm as an irregular wide complex tachycardia.** The differential diagnosis for an irregular wide complex tachycardia (WCT) includes polymorphic ventricular tachycardia (PVT); AF with aberrant conduction (bundle branch block or non-specific intraventricular conduction delay); and AF with pre-excitation (WPW).[1]

How do we know this is AF with WPW? In normal physiological cardiac conduction, an impulse is generated at the sinus node and travels to the AV node, resulting in atrial contraction (P wave). A conduction delay at the AV node (PR interval) allows the ventricles to fill. Finally, the ventricles are depolarized via the His-Purkinje system (QRS complex), and the ventricles simultaneously contract. In WPW, initial depolarization of the ventricle results via an accessory pathway known as the bundle of Kent. The early activation of the ventricle results in a shortened PR interval and a slow initial upstroke of the QRS complex. This occurs while the rest of the signal propagates normally through the AV node. **Thus, a shortened PR interval, a widened QRS, and a delta wave make up the classic triad seen in WPW.**[2]

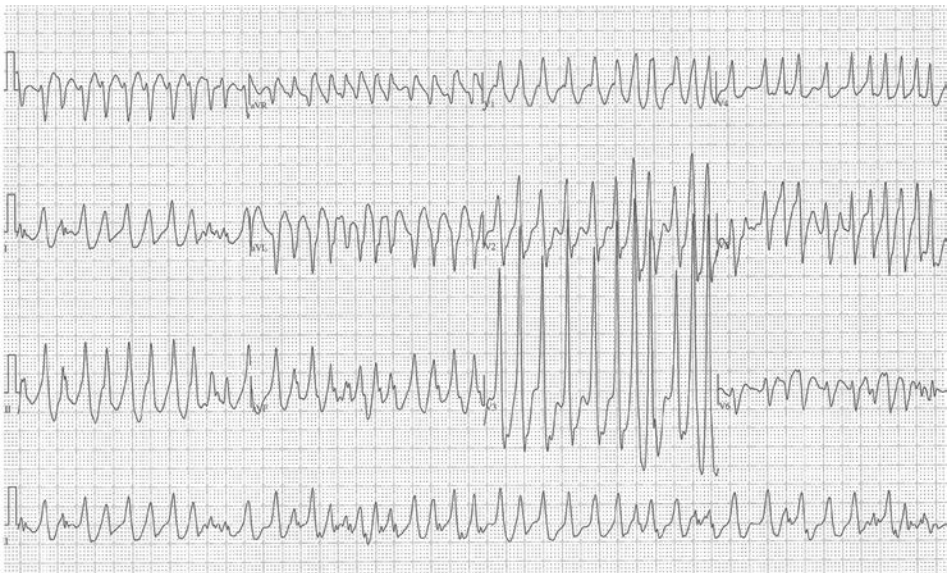


FIGURE 1. Atrial fibrillation with WPW. Note the rapid rate, irregularly irregular rhythm, and wide QRS with changing morphologies.

The first step in managing a potentially critical cardiac patient is to correctly identify the presenting rhythm. A shortened PR interval, a widened QRS, and a delta wave make up the classic triad seen in WPW.

In AF with WPW, some of the atrial impulses travel down the normal pathway, while others travel down the accessory pathway. This results in a recognizable ECG that is distinct from other irregular WCTs in several important ways. First, because of the accessory pathway, **the rate is >200 bpm and at times approaches 300 bpm**. Second, because of simultaneous conduction through both the accessory pathway and the His-Purkinje system, **the QRS complex is wide (>0.12 seconds) and has varying bizarre morphologies.** Finally, the axis is stable and not undulating, which differentiates it from PVT.[1]

Treatment

It is imperative to recognize AF with WPW, as **incorrect treatment with AV nodal blocking agents can be fatal.** Blocking the AV node in these patients will result in preferential use of the accessory pathway. Rates may exceed 300 or 400 bpm and are at extreme risk for degeneration into ventricular fibrillation (VF). Thus, an irregular wide complex tachycardia with rates approaching 300 bpm, bizarre and varying QRS morphologies, and a stable axis, must be treated as AF with WPW until proven otherwise. **Procainamide (50-100 mg every 2 min to a max dose of 17 mg/kg) or ibutilide (0.01 mg/kg maximum 1 mg over 10 min) are the treatments of choice** for chemical conversion.[4] Amiodarone is controversial but has been known to cause decompensation into VF, due to its calcium-channel blocking and beta-blocking effects.[5] Electrical cardioversion is the treatment of choice for unstable patients, however it is also an acceptable treatment for stable patients. Finally, it is recommended that cardiology be involved early to further guide your treatment decisions.

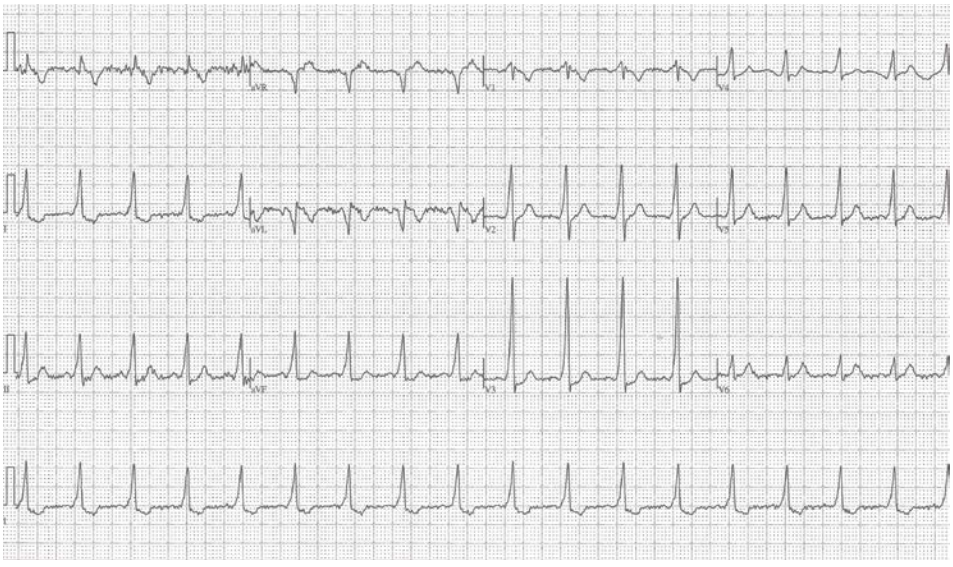


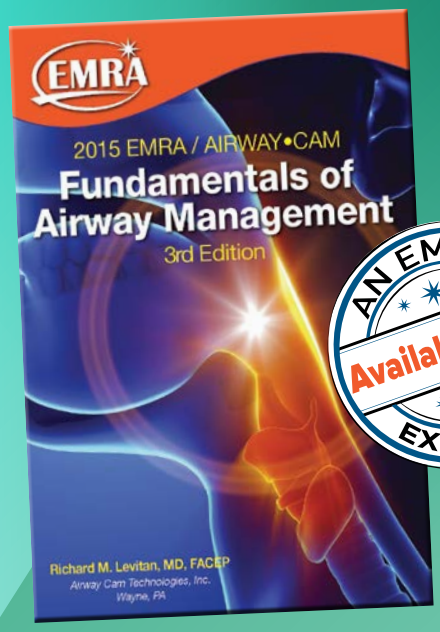
FIGURE 2. Normal sinus rhythm and WPW. Note the shortened PR interval, wide QRS, and delta wave.

Other Tachyarrhythmias

Because of the accessory pathway, WPW can also present as an atrioventricular reentrant tachycardia (AVRT). **Orthodromic AVRT is a regular *narrow* complex tachycardia**, whereas **antidromic AVRT is a regular *wide* complex tachycardia**. Note that regularity distinguishes both of these rhythms from AF.

In orthodromic AVRT, an impulse leaves the SA node, travels normally through the AV node, and then back to the atria through the accessory pathway. In antidromic AVRT, the impulse travels from the SA node to the accessory path first, and then travels back to the atria via the AV node. Ventricular depolarization via the accessory pathway occurs slowly and results in a widened QRS complex.[3]

WPW with orthodromic AVRT looks identical to run-of-the-mill paroxysmal supraventricular tachycardia (SVT) and can be treated as such. Vagal maneuvers or AV nodal blocking agents are the treatment of choice, as they slow conduction through the AV node and disrupt the re-entrant circuit. On the other hand, WPW with antidromic AVRT will look identical to ventricular tachycardia (VT). Since it is virtually indistinguishable, it should be treated with procainamide, amiodarone, or electrical cardioversion in the case of an unstable patient.[1] ✶



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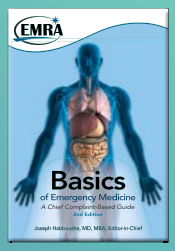

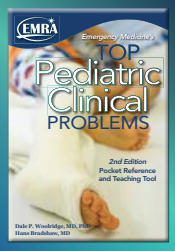

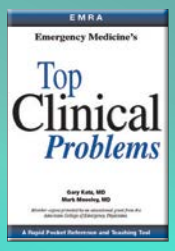

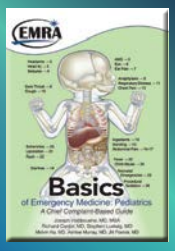

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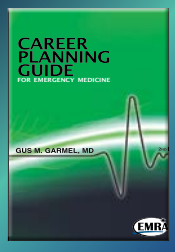

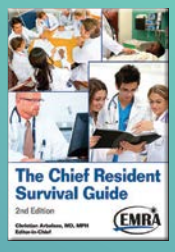

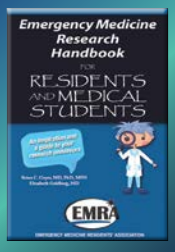

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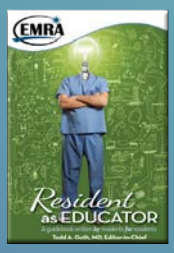

