

EM Resident

Official Publication of the Emergency Medicine Residents' Association

April/May 2017

VOL 44 / ISSUE 2

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Letter from the Editor



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

And in the end, when the life went out of him and my hands could work no more, I left from that place into the night and wept — for myself, for life, for the tragedy of death's coming.

Then I rose, and walking back to the suffering-house forgot again my own wounds for the sake of healing theirs.

—Anonymous

A picture is worth a thousand words. So too was the photograph that went viral on Reddit over a year ago, when an emergency physician took a moment to step outside on a desolate winter night to weep about the loss of his 19-year-old patient. The cold wind must have blown through the thread of his white coat that evening the way the words “Your son died” froze his parents’ hearts.

These types of losses never get easier. The ones who come in talking, and the children, are the hardest. Unforgettable, really. And even worse, one of these will be someone you have unintentionally hurt. You may even think you alone were responsible for their death. The medication you ordered, the procedure you performed, or the diagnosis you failed to make will have been the last thing that patient experienced.

I had my day this past year. A delay in diagnosis followed by a peri-intubation arrest, and there was no going back. Despite reassurance by my colleagues that there was not much else that could have been done, I was crushed. I cried the entire way home. I couldn’t sleep for days. The chaotic scenario played out over and over in my head. And then over again. To this day, when I close my eyes, I can see the blood stains on my scrubs, and the blood

draining out of her husband’s face.

What kind of impact do these experiences have on emergency providers? Fatal errors and those that cause harm are known to haunt healthcare professionals throughout their lives. Those who suffer in this way are called *second victims* and can often experience depression, long-lasting feelings of guilt and shame, loss of confidence, and burnout — which is one reason why physicians are twice as likely as the general population to commit suicide.

The reality is that in the era of modern medicine, there is very little room for error. The more precise and accurate our tests, the less willing we are to allow mistakes. Our own expectation for perfection, combined with incredibly advanced technology, imaging, and life-saving pharmaceuticals, have contributed to this unrealistic present-day intolerance.

Of course, there is still beauty and triumph in modern medicine. During that same devastating shift, I gave tPA to a man who had what would otherwise have been a debilitating stroke, intubated with video laryngoscopy, and used point-of-care ultrasound to diagnose a retinal detachment.

Yet one bad experience can permanently taint our passion for medicine and negatively impact our ability to care

for the next patient, either that day, or for days to come. While we must take care of the patients and families who are harmed by medical errors, and strive to make systematic changes to prevent these types of errors from happening, we must also care for the practitioners involved in these errors.

So when I read about a fatal valproic acid overdose that was accidentally managed as a diphenhydramine overdose (p. 10), or about a great save when a critical left circumflex artery occlusion was suspected in the absence of ST-elevations on ECG (p. 22), I can’t help but think about the providers who were there at the bedside, making life-or-death decisions with limited time to act, and with limited information.

The Reddit photo of the weeping emergency medicine physician went viral because it highlighted the fact that doctors are, in fact, human. But the superhuman ability to compartmentalize and bury normal reactions to tragic situations cannot be upheld indefinitely. What few people may have considered, and what we all know too well, is that this emergency physician then composed himself, walked back into the ED, and introduced himself to the next patient with a handshake and a smile. And that patient would never know he had just been to the gates of hell and back. ★

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Emergency Medicine Residents' Association

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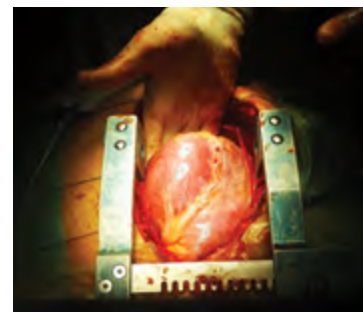
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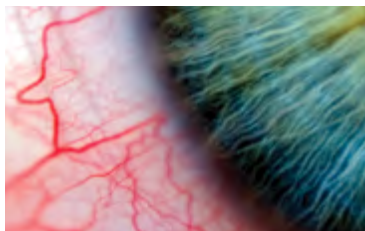
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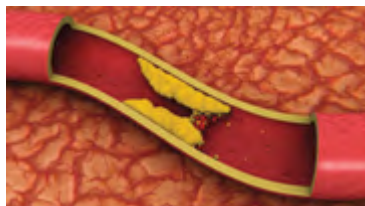


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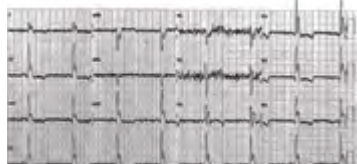
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Chief Resident Symposium @ CORD Academic Assembly

April 27–30
CORD Academic Assembly, Fort Lauderdale

April 29–May 2
ABEM Spring Oral Certification Exam

May 16–18
Essentials of Emergency Medicine, Las Vegas

May 16-19
SAEM Annual Meeting, Orlando, Florida

May 22
ABEM/NAM Fellowship Nomination Deadline

October 14–17
ABEM Fall Oral Certification Exam

October 29–November 1
ACEP Scientific Assembly, Washington, D.C.

November 6-11
ABEM Qualifying Exam



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Caring for All

in a
Divided Society

If you're anything like me, the latest news headlines have left a part of you feeling uneasy. Whether you're conservative or liberal leaning, it seems safe to say the current administration has left all of us feeling shocked more than once, and has created a future filled with uncertainty.

Our EMRA members come from all walks of life. We are male and female, straight and LGBTQ, partnered and single. We are loud and soft-spoken, immigrants and native-born Americans, religious and spiritual and neither of the two. We have put our support behind leaders who are in complete opposition with one another, and we have spent years developing our own unique sets of personal ideals and beliefs which guide our decisions, words, feelings, and how we invest our time.

This diversity is what makes us great! Diversity gives EMRA the varied perspectives that bring us to our best ideas and produce our best member benefits. It's how we can be an organization that supports military, international, osteopathic and allopathic, traditional and non-traditional grads in ways that are universal to all of us as EM trainees but are also unique to each subgroup of our membership. We celebrate our diversity and believe it is an essential part of our organizational sustainability.

In emergency medicine, we do not discriminate against people because of where they're from or what faith they practice. Despite how different we are as individuals, we — every

single member of EMRA — share this core mission of our chosen field: the desire to provide quality emergency care to *any* patient who comes through the doors of our ED, and to have the training and support we need to be the most competent and caring physicians we can be to every single one of them. *Every* person. *Every* time.

In my last letter to you, I recapped the things EMRA is doing to stay engaged and continue representing you in this dynamic political environment. Our Health Policy Advocacy Task Force is actively working on draft policies to formally articulate our organization's stances on the issues related to health care that have been or could be contentious moving forward. They are also creating a long-term advocacy strategy for EMRA to help us better engage our members in the political process.

At the same time, your EMRA Board continues to advocate for you in real time as legislative changes are being made that could adversely affect our field.

For example, along with more than 50 other national medical organizations, EMRA proudly co-signed a Feb. 1 letter written by the AAMC to President Donald Trump in opposition to his Jan. 27 Executive Order on immigration in the U.S. This letter states that "restricting the admission of certain foreign nationals and refugees to the United States will disrupt patient care, health education, and medical research" and notes our dedication "to promoting a diverse



Alicia Kurtz, MD
EMRA President
Chief Resident, UCSF Fresno
Fresno, CA
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and culturally competent health and biomedical workforce [that] supports improvements in health care, access to providers, breakthroughs in medical research, and equitable health for all patients regardless of their backgrounds."

While our members sit firmly on both sides of the political aisle, it is our responsibility to stand up for each other, our patients, and our specialty. We cannot sit idly by while the rights of those we care for and our ability to care for them are threatened.

It is our privilege to serve as your representative board, but remember that **advocacy is an active process!** We depend on you to communicate your thoughts to us and to reach out to your own Congressional Representatives in favor of better emergency care delivery and against those laws that would inhibit our ability to continue training strong emergency physician leaders ready to care for the diverse population of our world.

As always, if you have an idea or thoughts you want to share, please reach out to me at president@emra.org! We're excited to keep representing you and fighting for what's right for our patients.

Just keep swimming,
Alicia ★



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HOW TO BE AN EMRA Program Representative



Tiffany Jackson, MD
EMRA Speaker of the Council
University of Alabama
Birmingham, AL

Remember the saying “drinking from a firehose” we all learn during medical school? That’s how I felt at my first EMRA Representative Council meeting. As I entered a room buzzing with excitement, I saw to my right the seasoned program reps conversing near the breakfast bar, and to my left the EMRA Board candidates networking and campaigning. Intrigued by the spirit of the room, but in true beginner’s form, I grabbed a bagel and retreated to my state’s table to await the proceedings.

During the next hour, using the language of parliamentary procedure, representatives passionately debated policy and cast their votes for the next leaders of the organization. It was impressive, important — and a little intimidating. But this avenue of involvement is absolutely vital for a healthy organization, so we’re making it simple to understand your role and engage as an EMRA Program Representative.

EMRA PROGRAM REP PRIMER

How many program reps are there?

Every residency program that holds EMRA membership has 1 program representative and at least 1 alternate.

How are program reps chosen?

This varies by residency program; please check with your program director or program coordinator.

What does a program rep do?

Communicate! As program rep, you are the vital link between your program, other EM residencies, and EMRA. It’s your job to find out what your peers think about policy issues, EMRA Board candidates, resolutions, etc., and to speak for your program at the EMRA Representative Council meetings. As a program rep, you will:

- Keep your fellow residents up to speed on EMRA membership perks and initiatives.
- Keep EMRA up to speed on feedback from your program.
- Attend 2 Representative Council meetings per year: 1 in conjunction with SAEM’s Annual Conference in May, and 1 in conjunction with the ACEP *Scientific Assembly* in October.
- Present resolutions to your program for discussion before the bi-annual meetings.
- Report back to your program after each Rep Council meeting, to let your fellow residents know the outcome of votes, elections, etc.

How does EMRA help you fulfill your duties?

Your Speaker and Vice-Speaker of the Council will be in touch with you throughout the year, offering key instruction, information, and support. **Read those emails!**

EMRA also sends regular communication to help you keep your fellow residents informed, including:

- What’s Up in Emergency Medicine monthly e-newsletter;
- *EM Resident* magazine (print and online);
- EMRA 101 PowerPoint presentation.

What if you can’t travel?

EMRA is investigating new technology that will allow all program representatives to participate in our Rep Council meetings — even those who cannot attend in-person.

With remote voting and online discussion, the Representative Council will be as inclusive and transparent as possible. This makes your job as a program rep even more important.

Why should you serve?

The EMRA Program Representative position is an esteemed role in our organization. It’s the program reps who collaborate to put EMRA’s mission into action through resolutions and policy discussions that shape the association’s direction. Program reps quickly rise to the call of leadership. Several go on to be selected as EMRA board members and committee or division chairs.

EMRA appreciates the service of our program reps and recognizes their leadership potential. Our organization desires to foster those attributes, so meetings include several opportunities for professional development and outstanding networking. (For example, we host meet-ups at SAEM and ACEP *Scientific Assembly* specifically to allow our leaders — from program representatives to committee leaders to EMRA board members — to interact.)

Being an EMRA program representative is an honor and a responsibility, as you are the collective voice for almost 15,000 members — and you will, through your participation, shape the path of our specialty. So if you hear the calling and are ready to take your seat at the table, talk with your PD or current program rep to see how you can be next.

For questions, please email speaker@emra.org or vicespeaker@emra.org. ★

EMRA and ACEP Working Together



Nida Degesys, MD

ACEP Representative
University of California – San Francisco
San Francisco, CA

As the EMRA Board member representing all residents to the ACEP Board of Directors, I am frequently asked how our two organizations work together. While both EMRA and ACEP are independent, we work together to move the practice of emergency medicine forward and to support emergency medicine physicians and physicians in training.

When you join EMRA, you also receive complimentary membership to ACEP, which means you get membership to ACEP Sections. **An ACEP Section is a group of members who are interested in a particular area of emergency medicine (eg, critical care, geriatrics, toxicology, ultrasound, etc.).** The ACEP Sections meet virtually and in-person at the annual Scientific Assembly to discuss relevant topics, network, and provide mentorship. All EMRA members are automatically enrolled in the Young Physician Section (YPS), which is a pretty cool way to interact with more recent graduates and younger faculty. In addition to YPS membership, each EMRA member receives another section membership FREE (not a bad additional value since it is otherwise about \$20 for a resident or medical student to join a section).

Many of the ACEP Sections have overlap with our own EMRA Committees and Divisions (C&D), which are a great way to get involved in topics that interest you. A lot of EMRA's events and publications occur through our C&Ds. For example, through the EMRA Education Committee, we have put together amazing programming like the EMRA 20 in 6 Resident Lecture Competition and EMRA Quiz Show. Through the Wilderness Medicine Division, we hosted our first ever MedWAR.

The ACEP Representative also oversees EMRA Representatives to ACEP Committees. **Committees in ACEP are given objectives by the ACEP Board of**

Directors and essentially complete the work of the organization (similar to how EMRA's C&Ds work). To get on an ACEP Committee, you must apply, and there is a dedicated EMRA Representative to each of those committees. This is an essential way we represent residents within the work that ACEP does. Becoming an EMRA Representative to an ACEP committee is a selection process and involves an application. Stay tuned for details on the 2017-2018 application cycle, and if you are interested please email aceprep@emra.org.

You can see that **while we are two different organizations, we do have similar goals and interests**, and therefore do have some overlap. Ideally the EMRA Representatives collaborate with the EMRA C&D Chairs. For example, our EMRA Representative to the ACEP Wellbeing Committee is working with the EMRA Wellness Committee to improve the Wellness Booth at ACEP's Scientific Assembly. This is collaboration at its finest, and there are so many more opportunities for this type of cross-organization partnership! ★

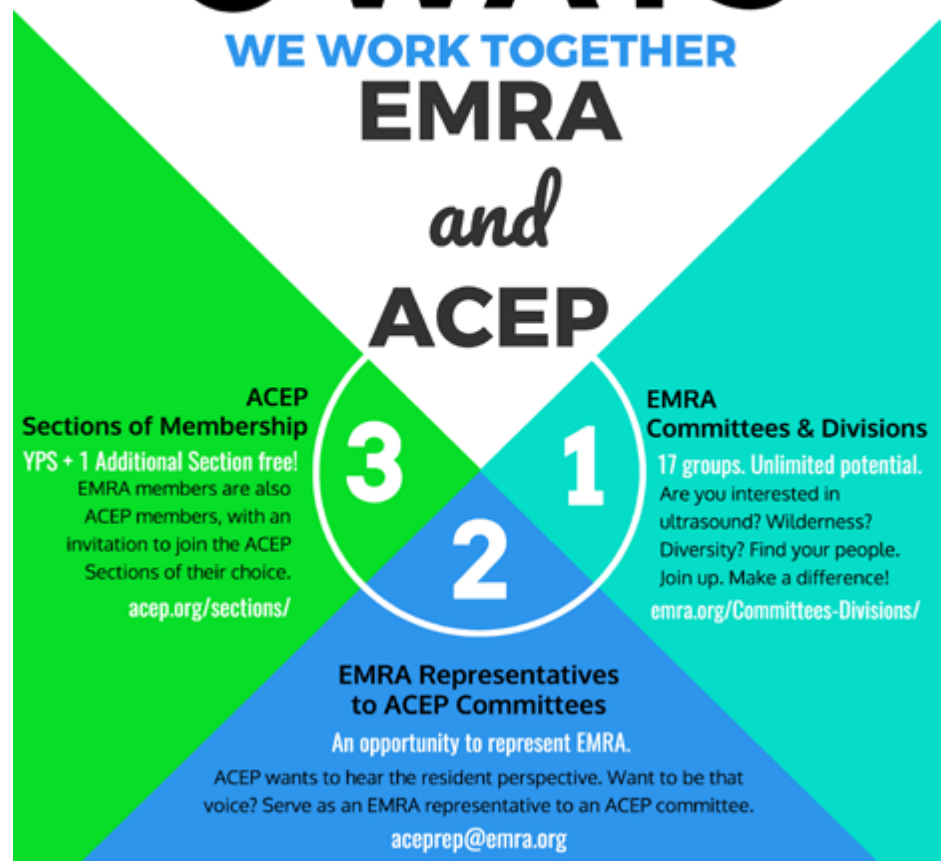
3 WAYS

WE WORK TOGETHER

EMRA

and

ACEP



Hospitals and Hackers

Keeping our Patients Safe From Cyber Attacks



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A n 83-year-old female with a history of sick sinus syndrome status post pacemaker implantation presents to the emergency department (ED) complaining of palpitations and lightheadedness. Upon arrival she is asymptomatic. Initial vital signs are as follows: T 37 C, HR 72, BP 120/80, RR 12, O2 sat 98% on RA. Within 10 minutes, her heart rate slows to 38 and she complains of severe lightheadedness. You order an electrocardiogram and ask for the name of her pacemaker manufacturer – just as you receive a call from the Department of Homeland Security advising you of a possible cyberattack in progress on the U.S. Senator now occupying your trauma bay. How do you respond?