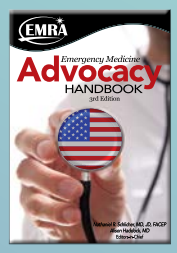

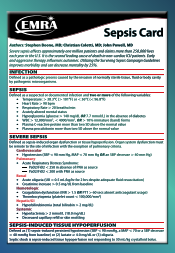

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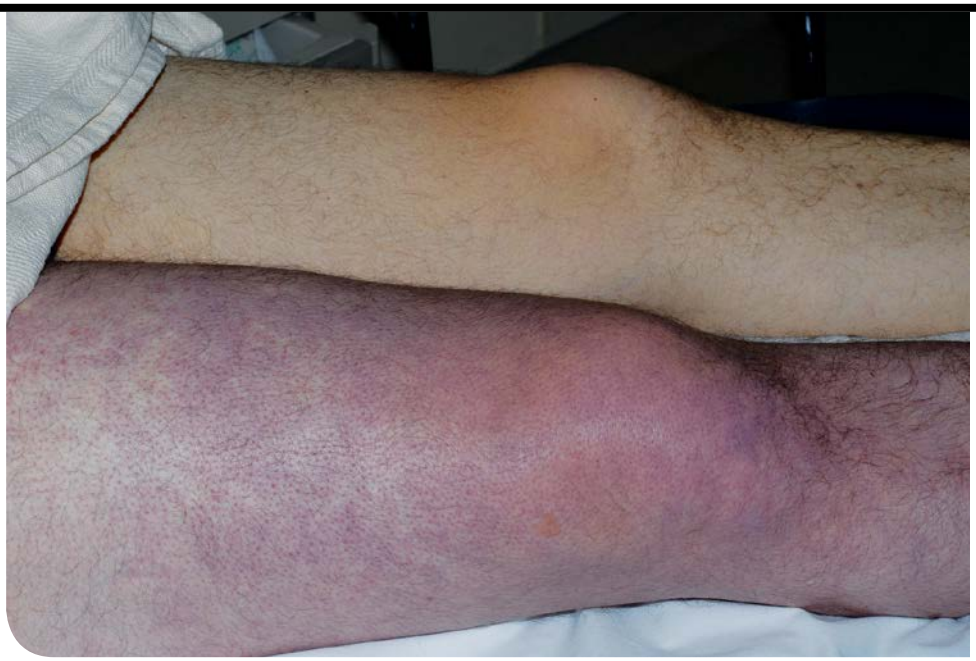
Phlegmasia cerulea dolens and venous gangrene are rare but life- and limb-threatening disease entities that require timely evaluation, resuscitation, and intervention.



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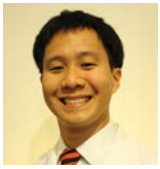

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RISKING LIFE AND LIMB

Management of Phlegmasia Alba and Cerulea Dolens

A 65-year-old woman with a history of breast cancer is brought to the emergency department with one day of left leg swelling, followed by the development of severe pain and discoloration today. Vitals signs are remarkable only for tachycardia with a HR of 110. Physical examination shows a tense, edematous, tender left leg with mottling and cyanosis. Bedside ultrasound reveals no compression of the left common femoral, saphenous, or popliteal veins. What are your next steps in management?

Introduction

Phlegmasia alba and cerulea dolens are rare diseases along a spectrum of deep venous thromboses. Phlegmasia alba dolens, which translates to "painful white inflammation," occurs when venous thrombosis progresses to a massive occlusion of the major deep venous system of the leg, but without ischemia as collateral veins are still patent. Phlegmasia cerulea dolens translates to "painful blue inflammation" and is the next progression of the disease, characterized by complete thrombosis of the deep venous system, including the collateral circulation. This results in significant venous congestion, fluid sequestration, and worsening edema. **Untreated, it will progress to venous gangrene and cause massive tissue death.**[1]

The overall incidence of this disease process is not well documented, but it does occur more frequently in women, in the fifth and sixth decades of life, and in the left lower extremity compared to the right.[2] Most patients have associated risk factors such as malignancy, hypercoagulable state, surgery, trauma, inferior vena cava filter placement, pregnancy, or May-Thurner syndrome. The most common risk factor is malignancy, which is seen in 20-40% of cases.[3] May-Thurner syndrome results in venous thrombosis secondary to an exaggeration of normal anatomy in which the left common iliac vein is compressed by the overriding right common iliac artery. Similarly, in pregnancy, a gravid third trimester uterus can become large enough to compress the iliac vein against the pelvic rim and cause venous stasis.[1]

Clinical Features

Symptoms occur 3-4 times more often in the left leg compared to the right leg, whereas upper extremity involvement is uncommon (<5%).[2] Duration of symptoms can be gradual or sudden. Phlegmasia alba dolens presents as a triad of edema, pain, and white blanching skin without cyanosis. **As the venous thrombosis progresses, it develops into**

phlegmasia cerulea dolens, which is characterized by edema, worsening pain, and cyanosis from ischemia. About 50% of the cases of phlegmasia cerulea dolens are not preceded by phlegmasia alba dolens.[1] The cyanosis begins distally and progresses proximally as ischemia worsens. This process can result in massive fluid sequestration and the development of skin bullae and blebs.[4] Further progression results in venous gangrene when muscle ischemia becomes infarction. Compartment pressures will increase, and patients may even experience hypotensive shock because of fluid sequestration and a severe systemic inflammatory response.[1]

Evaluation

While contrast venography is commonly described in the literature, it is rife with complications such as contrast administration in patients that may have renal failure and incomplete imaging because of severe burden of disease. Magnetic resonance venography (MRV) can identify the proximal and distal ends of venous thrombosis, but it is limited by time and motion artifact in patients with severe pain.[5]

Ultrasound is the best initial imaging method for suspected deep venous thrombosis and phlegmasia alba and cerulea dolens. Point-of-care bedside ultrasonography in the emergency department can be easily performed and is preferred in the critically ill patient.[6] At this time, two-point compression ultrasonography as a diagnostic evaluation specifically for this purpose has not been studied, but would likely be highly sensitive and specific given that the entire disease spectrum is defined by the continuously propagating massive clot burden.

Management

The initiation of anticoagulation for deep venous thrombosis is standard and routine care. The management of phlegmasia alba dolens and mild cases of phlegmasia cerulea dolens includes initiation of heparin infusion, warfarin bridging, fluid resuscitation, and steep limb elevation. Low molecular weight heparins have not been effectively studied in the setting of phlegmasia alba or cerulea dolens.[7]

Decisions regarding management of more severe cases of phlegmasia cerulea dolens, however, are still evolving. **Systemic or catheter-directed thrombolytic therapy, versus surgical or catheter-directed mechanical thrombectomy, is still a topic of debate.**[4] While there are no current guidelines regarding the best method of intervention, it is widely accepted that medical management alone is insufficient and could result in amputation or death. These patients require emergent consultation with vascular surgery and/or interventional radiology, and should be started on heparin anticoagulation if there will be any delay in intervention (such as an inter-facility transfer).

Minimally invasive endovascular approaches may offer similar outcomes with less morbidity when compared to open surgery, but no studies have clearly identified superiority.[8] Institutional resources and specialist expertise should determine management of phlegmasia cerulea dolens and venous gangrene. **Even with aggressive intervention strategies, the overall amputation rates are 12-25% among those who survive**.[3]

Pulmonary emboli are a common complication and should also be considered during evaluation and treatment. **The overall mortality rate for phlegmasia cerulea dolens is 20-40%** and pulmonary emboli are believed to be responsible for 30% of these deaths.[4] Inferior vena cava filter placement is generally recommended, but there is a paucity of data for this as well.[9]

Patients may compound their clinical crisis if they develop heparin-induced thrombocytopenia (HIT). There is currently little guidance on the usage of alternative agents in this specific population. Danaparoid is no longer available in the U.S., and lepirudin has been discontinued by Bayer HealthCare. Data regarding the usage of direct thrombin inhibitors such as argatroban and bivalirudin, or indirect factor Xa inhibitors such as fondaparinux, are represented by only a few case series.[10]

Conclusion

Phlegmasia cerulea dolens and venous gangrene are rare but life- and limb-threatening disease entities that require timely evaluation, resuscitation and intervention. Diagnosis is often made clinically, but rapid point-of-care bedside ultrasound can be used as an adjunct. Timely anticoagulation and coordination with vascular surgeons and/or interventional radiologists is necessary, but strategies may evolve as more robust literature becomes available. ✶

WHY PURSUE Pediatric Emergency Medicine?

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Emily Rose, MD, FAAP, FACEP
LA County + USC Medical Center
Los Angeles, CA

Paula Whiteman, MD, FACEP, FAAP
Cedars-Sinai Medical Center
Los Angeles, CA

Why should an EM resident consider specializing in pediatric EM? What unique opportunities exist for pediatric EM physicians? One of ACEP's Pediatric Emergency Medicine Committee's passions is to develop resources to encourage emergency medicine residents to enter pediatric emergency medicine. *EM Resident* spoke with some members of the PEM Committee, along with career pediatric EM physicians and researchers Nathan Kuppermann, MD, MPH, FACEP, and Marianne Gausche-Hill, MD, FACEP, FAAP. Collectively, they capture the mind, heart, and spirit of pediatric emergency medicine.

Q. Dr. Kuppermann, why did you specialize in pediatric emergency medicine?

Nathan Kuppermann
Professor of Emergency Medicine and Pediatrics, Department of Emergency Medicine, University of California—Davis

As I arrive in Kathmandu, Nepal, on a post-earthquake medical relief mission, I am reflecting on why I became a PEM physician originally, and how my sense of purpose has evolved over time. In fact it was in Nepal nearly 30 years ago, on a yearlong adventure/medical mission in the middle of my residency, during which I served at a clinic that cares for the poor and indigent in Kathmandu, that I decided to become a PEM physician. During my first visit to Nepal I would start each day with a sense of purpose, aware of acutely ill and injured children needing my attention. Medical care at that time in Nepal was far from the technologically advanced medicine that I practice today. I treated children with bacterial meningitis with oral chloramphenicol, and cared for many children with typhoid, trauma, and other acute, exotic diseases with whatever resources available. If a patient was not responding to treatment for whatever reason, we would simply treat for tuberculosis – and would probably be on target. I was thinking on my feet as a PEM "wanna-be," and the children were needy and sick. My being there made a difference. There were no PEM physicians in Kathmandu at that time, and I knew I wanted to come back as a PEM physician in the future. The PEM physician has the skillset needed to treat any child in any place at any time. And here I am now, in post-earthquake Nepal, able to offer the skills of a PEM physician, skills that nobody else here has at their disposal.

In the decades since that original Nepal experience, my sense of satisfaction and fulfillment as a PEM physician has only grown. In the nearly 30 years since my first trip to Nepal, I have become a seasoned PEM practitioner, department chair, and researcher. I still have that same sense of purpose of 30 years ago, but now my purpose has shifted to training the next generation of PEM practitioners and conducting research into improving PEM care everywhere. This is the joy of the field of PEM: There are so many ways to contribute, and so much need in all of these areas. In the community, in which the great majority of children with acute illnesses and injuries are cared for, we need PEM specialists. And we need great educators using the latest technology and training methods to train the next generation of PEM practitioners. Finally we need PEM researchers to investigate the best ways to care for acutely ill and injured children, and to determine how to best translate and disseminate those new methods into practice.

So why did I enter the field of PEM? The answer is simple and the choice was easy. I became a PEM physician for three main reasons:

1. To care for any ill or injured child anywhere in the world, better than anyone else can;
2. To train the next generation of PEM clinicians to do the same;
3. And finally, to do the groundbreaking type of research in PEM that is needed to achieve those first and second goals in the best way possible.

It is what still motivates me today, right now, back in post-earthquake Nepal.

Q. Aren't emergency physicians supposed to be able to see "anyone, anything, anytime?" Why should an EM resident do a pediatric EM fellowship?

Emily Rose
Assistant Professor of Clinical Emergency Medicine. Director of Pediatric Emergency Medicine MSIV Selective, Keck School of Medicine of USC. LA County + USC Medical Center, Los Angeles, CA

Most sick kids are seen in the community by non-fellowship trained emergency physicians. There is a tremendous need for emergency physicians who are well-versed in the care of sick kids to be in hospitals throughout the country. There is a need for leadership in administration and education regarding the care of children. It is also great job security to have this niche!

There are pros and cons to each path to pediatric emergency medicine. Medical students often want to know which route to take if they know they want to end up in peds EM. Here I give a disclaimer: I am biased. I always recommend starting with EM and then doing a peds fellowship for very practical reasons. First, you can see anyone and work anywhere, which really opens up your options. Secondly, emergentologists perform a lot more procedures and resuscitations in residency than occurs in even the busiest/highest acuity PEM fellowship. You will be more comfortable with procedures and resuscitation if you train in EM. The downside is you have to work harder to learn pediatric things like developmental stages, feeding regimens, pediatric rashes, vaccination schedules, parenting advice, things that are important for care and parental education but less urgent. The dirty secret is that nobody is ever 100% comfortable when caring for a critically ill child because it is less common and there is so much at stake.

Christopher Amato

Director, PEM Fellowship
Medical Director
Pediatric Advanced Life Support
Memorial Hospital/Goryeb Children's Hospital
Morristown, NJ

Though an emergentologist can care for anyone at any time, it does not mean s/he is absolutely comfortable with doing so. This is what the extra training of a PEM fellowship can provide. It allows for further maturation of your already appreciable skills and adds a new tool kit to them. It will provide a foundation of comfort through direct exposure to a unique population that is unlike any other type of patient encounter. As an EM trained physician, you are already an exceptional diagnostician, skilled in a vast array of procedures – but this is because you have honed these with repetition and mentoring from other skilled physicians. The same should be realized for caring for the pediatric patient: It is a skill that needs to be honed by practice and mentoring. A brief period of training, as compared to a career, will be all that is required to not only add to your already formative arsenal but also make you an invaluable member to any institution fortunate to have you.

***Q:* Is there a difference between pediatric EM fellowships for pediatricians and emergentologists?**

Dr. Amato: The difference is the rotations that you would take and it only requires 2-3 years for EM as opposed to the 3 years for pediatric trained. The focus of the fellowship is to get comfortable with pediatric patients of all ages and to add to your abundant knowledge base. There is basic science education as well as research opportunities to add to the clinical knowledge too.

Q. Are there unique opportunities for leadership, teaching, and career development within pediatric emergency medicine?

Dr. Rose: There are endless opportunities for leadership in the PEM world. The EM world needs PEM experience in administration in child-centered protocols, hospital readiness, and quality of care. There is need for pediatric EM education in the EM world to improve the care of children from good to excellent. Additionally, having a career that is meaningful and accomplishing larger goals or a higher purpose is extremely important for job satisfaction and overall wellness.

Dr. Amato: There is a growing need for pediatric specialists, as anyone can attest if listening to the local hospitals tout "pediatric specialists are available." What could be more fitting than an emergency physician with innate knowledge and training in pediatric emergency medicine?

Q. What's the best part of your job?

Dr. Rose: Where do I start? I am lucky enough to have the best job in the world. I am challenged, educated, and deeply rewarded each shift. Every day is different; every day I learn something and have the opportunity to get better at what I do. The human body is amazingly complex and resilient, with layers of pathophysiology to better understand. Becoming a better physician is more than expanding your knowledge base, billing well, or seeing x number of patients per hour. We can all improve in so many areas. We can explain something better to a patient or parent, improve our bedside manner, give feedback a little bit better, resolve conflict more effectively, or gain new perspectives on life from those with another language, culture, socioeconomic status, or world view.

I have the pleasure of working with amazing residents and fantastic colleagues and LOVE going to work. I work about half of my shifts in the adult areas of the ED and half in the peds ED. I have so much fun in the peds ED with the cute and entertaining kids who are less often critically ill (but who can tank quickly when they are sick). Working with sick adults helps me stay comfortable with a crashing patient and the associated procedures that are less commonly required in kids. The variety of seeing both kids and adults is refreshing and helps me be better at both (I hope).

Dr. Amato: No one is ever so tall as when they stoop to pick up a child. Though I often consider my success with children due to the facts that I am their height and mentality level, there is nothing better than the belly-laugh of a 2-year-old who had fever and now is improving.

Q. Dr. Gausche-Hill, why did you specialize in pediatric emergency medicine?

Marianne Gausche-Hill: *Vice Chair and Chief of the Division of Pediatric Emergency Medicine/Director of Pediatric Emergency Medicine and EMS Fellowships, Harbor-UCLA Medical Center*

I went into pediatric emergency medicine because of a desire to learn as much as I can so that I could care for our most vulnerable patients. I enjoyed the thought of sub-specialization in an area of medicine that few had tackled so that I could assist our specialty in improving the lives of children and their families in emergency settings. The joy of taking care of pain, curing illness, and repairing injury in children is truly life-changing, both for the physician and her patients. Finally, advocating for those patients who do not have a political voice is rewarding and is necessary for improving access to emergency care and to improving the quality of care provided. ✶

UPCOMING EVENTS

- **Jan 24–30** — ACEP Wellness Week, Nationwide
- **Feb 3** — ACEP Lobby Day, Nationwide
- **Feb 15** — EMRA C&D Vice-Chair Applications Due
- **Feb 15** — EMRA Medical Student Council Applications due
- **Feb 15** — EMRA Spring Awards Deadline
- **Mar 2** — Emergency Medicine Residents' Appreciation Day
- **Apr 15** — EMRA C&D Applications Due
- **May 15** — ACEP Legislative Advocacy Conference and Leadership Summit, Washington, DC

The Focus

Mastering the Art of Multitasking

Sam Zidovetzki, MD
University of Wisconsin Hospitals and Clinics
Madison, WI

"Doctor, come quick!" The anxious words pierce my reverie as I sit at my desk, attempting to chip away at the stack of unfinished charts piling up from the shift. I had been completing documentation and musing over my patients – Lauren the 86-year-old female with chest pain in Room 2, Bob in Room 33 with an ankle fracture, and Howard having his monthly psychotic break in Room 4. My sick patient is Denise, a pleasant, 72-year-old female who has early septic shock and is getting fluids and antibiotics while awaiting ICU admission. As EM physicians **we are trained to be professional multitaskers**, juggling multiple patients with various complaints simultaneously, so today is just an ordinary shift, but the plea for help immediately snaps me back to the reality of my environment. Being a good multitasker also means that when a nurse frantically runs out of a patient's room yelling for help, Lauren, Bob, Howard, Denise, and their problems all take a temporary back seat.

Arriving in the room, my eyes naturally jump to the patient, and then to the monitor, scanning for clues to the situation. "Doctor, I was about to wheel this patient to her bed upstairs… then she stopped responding," explains the nurse. I didn't really know the patient – she had been signed out to me as "a lady with stage 3 ovarian cancer, diabetes, and a recent surgery, being admitted for weakness with a new minimal oxygen requirement." She was "stable" and awaiting an inpatient bed – nothing to do. Until now. I find that she is pale and cool, and the pulse oximetry monitor is blaring out a low frequency dronal tone, contrasting with my quickly rising pulse. I don't have to look at the numbers on the monitor to know what that low-pitched tone means. It's a sound every emergency physician dreads.