Background

Emergency medicine residents tend to serve as the technical thought leaders of their departments. Raised with personal computers, smartphones, and social media, we have come to expect digital efficiency in our daily lives, and we hunger for such sophistication in our work as well. But **we must be wary of the risk such technologies pose to**

the health of our patients and to our fragile healthcare systems.

Hospitals & Hackers

As we continue to expect innovation of our hospitals, clinics, and consumer health devices we expose ourselves to the dark side of such advances. The sophisticated health care devices our patients need for survival are built from vulnerable systems that are just

as hackable as our home computers. The viruses, malware, and worms of the Internet don't stop at the digital borders of hospitals. **The consolidation of healthcare delivery networks and electronic medical record (EMR) systems have now made the weak digital defenses of one hospital the vulnerabilities of hundreds.**

The future of healthcare cybersecurity rests on not only the protection of patient information, but also the prevention of attacks on medical devices and vital hospital infrastructure from malicious hackers. For the past decade, talented researchers have been publishing vulnerabilities in medical devices such as insulin pumps, cardiac pacemakers, and bedside medication pumps.¹⁻³ In each of these cases the demonstrated attacks could result in patient harm or death stemming from a compromised device. It is very possible that during our career in emergency medicine we will wake one morning to the news that a patient has died at the hands of hackers manipulating a medical device connected to the Internet.

Hospital infrastructure itself can be a target of cyberattack, as demonstrated in 2014 when the hacker collective Anonymous attacked Boston Children's Hospital for nearly a week, blocking Internet access and preventing vital services from being performed.⁴ Also in 2014 security researcher physicians demonstrated how easy it would be to hack 911 emergency systems, rendering them useless and preventing emergency responses to time critical illness such as STEMIs and strokes.⁵ In 2016 Hollywood Presbyterian Hospital in Los Angeles was the victim of a ransomware attack in which a piece of malware encrypted the EMR databases, resulting in the near-total shutdown of the institution for three days.⁶ And in a shocking twist of hacking-for-profit in August 2016, a healthcare IT security firm targeted St. Jude Medical, documenting vulnerabilities in its pacemakers and defibrillators — but instead of warning St. Jude, the firm partnered with an investor and published the findings in order to drive down stock prices and turn a profit.⁷ (Lawsuits are now pending.)

Government and Industry Guidance

Hospitals are by no means swimming alone in this sea of risk. In fact, the U.S. Food & Drug Administration's Center for Devices and Radiological Health points first at device manufacturers for safeguards. In a guidance issued in December 2016, the FDA outlines considerations in pre- and post-market security, cybersecurity vulnerabilities, and even evaluation of the risk of patient harm.⁸

But where do physicians fit in the picture?

We're on the front lines. Patient education falls to the providers at bedside — we must be ready to explain not only how a patient's medical device works (and how to maintain it), but also how to recognize a cybersecurity risk for that device.⁹ We must be ready to manage a patient who comes to the ED because a hacked pacemaker suddenly started malfunctioning or a compromised insulin pump is threatening to deliver fatal results.

How, exactly, do we accomplish that? It's a glaring knowledge gap — but one that needs to be corrected quickly. **Speakers at the 2017 Healthcare Information and Management Systems Society meeting in February stressed that the possibility of ransomware moving from hospital IT systems to the clinical environment — via implanted devices — is not a matter of "if" but "when."**¹⁰

What Residents Can Do

Emergency medicine residents should use our technical prowess to advance patient care in safe and meaningful ways. We should identify the risks we will introduce as we improve health care in the 21st century, and prepare for inevitable cyber disasters that may disrupt our devices, harm our hospitals, and threaten our patients.

Awareness is a good first step. Read up (see sidebar for resources).

No other field of medicine is better prepared to fight this battle than EM, and no other generation of computer-coding, smartphone-wielding, Tweeting doctors will do it better than we will. ★

The sophisticated healthcare devices our patients need for survival are built from vulnerable systems that are just as hackable as our home computers.

RESOURCES

"A Brief Chronology of Medical Device Security"

The Association for Computing Machinery released this paper in October, offering an overview of the threats posed by the growing implantable device sector.

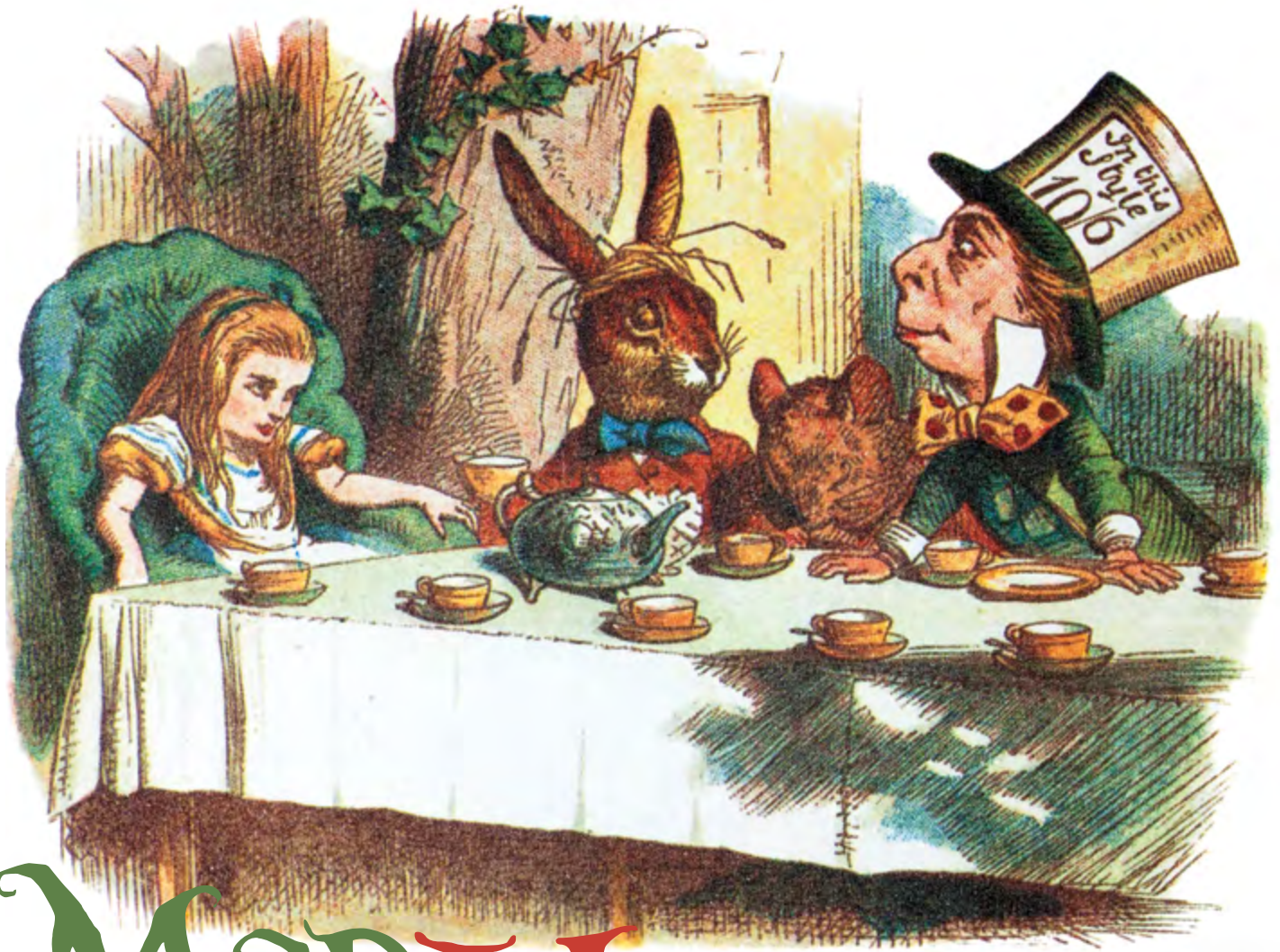
"Networked Medical Device Cybersecurity and Patient Safety"

This white paper from the Deloitte Center for Health Solutions sets forth 8 recommendations to help understand the shared responsibilities among health care providers, software and hardware manufacturers, and government regulators.

"Top 10 Tips for Cybersecurity in Health Care"

From Uncle Sam, this tip sheet — and its accompanying "Guide to Privacy and Security of Health Information" — includes a wealth of resources that will help physicians understand risk management principles associated with health care technology.

Closer to home, the **EMRA Informatics Committee** offers you a way to get directly involved in this issue. Join the division and suggest new ideas that will help our specialty address the risks inherent to the Information Age in which we practice.



Mad as a Hatter



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Physostigmine for Delirium Control in Anticholinergic Toxicity

A 34-year-old female with a history of bipolar disorder, depression, and multiple previous suicide attempts is brought into the emergency room after ingesting “an entire bottle” of diphenhydramine in a suicidal gesture. Family found the patient moaning on the floor and called 911. Paramedics at the scene find no medications other than the diphenhydramine. Her vitals are as follows: Temp 100.1 F, HR 122, BP 101/56, RR 22. A point of care glucose is 94. Pertinent exam findings include dry mucous membranes, dilated pupils, normal muscle tone, and normal reflexes. She is attempting to climb out of her hospital bed, reaching out at objects that are not there, and exhibits a mumbled speech pattern. Nurses are having a difficult time obtaining blood and an ECG, and several security guards are at the bedside attempting to control the patient.

This presentation is one that every emergency physician will confront during their career. Diphenhydramine toxicity is especially common because of its easy access as an over-the-counter therapeutic as well as its abuse potential.^{1,2} When presented with this type of patient, many providers would consider treatment with benzodiazepines, antipsychotics, physical restraints, or all of the above. Unfortunately, these interventions do not reverse the effects of anticholinergic delirium caused by diphenhydramine overdose.³ This is because the delirium is caused by blockade of muscarinic receptors in the brain. Therefore, **delirium can be completely refractory to repeated doses of benzodiazepines and may actually be worsened by the use of some antipsychotics** that have anticholinergic properties.⁴ Often this leads to an admission to a monitored floor until the medication wears off. In severe circumstances, patients may require intubation and ICU placement — two interventions with significant associated morbidity and mortality.⁵

Fortunately, **there is a better approach:** delirium reversal with physostigmine.

Physostigmine is a centrally-acting acetylcholinesterase inhibitor that has fallen out of favor since the publication of two patient case series in 1980.^{3,6} These two patients were both in the final throes of severe TCA overdose — both with a widened QRS, one already hypotensive and seizing — who were given a dose of physostigmine and then developed bradycardia and asystole.⁷ Based on this temporal relationship alone, the authors concluded that the “use of physostigmine in patients who have ingested an overdose of TCAs carries the risk of life-threatening bradyarrhythmias.” In retrospect, it is clear these patients had clear contraindications to physostigmine and had received inadequate sodium bicarbonate to treat their life-threatening sodium channel blockade prior to their cardiac arrest.

Since the publication of this case series, the use of physostigmine has been largely avoided because of the fear of causing cholinergic excess (bradycardia,

seizure, and bronchorrhea).⁶ Although the concern arose from TCA overdose, emergency department providers have become hesitant to use physostigmine for delirium and agitation caused by other anticholinergic medications like diphenhydramine.

In the intervening years, several authors have reassessed the concern and published various studies investigating not only the efficacy, but also the side effect concerns.^{6,8-11} Overall, the use of physostigmine in anticholinergic toxicity has been associated with better delirium control, fewer intubations, and a remarkably low rate of bradycardia, seizures, and cholinergic excess.^{6,8-10} Authors have proposed that the **slow administration of 1-2mg physostigmine IV infusion over 5-10 minutes for adults without relative bradycardia or diaphoresis (both which would suggest the delirium is not secondary to anti-muscarinic effects) is safe.**^{3,8} Absolute contraindications include QRS >100ms or other signs of sodium channel blockade on ECG (such as R' in aVR), seizure, and bradycardia. Relative contraindications include TCA exposure, severe asthma, or ileus. It is important to mention that the reversal effect usually takes several minutes but not necessarily seconds, as one would see in opioid reversal with naloxone. In addition, an infusion can be considered.

After delirium is controlled in anticholinergic toxicity, the emergency provider can ideally obtain a more accurate history and the patient can better cooperate with medical care. The importance of this is highlighted in the outcome of this patient's case — in which delirium was not reversed due to the aforementioned concerns regarding physostigmine. The young woman's providers were unable to determine that she also had ingested a large overdose of a parent's valproic acid (a fact revealed much later). She was given benzodiazepines until excessive sedation required intubation. On day 2, the patient remained intubated without additional administration of sedative medications. On day 3, the work-up was broadened because her mental status did not improve. An ammonia level was noted to be markedly elevated. Despite the administration of levocarnitine to treat the presumed valproic acid toxicity, her neurological exam worsened, and she developed severe cerebral edema. Ultimately, care was withdrawn as she progressed to brain death.

Although physostigmine may not have avoided the catastrophic consequences of a massive valproic acid overdose, it may have given the emergency provider the chance to clear her delirium early, interact with the patient, and obtain the history that may have been critical in saving her life. ★



Overall, the use of physostigmine in anticholinergic toxicity has been associated with better delirium control, fewer intubations, and a remarkably low rate of bradycardia, seizures, and cholinergic excess.



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Weeding

through the Effects of Marijuana Legalization



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Legalization of marijuana has become a heated topic in the United States as 8 states and Washington, D.C., have legalized it for recreational use. These 8 states include Washington, Colorado, Alaska, Oregon, California, Massachusetts, Nevada, and Maine. This means that, at this time, approximately one-fifth of the United States population (62 million Americans) live in a state where marijuana use is legal.¹

With a shift in political leadership, the federal government may pressure these states to ban legalization, because marijuana is still illegal under federal law. Attorney General Jeffrey Sessions is a proponent for reversing legalization of marijuana. People in favor of legalization fear he will clamp down on participating states by implementing financial roadblocks, litigating businesses into bankruptcy via excessive legal costs, and increasing federal regulations and restrictions on businesses.

Why Should You Care?

With an anticipated 10 or more states attempting to legalize marijuana in 2017, the stigma and legislation is rapidly changing across the nation. Regardless of personal beliefs, it is important to know how this will affect emergency departments (EDs) nationwide.

Currently, one of the main concerns in emergency medicine is overcrowding, and ED visits involving marijuana have increased substantially over the past 4 years. One study performed at the University of Colorado estimated that the rate of ED visits related to cannabis use doubled from 85 per 10,000 visits in 2013 to 168 per 10,000 visits in 2014, coinciding with the first year of retail

marijuana sales.²

The authors conclude that many of these cannabis-related ED visits are from state visitors, and that education efforts are needed at the time of sale to review possible adverse effects and indications for seeking emergency treatment.

How Do Patients Present?

Reasons that patients present to emergency departments after using marijuana include:

- Exacerbations of underlying psychiatric disorders
- Motor vehicle collisions
- Panic attacks leading to chest tightness
- Sense of doom
- Hyperventilation
- Overconsumption of potent edible products.³⁻⁶

Over-consumption of edibles is of particular importance because the percentage of THC is much higher in edibles, yet the effects take much longer to be felt (up to 2 or more hours when ingested vs. 5-10 minutes when smoked). This causes a consumer to continue ingesting the product, falsely believing they have not consumed enough.^{3,4} Approximately 10-30 mg of THC is necessary for intoxication, and a single edible may contain upwards of 100 mg of THC. Most consumers are unaware or find it difficult to consume only part of an edible, resulting in unintentional overdose. Furthermore, inconsistencies are common due to the lack of standardization and regulation on THC concentrations. Because no testing is required, businesses can claim any THC concentration they deem appropriate.⁷

Some other major health concerns to be aware of include cannabinoid

hyperemesis syndrome, and ingestion by children. Cannabinoid hyperemesis syndrome presents with diaphoresis, abdominal pain, and intractable vomiting. Patients often find relief with warm showers or baths. Treatment options include antiemetics, haloperidol, capsaicin cream, and, of course, abstinence.^{6,7}

In 2014 and 2015, the number of children presenting to the ED in states with legalized marijuana doubled and the number of poison control cases related to marijuana consumption increased five times.

The median age was 2 years old and the median length of stay was 11 hours, with approximately 33% resulting in admission. The most common reasons for admission was breathing difficulty. Toddlers often present with difficulty walking, somnolence, and difficulty feeding. Children should be monitored and given oxygen, intravenous fluids, and antiemetics if necessary.^{6,8}

What Will the Future Hold?

The legalization of marijuana may allow for more thorough and well-funded research. Some current topics being studied are the use of marijuana to manage seizure disorders, control symptoms of inflammatory bowel disease, and alleviate chronic pain. More research will most likely be required before any formal recommendations are made by national medical organizations. For now, it is important to know what to expect when encountering marijuana intoxication in the ED, continue to stay up-to-date on legislative changes, and educate patients on the risks associated with its use. ★

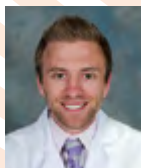


Can't-Miss Diagnoses in the Dizzy Patient

WHEN THE ROOM IS SPINNING



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A 34-year-old previously healthy female presents with abrupt onset right-sided headache, vertigo, and vomiting associated with diplopia and perioral paresthesias. On exam, the patient is afebrile with normal vital signs. Her neurologic exam is remarkable for a unilateral lateral gaze palsy, multidirectional nystagmus, and unsteadiness of gait. She exhibits persistent retching despite antiemetics.