"Ma'am, ma'am, wake up!" I yell, but she isn't responding. Pinching her forearm does nothing to change her lifeless stare. Glucose… normal. Naloxone… no effect. She starts to gurgle as the oximetry tones continue to drop, and the nurse is now holding her in a jaw thrust. Out of the corner of my eye I can see the tech grabbing a nonrebreather. She's buying herself plastic between her cords.

Staff prep time gives me just a second to look through previous notes – and I see "multiple attempts required for intubation," "difficult intubation," "inadequate view" stamped all across her chart. "Great," I mutter, as my mind is thinking of expletives. **I know next to nothing about this patient, except the fact that what I'm about to do for her is probably going to be very hard.** Briefly I wonder how this development will affect my six other patients scattered around the department. Refocusing, I inhale deeply and turn to the task at hand.

"Is everyone ready to intubate?" I ask, acutely aware of the rising tension in the room. With all equipment ready, we administer the sedative, quickly followed by the paralytic. As what's left of our patient's respiratory drive dissolves, her sats continue to drop, and now we're toying with oxygen sats in the 70s. Spreading open her mouth with one hand, **I place a laryngoscope blade into her vallecula and take a good look at life or death**.

Epiglottis. That's it. No cords, no arytenoids, nothing. Seconds are turning into hours as beaded sweat forms on my brow. Repositioning the head, cricoid manipulation – nothing seems to bring any other identifiable structures into view. Meanwhile I can hear the monitor behind me tick below 70%. The multitasker in me has become one singularly-focused person, intent only on the task at hand, and oblivious to the needs of Denise, Howard, or any other patient. **In this moment,**

there is only one patient, and she needs a definitive airway, and quick.

I grasp a bougie and slide it underneath her epiglottis, hoping it can serve as my tactile eye and see what I cannot. Holding my breath, and sliding millimeter by millimeter, I finally feel an incredibly welcome "click, click, click" – and the wave of nausea rolling in my stomach is almost instantly dispelled. Tiny vibrations making their way up the long plastic catheter confirm I have found her trachea. Quickly sliding an endotracheal tube over the bougie finally provides the airway she needed, and we're able to bag her saturations back from the precipice. Her immediate danger has at least been temporarily removed.

However, **my relief lasts only seconds**; as soon as I leave that patient's room, I find that all of my other patients who have been on the back burner for the past 20 minutes are now boiling over. And so I transition back into multitasking mode. Lauren has a negative troponin but will need a stress test; Bob's ankle fracture still needs to be reduced, and Howard needs more haloperidol. To top off this constantly brewing chaos, I now have the additional responsibility of reviewing the patient I just intubated, and calling her up to the ICU. Again taking a focusing breath, I sit down to review labs and orders.

> Mastering acute patient care goes beyond medicine, clinical skills, and procedures.

And then it came again – "Doctor, come quick!" Denise is now in full-blown septic shock. Surprisingly, I feel my adrenaline rising again, not entirely depleted after my harrowing airway. **Here we go again... just another typical day.**

No one ever figured out what caused my intubated patient to decompensate. She eventually came around, was extubated, and did quite well. It is interesting, though, to reflect how the "easiest" patient quickly evolved into the most critically ill. Clearly, mastering acute patient care goes beyond medicine, clinical skills, and procedures. Whether with seven patients, 17 patients, or just one, multitasking is a key skill for any EM physician. **While the art of juggling is probably inherent in all of us, we still spend our entire careers honing this one skill.**

With interruptions coming every few minutes in the ED, we must be adept at changing, adapting, and then refocusing. Our oceans can go from calm to hurricane-force in a matter of seconds; we can go from "I'm sorry, you're dying" to "Congratulations, it's a boy!" within a couple of steps between rooms. Being able to master all of these convolutions and changes of emotion is something that we're built for, and may in fact be the true skill of the emergency provider.

Patients will continually surprise us, but our quick actions and flexibility will often save the day. Unlike other providers who might focus on one particular organ system or set of procedures at a time, **in the ED, we focus on everything at once.** ✶

empower
Sharing Our Stories

Your Time, Your Legacy

Christopher I. Doty, MD, FACEP, FAAEM

Medical school: Thomas Jefferson University

Residency: SUNY Downstate and Kings County Hospital

Current position: Program director and vice chair for Education, associate professor of emergency medicine, University of Kentucky-Chandler Medical Center

Remember that nerve-wracking season of residency program interviews? Maybe they all blended together — but not if you visited the University of Kentucky, where program director Christopher Doty has been interviewing candidates since 2002.

You're known as a great educator. What makes a great learner?

Well I don't know that I'm anything special, but I am trying to make an impact. I wanted very early on in my medical career to be a medical educator, and I thought — I still think — that's the way I'm going to be most impactful. There's a logarithmic effect in having an influence on future emergency physicians. For me, the learners I'm looking for in my programs have always been hungry. What I really value in a learner is the desire to be committed to the relentless pursuit of excellence — and I mean pursuit, I don't mean attainment; there's a critical difference. I would much rather have people aim high and miss, even miss often, than aim low and hit every single time. It's in the missing that we grow as learners, and that's where I live as an educator — that's my jam. I want to help people see the gap, help them close the gap, and then open a new gap.

What keeps you coming to work every day?

I really live for seeing the lightbulb go on over someone's head, when they really connect the dots. That opportunity to affect the next generation of leaders in medicine — that's what gets me up in the morning.

If residents remember just one thing when, it should be _____.

Be humble. There's always something you don't know. When you really think you have all the answers, you get body-checked. As soon as you stop taking patients seriously, you get spanked.

What is the most-used app on your phone?

Probably Twitter. (Follow him @poppaspearls)

What goes on pizza?

My all-time favorite would be New York style, because I do consider myself a New Yorker, with sausage and mushrooms. And it's gotta be a red pizza — no white pizza.

Last song stuck in your head?

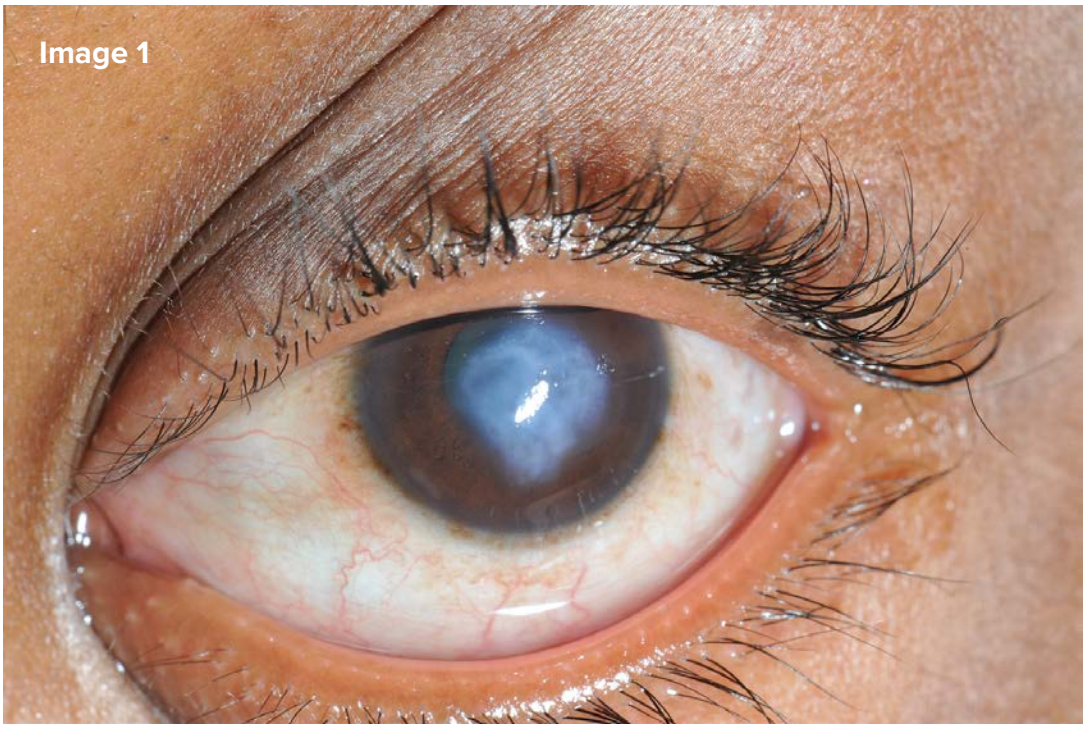
It was playing on the radio when I came in, and I'm not going to admit I like this song: Britney Spears' "Piece of Me."

Who are you outside of medicine?

A family man. My wife, Laurie Doty, is also an emergency physician, in private practice. And we have a 2-year-old son, Max.

Corneal Hydrops

A Complication of Keratoconus



ALL PHOTOS COURTESY OF LAWRENCE B. STACK, MD

Craig A. Sheedy, MD
Brian Bales, MD
Lawrence B. Stack, MD
Department of Emergency Medicine
Vanderbilt University
Nashville, TN

The Patient

A 36-year-old female presents to the emergency department with 1 week of decreased vision, pain, and photophobia of her left eye. She denies any precipitating factor. She has known bilateral keratoconus with corneal transplant of the right eye. Visual acuity is hand motion only in the left eye, and 20/25 in the right eye. Examination is notable for central corneal opacity of the left eye *(Image 1)*. There is no uptake with fluorescein stain.

What is the diagnosis?

See the DIAGNOSIS on page 36

The Diagnosis

Corneal opacity without fluorescein uptake in a patient with keratoconus is most consistent with corneal edema (called corneal hydrops), a consequence of keratoconus. Keratoconus is a non-inflammatory eye disorder characterized by progressive thinning of the cornea leading to a cone shaped deformity *(Image 2)*. This condition typically presents at puberty or early adulthood with blurry vision or a sudden decrease in visual acuity. Munson's sign, a V-shaped indentation of the lower eyelid on downward gaze caused by a protruding cone *(Image 3)*, is seen in advanced disease. Risk factors include systemic disorders such as Down syndrome, Ehlers-Danlos syndrome, and osteogenesis imperfecta. Eye rubbing, contact lens use, and family history also may put patients at risk. Initial treatment of keratoconus is with standard corrective lenses. As symptoms progress, patients will typically require specialized contact lenses for refractive correction, and may ultimately require a corneal transplant.

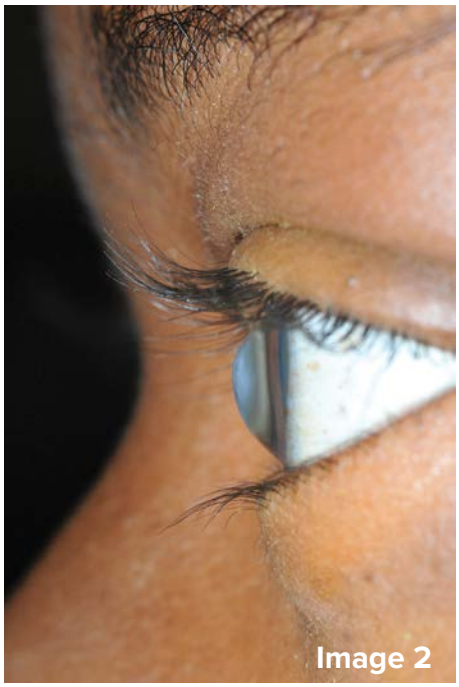


Image 2

Corneal hydrops is a complication of advanced keratoconus and is characterized by sudden onset of severe corneal opacification because of edema. The edema occurs from a spontaneous break in Descemet's membrane because of the weakened cornea, leading to a sudden and painful decrease in visual acuity. There is no specific treatment for corneal hydrops, and the symptoms generally resolve over several months. Our patient was treated with prednisolone acetate ophthalmic suspension to reduce inflammation and provided cornea specialist follow-up.


Image 3

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 emrresident.org (*Features* section).

To learn more about *PEER VIII*, or to order it, go to www.acep.org/bookstore.

1. In which of the following patients should urinary catheterization be avoided?
   A. 66-year-old man with hemoperitoneum
   B. 72-year-old woman with neck of femur fracture
   C. 75-year-old man in cardiogenic shock
   D. 78-year-old woman with urinary tract infection

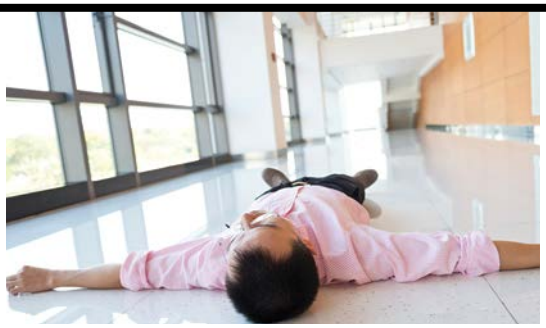
2. . Which of the following signs or symptoms seen in carbon monoxide poisoning is the most common?
   A. Cherry red skin
   B. Coma
   C. Convulsion
   D. Headache

3. An 11-month-old boy presents 3 hours after falling off a 4-foot-high step and landing directly on his head on the sidewalk. He is awake and alert on examination with age-appropriate vital signs. There is a 4-cm boggy hematoma overlying the site of impact. Which bone is most likely to be fractured?
   A. Frontal
   B. Parietal
   C. Temporal
   D. Zygomatic

4. When performing an emergency department thoracotomy, after the incision has been made and the pleural cavity has been entered, in the presence of cardiac arrest and with no obvious injury on entry, what should be accomplished first?
   A. Begin direct cardiac compressions
   B. Clamp the aorta
   C. Open the pericardium
   D. Pass a nasogastric tube to help distinguish the aorta from the esophagus

5. The most common form of migraine headache is:
   A. Basilar-type migraine
   B. Hemiplegic migraine
   C. Migraine without aura
   D. Ophthalmoplegic migraine

ANSWERS
1. D; 2. D; 3. B; 4. C; 5. C



RISK MANAGEMENT PITFALLS
Syncope in Adult Patients

EB MEDICINE
Improving Patient Care

From the April 2014 issue of *Emergency Medicine Practice*, "Syncope: Risk Stratification and Clinical Decision Making." Reprinted with permission. To access your EMRA member benefit of free online access to all *EM Practice*, *Pediatric EM Practice*, and *EM Practice Guidelines Update* issues, go to www.ebmedicine.net/emra, call 1-800-249-5770, or send e-mail to ebm@ebmedicine.net.

❶ **"It didn't even occur to me that a patient with syncope might have a dissection of the thoracic aorta."**
Syncope is generally a benign process. However, one must be proactive in trying to identify life-threatening causes. History, physical examination, and ECG findings are most helpful, but keep your differential large or you may miss the rare life-threatening conditions.

❷ **"I sent the patient home after syncope with a history suggestive for cardiac syncope. There were no abnormalities on physical examination or on the ECG. The patient returned because of an accident with his truck after syncope."**
People with occupations that are high risk for disastrous outcomes include truck drivers, bus drivers, airplane pilots, and heavy equipment operators. In particular, they need counseling about the risks of driving after syncope. Instructions should be provided for paying attention for prodromal symptoms.

❸ **"I sent a patient home with the diagnosis 'syncope based on orthostatic hypotension.' After a few days the patient returned with another episode of syncope, and on the monitor a dysrhythmia was seen."**
There may be multiple causes of a syncopal episode, especially in the elderly. Even if a patient had an obvious stressor prior to the syncopal episode, or had orthostatic hypotension, other causes are still possible.

❹ **"I obtained an ECG in a patient with syncope that showed a sinus rhythm with no conduction abnormalities. The patient died of a sudden cardiac arrest the next day."**
A normal ECG has a high negative predictive value, but it does not completely rule out future cardiac events. Obtain an ECG in every patient with syncope (with, perhaps, the exception of syncope in a young person with a clearly identified trigger) to assess rhythm and conduction abnormalities. Assess for evidence of pre-excitation, prolonged corrected QT time (> 500 ms), and Brugada pattern. When checking the patient's medication list, be alert for drugs known to cause prolonged QT syndrome.

❺ **"I did a complete workup in a 48-year-old patient with syncope, including ECG, laboratory tests, and a chest X-ray, before discharging him. A few hours later, he returned with a hemiparesis from a subarachnoid hemorrhage. He didn't mention he had a sharp headache just before the event."**
The most important step in obtaining an accurate diagnosis is the history of present illness. Invest the time to get all the facts from the patient, family, and bystanders. This investment will yield more efficient ED diagnostic workup, more accurate diagnosis, and a higher quality of emergency care.

❻ **"A patient came in after syncope and had another episode in the ED. I think the underlying problem might be a dysrhythmia that we didn't capture on the ECG."**
Continuous ECG monitoring increases the likelihood of capturing an intermittent dysrhythmia. All patients with a possible cardiac cause of syncope should be placed on continuous ECG monitoring in the ED.

❼ **"I ordered a CT of the thorax because the patient complained of dyspnea and hemoptysis after syncope, and I was concerned for a pulmonary embolism. The patient became more dyspneic and tachypneic, and, while being transported to radiology, he arrested."**
If you recognize a potential life-threatening cause in a patient, consider starting aggressive treatment before getting diagnostics.

❽ **"I discharged a patient from the ED after his first episode of syncope. He had a second episode of syncope and didn't go to see a doctor because 'it was nothing the last time.'"**
Patients who suffer from syncope and are discharged from the ED should seek follow-up with their primary care physician, especially if they are at the extremes of age. It is necessary to explicitly instruct or arrange this for your patients; otherwise, they may assume it is not important. Make sure they understand the importance of seeking attention with additional symptoms or events.

❾ **"After a discussion with the cardiologist, I discharged the 78-year-old syncopal patient. A detailed history did not identify any new worrisome symptoms. Even though he had a coronary artery bypass graft 3 years prior, there were no abnormalities on physical examination and no ECG changes. Two days later the patient returned with a cardiac arrest."**
Factors associated with higher risk for an adverse event after syncope are advanced age, cardiovascular disease, and an abnormal ECG. Patients with these and other risk factors may require admission for observation and further evaluation. Outpatient follow-up may be inadequate when the patient is risk stratified as high-risk.

❿ **"An 85-year-old patient was sent home after syncope based on orthostatic hypotension. A few weeks later she returned to the ED because she sustained a head injury during syncope."**
Take the time to inform your patients about the possible dangers of syncope. Patients should be warned about possible trigger events for syncope, associated signs and symptoms, and the risk of a sudden attack. Particularly in the elderly, instructions should be provided for procedures to decrease the risk of falls, such as using a cane or walker, taking extra time to equilibrate when changing position, and paying attention to symptoms that may precede the syncopal attack. ✶

RISK MANAGEMENT PITFALLS
Urinary Tract Infection in Children

EB MEDICINE
Improving Patient Care

From the May 2014 issue of *Pediatric Emergency Medicine Practice*, "Urinary Tract Infection in Children: Emergency Department Diagnostics and Interventions." Reprinted with permission. To access your EMRA member benefit of free online access to all *EM Practice, Pediatric EM Practice*, and *EM Practice Guidelines Update issues*, go to www.ebmedicine.net/emra, call 1-800-249-5770, or send e-mail to ebm@ebmedicine.net.

❶ **"The patient never made urine, so I just empirically treated for UTI."**
It is vital to obtain an appropriate urine specimen, both for diagnosis and for later antibiotic-sensitivity assessment. If the patient has no urine, even on bladder catheterization, then significant dehydration and possibly a more serious infection should be considered.

❷ **"I prescribed an antibiotic, so I'm not sure why the patient returned with sepsis."**
Not only is it vital to make sure that the patient's bacterial agent is sensitive to your antibiotic, you must make sure s/he can actually tolerate oral intake before discharge and has not had difficulty with oral medications in the past.