**What is on your differential?
What labs or imaging studies
would you pursue at this point?**

Background

Acute onset headache, vertigo, and ophthalmoplegia should invoke a broad differential diagnosis from the emergency physician that considers multiple critical and emergent diagnoses.¹ This would

include an evaluation for hemorrhagic, ischemic, and vascular cerebrovascular accidents because these are highly morbid, critical diagnoses with time-sensitive treatments. Numerous stroke mimics such as hypoglycemia, seizure with postictal deficits, multiple sclerosis, intracranial tumor, toxic-metabolic disturbances, meningoencephalitis, Wernicke's encephalopathy, and extrapyramidal symptoms must also be considered. For now, let's focus on **three sinister syndromes** causing acute headache, vertigo, and neurologic deficits—cerebellar infarct, vertebral artery dissection, and lateral medullary syndrome.

Cerebellar Infarct

Ischemic and hemorrhagic cerebellar infarcts accounts for just 2% of CVAs overall.² The classic triad of presenting

symptoms is headache, vomiting and ataxia.³ Patients typically appear toxic, manifesting dysmetria and ataxia (eg, 71% are unable to walk without assistance).⁴ A key exam finding is direction-changing nystagmus, in which the direction of saccadic beats follow the direction of gaze. While neurologic deficits that correlate with cerebellar injury are commonly evident, manifestations can be highly variable—making this a remarkably challenging diagnosis. For example, a subset of approximately 10% of patients will present with isolated subjective vertigo without deficits.⁵ However, among this subset without neurologic deficits, 84% will have either ataxia or direction changing nystagmus. While CT can reliably detect cerebellar hemorrhage, it has poor sensitivity (26%) for ischemic lesions. Therefore, MRI is the optimal study.⁵

Vertebral artery dissection

Vertebral artery dissection (VAD) is a rare disease entity that typically afflicts relatively young patients. Presenting symptoms are usually acute onset neck pain or headache, followed by progressive development of neurologic symptoms.⁶ Headaches are typically posterior, ipsilateral, throbbing, and accompanied by diplopia and vomiting. Neurologic deficits often involve ataxia and even hemiparesis. It should be noted that vertebral artery dissection afflicts the posterior circulation and

TABLE 1. Can't-Miss Dizzy Diagnoses and Preferred Imaging Modality

	Characteristic Features	Imaging
Cerebellar infarct	Headache, vomiting, multi-directional nystagmus, ataxia	MRI/MRA
Vertebral artery dissection	Younger patients with neck pain or headache followed by cerebellar symptoms	CTA = MRA
Lateral medullary syndrome	Horner syndrome, “crossed findings” on motor-sensory exam	MRI/MRA
BPPV	Paroxysms of vertigo induced by head movements with fatigable nystagmus	N/A
Vestibular neuritis	Recent viral illness, abnormal head impulse test on HINTS	N/A
Ménière’s disease	Hearing loss, tinnitus, or aural fullness with isolated vertigo	N/A

manifests as cerebellar dysfunction—in distinction from carotid dissection, where the presenting headache is associated with contralateral cerebral hemispheric deficits and may be accompanied by Horner’s syndrome in up to half of cases. CTA has been shown to be equivalent to MRA and is the initial study of choice to evaluate for VAD in the ED after a hemorrhagic etiology has been ruled out with non-contrast head CT.⁷ Common neuroimaging findings suggestive of VAD are the “string of pearls” sign, arterial dilation, pseudoaneurysm, double lumen or intimal flap formation (**Figure 1**).

Lateral Medullary Syndrome

Also known as Wallenberg syndrome, lateral medullary syndrome is a classic constellation of symptoms associated with a medullary infarct involving the posterior inferior cerebellar artery

(PICA). Several bordering brainstem nuclei and tracts can be damaged, causing the triad of Horner syndrome, ipsilateral ataxia, and contralateral hypoalgesia. Lateral medullary syndrome is the most common syndrome associated with intracranial vertebral artery occlusion and can be seen in up to 20% of cases of VAD.^{8,9} Symptoms often include imbalance, vertigo, diplopia, nystagmus, dysphagia, hoarseness, and Horner syndrome. While manifesting symptoms can be variable given degree of infarct, crossed hemisensory deficits are seen in 90% cases.¹⁰ An ischemic process within the thrombolysis window warrants immediate evaluation for potential administration of thrombolytics. Emergent labs and neuroimaging should be obtained STAT. While MRI is the gold standard for brainstem strokes, the sensitivity within 48 hours of symptom onset is 72%, further emphasizing importance of clinical suspicion.¹¹

Management

The approach to headache and vertigo should incite prompt evaluation of ABCs, fingerstick glucose, and history and physical, in addition to a thorough neurologic exam with a focus on coordination and ataxia. Any suspicion of stroke should prompt immediate neuroimaging. The HINTS exam may be especially useful in identifying 3 particularly worrisome findings—multidirectional nystagmus, vertical skew, and a normal head impulse test.¹¹ Obtaining a clear history of symptom

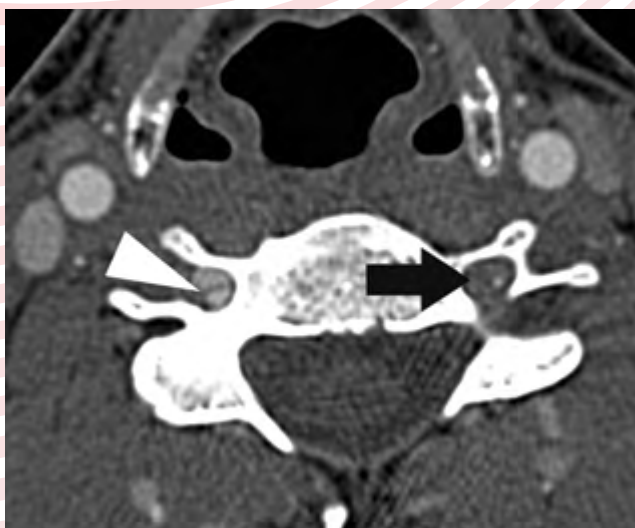


FIGURE 1. Bilateral Vertebral Artery Dissection on Axial CT.

Note intimal flap (arrowhead) and stenotic lesion (arrow).

Permission obtained for reproduction; image source: Mathieu H. Rodallec, MD, Véronique Marteau, MD, et al. Craniocervical Arterial Dissection: Spectrum of Imaging Findings and Differential Diagnosis. *RadioGraphics* 2008;28:1711-1728. Figure 13.

onset is critical, as thrombolysis may be indicated. Initial imaging of choice is CT/CTA head and neck to evaluate for hemorrhage, dissection and large vessel filling defects. The definitive imaging modality to evaluate brainstem and posterior fossa stroke is MRI/MRA, but this is often not available rapidly enough to influence the decision on thrombolytics. In cases of non-hemorrhagic, ischemic posterior CVAs in which thrombolysis is not indicated, early antiplatelet should be initiated in the ED.

Finally, a broader differential of stroke mimics may prompt lumbar puncture to evaluate for basilar meningitis or multiple sclerosis. The approach to a patient presenting with headache and vertigo must be steeped in a “worst-first” differential diagnosis that evaluates for highly morbid catastrophic cerebellar and brainstem strokes. Prompt evaluation, diagnostic testing, and imaging are crucial to facilitate involvement of consultants and timely, life- and brain-saving interventions.

Other Considerations

Generally, in the absence of multiple prodromal symptoms, heavy vomiting, ataxia, headache, or neck

pain, a peripheral cause is more likely. Three common peripheral etiologies for vertigo are benign paroxysmal positional vertigo (BPPV), vestibular neuritis, and Ménière’s disease. Episodic “paroxysms” of vertigo induced by head movements with fatigable nystagmus are typical for BPPV. A positive (abnormal) head impulse test on HINTS would be expected in a post-viral vestibular neuritis, as decreased unilateral vestibular tone alters the vestibulo-ocular reflex. Hearing loss, tinnitus, or aural fullness in context of isolated vertigo is very suggestive of endolymphatic buildup characteristic of Ménière’s disease.

Case Conclusion

A CTA of the head and neck did not identify any mass, cerebellar hemorrhage, arteriovenous malformation (AVM), or vascular dissection. Lumbar puncture was also normal, including a normal cell count, gram stain, glucose, and absence of oligoclonal bands. An MRI showed no acute intracranial pathology. The patient was admitted to neurology with the presumptive diagnosis of ophthalmoplegic migraine and was

treated with dopamine antagonists and NSAIDs. During her 2-day admission, her headache and vertigo resolved. She had regained the majority of the adduction of her eye, and the amplitude of her nystagmus had diminished. Verapamil was initiated as prophylactic migraine treatment and she was discharged with follow-up in neurology clinic.

Learning Points

Acute vestibular syndrome, defined as rapid onset dizziness accompanied by nystagmus, nausea, vomiting, and gait unsteadiness, envelops both benign peripheral and highly morbid central pathologies. However, discerning between these etiologies is particularly challenging when relying on subjective sensory abnormalities amidst a confusing array of descriptions (ie, dizziness, presyncope, vertigo, unsteadiness) that are highly subjective and historian-dependent.¹⁴ Further, patients’ descriptions of vertigo have been shown to be inconsistent and unreliable.¹⁵ The emergency physician must pay close attention to details regarding associated symptoms and always perform a thorough neurological examination. ★

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Managing Acute Right Ventricular Failure



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A 50-year-old woman with a history of primary pulmonary hypertension with right ventricular dysfunction presents with one week of worsening abdominal pain. She is lethargic, febrile to 102.5 F, breathing at a rate of 40, and saturating 85% on room air. Her MAP ranges from 60 to 70 mmHg. You pause for a moment as you contemplate fluid management and the risks associated with intubating this likely septic patient with known right ventricular dysfunction.

Introduction

Acute right ventricular (RV) failure, while far less common than left ventricular (LV) failure, adds unique complexity to the management of the critically ill patient. Hypoxia and hypotension can be seen in both

decompensated LV and RV failure because of a number of underlying insults. However, the underlying pathophysiology and management considerations differ dramatically.

Physiology Primer

The RV is part of a low-pressure system that is built for compliance and does not handle increased afterload, or pulmonary hypertension, very well. While the RV can adapt through hypertrophy in the same way the LV adapts to systemic hypertension, contractility falls due to dilation in situations of acutely increased afterload (as in acute massive pulmonary embolism), or at the extremes of chronically increased afterload (as in patients with severe COPD, primary pulmonary hypertension, or severe left heart failure).¹⁻⁴

A severely dilated RV will push the interventricular septum into space otherwise occupied by the LV. This is the concept of “ventricular interdependence.” In decompensated RV failure with volume overload, the interventricular septum shifts into the LV during end-diastole, resulting in decreased LV preload.⁵ As systemic blood pressure falls and becomes closer to the right ventricular pressure, the pressure gradient over which the RV is perfused is smaller, and the RV is susceptible to ischemia. Once ischemic, the RV contractility falls further, and the sequence self-perpetuates.⁶⁻⁸

Diagnosis

While definitive diagnosis of pulmonary hypertension requires right heart catheterization and invasive measurement of intracardiac and pulmonary artery pressures, bedside echocardiography provides a modality to quickly identify RV dysfunction in the undifferentiated critically ill patient.

The apical four-chamber view, if attainable, is best for comparing chamber size. An RV:LV chamber size ratio >1 or an RV end-diastolic diameter >30 mm (at mid-level) indicate the RV is dilated and THAT right sided pressures may be elevated (Figure 1).⁹ Likewise, loss of inferior vena cava (IVC) inspiratory collapse indicates increased RA filling pressures seen in decompensated RV dysfunction. In the parasternal short axis view, flattening of the interventricular septum causes the



LV to take on a characteristic “D” shape, illustrating the presence of ventricular interdependence (Figure 2).

Fluid Management

In decompensated RV failure, a cautious approach to fluid management is paramount, and it is problematic to rely on one marker of volume status. For example, the IVC may be plethoric in both hypo- and hyper-volemia as a result of increased preload and a non-compliant right heart.

In clinical scenarios suggestive of volume overload (eg, missed dialysis), forward flow can be improved by offloading the RV. Diuretics and even renal replacement therapy can be important.¹⁰

In decompensated RV failure, a cautious approach to fluid management is paramount, and it is problematic to rely on one marker of volume status.

In circumstances of hypovolemia, cardiac output may benefit from the cautious administration of IV fluids. Knowledge about the clinical scenario (eg, diarrhea) is critical and may offer the best insight into the patient’s volume status. If the volume loss is suspected, the use of small fluid challenges and close monitoring for response is a reasonable approach. Alternatively, performance of a passive leg raise with an associated increase in cardiac output measured via dedicated monitor or bedside echocardiogram may identify a patient as fluid responsive and can guide volume resuscitation. (*For more, see “Assessment of Fluid Responsiveness in the ED,” at emresident.org/ahead-curve-assessment-fluid-responsiveness-ed.)*

Vasopressors and Inotropes

The RV is perfused in systole and diastole over the pressure gradient between the systemic blood pressure (SBP) and the RV chamber pressure (RVP). In an effort to prevent RV ischemia, systemic hypotension must be avoided so that this pressure gradient is maintained. Unfortunately, many of the commonly used vasoactive agents used to abate systemic hypotension non-selectively cause vasoconstriction, thereby increasing the pulmonary vascular resistance and RV pressure.

Phenylephrine is a pure alpha-1 agonist which acts on the pulmonary

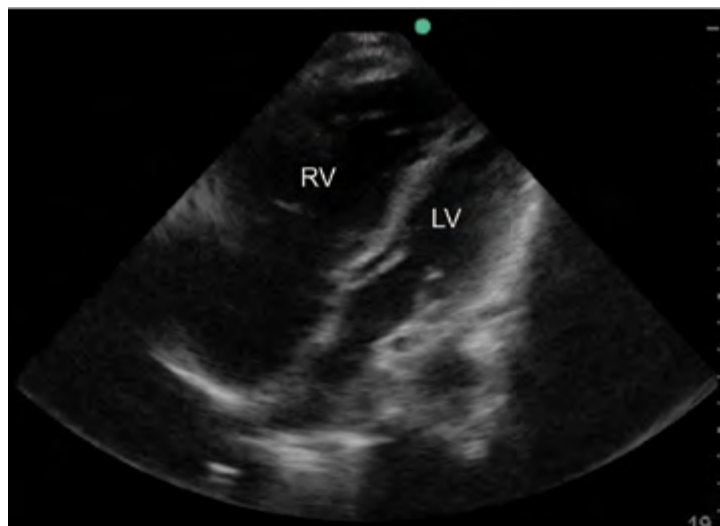


FIGURE 1.
Apical Four Chamber View
Right greater than left ventricular chamber size.

vasculature and increases RV afterload; **it is best avoided in RV failure.** **Norepinephrine**, in contrast, has been demonstrated to increase the pulmonary vascular resistance less than phenylephrine while augmenting inotropy through beta-1 agonism.¹¹ **Vasopressin** is an attractive agent for use in RV failure as it is a potent systemic vasoconstrictor but has little effect on the pulmonary vasculature.¹² The inodilators — **dobutamine and milrinone** — augment RV contractility and can have a role when other agents have failed. However, both agents can drop systemic vascular resistance and generally necessitate concurrent use of another vasopressor. **Epinephrine** offers beta-1,2, and alpha-1 agonism, balancing inotropy with vasoconstriction and providing a standalone agent that increases cardiac output without concern for vasodilation and hypotension. Of note, dobutamine, milrinone, and epinephrine are all potentially arrhythmogenic, which presents unique concerns in patients with RV failure whose cardiac output is dependent on being in sinus rhythm.^{13,14}

Airway Management

Respiratory failure in right ventricular failure is particularly difficult to manage; and intubation should be avoided if possible. This group of patients is prone to peri-intubation hemodynamic collapse due to an increase in RV afterload with positive pressure ventilation and the decrease in systemic vascular resistance on induction.^{15,16} An ideal strategy for airway management involves optimizing hemodynamics prior to intubation, choosing an appropriately dosed induction agent with a good hemodynamic profile, and using a low-tidal-volume strategy with the avoidance of hypercapnia, hypoxemia, and excessive PEEP. **Anticipate post-intubation hypotension.** Non-invasive ventilation is an attractive option as it can offer information about how the patient responds to positive pressure and can be easily discontinued.

Adjunctive Therapies

In critically patients with decompensated RV failure who have not responded to other therapies, inhaled nitric oxide should be considered. **Nitric oxide** selectively dilates the pulmonary vasculature — both decreasing pulmonary vascular resistance and improving ventilation perfusion matching by increasing perfusion to well ventilated parts of the lung.¹⁷ Inhaled prostacyclins such as **epoprostanol** or **iliprost** similarly dilate the pulmonary vasculature, but, unlike nitric oxide, can have systemic effects and should not be initiated without involvement of specialty services.¹⁰ Patients with primary pulmonary hypertension maintained on pulmonary vasodilator infusions in the outpatient setting must be continued on

decompensated due to cholecystitis. She was initially managed with noninvasive ventilation but ultimately required intubation for refractory hypoxia. She had been maintained on subcutaneous treprostinil in the outpatient setting. This was promptly reinitiated as an intravenous infusion. As her systemic blood pressure continued to fall, she was placed on milrinone and epinephrine, as well as inhaled nitric oxide. In the ICU, her condition continued to decline, and transfer to a center with ECMO capabilities was coordinated.