❸ **"The patient's mom didn't want her child to have an intravenous line, so I thought oral antibiotics were the right choice."**
While it is prudent to minimize trauma and harm to the child, there are certain indications that warrant intravenous antibiotics, including sepsis, inability to tolerate oral intake, evidence of pyelonephritis, and significant dehydration.

❹ **"I treated the patient with locally-susceptible antibiotics. I don't know why her condition did not improve."**
While verifying local susceptibilities is important, assessing the patient for risk factors (such as pediatric intensive care unit stay, immunosuppression, renal transplant, recurrent UTIs, or genitourinary deformities) is also necessary in determining the proper pharmacologic agent.

❺ **"The adolescent girl complained of dysuria and was certain it was a UTI because her mom had recurrent cystitis. I treated it, even though the urinalysis was unremarkable."**
In adolescent females, sexually transmitted diseases must be on the differential for complaints of dysuria, and, in the presence of any uncertainty, a pelvic examination is necessary. Asking the parent to leave the room in order to obtain a more detailed history is always warranted, especially in this age population. It is also not uncommon for urine WBCs or LE to be elevated in a patient with sexually transmitted urethritis or cervicitis.

❻ **"The patient was afebrile in the ED, so I didn't consider UTI."**
It is important in pediatric populations to note in the history the patient's objective or even subjective febrile temperatures before presentation to the ED, especially as the child may have received anti-inflammatory medications prior to arrival. Additionally, it is important to remember that not all UTIs present with fever.

❼ **"I didn't check for a UTI because the patient is a boy."**
In male patients aged <2 years and, especially male patients aged < 6 months, UTI is not uncommon and approaches the prevalence of this condition in females. For male patients aged > 2 years, circumcision status should be sought, as uncircumcised males still have a higher prevalence of UTIs.

❽ **"The patient's father didn't want us to catheterize his newborn baby, so we placed an adhesive bag. When the UA showed bacteria, I treated it."**
In all infants and toddlers who are not toilet-trained, an adhesive bag, regardless of perineal cleansing, is not as specific as a straight catheterization. Contaminated specimens from a bag may result in unnecessary treatment or a missed diagnosis.

❾ **"The 3-month-old looked great. I can't believe his dad is threatening to sue because I didn't admit him."**
New guidelines suggest that infants aged > 2 months who appear well can be sent home on oral antibiotics. Additionally, new studies have shown that patients "on the cusp" can obtain effective treatment in facilities that provide daily ambulatory intravenous antibiotics.

❿ **"I treated the otherwise healthy girl who had positive nitrites and LE on dipstick with an antibiotic. How would I have known that it was not a sensitive antibiotic?"**
While it is acceptable to treat a patient with a strongly positive urine dipstick, sending the urine for a formal culture is recommended to ensure a correct diagnosis and to confirm that the antibiotic choice was appropriate. ✶

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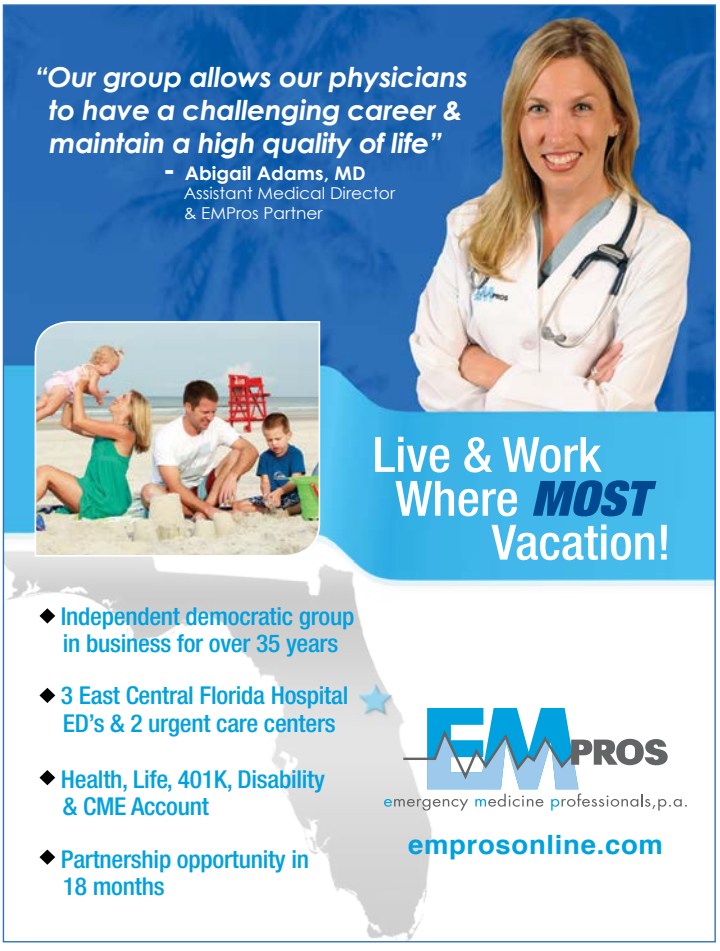

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Exceptional Opportunity for Emergency Department Physicians! Eastern Maine Medical Center seeks BC/BP emergency medicine physician to join ED with 20 hospital employed physicians. EMMC is a 411-bed tertiary care and ACS-verified level II trauma center. The ED sees more than 70,000 patients per year. Inpatient care supported by hospitalist and intensivist services, as well as a multi-specialty trauma surgery group. EMMC serves a population of 500,000, in a region covering 2/3 of the state's geography. EMMC is one of two base hospitals for LifeFlight of Maine, a critical care air transport service flying nearly 900 missions per year. Opportunities for teaching residents and students.

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120 hours considered full time for benefits, bonus for extra shifts, night-shift differential, work schedule designed to accommodate physician preferences, favorable malpractice environment.

Bangor: St. Joseph Hospital, a 112-bed non-profit acute care community facility with an outstanding reputation is recruiting two E.M. BC/BP physicians to augment its dedicated group. Our work environment is relaxed, collegial and supportive with the latest technology and we just completed an E.D. expansion and modernization. We are a group whose members support each another and we (and the hospital administration) know patient satisfaction is best achieved through staff satisfaction. There are many opportunities for leadership development and participation in the Department's policies and direction. Current staffing includes 39 physician hours and 12 mid-level hours per day for 27,000 visits. The Bangor and Penobscot Bay area offers a variety of cultural attractions, including the flagship campus of the University of Maine. We are home to one of the largest collections of natural and organic food producers in the world. The region offers a pleasant pace of life, low crime, friendly people, excellent educational opportunities, great public schools and affordable housing. The Bangor area is widely regarded as a wonderful place to raise a family. This area has become a four-season sports, recreation and tourist destination, with nearby Acadia National Park, Bar Harbor and the many other scenic harbors and towns up and down the Penobscot River and Bay. Sugarloaf USA, one of the premier outdoor, golf and ski resorts in the east, is just two hours away by car. Interstate 95 is adjacent to the city and we are served by Bangor International Airport, with connecting flights to any destination. We offer highly competitive compensation and benefit packages, including relocation, student loan repayment, retirement, signing bonus, plus contracted vacation and

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CME time. Please contact: Charles F. Pattavina, MD, F.A.C.E.P., Medical Director and Chief, Department of Emergency Medicine, 207.907.3350, cpattavina@sjhhealth.com. MAINE: "The Way Life Should Be."

MASSACHUSETTS

Northampton: Cooley Dickinson Hospital, a dynamic 140-bed community hospital in Northampton affiliated with Massachusetts General Hospital in Boston, is currently seeking BC/BP Emergency Medicine physicians to join our independent and democratic Emergency Medicine group. We are looking for physicians who are excited by the prospect of joining the staff of a full-service, highly regarded community hospital. Our department is currently staffed by Emergency physicians and physician assistants with the support of great nursing staff and techs seeing a patient volume of approximately 33,000 with 20-25% admission rate. The present staffing model in the ED consists of 8-10 hour shifts — double, triple, and quadruple coverage at the busiest time of day. Competitive compensation including a rapid path to partnership will be offered. Northampton Massachusetts, a vibrant community in the western part of the state, is located in the midst of the "Five College" area including Smith College, Amherst College and the flagship campus for the UMass system in Amherst. There is an active downtown scene, dynamic arts and culture community, and great educational opportunities for all ages. Leisure Magazine has named Northampton one of the best U.S. destinations for restaurants, theater, galleries and overall quality of life. It is conveniently located to all points throughout New England including three major cities (Hartford, Boston and New York City). For more information about Cooley Dickinson and the communities we serve: cooley-dickinson.org; explorenorthampton.com; visithampshirecounty.com. For more information or for confidential consideration, please contact Josh Maybar, Recruitment Manager, at 413-582-2720 or josh_maybar@cooley-dickinson.org.

NEVADA

LAS VEGAS: Full time opportunities for Pediatric Emergency Medicine Physicians. Children's Hospital of Nevada at UMC is the main teaching hospital of the University of Nevada School of Medicine and serves as the region's only Pediatric Trauma Center and Burn Center. Our 20-bed department cares for 31,000 pediatric patients annually. There is excellent sub-specialty coverage with 24 hour in-house intensivist coverage and a level 3 NICU. EMP is a physician managed group with open books, equal voting, equity ownership, funded pension, comprehensive benefits and more. Please contact Bernhard Beltran at 800-359-9117 or e-mail bbeltran@emp.com.