Right ventricular dysfunction adds layers of complexity in the management of the critically ill patient. These patients are susceptible to decompensation in situations of fluid overload, shock states, and other swings in cardiac dynamics. A

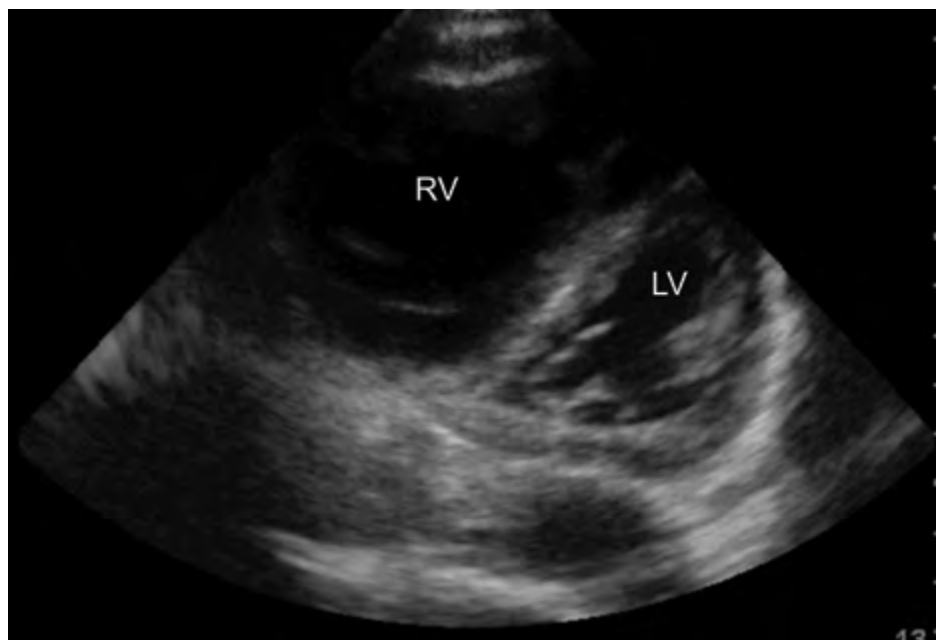


FIGURE 2. “D” Shaped Septum

Seen in diastole indicating RV volume overload and ventricular interdependence.

these medications, as sudden withdrawal can precipitate rebound pulmonary hypertension and hemodynamic collapse.¹⁸ Extracorporeal membrane oxygenation (ECMO) has a role as salvage therapy in decompensated RV failure, and transfer to a center with ECMO capabilities should be considered early.^{19,20}

Case Conclusion

The patient had known right ventricular dysfunction and acutely

cautious fluid resuscitation strategy—with care not to iatrogenically overload the RV—is necessary. Systemic hypotension can precipitate RV ischemia and should be avoided with a tailored approach to vasopressor selection and other adjunctive therapies. Intubation comes with a high risk of mortality given the complicated hemodynamic implications of positive pressure ventilation, and should be avoided if possible. ★

More than Meets the Eye

A CASE OF ORBITAL PSEUDOTUMOR



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A 55-year-old female presents to the emergency department with 2 days of worsening right eye pain and conjunctival injection, now with proptosis (Figure 1). She had been seen the day prior and had been sent home with a presumptive diagnosis of conjunctivitis. Her eye examination is significant for mild proptosis, chemosis, and severe conjunctival injection of the right eye. Pupils are 4mm, equal, round, and reactive to light and accommodation. Visual acuity is 20/40 bilaterally without corrective lenses. Left eye is normal with no obvious gross defects. After reviewing her chart, you begin to wonder what else should be on your differential.

Background

The differential diagnosis for “red eye” can be quite broad (Table 1). Therefore,

careful history and physical examination are of paramount importance. Specific factors to consider include the following: chronicity of illness, degree of pain, history of trauma or recent procedure, presence of visual changes, presence of proptosis, presence of fever, restriction of eye movement, cranial nerve involvement, and medical comorbidities.¹

Because of this patient's unusual and repeat presentation, an orbital computerized tomography (CT) scan is performed, ultimately revealing the diagnosis of orbital pseudotumor, an idiopathic non-neoplastic inflammatory syndrome of the orbit.^{2,3}

Clinical Features and Diagnosis

Idiopathic orbital inflammation, often called orbital pseudotumor or orbital inflammatory syndrome, can

affect every structure in the orbit, including the lacrimal gland, extraocular muscles, orbital fat, and the optic nerve.⁴ Orbital pseudotumor typically affects patients less than 50 years old and may occur unilaterally or bilaterally. **It is a common cause of unilateral exophthalmos (as opposed to Graves' disease, which is most often bilateral).** Bilateral involvement occurs in less than 10% of cases.²

Typical presenting symptoms include pain, erythema, swelling, proptosis, and restrictions in eye movement.²⁻⁶ The diagnosis can be made with careful patient history, ultrasonography, CT, and/or magnetic resonance imaging (MRI).² Diffuse infiltration of the orbit, inflammation of the sclera, and/or optic nerve involvement may be seen.² CT of the orbits will show involvement of the tendinous insertion of the extraocular muscles, which distinguishes it from thyroid associated orbitopathy, where the insertion point is spared (Figure 2).

Moreover, a CT will demonstrate thickening and fat stranding around the muscle belly (Figure 3). Diagnosis may be confirmed with a biopsy referred to as an orbitotomy.² However, if suspicion is high enough, response to corticosteroids can also be used to confirm a diagnosis without the need for biopsy.²

Pathophysiology

Although the pathophysiology of this condition remains unknown, **it has been hypothesized that immune-mediated processes are the most likely underlying mechanism.**¹ Infections and aberrant wound healing have been proposed as other etiologies. Several infectious diseases, such as viral upper respiratory infection, *Borrelia burgdorferi*, and Streptococcal pharyngitis have also been linked with orbital pseudotumors. Pathological findings of biopsies are often nonspecific, and may only reveal benign lymphoid hyperplasia and inflammatory cell infiltration with necrotizing vasculitis.²

Management

The cornerstone of treatment includes systemic corticosteroid therapy.^{3,8} It is reported that approx-

imately 75% of patients have a remarkable improvement after 24-48 hours of treatment.^{2,7} Although most cases have a rapid and dramatic response to steroids, there is also a chronic form with progressive fibrosis associated with a mild or poor response to steroids.^{2,8} In such cases, chemotherapy or radiation therapy is utilized.² Collectively, it has been found that almost 80% of patients have a positive outcome.² However, relapses are common, especially in bilateral disease.²

It is important to have ophthalmology involved for treatment and follow-up of this condition as well as to consider ruling out other rare but severe causes of orbital inflammation, such as thyroid-associated orbitopathy, sarcoidosis, infectious orbital cellulitis, orbital myositis, orbital vasculitis, Sjogren's syndrome, Wegener's granulomatosis, or malignant ocular tumors.²

The patient was admitted to the medical floor for intravenous methylprednisolone, as nausea and vomiting prevented her from tolerating oral steroids. On examination by ophthalmology the following morning, her signs and symptoms were much improved. She was discharged on a prednisone taper.

Conclusion

It is imperative to entertain a broad differential when encountering any ophthalmologic complaint. It is especially important when patients present for a return visit with new or changing symptoms. In general, the diagnosis of orbital pseudotumor should be entertained in any patient presenting with acute onset unilateral proptosis. ★



FIGURE 1. Conjunctival Injection and Proptosis

TABLE 1. Differential Diagnosis

Viral conjunctivitis
Bacterial conjunctivitis
Allergic conjunctivitis
Acute angle closure glaucoma
Subconjunctival hemorrhage
Keratitis
Iritis/Anterior uveitis/Iridocyclitis
Episcleritis
Scleritis
Endophthalmitis
Herpes zoster ophthalmicus
Orbital/postseptal cellulitis
Preseptal cellulitis
Corneal ulcer
Retroorbital hematoma
Graves' ophthalmopathy
Orbital pseudotumor



FIGURE 2. Axial CT of the Orbits
Shows thickening of the right lateral rectus muscle belly and its tendinous insertion (black arrows). Involvement of the tendinous insertion distinguishes it from thyroid associated orbitopathy, in which the insertion point is spared.

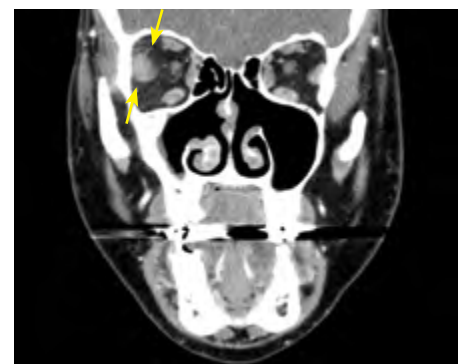
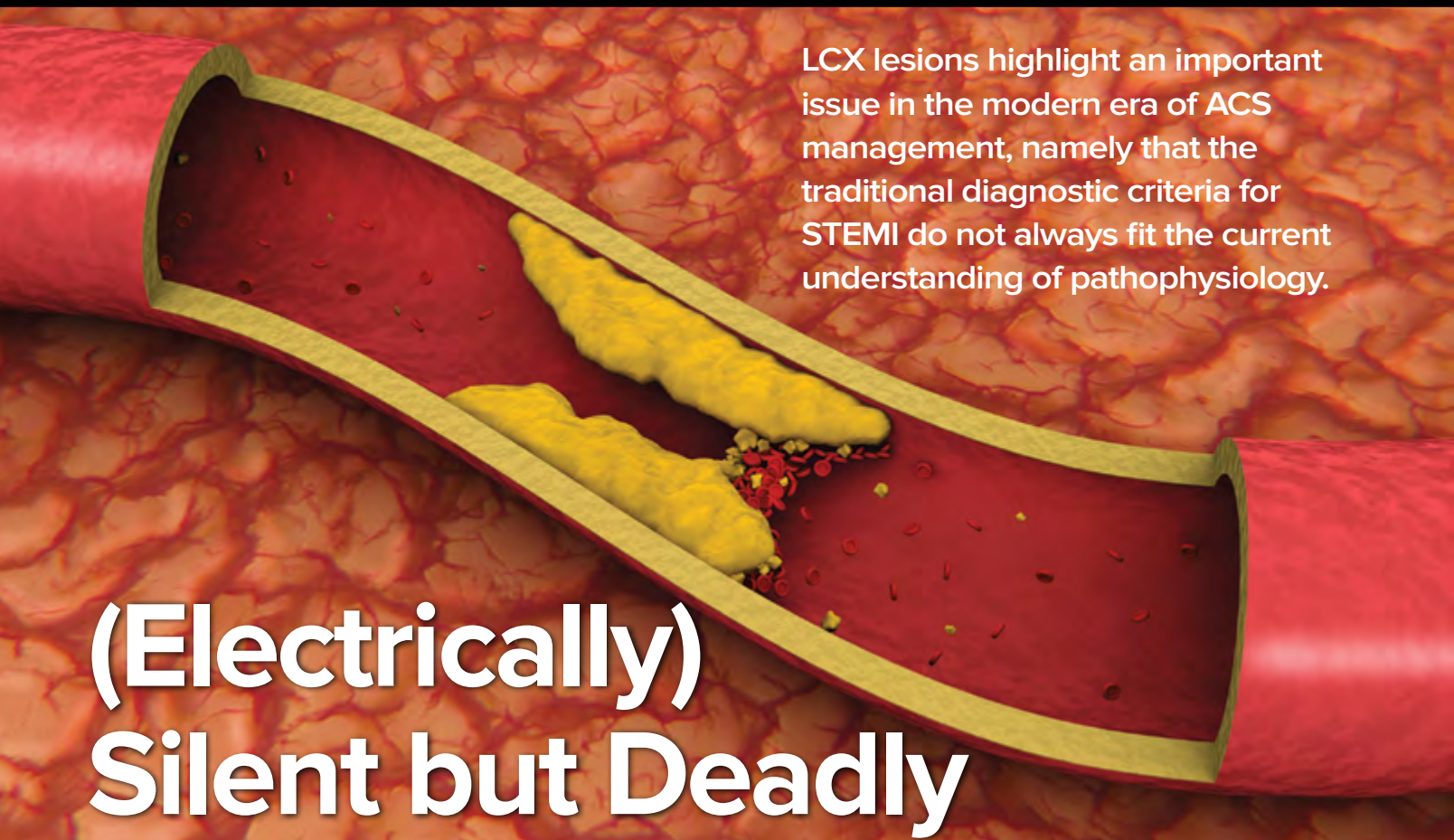


FIGURE 3. Coronal CT of the Orbits
Shows thickening and fat stranding around the right lateral rectus muscle belly (yellow arrows).



LCX lesions highlight an important issue in the modern era of ACS management, namely that the traditional diagnostic criteria for STEMI do not always fit the current understanding of pathophysiology.

(Electrically) Silent but Deadly

Left Circumflex Artery Occlusions



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@AlbanyMed

A 63-year-old male is brought in by EMS after having a witnessed cardiac arrest while at work. Bystander CPR was started immediately, and he was defibrillated twice in the field for ventricular fibrillation with successful return of spontaneous circulation. On arrival to the ED he is intubated. His ECG shows T wave inversions in I and aVL, with ST depressions in V5 and V6 (Figure 1).

The first troponin is within normal limits. While initial vital signs are normal, he soon develops worsening bradycardia and severe hypotension. After a normal head CT and discussion with the on-call interventional cardiologist, the patient is taken for percutaneous coronary intervention (PCI) where a 99% occlusion of the proximal left circumflex (LCX) is found and thought to be the culprit lesion (Figure 2).

He is transferred to the Cardiac Care Unit, where he ultimately has good neurologic recovery.

Discussion

Acute reperfusion therapy after a myocardial infarction (MI) has long been the mainstay in treatment of acute coronary syndrome (ACS), reducing both mortality and morbidity.¹ However, recognizing which patients require emergent reperfusion versus who can wait on an urgent basis is more difficult. ST elevation myocardial infarction (STEMI) focuses on rapid revascularization of the total coronary artery occlusion, with guidelines recommending

percutaneous coronary intervention (PCI) or fibrinolysis within designated time parameters.² Indications and timing for PCI for non-ST elevation ACS (NSTEMI-ACS) are less clear.³ NSTEMI-ACS encompasses a broader spectrum of disease than STEMI and ranges from unstable angina (chest pain at rest without ECG changes or elevated cardiac biomarkers) to non-ST elevation MI (NSTEMI), characterized by either elevated biomarkers or ECG changes that do not meet STEMI criteria.

While fibrinolysis is not associated with increased survival in NSTEMI-ACS, PCI is still considered an important aspect of therapy. While the ideal timing of PCI in NSTEMI-ACS remains unclear, better outcomes have been shown if PCI is performed within 24 hours of symptom onset.⁴

The Evidence

LCX artery occlusions are estimated to account for 20% of MIs.^{5,6} They may pose a diagnostic dilemma, primarily if the ECG findings are non-diagnostic for STEMI. **Subsequently, these patients are more likely to undergo PCI more than 24 hours from onset of symptoms compared to patients with more readily recognizable left anterior descending (LAD) and right coronary artery (RCA) occlusions.**⁵

LCX lesions are associated with increased risk of heart failure and mortality at 90 days and 1 year compared to RCA and LAD lesions.⁷ In addition, there have been multiple reports indicating higher peak levels of cardiac biomarkers, suggesting larger infarct sizes and thus more myocardial necrosis.⁸

Attempts at improving early diagnosis of total occlusion lesions in the LCX have had limited success. According to one study, angiography-proven LCX total artery occlusions only met STEMI criteria 46% of the time, and the addition of posterior leads (V7-V9) only improved sensitivity 6-14% of the time.⁹ Isolated V2 and V3 ST segment depression has also been purported to be diagnostic. In one study of 111 patients, the specificity of this finding was 96% with a sensitivity of 70%.¹⁰

STEMI or no STEMI

LCX lesions highlight an important issue in the modern era of ACS management, namely that the traditional diagnostic criteria for STEMI do not always fit the current understanding of pathophysiology. STEMI is thought to be a complete infarction along vascular territories, whereas NSTEMI-ACS encompasses sub-total occlusions with varying effect. Currently, STEMI remains an electrocardiographic diagnosis, despite failing to encompass all forms of total occlusive disease.² **In patients with total artery occlusions who do not**

meet STEMI criteria — as in some LCX occlusions — delayed PCI poses a significant risk for mortality and morbidity.

Indications to pursue emergent PCI in NSTEMI-ACS (ie, many LCX occlusions), include the following: hemodynamic instability, persistent chest pain despite maximum medical therapy, severe left ventricular dysfunction or heart failure, new or worsening mitral regurgitation or a new ventricular septal defect, or sustained ventricular arrhythmias.³ Overall, these criteria are indicative of large regions of myocardium being at risk. It remains unclear whether these patients would benefit from fibrinolytics

if total occlusion is suspected despite non-diagnostic ECG findings.