NEW YORK

Albany area: Albany Memorial Hospital has a newer ED that sees 44,000 pts/yr. and hosts EM resident rotations. Samaritan Hospital in Troy is a respected community hospital, minutes from Albany, which also treats 45,000 ED pts/yr. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson, (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd, NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

Cortland: Cortland Regional Medical Center is a modern, full-service facility situated in the Finger Lakes Region between Syracuse and Ithaca. A broad mix of pathology makes up 33,000 ED pts/yr., and there is strong support from medical staff and administration. Ownership Matters — EMP is a majority physician owned group with

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equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson, (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd, NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

Port Jefferson: EMP is pleased to announce our newest affiliation with John T. Mather Memorial Hospital. Situated in a quaint coastal town on Long Island's north shore, the facility sees 42,000 emergency patients per year. Pathology is broad with moderate acuity, and most services are represented. Enjoy a variety of residential options, outdoor recreation and shopping and access to NYC. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson, (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd, NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

NORTH CAROLINA

Charlotte: EMP is partnered with eight community hospitals and free-standing EDs in Charlotte, Lincolnton, Pineville and Statesville. A variety of opportunities are available in urban, suburban and smaller town settings with EDs seeing 12,000 – 81,000 pts./yr. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (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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Charlotte/Statesville: Iredell Memorial Hospital is a respected community hospital situated north of Charlotte and seeing 41,000 ED pts./yr. Statesville is easily commutable from desirable north-Charlotte suburbs like Mooresville (highly regarded schools), with access to lakeside, small town and rural residential options as well. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

Morehead City: Modern community hospital on the Atlantic coast minutes from Atlantic Beach! This 135-bed facility sees 39,000 emergency pts./yr. and is active in EMS. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

New Bern: CarolinaEast Medical Center is a respected 313-bed regional medical center located at the intersection of the Trent and Neuse Rivers just off the central coast. 70,000 ED pts./yr. are seen in the ED. Beautiful small city setting. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

Pinehurst: Sandhills Emergency Physicians needs ABEM BC/BP physicians to join our 27 physician democratic group. You'll have scheduling equity from day one, competitive salary, and a comprehensive benefits package. Partnership in two years. We staff four Emergency Departments in the Sandhills of North Carolina, combined volume 125k. With the flagship FirstHealth Moore Regional Hospital in Pinehurst, golf and equestrian activities abound. Equidistant between Blue Ridge Mountains and NC Beaches. Excellent working environment with Wellsoft, ultrasound, and extensive specialist coverage. Many of our staff have, or will, enjoy the area and their practice enough to stay their entire EM career with our democratic group. We welcome all inquiries, and have openings for Advanced Practice Providers also. Email us at madju@nc.rr.com or call 910-692-8224.

OHIO

Canton: Unique opportunity to join a top-quality, democratic, well-established and physician-owned group with an opening for an ABEM or AOBEM BC/BP physician. Stark County Emergency Physicians staffs a 65,000+ volume ED and a 30,000+ volume Urgent Care. The ED is nationally recognized as the first-ever accredited chest pain center in the US, is a multi-year recipient of the HealthGrades Emergency Medicine Excellence award, and is also a level II Trauma Center and Stroke Center. Equitable and flexible scheduling. Excellent provider staffing levels. Newly renovated ED. Great work-lifestyle balance. Clearly defined equal-equity partnership track (including equity interest in an independent billing company). Generous benefits include signing bonus, 100% employer-funded retirement plan, BE/CME account, PLI insurance with corporate tail, and HSA-based health insurance. Contact Frank Kaeberlein, MD at (330)-489-1365 or frank.kaeberlein@cantonmercy.org

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. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

Cincinnati Region: EMP's affiliation with the Mercy Health System in eastern and western Cincinnati includes nine respected community hospitals seeing 14,000-60,000 emergency pts./yr. Locations are proximate to desirable residential areas. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (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: 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 hospital serving 37,000 ED pts./yr. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (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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Our Network is comprised of hospitals in Allentown, Bethlehem, Coaldale, Quakertown and Easton PA. Our St. Luke's Warren campus offers care to the Philipsburg, NJ area. ***Our new hospital in Monroe County, PA is scheduled to open in the fall of 2016.***

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- Rich benefits package, including malpractice, health & dental insurance, CME allowance
- Opportunities to teach

St Luke's
UNIVERSITY HEALTH NETWORK

www.slhn.org

St. Luke's Hospital is a non-profit, regional, fully integrated nationally recognized Network comprised of hospitals, physicians and other related organizations. The network provides services at more than 150 sites that include more than 80 owned physician practice sites, 400 employed primary care/specialist physicians and various outpatient testing and services facilities. With the Temple-St. Luke's School of Medicine, St. Luke's has created the first and only regional medical school campus in the Lehigh Valley.

The Lehigh Valley boasts 10 colleges and universities scenic recreational opportunities, excellent economic environment, vibrant arts and culture scene, and close proximity to New York City, Philadelphia, and Washington, D.C.

Please send your Curriculum Vitae to Drea Rosko at physicianrecruitment@sluhn.org

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Lancaster: 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. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

Springfield: Springfield Regional Medical Center is a new, full-service hospital with supportive administration committed to emergency medicine. Situated 45 miles west of Columbus and 25 miles northeast of Dayton, the ED sees 75,000 patients/yr. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

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. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

Emergency Medicine Physician Opportunity in Kennewick, Washington

Kennewick Emergency Physicians, in collaboration with Trios Health, is seeking an emergency medicine physician to join their expanding team. The group welcomes applicants who are completing residency in 2016.

- Full-time position for board certified emergency medicine physician
- Generous compensation package: guarantee plus incentive
- Opportunity for full partnership tract
- Medical liability insurance and relocation expenses included
- Annual visits of 35,000
- 12 hour shifts; 12-14 shifts per month
- Double coverage during peak hours
- Group serving a single hospital.

For immediate consideration please contact:
Tamie Bradbury, Physician Recruitment
509-221-5980 • tamie.bradbury@trioshealth.org

About Trios Health

Trios Health is the Kennewick Public Hospital District's system of care serving the greater Tri-Cities. The District operates two hospitals to accommodate the area's fast-growing population: Trios Women's and Children's Hospital and Trios Southridge Hospital—a new, state-of-the-art facility that opened in July 2014.

Trios Medical Group, comprised of over 100 employed physicians and providers, serves as the core of a growing medical staff network of 300+ providers throughout the Tri-Cities and includes practices and services at nine Care Centers and four Urgent Care Centers.

For more information, visit our website at trioshealth.org.

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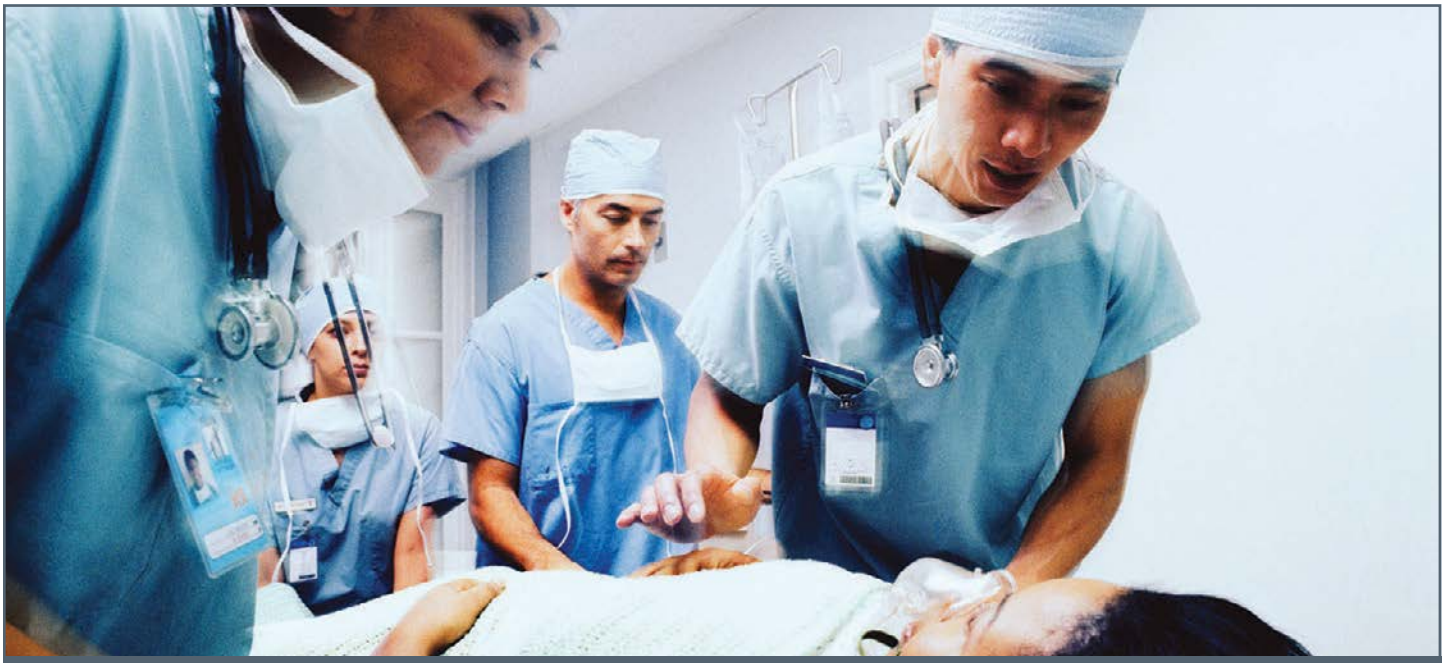

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OKLAHOMA

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. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (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 or call us at 503-561-5634.