Summary

LCX occlusions are an underdiagnosed clinical entity in ACS management. Despite non-diagnostic ECG findings, total LCX occlusion should be considered in clinical presentations consistent with ACS. If the patient appears clinically worse than the ECG findings would suggest, consider discussing with interventional cardiology about pursuing PCI earlier than the NSTEMI-ACS protocols would dictate. These patients can have STEMI pathology without STEMI findings, yet will suffer the same downstream consequences. ★

FIGURE 1. ECG Demonstrating Non-specific Changes

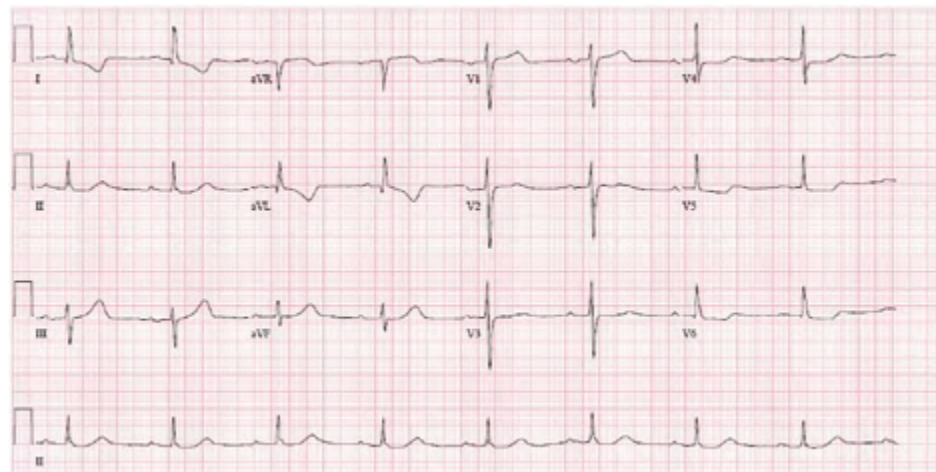
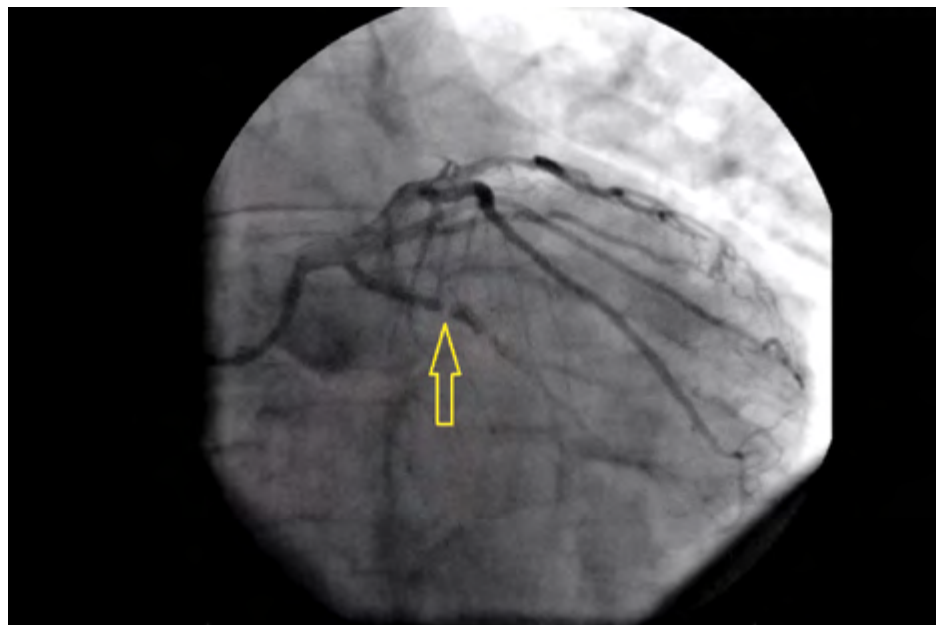


FIGURE 2. Still Image from Angiography, RAO Caudal View

Arrow indicates 99% occlusion of the LCX.





Straight to the source

Local Treatment Options for Low Back Pain



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Low back pain (LBP) is one of the top 5 chief complaints among patients presenting to the emergency department (ED), making it an important health issue in the United States.¹ The goal of therapy for musculoskeletal LBP is to minimize pain, decrease local inflammation, and return the patient to normal function as soon as possible.² Orally administered NSAIDs, muscle relaxants, and opioids have been effective in the treatment of LBP, but each class has its own drawbacks in certain patient populations.

The purpose of this article is to review local agents that are effective alternatives to oral analgesics in the treatment of LBP.

Topical NSAIDs

Certain topical NSAIDs (ie, formulations that contain diclofenac, ketoprofen, or ibuprofen) have been

shown to be effective and well tolerated for the alleviation of local pain.³ Among these options, the most commonly used agent is **diclofenac**, which is available in two topical forms — a patch and a gel. A 2008 review of 19 randomized controlled trials that compared topical diclofenac with either a placebo or an active drug (oral diclofenac and oral ibuprofen) demonstrated that diclofenac significantly mitigated local musculoskeletal pain when compared to oral agents.²

Ketoprofen is also available as patch and as a gel. The efficacy of the patch form was compared with a placebo in 163 patients with ankle sprains and found to significantly reduce pain.^{3,4} Similarly, in a meta-analysis of three pilot studies of exercise-induced muscle pain, locally delivered ketoprofen gel was more

effective than both the oral form of the NSAID and placebo.^{3,5}

Ibuprofen (5%) is available as a cream, a gel, and a transdermal patch. In a comparison with placebo, the cream was found to notably decrease pain associated with sprains and other musculoskeletal conditions.^{3,6} In a study of patients with acute soft tissue injury, the 5% gel form had efficacy similar to that of 400-mg ibuprofen tablets and

Average Cost of Topical Analgesics

Capsaicin cream	\$10
Diclofenac gel	\$55
Diclofenac patches	\$785
Ketoprofen cream	\$40
Lidocaine patches	\$277
Wintergreen oil	\$7

References available online.

achieved higher patient satisfaction scores.³⁷ In a study of 81 patients randomized to use either ibuprofen gel and placebo, those who used the gel experienced a faster reduction in pain than those using placebo, enabling them to resume physical activities sooner.³⁶

Topical NSAIDs have their own set of possible side effects (skin irritation, poor skin permeability, and allergic reaction), but they are usually limited to local effects as opposed to the systemic effects of oral NSAIDs.³ For many reasons, topical NSAIDs offer an attractive alternative to oral NSAIDs for the treatment of acute localized pain.

Lidocaine Patches

Lidocaine patches (Lidoderm) induce local anesthesia and provide another alternative in the management of LBP.⁸ A 2003 study evaluated lidocaine's ability to treat acute, subacute, and chronic LBP in 131 enrolled patients. The patients showed significant improvement within 2 weeks of patch placement. Side effects, seen in 6% of the study group, were limited to local skin reaction, nausea, dizziness,

and headache.⁹ That being said, cardiac toxicity is possible with concurrent use of Class I antiarrhythmics or beta-blockers despite the low systemic absorption associated with lidocaine patches.¹⁰

Herbal Medicaments

Capsaicin, or cayenne, is a powerful topical stimulant that acts by persistent skin desensitization upon repeated exposure.¹¹ The evidence behind its use in acute and chronic pain is based on a Cochrane systematic review of three randomized control trials.¹² One trial included 40 patients with acute LBP who were randomized to either a placebo or a capsaicin-containing cream.¹² Patients in the treatment arm experienced significant alleviation of pain at 3 days and 14 days. Another trial randomized 154 subjects with acute or chronic LBP to receive either placebo or capsaicin-containing plasters. Patients in the capsaicin treatment arm reported twice the relief when compared to the placebo group.¹³ The only side effect was local skin irritation.

Another herbal option is wintergreen oil, which is composed predominantly of

methyl salicylate, an agent chemically similar to acetylsalicylic acid (aspirin). When applied to the skin, wintergreen oil produces local tissue analgesia. The effect is synergistic when applied topically with peppermint oil, lowering the dose needed to achieve analgesia and thereby lowering the risk of side effects. It is also incredibly important to emphasize that accidental (or intentional) ingestion of wintergreen oil places patients at extremely high risk of salicylate toxicity, which can be fatal. Thus, extreme caution must be observed when using this agent.

Conclusion

A number of local analgesics are available for the management of low back and general musculoskeletal pain, and are generally well tolerated. Topical compounds carry their own set of potential side effects, but they tend to be milder than the systemic effects associated with oral NSAIDs, opioids, and muscle relaxants. Emergency medicine physicians should consider these alternatives to oral analgesics when treating patients with low back pain. ★

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Setting Up for Success



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The Importance of Medical Student Mentorship

Whether through formal arrangements or casual interactions, medical students depend on the guidance of resident mentors to help them explore the possibilities of a career in emergency medicine (EM), prepare a competitive application, and match into a residency program. So, how exactly should medical students go about the anxiety-inducing task of finding a resident mentor and developing a strong relationship with him or her? Fortunately, it has never been easier to dive into the world of EM as a medical student. With open access education resources online and countless opportunities to network through organizations like EMRA, there are many ways to meet and interact with potential resident mentors.

What is Unique about Medical Student Mentorship in EM?

While the concept of mentorship is hardly unique to EM, the audition and application process adopted by EM residency programs has resulted in a situation in which physicians practicing outside of the specialty may have severely limited knowledge about what makes a successful application. Students may even be ill-advised by some attending emergency physicians who are not as

familiar with recent changes in the application process. With this, there is a huge knowledge gap that can only be filled by those currently involved in the training process. For students, this means that residents are often the most up-to-date resource regarding the application process to the specialty.

What Mentorship Opportunities Exist Through EMRA?

First and foremost, turn to the EMRA Student-Resident Mentorship program. This project is managed by the EMRA Medical Student Council and is the premier platform for direct medical student advising by EM residents. The program is open to every medical student member of EMRA. Through the program, students are asked a series of questions regarding their background and interests to help create a match between one of the EMRA resident mentors and the student. While third- and fourth-year students will benefit significantly from involvement in the program during the peak of the audition, application, and interview process, students entering the program in the first or second year have a major opportunity to foster a long-term relationship with their mentors. As such, it is recommended to sign up

References available online.

for the program as early as possible to maximize this potential (emra.org/students/mentorship).

Mentorship in the Pre-Clinical Years

During the pre-clinical years, getting involved with your medical school Emergency Medicine Interest Group (EMIG) is an easy first step that can prove invaluable when it comes time to find a mentor. EMIGs will often host resident speakers, which provides a great opportunity for networking. While some medical schools are associated with emergency medicine residency programs, many medical students are faced with the challenge of finding resident mentors from outside institutions. Remaining active within the school EMIG is a great way to combat this problem. By establishing relationships with attending emergency physicians in the community affiliated with the EMIG, opportunities to interact with outside residency programs will open up. For medical students with direct access to a residency program at their own institution, a great way to find a mentor is to schedule a shadowing shift in the emergency department (ED). After meeting some of the residents on shift, establishing a mentor-mentee relationship is as simple as exchanging emails.

Mentorship in the Clinical Years

In the clinically-oriented third and fourth years, the best way to find a resident mentor is to complete an emergency medicine rotation in an emergency department that is staffed with residents. Not only will this provide ample opportunity for advising, it will allow students to experience first-hand what it's like to be an EM resident. Although it can often be a busy and chaotic place, rotating in a teaching ED can also result in some great clinical learning opportunities. For students who are unable to rotate in an ED prior to the fourth year, most residency programs are happy to allow students to participate in shadowing shifts or even attend didactics and journal club sessions. This can be accomplished by reaching out to program coordinators

and expressing an interest in getting involved. Many programs have a specific group of residents interested in education, and these individuals are great resources and potential mentors for motivated students.

What Makes a Great Mentor-Mentee Relationship?

Just as important as finding a mentor is being able to recognize the characteristics of a healthy mentor-mentee relationship. This skill will serve medical students well, as EM residents tend to have outgoing personalities and will be quick to offer help. While all of these relationships can be rewarding, it is important to first establish a few prerequisites prior to entering into a mentor-mentee relationship. With multiple potential mentors, how can students decide how to proceed?

Before selecting a mentor, it is critical that both the potential mentor and the mentee are able to have a clear and direct conversation about important topics. For example, if a resident mentor is unable to produce a single drawback to the practice of emergency medicine, this may be a good indication that he or she is not being fully honest and may not help the student in deciding whether the specialty is a good fit. On the other hand, if a student would like help strategizing for the

residency application process, it would be a significant detriment to lie to the resident mentor about application details.

Once the ground rule of mutual honesty has been established, there are quite a few secondary features that serve to enhance the mentor-mentee relationship. Does the mentor share the same career goal as the student? Does he or she have a similar academic profile and have experience applying to programs of interest to the student? These are a few questions to consider. For students with specific needs or concerns, it is often quite helpful to find a mentor with a similar background. While some of these secondary characteristics may be difficult for students to find independently, participation in organized mentorship programs will significantly increase the likelihood of finding an ideal mentor.

A Personal Note

Mentors can have a profound effect on a medical student's early career. Therefore, it is imperative that students seek mentors early and often. For graduating medical students and current residents interested in becoming a mentor, please consider joining the EMRA Student-Resident Mentorship program. ★



Visit EMLRC.org for more information on the program and how to register.

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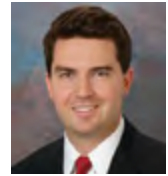
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Neurosurgery



Colin Przybylowski, MD
Neurosurgery Resident
Barrow Neurological Institute
Phoenix, AZ

When you have a patient with a neurosurgical emergency, time is precious. Colin Przybylowski, MD, of the Barrow Neurological Institute offers insight on how to present an efficient, effective consult.



What basic work-up would you like completed prior to placing a consult?

In general, a pertinent neurologic exam with pertinent imaging. Basic labs and coagulation studies are useful but don't need to hold up a consult. Imaging will vary based on the pathology at hand, but you typically can't go wrong by starting with a head CT. If the history or presentation is suggestive of a tumor or infection, an MRI with and without contrast is the study of choice. For vascular pathology of the head and neck, CTAs are often faster to obtain and better quality studies than MRAs, although this may be institution dependent. ESR, CRP, and procalcitonin are helpful for an osteomyelitis/discitis workup.

What do you consider to be urgent or emergent consultations?

There are several obvious ones: intracranial hemorrhage (epidural, subdural, intraparenchymal, subarachnoid), severe traumatic brain injury with low GCS, cauda equina syndrome, and spinal cord injury.

Here are 2 less common ones to keep in mind:

1. **Shunt failure** — A basic shunt workup includes a head CT and an X-ray shunt series. In addition to clinical suspicion, an increase in ventricular size compared to previous head CTs is concerning for shunt failure. Be especially

cautious with patients shunted for congenital hydrocephalus, as their ventricles do not always increase in size with shunt failure, and they can decline rapidly. Pseudotumor cerebri shunts are only of concern if the patient is truly losing vision rapidly. NPH shunts are never an emergency, unless there is suspicion for infection.

2. Central cord syndrome —

Patients with severe cervical stenosis can develop central cord syndrome after trauma, even after something minor like a ground-level fall. Look for distal > proximal upper extremity weakness as well as severe hyperesthesias (pain in the hands, even with light touch). This clinical picture will warrant an MRI of the cervical spine. This is a spinal cord injury by nature, and surgical decompression is often required within 24 hours.

Top 3 ED pet peeves?

1. Overuse of spine MRIs — patients who present with back or neck pain (axial pain and/or radiculopathy) with no other concerning signs or symptoms do not warrant an MRI (or neurosurgical consult if the workup is negative) in the ED. This is an outpatient workup.
2. Calling a consult without performing a neurologic exam, especially for patients with intracranial

hemorrhage who are subsequently intubated and sedated.

3. Not knowing or relaying the patient's pertinent medical history (when it is possible to obtain it) — this is mainly in regard to anticoagulation or antiplatelet medication, which may need to be reversed in emergency settings. Neurosurgeons will want to be told about medical comorbidities that will influence the timing of operative clearance, such as severe heart failure, history of DVT/PE, renal failure, etc.

Other pearls for emergency medicine residents?

Really try to nail down your GCS score and make a habit of communicating it to your neurosurgery consultant, particularly in the setting of trauma and/or intracranial hemorrhage. It is fairly straightforward and allows the neurosurgery consultant to triage the

patient. GCS is one of the main factors that help determine whether intervention is indicated in these situations.

For example, "I have a 47-year-old female with no major past medical history who presented with the worst headache of her life. She was initially wide awake and neurologically intact, but then declined, requiring intubation. Head CT shows a diffuse subarachnoid hemorrhage. Her GCS is currently E2M5VT, localizing in her left upper and withdrawing in her right upper. Platelets and coags are normal." This paints a clear picture of the patient in the neurosurgeon's head and gives him/her the ability to know the exact order of what steps need to be taken next before even seeing the patient.

Here are two situations when medications for certain new diagnoses do not necessarily need to be given reflexively in the ED:

1. When a new brain tumor is diagnosed

in the ED, dexamethasone does not need to be given immediately for cerebral edema. If the patient is declining or if there is any doubt (large tumor burden, large amount of edema), it is always fine to give it. Otherwise, you can wait to ask the neurosurgery consultant if s/he wants it given. This is because dexamethasone interferes with the ability to diagnose lymphoma from biopsy specimens, which is often on the differential diagnosis for intracranial lesions.

2. When osteomyelitis/discitis is first diagnosed, antibiotics do not need to be given immediately if the patient does not appear sick. Ideally, blood cultures and tissue cultures (either from open surgery or CT-guided biopsies) are obtained prior to initiation of antibiotics. Of course, if there is any question, we will not fault you for giving antibiotics. ★



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If you're interested in health care policy issues, you've heard of — and most likely have met — Alison Haddock. Since her second year of residency, Dr. Haddock has been a staple at advocacy events on the national and state levels. She and Nathaniel Schlicher, MD, JD, FACEP, oversee the Emergency Medicine Advocacy Handbook, updated every few years. (As past EMRA Legislative Advisors, the two physicians both have continued to educate and inspire colleagues to get involved in health care policy initiatives.)

Dr. Haddock currently serves as ACEP State Legislative Committee chair, and she advocates tirelessly for her patients and her colleagues by staying in the know about policy issues. EM Resident spoke with Dr. Haddock to learn what drives her belief that legislation matters to every practicing physician.



Visit emra.org/resources/emra-cast to hear our interview with Dr. Haddock.

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Your Time, Your Legacy

Alison Haddock, MD, FACEP
@AdvocacyMD

Medical school: Cornell University Medical College

Residency: University of Michigan

Current Position: Assistant professor of Emergency Medicine – Baylor College of Medicine

First things first: Why emergency medicine? When I went to medical school, I planned on going into pediatrics, but then I discovered that the reason I had enjoyed pediatrics so much in my preclinical years was that I had volunteered in several pediatric emergency departments. I realized what I liked most was the emergency medicine, not the pediatrics. I like caring for people from all walks of life, and the opportunity to see a wide variety of patients.

You've been extremely active in organized medicine. What's your favorite volunteer role? I loved being the EMRA Legislative Advisor. It gave me the opportunity to work with other residents about something we were passionate about. The cool thing was I got to dive deep into health policy and figure out how to represent residents within the broader house of medicine, while I also got to know EMRA and ACEP much better.

How has being a volunteer helped your career? I think the leadership skills I've learned through my involvement in EMRA and ACEP have helped my career tremendously. Learning how to work in teams and represent your ideas well, learning how to work with others who may disagree with you — those are important life skills. But the other thing is the networking opportunities. You get to know some of the people you would be working for before you work for them. I was recruited to my current job by Nathan Deal, MD, FACEP, who was the president of EMRA while I was on the EMRA Board. Another job I was considering was with someone I had worked with on the ACEP Education Committee.

If you were just starting your residency now, what would you do differently? I would get more involved with EMRA and ACEP sooner. I went through my first year of residency knowing I wanted to be involved in health policy but not knowing how to do that. I didn't even know what health services research was called. There is a fine balance between getting overwhelmed your intern year and still finding opportunities to be involved.

What keeps you coming to work every day? I really love teaching. I like the opportunity to work with residents and medical students and expose them to new approaches, and have that teamwork. When I worked in community medicine, I missed the teamwork aspect of EM.

Favorite life hack for night shifts? Oh boy, I need some. Can anybody give me some tips? Night shifts are just hard.

Best time management tip? I'm a big fan of the Pomodoro Technique, which says you can really only concentrate on something for 20 to 25 minutes at a time. No interruptions; just do that one thing. So I have a timer, and I can see it's running but I can't see how long I have left. I tell myself, "You can do anything for 20 minutes."

Dog or cat? Dogs, 100 percent. I'm looking at 2 of them right now (Ginger, a mini Labradoodle, and Gilligan, a Spaniel mix). We compete formally in agility — with ribbons and all.

Beach or mountains? Beach. I'm afraid of heights, and mountains aren't as fun without chair lifts and skiing.

What goes on pizza? Sausage and mushrooms

Most-used app? Really, probably email — but that's boring. I spend an embarrassing amount of time on Threes!, an iPhone game. It's so addictive.

Favorite Twitter feed? @MDAWARE

Fellowship Opportunity Open

The American Board of Emergency Medicine and the National Academy of Medicine are seeking applicants for the next ABEM Fellow, a role that provides talented, early-career health science scholars in emergency medicine the opportunity to experience and participate in evidence-based health care or public health studies that improve the care and access to care of patients in domestic and global health care systems.

Diplomates or active candidates for certification by ABEM, who hold non-tenured faculty positions in any university, are eligible for the program. Nominations can only be made by a member of the NAM or a member of the ABEM Board of Directors. Nominees will be evaluated and selected by an NAM-appointed committee. The selected fellow will be awarded a flexible research stipend of \$25,000 that will be administered through the appropriate department in the fellow's home institution.

Those wishing to submit a nomination for consideration by the ABEM Board of Directors must submit a completed nominations packet to Kelly R. Johnston at kjohnston@abem.org by May 22. For details, visit the NAM website at <https://nam.edu/programs/health-policy-educational-programs-and-fellowships/nam-fellowship-program/american-board-of-emergency-medicine-fellowship>. ★

Annals of Emergency Medicine Calls for Abstracts from Residents, Fellows

Now in its 19th year, the Residents' Perspective section in *Annals of Emergency Medicine* comprises articles by emergency medicine residents and fellows. The purpose of the column is to create a forum for the discussion and analysis of topics affecting trainees in emergency medicine. They are written as informative instructional pieces, educational research, referenced position papers, or unique resident perspectives on current emergency medicine topics.

Submit an abstract! Authors of promising abstracts will be invited to submit a full manuscript for peer review. Themes of interest this year include:

- **Emergency Medicine Education:** Trends in the delivery and scope of emergency medicine education for learners at all stages
- **Emergency Medicine in Society:** The intersection of emergency medicine and public institutions such as civil groups, public health agencies, the justice system, mass media etc.
- **Technology in Emergency Medicine:** Technology and innovation that is expected to change the care of the ED patient population
- **Administration of Emergency Medicine:** Physician efficiency, productivity, reimbursement, the organizations that influence these metrics, and their importance to the resident physician.

Abstracts are limited to 300 words and should be double-spaced. Submit your abstract via Annals' online submission system, Editorial Manager, at editorialmanager.com/annemergmed (select the "Residents' Perspective" article type). Invited manuscripts will undergo the same peer review process as all other submissions to Annals.

More information for authors can be found at annemergmed.com/content/categories/#residentsperspective.

For questions, contact Editorial Board Resident Fellows Tricia A. Smith, MBBS, MD, MPH, and Tarak K. Trivedi, MD, at annalsfellow@acep.org. ★



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Join Us FOR ALL THE EMRA MAGIC



EMRA has a full slate planned for the SAEM Annual Meeting, May 16-19 at the Hyatt Regency Orlando.

The EMRA Board of Directors and all EMRA committees and divisions will meet during the conference, along with the Representative Council and program reps.

These spring meetings set the tone for the year, with a new roster of leaders stepping up to make their mark. Plus, we're hosting all the fun events that make EMRA special!

TAKING CARE OF BUSINESS

In addition to Committee & Division meetings (*detailed schedule at emra.org/Events/SAEM-Annual-Meeting*), notable business events include:

EMRA Board Meetings

Tuesday, May 16 • 8:30 am–5 pm
Friday, May 19 • 9 am–12 pm
Barrel Spring 2/Lobby Level

EMRA Reference Committee Public Hearing

Wednesday, May 17 • 1:30–2:30 pm
Bayhill 28

What's on your mind? Come share your questions, concerns, ideas, and observations about EMRA, the specialty, and the life of emergency medicine. We want to hear from everyone!

EMRA Rep Council Meeting & Town Hall

Thursday, May 18 • 8:30–11:30 am

Regency Ballroom V, Convention Level

If you'd like to help guide EMRA's future, this is the meeting you need to attend. Proposed resolutions will be introduced and debated, and at the end of the audience discussion, program reps will vote. Make sure your program rep knows what you think.

BRAGGING RIGHTS

EMRA is giving you not just one — but **three** — chances to call yourself a champion at SAEM 2017! We're hosting three fun-filled contests that keep your competitive edge sharp and your skills even sharper.

EMRA Quiz Show

sponsored by Rosh Review

Wednesday, May 17 • 5–7 pm

Regency Ballroom V, Convention Level

This is one of the most entertaining, educational, and enjoyable events at SAEM. Come cheer on our teams!

ACOEP's Airway Shootout

presented by EMRA

Thursday, May 18 • 2–4 pm

Plaza International Ballroom D, Convention Level

New this year, 8 teams will try to outdo one another as they battle to successfully complete 4 airways in a competition of skill and speed - with a few twists and turns in store!

EMRA Resident SIMWars

Friday, May 19 • 12–5 pm

Plaza International Ballroom D-E-F, Convention Level

This always-popular event returns with a new slate of competitors and cutting-edge simulation scenarios and equipment.

CONNECT WITH COLLEAGUES

Emergency medicine is a tight-knit world, so take these opportunities to network and get to know one another.

EMRA Spring Awards Lunch

Thursday, May 18 • 12–2 pm

Regency Ballroom O, Convention Level

It's our privilege to honor the students, residents, and faculty included in the Spring Awards roster. We're most excited this year, because the ceremony will be EMRA-fied. (This event is invitation-only.)

EMRA Leaders Meet-Up

Thursday, May 18 • 6:30–8 pm

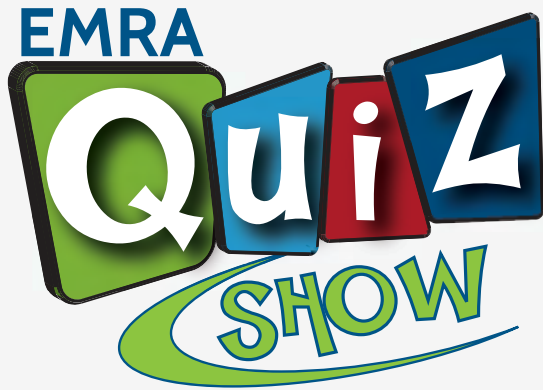
All EMRA program reps, committee and division leaders, Medical Student Council, and EMRA reps to ACEP committees are invited to join the EMRA Board for some mix-and-mingle time before the EMRA Party.

EMRA Party at SAEM

Mango's

Thursday, May 18 • 10 pm–2 am

IF YOU'RE NOT PLAYING, YOU SHOULD BE WATCHING!



**Wednesday, May 17
5–7 pm**

Pop culture combined with puzzling medical questions make for a rollicking good time at the EMRA Quiz Show! Not to mention the popcorn-throwing, noise-making, rowdy bunch of residents cheering for their favorite teams!

**Thursday, May 18
2–4 pm**

Eight residencies compete against each other to successfully complete airway challenges. Think it's easy in front of a live audience? Oh, we might throw these teams a curve or two!



**Friday, May 19
Noon–5 pm**

Some things look obvious; other things, not so much! That's what SIMWars is all about — and you'll see plenty of twists and turns in this high-fidelity simulation competition. Eight teams try to outwit each other!



Monitor the EMRA Events @ SAEM schedule at emra.org/Events/SAEM-Annual-Meeting/ for the latest updates.

EMRA Honors 2017 Spring Awards Recipients ROUND OF APPLAUSE!



Please join EMRA in congratulating our 2017 Spring Awards recipients. *Special thanks to our EMRA Awards Committee for doing the work to make this recognition possible.*

MERIT AWARDS

ACEP Scientific Review Subcommittee:

Shih-Chuan Chou, MD, Yale-New Haven Hospital/
Brigham and Women's Hospital

Academic Excellence Award:

Justine Nagurney, MD, Yale-New Haven Hospital

Alexandra Greene Medical Student Award:

Sean Ochsenbein, ETSU Quillen College of Medicine

Chief Resident(s) of the Year:

Brian Jennett, MD; **Ravi "Roni" Chauhan**, DO;

Christopher Joseph Ford, MD, University of Wisconsin

Fellow of the Year:

Sara Andrabi, MD, Baylor College of Medicine

Resident of the Year:

Taylor Nichols, MD, UCSF-SFGH

Jean Hollister EMS Award:

Maika Dang, MD, Univ of Cincinnati

Rosh Review "One Step Further" Award: To be announced

Robert Doherty, MD Teaching Fellowship Award:

Jenelle Holst Badulak, MD, Univ of Washington

FACULTY AWARDS

Residency Director of the Year:

Jason D. Bothwell, MD, FACEP, Madigan Army
Medical Center

Associate Residency Director of the Year:

Sameer Desai, MD, University of Kentucky

Residency Coordinator of the Year:

Lori Berryman, Thomas Jefferson University

GRANTS

Local Action Grant:

Danika Evans, OMS-III, Rocky Vista U COM

Research Grants:

Jessica Rainey, MD, Stanford University;

Alicia Lu, Warren Alpert Medical School of Brown
University

TRAVEL SCHOLARSHIPS

Airway Lab Scholarship

Tiffany Abramson, MD, LA+USC Med Ctr/Keck
SOM of USC

Lipika Bhat, MD, University of Kentucky

Michael Butterfield, MD, University of South Florida/
Tampa General

Kiersten Carter, MD, Stanford/Kaiser

Thomas W. Engel II, MD, Cook County Hospital

Anthony Guynes, MD, Maricopa Med Ctr

Laurie Krass, MD, John H. Stroger Jr. Hospital of
Cook County

Lawrence Lau, MD, Thomas Jefferson University

Andrew Staffaroni, MD, Christiana Care

Keiran Warner, MD, Stanford University Med Ctr

EMBRs SCHOLARSHIP

Michael O'Brien, MD, University at Buffalo

EDDA SCHOLARSHIP

Justin Fuehrer, DO, Long Island Jewish

Emily R. Gordon, MD, UMass Memorial

Sarathi Kaira, MD, Baylor College of Medicine

Erin Muckey, MD, NYU Langone/Bellevue Hospital Ctr

Krystin Thomas, MD, Carolinas Med Ctr

SAEM SCHOLARSHIP

Henrik Galust, Northeast Ohio Medical U

Christine E. Loftis, UT-Rio Grande Valley

Evangelia Murray, UMass Med School

Jerome Rogich, UMass Med School

Jake Valentine, Baylor College of Medicine

CRITICAL CARE MEDICINE CONFERENCE SCHOLARSHIP

Nancy Globber, MD, UC-San Diego

Mohamed Hagahmed, MD, UPMC

JOIN US IN CONGRATULATING THE
RECIPIENTS OF OUR SPRING AWARDS!

MAKING A DIFFERENCE

Welcome to the Leadership Pipeline!

EMRA's committees and divisions will welcome new leaders during the SAEM conference in May, kicking off a yearlong tenure that offers unlimited potential for new initiatives, ongoing projects, and — best of all — personal and professional development. EMRA is pleased to welcome these 2017-18 Committee and Division leaders.



AWARDS COMMITTEE

Chair: Aditi Mitra, MD, Beaumont Hospital
Vice-Chair: *Open position*

DIVERSITY & INCLUSION COMMITTEE

Chair: Vidya Eswaran, MD, Northwestern University
Vice-Chair: Abdullah Hasan-Pratt, MD, University of Chicago

EDUCATION COMMITTEE

Chair: Michael Yip, MD, Yale University
Vice-Chair: Sara Paradise, MD, University of Arizona

HEALTH POLICY COMMITTEE

Chair: Nathan Vafaie, MD, Baylor College of Medicine
Vice-Chair: Allen Wang, MD, George Washington University

INFORMATICS COMMITTEE

Chair: Michael Hoaglin, MD, Duke University
Vice-Chair: *Open position*

RESEARCH COMMITTEE

Co-Chairs: Olga Kovalerchik, MD, Yale University
Vice-Chair: Tommy Eales, MS-IV, Des Moines University

WELLNESS COMMITTEE

Chair: Randy Sorge, MD, Icahn SOM at Mount Sinai
Vice-Chair: Leann Mainis, MD, UCSF-Fresno

MEDICAL STUDENT COUNCIL

Chair: Erin Karl, MS-III, University of Minnesota
Vice-Chair: Mike Sachon, MS-III, Edward Via College of Osteopathic Medicine

CRITICAL CARE DIVISION

Co-Chairs: Abdullah Bakhsh, MD, Emory University and Joshua Glick, MD, University of Pennsylvania Medical Center
Vice-Chair: Clark Owyang, MD, Icahn SOM at Mount Sinai

EMS DIVISION

Chair: Michael Spigner, MD, University of Cincinnati
Vice-Chair: Seth Kelly, MS-IV, Texas A&M College of Medicine

INTERNATIONAL DIVISION

Chair: Eric Lee, MD, Icahn SOM at Mount Sinai
Vice-Chair: Brian Strickland, MD, University of Chicago

PEDIATRIC EMERGENCY MEDICINE DIVISION

Chair: Alexander Chang, DO, University of Illinois at Peoria
Vice-Chair: Katie VanNatta, MS-IV, Kansas City University Medical College of Osteopathic Medicine

SIMULATION DIVISION

Chair: (Tony) Xiao Chi Zhang, MD, Brown University
Vice-Chair: Nicholas Salerno, MS-IV, UT-San Antonio

SPORTS MEDICINE DIVISION

Chair: Albert Leung, MD, University of Chicago
Vice-Chair: Richard Grantier III, MD, University of Mississippi

TOXICOLOGY DIVISION

Chair: Alexandra Amaducci, DO, Lehigh Valley Health Network
Vice-Chair: *Open position*

ULTRASOUND DIVISION

Chair: Franklin A. Poff III, DO, University of South Florida
Vice-Chair: Landon Pratt, MD, University of Arizona

WILDERNESS DIVISION

Chair: Geoffrey Comp, DO, Ohio Health Doctors Hospital
Vice-Chair: Charlie Duke, MD, Yale New Haven Medical Center

Diagnose this Condition



Jacob D. Mace, MS-III
Edward Via College of
Osteopathic Medicine
Blacksburg, VA



Scott Fulton, MS-III
Edward Via College of
Osteopathic Medicine
Blacksburg, VA

Robert Cocke, MD
Emergency Medicine Physician
Augusta Health
Fishersville, VA



The Patient

A 60-year-old female presents to the emergency department with a chief complaint of “my mass is bleeding.” She believes the mass has been present for over a year but has been reluctant to seek medical attention. She has no past medical history but has lost about 20 pounds in the past year. Exam reveals a large pedunculated mass over the left posterior axillary line that is approximately the size of a grapefruit and appears to have significant vascularization. There are multiple areas of serosanguinous discharge and a small amount of bleeding.