PENNSYLVANIA

St Luke's UNIVERSITY HEALTH NETWORK

Eastern and New Jersey, Western: Emergency Medicine Opportunities – St. Luke's University Health Network is recruiting for BC/BP Emergency Medicine physicians to join our dedicated team(s) of physicians providing excellent care at 6 (soon to be 7) Network hospitals. Whether you're looking to provide care in a Level 1 Trauma Center with residents and medical students, a smaller rural hospital or something in between, we have the flexibility to offer you a setting that fits your needs and career goals. You can choose a home hospital or split your time. Our Network is comprised of hospitals in Allentown, Bethlehem, Coaldale, Quakertown and Easton PA. Our St. Luke's Warren campus offers care to the Philipsburg, NJ area. ***Our new hospital in Monroe County, PA is scheduled to open in the fall of 2016***. *These employed positions offer:* Competitive salary with incentive plan; Rich benefits package, including malpractice, health & dental insurance, CME allowance; Opportunities to teach. St. Luke's Hospital is a non-profit, regional, fully integrated network comprised of hospitals, physicians and other related organizations. We provide services at more than 150 sites that include more than 400 employed primary care/specialist physicians and various outpatient testing and services facilities. With the Temple-St. Luke's School of Medicine, St. Luke's has created the first and only regional medical school campus in the Lehigh Valley. The Lehigh Valley boasts 10 colleges and universities scenic recreational opportunities, excellent economic environment, vibrant arts and culture scene, and close proximity to New York City, Philadelphia, and Washington, D.C. Please send your CV to Drea Rosko at physicianrecruitment@sluhn.org.

Ellwood City: The Ellwood City Hospital is located less than an hour west of Pittsburgh. The facility sees 12,000 emergency pts./yr. and is in a smaller community that affords easy access the north-Pittsburgh's most desirable suburbs. Allegheny Health Network Emergency Medicine Management (AHNEMM) offers a professional arrangement unlike

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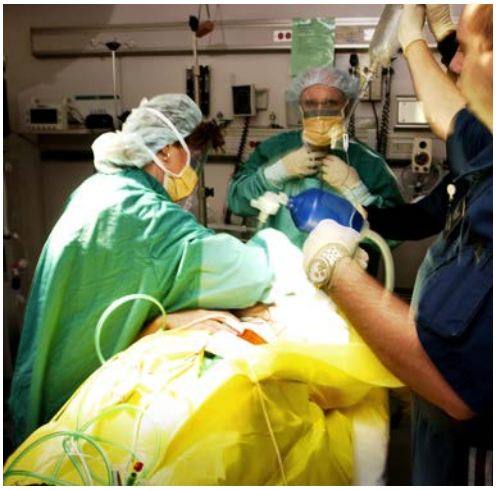
that previously available in the region. Ownership Matters — we are a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Jim Nicholas (jnicholas@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

Indiana: Indiana Regional Medical Center is a full-service community hospital in a college town located 50 miles northeast of Pittsburgh. IRMC sees 45,000 ED pts./yr. and is situated in a nice college town. AHNEMM/EMP offers equal equity ownership/partnership, equal voting and the opportunity to be part of a progressive EM group. Ownership Matters -we are a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Jim Nicholas (jnicholas@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

Pittsburgh – Canonsburg: Canonsburg Hospital is a friendly, community oriented facility situated 21 miles south of Pittsburgh near the region's most attractive suburbs including Peters Township, Upper St. Clair and Mt. Lebanon. A modern ED sees 19,000 pts./yr., and most major services are available on-site. AHNEMM/EMP offers equal equity ownership/partnership, equal voting and the opportunity to be part of a progressive EM group. Ownership Matters -we are a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Jim Nicholas (jnicholas@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

Seeking **Emergency Medicine Physician**
for Huntsville Hospital



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Huntsville Hospital is a 941-bed hospital that serves as the regional referral center for north Alabama and southern Tennessee. The hospital has 24/7 Hospitalist, Radiology, Cardiology, Trauma, Orthopedic and Neurosurgical coverage. The hospital also has dedicated Adult, Cardiovascular, Neurological and Pediatric ICUs.

For more information contact **Kimberly Salvail**
(256) 265-7073 | kimberly.salvail@hhsys.org

Huntsville, AL

Huntsville is situated in the fastest growing major metropolitan area in Alabama with the highest per capita income in the southeast. With a population of 386,661 in the metro area, Huntsville is a high-tech, family oriented, multi-cultural community with excellent schools, dining and entertainment. It is nestled at the foothills of the Appalachian Mountains with an abundance of indoor and outdoor activities.

- *Named one of the top 30 fastest growing major metros in the country* – U.S. Census
- *Top 10 Places for Innovation* – USA Today
- *Named one of the Top 50 Best Places to Raise Children in the U.S.* — Business Week
- *Ranked in World's Top Ten Smartest Cities* — Forbes Magazine

huntsvillehospital.org

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Pittsburgh and suburbs, 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. Ownership Matters! We are a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options are 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. Contact Jim Nicholas (jnicholas@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

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. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd. NW, Canton, OH 44718, 800-828-0898 or fax 330-493-8677.

Somerset: Allegheny Health Network Emergency Medicine Management (AHNEMM) is pleased to announce our newest affiliation with Somerset Hospital. A beautiful new ED seeing 19,000 ED pts./yr. will open in late 2015. The facility hosts close-knit and supportive EM and administrative staffs which provides for a great work environment. Located in the Laurel Highlands region, easy access is afforded to the mountains and great ski resorts, biking/hiking and a number of rivers and lakes, as well as the metropolitan amenities of Pittsburgh which are just an hour away. Ownership Matters — we are a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Jim Nicholas (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. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (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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United Health Services Hospitals, a progressive family of health services organizations, located in the southern tier of New York, is seeking BC/BP E.M. trained or ABEM physicians to join our Emergency Medicine Department.

One opportunity is located at Binghamton General Hospital and Wilson Medical Center, a Level II Trauma Center. Combined they see 60,000 patients a year and have single, double, and triple coverage.

The other is at UHS-Chanango Memorial Hospital in Norwich, NY. This is a level III ED seeing 17,000 patients a year with a PA working during busy hours.

Teaching is available at our Binghamton location.

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To apply please contact Denise Harter at 607-337-5627 or email at denise_harter@uhs.org

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Washington, Wenatchee: Stable Democratic ED group seeking BC/BP ED Physicians for expanding volume ED in a great family oriented community. Great outdoor recreation with skiing, mountain biking, hiking, fishing, hunting. Great schools. Level 3 trauma center with patient volume 40,000. Competitive income with partnership in one year. Contact Dr Eric Hughes, cehughes@nwi.net.

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. Ownership Matters — EMP is a majority physician owned group with equal voting, equal equity ownership, funded pension and comprehensive benefits, plus industry-leading training programs, support services and career development options. Contact Ann Benson (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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WISCONSIN

MILWAUKEE: Emergency Medicine Specialists (EMS) is a Physician-owned, democratic EM group of 30 EM Physicians based in Milwaukee, WI. We are seeking full time and/or part time BC/BP Emergency Physicians to join our well-established practice. Our group staffs five EDs in the Milwaukee area. Partnership tracks are available. Excellent work environment, benefits, compensation! We pride ourselves on being fair, equitable, and democratic. Interested Physicians please contact Matthew Deluhery, matthew.deluhery@ems-wi.com, 414.877.5350.

Rice Lake: Attractive Midwest Emergency Medicine Opportunity. Marshfield Clinic Rice Lake Center is seeking two Emergency Medicine physicians to join an established ED in Rice Lake, WI. BC/BP in EM. Shift scheduling model: 12 twelve-hour shifts/month, equal approx. 1700 work hours/year. Marshfield Clinic is a nationally recognized physician-led medical group known for providing its more than 700 physicians in 80+ specialties with the most advanced medical equipment and health information technology today. Competitive and guaranteed salary, full benefit package, relocation assistance, opportunities for teaching, research and more! Our Wisconsin communities are safe residential communities with beautiful homes at affordable prices and no long commutes. Plentiful four-season recreation such as bicycling, hiking, skiing, fishing and golf abound. Practice where you play! Contact: Heidi Baka, Physician Recruiter, baka.heidi@marshfieldclinic.org, 715-221-5775, marshfieldclinic.org.

PEDIATRIC EMERGENCY MEDICINE CAREER OPPORTUNITY

The Department of Emergency Medicine at Penn State Hershey Medical Center is seeking Pediatric EM-trained board-eligible physician. Penn State Hershey is a major pediatric referral center for central Pennsylvania and hosts faculty from all major pediatric specialties. A five-story Children's Hospital opened in 2013, which includes 128 beds, five pediatric-only operating rooms, a pediatric cardiac catheterization lab, blood bank and pediatric cancer pavilion. Named a national leader in six pediatric specialties (cancer, cardiology and heart surgery, nephrology, neurology and neurosurgery, orthopaedics, and urology) in *US News & World Report*'s 2014-2015 Best Children's Hospitals rankings, we are currently in the process of an ED Redesign Expansion Project which will include a new Pediatric Emergency Department.

Our ED cares for approximately 20,000 pediatric patients per year in a dynamic, high-acuity emergency service, with Emergency Medicine and Pediatric Residents and 18+ hrs/day of Advanced Practice Clinician support. Research and educational missions are critically important, as is providing outstanding patient care, and providing opportunities for integrated faculty development. Penn State Hershey is a twice designated Magnet® healthcare organization and the only Level 1 Adult and Level 1 Pediatric Trauma Center in PA with state-of-the-art resuscitation/trauma bays, incorporated Pediatric Emergency Department and Observation Unit along with our Life Lion Flight Critical Care and Ground EMS Division.

Known for home of the Hershey chocolate bar, Hershey, PA is rich in history and offers a diverse culture. Our local neighborhoods boast a reasonable cost of living whether you prefer a more suburban setting or thriving city rich in theater, arts, and culture. Outdoor and sporting activities are numerous. We are home to the Hershey Bears hockey team and Harrisburg Senators baseball team. The Susquehanna River and Appalachian Trail are in our backyard.

Conveniently located within a short distance to major cities such as Philadelphia, Pittsburgh, NYC, Baltimore, and Washington DC, we offer a great place to live, work, play, and learn. We're proud of our community involvement and encourage you to learn more about our organization at **pennstatehershey.org/web/emergencymedicine/home**.

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