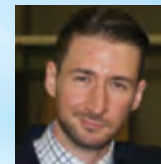
What is the diagnosis?

See the **DIAGNOSIS** on page 38



ECG Challenge

See the **ANSWER** on page 38



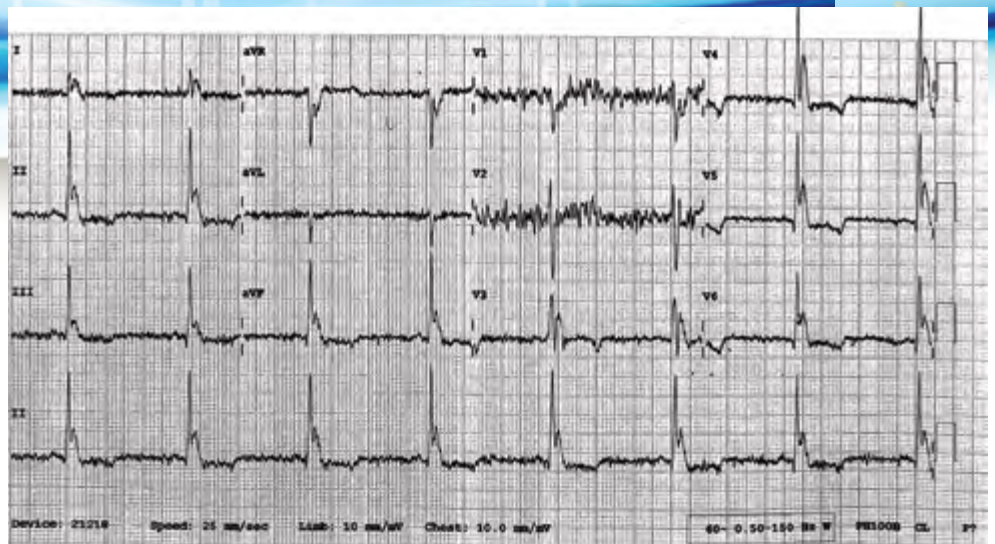
Zachary S. Wilson, MD
ECG Section Editor
Icahn SOM at Mt Sinai
New York, NY



Carlo Canepa, MD
Emergency Ultrasound
Fellow
Icahn SOM at Mount Sinai
New York, NY

CASE. A middle-aged male with unknown medical history is brought to the emergency department after being found outside on the streets of New York City in February smelling of alcohol and shivering. He is awake but does not respond to questioning. In triage, a temperature could not be obtained.

What are you seeing in this ECG?



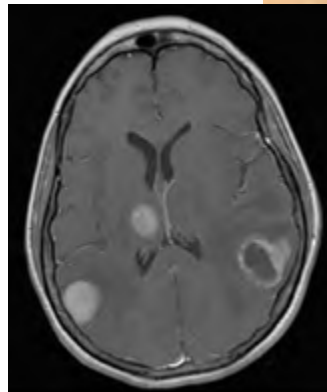
The Diagnosis

Malignant Melanoma

The patient underwent a computed tomography (CT) scan of the chest, abdomen, and pelvis that revealed extensive lymphadenopathy in addition to the large exophytic mass thought to be likely sarcoma. There were also multiple metastatic subcutaneous deposits. She was taken to the operating room for removal, and histology confirmed a diagnosis of **malignant melanoma**. Further history revealed that the patient had spent much of her life outside working on the family farm.

After discharge home with oncology follow-up, she developed altered mental status. An MRI of the brain revealed the presence of multiple enhancing metastatic lesions. The patient was diagnosed with stage IV metastatic melanoma with an overall 1-year survival of 0%. Prognosis and treatment options were discussed, and the patient and family made the decision to start hospice. The patient expired 8 weeks later, approximately 10 weeks from the initial diagnosis.

For an expanded article, please visit emresident.org.



ECG Challenge

ANSWER

At first glance, this ECG demonstrates bradycardia which is likely sinus (though artifact makes identification of p-waves difficult); ST-depressions in leads V4-V6; and, most importantly, Osborn waves throughout. An Osborn wave, also known as a J wave, is an ECG finding most often associated with hypothermia. The Osborn wave has the appearance of a camel hump and is a positive deflection between the QRS complex and ST segments of the ECG. **The magnitude of the Osborn wave usually correlates directly with the level of hypothermia and so should become less prominent as rewarming occurs.**

Other ECG findings that may be seen in hypothermia include bradycardia and prolonged PR, QRS and ST segments. When profound, hypothermia may also precipitate cardiac arrest. A reassuring ECG finding that is present here is the significant artifact seen throughout. This is secondary to shivering, which is desirable in the setting of profound hypothermia. As the patient's core temperature increases one would see improvement or resolution of the bradycardia, Osborn waves, shivering artifact, and segment prolongation. **In a patient who is in cardiac arrest, rewarming may be the trigger for return of circulation.** When these ECG findings are present, it is absolutely essential that an accurate temperature be obtained. If hypothermia is identified, decisive steps must be taken to rewarm the patient as this may be a lifesaving intervention.

LEARNING POINTS

1. The Osborn wave, or J wave, is a positive deflection between the QRS complex and ST segment of an ECG and has a camel hump appearance. It is most often associated with hypothermia.
2. The magnitude of the Osborn wave often correlates directly with level of hypothermia and so should improve as rewarming occurs.
3. Other ECG findings associated with hypothermia include bradycardia and prolonged PR, QRS and ST segments. Other findings could include asystole or PEA. These ECG changes will improve or resolve with rewarming. ★

OLGA KOVALERCHIK, MD
 Emergency Medicine Resident
 EMRA Research Committee
 Vice-Chair
 Yale School of Medicine
 New Haven, CT



Rapid Research Review

DATA SETS AND SUMMARY INDEXES

You've just finished collecting data for your study on the effectiveness of a particular medication. Now you may want to use the information to make comparisons either internally or externally. You want to know if your control subjects are similar to each other or to the individual members of the treatment group. You also want to use what you found out about your population and extend it to the population at large. As part of this, you'll need to address whether your study population is younger, more obese, or has more cardiac disease than the rest of the general population. To allow for this comparison, you need to use the right summary indexes.

Is the mean, median, or mode going to best capture your select population? Do these apply?

If the data cannot be ranked or has arbitrary magnitudes, it is considered non-dimensional. **Non-dimensional data** can be **binary**, **nominal**, or **ordinal**. Sex, generally referred to as male or female, is

an example of binary data. If you documented the medical conditions of your patients such as hypertension, diabetes, or depression, you have data that is nominal. If you used a particular pain scale where pain is rated none, mild, moderate, or severe, you have ordinal data. Non-dimensional data has no absolute defined intervals between values. Ranking this data and trying to find a way to represent it in a central index is tricky for this reason. For example, is severe pain always twice as bad as mild pain? Not always.

Dimensional data, on the other hand, is more consistent in some ways. Data is dimensional if each of the values has an equal interval between the next, and also if the data is monotonic, where each value is consistently the same value more or less than the preceding category. If your data is dimensional, such as in age, weight, or height, you can use the conventional measures of central tendency such as mean, median, or mode. Examples of dimensional data include age, weight, or height.

REFERENCE: FEINSTEIN AR. PRINCIPLES OF MEDICAL STATISTICS. COLLEGE PARK, MD: CHAPMAN & HALL/CRC. 2002.

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Board Review

QUESTIONS



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 PEER VIII. For complete answers and explanations, visit the [Board Review Questions](#) page under "Features" at [emresident.org](#).

To learn more about PEER VIII, or to order the newly released PEER IX, go to [acep.org/bookstore](#).

1. A 64-year-old man with a history of hypertension, diverticulosis, and remote abdominal aortic aneurysm repair presents with a 2-day history of black stools, abdominal discomfort, and low-grade fever. He is diaphoretic. Vital signs include blood pressure 72/46, pulse 138, and respiratory rate 24. Physical examination reveals a midline abdominal scar, diffuse abdominal tenderness, and bright red blood in his rectum. Two large-bore intravenous lines are placed, and fluid resuscitation is begun. What is the appropriate next step in management?
 - A. Obtain vascular surgery consultation
 - B. Order abdominal and pelvic CT scans and start intravenous antibiotics
 - C. Start nasogastric lavage and obtain endoscopy consultation
 - D. Start proton-pump inhibitor and octreotide infusion
2. Which of the following antidepressants is most likely to cause QRS interval prolongation and convulsions in overdose?
 - A. Fluoxetine
 - B. Sertraline
 - C. Trazodone
 - D. Venlafaxine
3. A mother brings in her 5-month-old son because his right leg does not look right. She points out a difference in the appearance of the skin around the right hip and a difference in the range of motion compared with the left. Clinical examination confirms these findings. The mother denies any history of trauma; she is the sole caretaker. The child is happy and playful during the examination. There are no rashes or markings on the skin, and the child is of normal height and weight. Additional examination is likely to reveal:
 - A. A definitive "clunk" with movement of the femoral head
 - B. Definitive radiographic evidence of bilateral hip abnormality
 - C. Hypertrophy of the gluteal muscles on the affected side
 - D. The definitive diagnosis based on skinfold asymmetry
 - E. Toxic synovitis
4. The development of biphasic defibrillators affected intervention in ventricular fibrillation by:
 - A. Decreasing first shock success rates
 - B. Decreasing the number of shocks needed to defibrillate
 - C. Increasing the current applied to the myocardium
 - D. Increasing the effect of electrical current on cardiac myocytes
5. A 23-year-old man presents with bilateral peripheral facial nerve paralysis. He says he has felt fatigued for the past 1 to 2 weeks. He is an avid hiker but denies any injury. He is not sexually active and has no significant social history. He has no other neurologic deficit. What is the most likely pathogen?
 - A. *Borrelia burgdorferi*
 - B. Herpesvirus
 - C. HIV
 - D. *Rickettsia rickettsii*

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

CLASSIFIED ADVERTISING

CALIFORNIA

Los Angeles – Culver City: Southern California Hospital at Culver City Rare opportunity to join a Westside Los Angeles ER group. Group seeks BC/BE emergency physician to work Part Time/Full Time as an independent contractor. Excellent compensation in top 15% locally with malpractice insurance and tail paid. Nine hour shifts with 11 hours of PA double coverage. 85% of the night shifts are covered by night doctors. Very manageable 1.6 - 1.9 patients per hour. Our emergency department sees 25,000 patients per year. A complete ED refurbishment has been completed with an ER rebuild and expansion in the future. Brand new Sonosite SII Ultrasound machine and Glidescope video laryngoscope in the department. Computerized Charting and PACS at every physician station. Email CV and references to clumel@repmg.com or phone 951-898-0823.

Madera: Pediatric EM – Excellent compensation package (\$300K/yr) at Valley Children's Hospital. Join an outstanding team of fellowship trained/board certified pediatric emergency medicine physicians. 119,000 pediatric emergency patients are treated annually, you can count on excellent back up, PICU, and in-house intensivist coverage. The ED physicians also staff the hospital-wide sedation service. US Acute Care Solutions (USACS) was founded by EMP and other like-minded groups that share an ironclad commitment to a physician-led and majority-owned, democratic business model. As a USACS physician, you'll have an equal voice as an owner, and unparalleled access to personal and professional growth resources. Our incredible benefits package includes excellent compensation, the best medical malpractice, an industry leading company-funded 401(k), exceptional healthcare and the camaraderie that is exclusive to a physician led and majority owned group. At USACS, we control our careers and love our lives! Ownership matters!! Visit us at www.usacs.com. Contact Bernhard Beltran directly at 800-359-9117 or email bbeltran@usacs.com.

Northern California – Placerville, Marshall Medical Center: Equity partnership position with stable, democratic group at modern community hospital seeing 31,000 emergency pts./yr. New 24 bed ED opened in 2013. Desirable area proximate to the amenities of the Bay Area, Sacramento, Napa Valley, Lake Tahoe and Yosemite. US Acute Care Solutions (USACS) was founded by EMP and other like-minded groups that share an ironclad commitment to a physician-led and majority-owned, democratic business model. As a USACS physician, you'll have an equal voice as an owner, and unparalleled access to personal and professional growth resources. Our incredible benefits package includes excellent compensation, the best medical malpractice, an industry leading company-funded 401(k), exceptional healthcare and the camaraderie that is exclusive to a physician led and majority owned group. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Ownership matters! Contact Bernhard Beltran directly at 800-359-9117 or email bbeltran@usacs.com.

Riverside – Parkview Medical Center: Great opportunity to join an established 15 year ER group. Group seeks BC/BE Emergency Physician to work Part Time/Full Time as an independent contractor. Excellent Top 10% Compensation based on productivity with malpractice insurance and tail paid. Ten hour shifts with MD double coverage and 12 Hour mid level triple coverage. Our emergency department sees 48,000 patients per year. Computerized equitable shift scheduling. Efficient Computerized Charting and PACS at every physician station. New Sonosite Ultrasound machine and Glidescope video laryngoscope in the department. A brand-new ER expansion will break ground soon tripling the size of the ER! Email CV and references to clumel@repmg.com Phone (951) 898-0823.

San Francisco: Chinese Hospital – Located in the heart of San Francisco's Chinatown, Chinese Hospital has served the diverse healthcare needs of this community since 1924. Although the volume of emergency patient visits is low (6,500 per year), the acuity is high with a wide spectrum of interesting and complex medical cases. A brand new state of the art ED opened in 2016. The supportive medical staff of approximately 250 represents most major specialties. ED shifts are 12 hours in length and provide for a high quality of life through a manageable work schedule. US Acute Care Solutions (USACS) was founded by EMP and other like-minded groups that share an ironclad commitment to a physician-led and majority-owned, democratic business model. As a USACS physician, you'll have an equal voice as an owner and unparalleled access to personal and professional growth resources. Our incredible benefits package includes excellent compensation, the best medical malpractice, an industry leading company-funded 401(k), exceptional healthcare and the camaraderie that is exclusive to a physician led and majority owned group. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Ownership matters! Contact Bernhard Beltran directly at 800-359-9117 or email bbeltran@usacs.com.

San Francisco Bay Area – San Jose: EMERGENCY MEDICINE OPPORTUNITIES AT LEVEL 1 TRAUMA CENTER IN SAN FRANCISCO BAY AREA! VEP Healthcare is recruiting for EM trained board certified/prepared physicians to work at Santa Clara Valley Medical Center in San Jose, CA. Located in SF's south bay, in the heart of Silicon Valley and a short distance to all the amenities of the San Francisco Bay Area offers. This medical center is affiliated with Stanford Emergency Medicine Program and offers a pathway to professorship. For more information contact Ben Aguilar at baguilar@vephealthcare.com or 925-482-8253.

San Francisco Bay Area – Pleasanton, Stanford ValleyCare Medical Center: Single hospital, democratic physician-owned group is seeking full and part-time Emergency Physicians. Our community hospital has 34,000 annual ED visits. We have double physician coverage 18 hours/day, with shift duration ranging 7-8 hours, and equitable distribution of night shifts. Pleasanton is a very desirable area with easy access to San Francisco, the mountains of Tahoe and Yosemite, as well as top-ranked schools. Candidates must be residency trained and EM board qualified or certified. For more information about this position, contact email: pleasantonemgroup@gmail.com.

South Bay: Adult & Pediatric EM Physician BC/BP to join private group in busy, 200 bed community hospital in South Bay, 5 minutes from the beach. Catchment area from Palos Verdes peninsula to El Segundo/Manhattan Beach. As a team member you'll have: 8-10 hour shifts, designed to allow for physician longevity; Competitive hourly rate, with well-defined increases once you are full time; All docs are independent contractor status for tax benefits; 11 overlapping physician shifts/day, 95 physician hours of coverage, MLP in triage & fast track 3 shifts/day; 70,000+ visits with 21% admit rate; EPIC EMR with Dragon Dictation; Ideal call panel (ENT, urology, cardiothoracic, pediatric surgery, podiatry, ophthalmology, interventional and non-interventional cardiology, etc.); Stroke and STEMI receiving center, Paramedic Base station. 24/7 ultrasound, CT, XR, MRI with Beach community with world-class surf, food, schools, in an expanding US Top 100 Hospital. Contact Luis Abrishamian, abrishamian@gmail.com or go to www.ESPMA.org for more details.

COLORADO

Denver region: US Acute Care Solutions (USACS) is partnered with 19 hospitals and free-standing EDs with annual ED visits ranging from 5,000 – 73,000. We are a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Longmont, just North of Denver, Longmont United Hospital: Equity partnership position with stable, democratic group at modern community hospital seeing 35,000 emergency pts./yr. Desirable area, Boulder County is a special place with endless outdoor activities and located just minutes North of Denver. US Acute Care Solutions (USACS) was founded by EMP and other like-minded groups that share an ironclad commitment to a physician-led and majority-owned, democratic business model. As a USACS physician, you'll have an equal voice as an owner, and unparalleled access to personal and professional growth resources. Our incredible benefits package includes excellent compensation, the best medical malpractice, an industry leading company-funded 401(k), exceptional healthcare and the camaraderie that is exclusive to a physician led and majority owned group. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Ownership matters! Contact Bernhard Beltran directly at 800-359-9117 or email bbeltran@usacs.com.

CONNECTICUT

Bristol: Bristol Hospital features a full-service ED and a four-bed Express Care Unit and is ranked as one of the best hospitals in Connecticut for patient satisfaction. Situated in on of Hartford's most desirable suburbs, the facility provides care for more than 41,000 emergency patients annually. US Acute Care Solutions (USACS) is a coalition of like-minded groups that

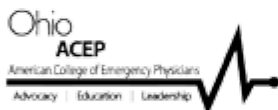
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For further information, contact Steven L. Bernstein, MD, steven.bernstein@yale.edu.

The fellowship in **Emergency Ultrasound** is a 1 or 2 year program that will prepare graduates to lead an academic/community emergency ultrasound program. The 2-year option includes a Master of Health Sciences with a focus on emergency ultrasound research. This fellowship satisfies recommendations of all major societies for the interpretation of emergency ultrasound, and will include exposure to aspects of program development, quality assurance, properties of coding and billing, and research. The program consists of structured time in the ED performing bedside examinations, examination QA and review, research into new applications, and education in the academic/ community arenas. We have a particular focus on emergency echo and utilize state of the art equipment, as well as wireless image review. Information about our Section can be found at <http://medicine.yale.edu/emergencymed/ultrasound/>

For further information, contact Chris Moore, MD, RDMS, RDCS, chris.moore@yale.edu, or apply online at www.eusfellowships.com.

The fellowship in **EMS** is a 1-year program that provides training in all aspects of EMS, including academics, administration, medical oversight, research, teaching, and clinical components. The ACGME-accredited program focuses on operational EMS, with the fellow actively participating in the system's physician response team, and all fellows offered training to the Firefighter I or II level. A 1-year MPH program is available for fellows choosing additional research training. The fellowship graduate will be prepared for a career in academic EMS and/or medical direction of a local or regional EMS system, and for the new ABEM subspecialty examination.

For further information, contact David Cone, MD, david.cone@yale.edu.

The **Administration** fellowship is a new 2-year program that will prepare graduates to assume administrative leadership positions in private or academic practice. By having an active clinical practice in our department, the fellow will acquire experience in all facets of ED clinical operations. Fellows will complete the Executive MBA program at the Yale School of Management and a clinical Emergency Medicine Administrative Fellowship. In addition, the candidate will play a leadership role on one or more projects from the offices of the Chair and Vice Chair for Clinical Operations. For further information, contact Andrew Ulrich, MD, andrew.ulrich@yale.edu.

The **Global Health and International Emergency Medicine** fellowship is a 2-year program offered by Yale in partnership with the London School of Hygiene & Tropical Medicine (LSHTM). Fellows will develop a strong foundation in global public health, tropical medicine, humanitarian assistance and research. They will receive an MSc from LSHTM, a diploma in Tropical Medicine (DTM&H) and complete the Health Emergencies in Large Populations (HELP) course offered by the ICRC in Geneva. In addition, fellows spend 6 months in the field working with on-going Yale global health projects or on an independent project they develop.

For further information, contact the fellowship director, Hani Mowafi, MD, MPH, hani.mowafi@yale.edu.

NIDA K12: Partnering with Yale's Clinical and Translational Sciences (CTSA), Robert Wood Johnson Foundation Clinical Scholars Program, the Center for Interdisciplinary Research on AIDS (CIRA) and the VA Connecticut Healthcare we are offering the Yale Drug Abuse, HIV and Addiction Scholars K12 Research Career Development Program. The DAHRS K12 Scholars Program provides an outstanding 2-3 year research training experience that offers a Master of Health Science, a mentored research program as well as career and leadership development activities. For further information, contact Gail D'Onofrio, MD, MS, gail.donofrio@yale.edu.

The **Wilderness Medicine** fellowship is a 1-year program that provides the core content of medical knowledge and skills in being able to plan for and to provide care in an environment that is limited by resources and geographically separated from definitive medical care in all types of weather and evacuation situations. The fellow will be supported to obtain the Diploma in Mountain Medicine and other Wilderness Medical education. The fellow will become a leader and national educator in the growing specialty of wilderness medicine. For further information, contact David Della-Giustina, MD, FAWM, david.della-giustina@yale.edu.

The **Medical Simulation** fellowship is a 1-year program that provides training in all aspects of simulation education, including high fidelity mannequin simulation with computer program training, acquisition of debriefing skills and procedural simulation. The fellow will participate in all educational programs for medical students, residents and faculty at the new Yale Center for Medical Simulation (opened the winter of 2014-15). The fellow will receive training in research methodology through the Research Division of the Department of Emergency Medicine and participate in the medical education fellowship through Yale Medical School. The fellow will attend a one week Comprehensive Instructor Workshop at the Institute for Medical Simulation in Boston. The fellow will also have the opportunity to participate in an international exchange through the Yale-China Association Xiangya School of Medicine. For further information, contact Leigh Evans, MD, leigh.evans@yale.edu.

The **Clinical Informatics** fellowship is a 2-year program that provides ACGME-approved training in all aspects of clinical informatics. The program is administered through the Yale Department of Emergency Medicine. In the first year, the fellow will rotate between the Yale-New Haven Health and Veterans Affairs. Major blocks will be devoted to electronic health records, clinical decision support, databases and data analysis, and quality and safety. Experiential learning will be combined with didactic classes and conferences. The second year is dedicated to advanced learning and project leadership. The fellow will attend the American Medical Informatics Association annual meeting. The program prepares fellows for Clinical Informatics Board examination. For further information, contact Cynthia Brandt, MD, PhD, cynthia.brandt@yale.edu or Richard Shiffman, MD, richard.shiffman@yale.edu.

All require the applicant to be BP/BC emergency physicians and offer an appointment as an Instructor to the faculty of the Department of Emergency Medicine at Yale University School of Medicine. Applications are available at the Yale Emergency Medicine web page <http://medicine.yale.edu/emergencymed/> and are due by November 15, 2017, with the exception of the Wilderness Fellowship, which are due by October 15, 2017.

Yale University and Yale-New Haven Hospital are affirmative action, equal opportunity employers and women, persons with disabilities, protected veterans, and members of minority groups are encouraged to apply.



CAPE REGIONAL

CAPE EMERGENCY PHYSICIANS

Emergency Medicine Physicians

Cape Emergency Physicians is a small independent emergency medicine physician owned and operated practice that has been staffing Cape Regional Medical Center for over 20 years. It is a small community based hospital in Cape May County New Jersey with approximately 45k visits per year. The hospital is just minutes away from the beautiful beaches of Stone Harbor, Avalon and Cape May.

We are seeking BC/BE emergency medicine physicians for FT, PT, or per diem positions.

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If interested, please reply to Laura Ashley at staffing@urgentcarephysicians.org with your contact information and CV.



EMERGENCY MEDICINE FACULTY

- ◊ Clinician-Educator ◊ Clinical-Researcher ◊ Critical Care Medicine ◊
- ◊ Pediatric Emergency Medicine ◊ Ultrasound ◊

The Department of Emergency Medicine at East Carolina University Brody School of Medicine seeks BC/BE emergency physicians and pediatric emergency physicians for tenure or clinical track positions at the rank of assistant professor or above, depending on qualifications. We continue to expand our faculty to meet the clinical needs of our patients and the educational needs of our learners. We envision further program development in clinical education, emergency ultrasound, EM-critical care, pediatric EM, and clinical research. Our current faculty possesses diverse interests and expertise leading to extensive state and national-level involvement. The emergency medicine residency includes 12 EM and 2 EM/IM residents per year. We treat more than 130,000 patients per year in a state-of-the-art ED at Vidant Medical Center. VMC is a 960+ bed level 1 trauma center and regional referral center for cardiac, stroke, and pediatric care. Our tertiary care catchment area includes more than 1.5 million people in eastern North Carolina. Additionally, we provide clinical coverage at two community hospitals within our health system. We are responsible for medical direction of East Care, our integrated mobile critical care and air medical service, and multiple county EMS systems. Our exceptional children's ED opened in July 2012 and serves approximately 25,000 children per year. Greenville, NC is a university community offering a pleasant lifestyle and excellent cultural and recreational opportunities. Beautiful North Carolina beaches are nearby. Compensation is competitive and commensurate with qualifications; excellent fringe benefits are provided. Successful applicants will be board certified or prepared in Emergency Medicine or Pediatric Emergency Medicine. They will possess outstanding clinical and teaching skills and qualify for appropriate privileges from ECU Physicians and VMC.

Confidential inquiry may be made to:
Theodore Delbridge, MD, MPH
Chair, Department of Emergency Medicine
delbridget@ecu.edu

ECU is an EEO/AA employer and accommodates individuals with disabilities. Applicants must comply with the Immigration Reform and Control Act. Proper documentation of identity and employability required at the time of employment. Current references must be provided upon request.

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share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Meriden, New London and Stamford: MidState Medical Center is situated between Hartford and New Haven (53,000 EM pts./yr.). Lawrence & Memorial is a Level II Trauma Center on the coast near Mystic (52,000 EM pts./yr.). The Stamford Hospital is a brand new facility and with Level II Trauma seeing 49,000 ED pts./yr., located 35 miles from New York City. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. Enjoy equity owner with unparalleled access to personal and professional growth resources. Outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

FLORIDA



Atlantic Coast/East Central (Daytona Beach Area): Seeking Residency-Trained EM Physicians for desirable beachside Central Florida coastal area. Join our fully democratic group and become a partner in 18 months! EMPros serves 4 community hospitals with 170k total visits. Health, life, dental, disability and 401(k) provided. Visit www.emprosonline.com to learn more and submit your CV.

Central Florida – Lake Placid, Sebring, and Wachula: Signing Bonus Available! Beautiful facilities with modern EDs and annual patient visits ranging from 13,000 to 35,000. Great, affordable area with many lakes situated an hour from Tampa. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Northeast Florida – Jacksonville: St. Luke's Emergency Care Group, LLC in Jacksonville, Florida Independent Physician run group at St. Vincent's Medical Center-Southside in beautiful Northeast FL. Great area/community with river and ocean access, good schools, sports, and entertainment. Emergency Medicine residency trained BC/BE physicians with PA's providing MLP coverage. FT/PT available. Low physician turnover. Flexible scheduling with 10 hr. shifts. Holiday pay, shift differential, competitive base salary, and quarterly RVU bonus pool. Sign-on bonus and moving stipend available. Cerner EMR. Supportive medical staff with hospitalists and intensive care coverage, L&D/Neonatal ICU. Currently we staff 70 hours of physician/ MLP coverage/day with overlapping shifts. Best coverage for volume in NE Florida. 39,500 ED visits/year. Please contact us directly and send CV to: Katherine Considine, MD, Medical Director at Katherine.considine@jaxhealth.com. (904) 296-3885.

Orlando: Florida Emergency Physicians of TeamHealth is looking for outstanding Emergency Medicine Physicians to join our team. We currently staff 10 Emergency Departments in five Central Florida counties. FEP provides an employee based work environment for individual practitioners with a flexible work schedule. Quality of life is truly considered when setting clinical schedules. We offer a generous sign-on bonus and a highly competitive minimum compensation with incentives: *138 hours/month, *Comprehensive benefits package, *Leadership opportunities, *Scheduling Flexibility. Please send your cover letter and resume to: Susan_Yarcheck@teamhealth.com.

HAWAII

Pali Momi Medical Center: US Acute Care Solutions is seeking Emergency Medicine Physicians to join us at Pali Momi Medical Center. Pali Momi Medical Center is a 116 bed facility with an annual volume of 66K patients. If you have ever dreamed of moving to Hawaii, now is your chance. This is your opportunity to practice in a challenging and rewarding setting while enjoying the lifestyle that only this island paradise can offer. US Acute Care Solutions (USACS) was founded by EMP and other like-minded groups that share an ironclad commitment to a physician-led and majority-owned, democratic business model. As a USACS physician, you'll have an equal voice as an owner, and unparalleled access to personal and professional growth resources. Our incredible benefits package includes excellent compensation, the best medical malpractice, an industry leading company-funded 401(k), exceptional healthcare and the camaraderie that is exclusive to a physician led and majority owned group. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Ownership matters! Contact Bernhard Beltran directly at 800-359-9117 or email bbeltran@usacs.com.

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Emergent Medical Associates (EMA) has partnered with the University of Southern California (USC) to create a cutting edge emergency medicine fellowship.

The *EMA-USC Emergency Medicine Administration Fellowship* is proud to be in its 12th year! The fellowship includes a Masters in Medical Management (MMM) from the USC Marshall School of Business.

Let us help to accelerate your career!

For more information about the *EMA-USC Emergency Medicine Administrative Fellowship* program, visit us at: www.ema.us/fellowship.html or email us at: fellowship@ema.us

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E-mail: Tziff@Mountnittany.org

Or mail:

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State College, PA 16803
814-278-4851
TZiff@mountnittany.org

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ILLINOIS

Chicago: Norwegian American Hospital is situated just northwest of downtown. This highly regarded hospital represents most major services and treats 31,000 emergency pts./yr. with a full-range of pathology. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Chicago-Blue Island: Signing bonus available! MetroSouth Medical Center is located in the southern end of Chicago 18 miles from downtown. This respected acute care facility treats 50,000 emergency pts./yr. A modern ED and fast track see a broad mix of pathology and admit approximately 14%. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Chicago Heights/Olympia Fields: Signing Bonus Available! Franciscan St. James Health (2 campuses seeing 38,000 and 37,000 pts./yr.) is affiliated with Midwestern University's emergency medicine residency program. Great location 30 miles south of Chicago is near desirable residential areas and offers easy access to the city. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Chicago-Joliet: Signing bonus available! Presence Saint Joseph Medical Center (64,000 pts./yr.) is a respected hospital SW of Chicago proximate to the Hinsdale and Naperville suburbs. Comprehensive services include a dedicated pediatric ED. Outstanding opportunity to join a dynamic director and supportive staff. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Kankakee: Signing bonus available! Presence St. Mary's Hospital hosts an efficient, recently renovated ED seeing 31,000 emergency patients/yr. This Level II Trauma Center has an admission rate of 19% and broad pathology. Situated 50 minutes south of Chicago, the local area is very affordable and offers great housing/schools. US Acute Care Solutions US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

INDIANA

Fort Wayne: Emergency Medicine of Indiana (EMI) is seeking BC/BE emergency physicians for our Fort Wayne locations. Volumes range from 14k-45k with varying acuities and demographics. Our compensation package includes sign-on up to 100k, loan repayment up to 100k, relocation, paid health/dental, paid malpractice, short/long term disability and 401k plan. Some positions qualify for ownership after one year! EMI is a 100% physician owned democratic group staffing nine contracts in NE Indiana. Fort Wayne is the #1 City in Indiana to raise a family with a very low cost of living. It is an easy drive to metro areas such as Chicago, Indianapolis, Detroit, Cleveland and Cincinnati! Visit us at www.emipg.com. E-mail CV to mschenkel@emipg.com or call 260-203-9607.

South Bend: Memorial Hospital. Very stable, Democratic, single hospital, 23 member group seeks additional Emergency Physicians. 60K visits, Level II Trauma Center, double, triple and quad physician coverage. Equal pay, schedule and vote from day one. Over 375K total package with qualified retirement plan; group health and disability insurance; medical, dental and CME reimbursement, etc. Very favorable Indiana malpractice environment. University town, low cost of living, good schools, 90 minutes to Chicago, 40 minutes to Lake Michigan. Teaching opportunities at four year medical school and with FP residency program. Contact Joseph D'Haenens MD at southbendemergency@gmail.com.

KANSAS

Garden City, St. Catherine Hospital: Equity partnership position with stable, democratic group at modern community hospital seeing 18,000 emergency pts./yr. Desirable area, small town living with endless outdoor recreation. US Acute Care Solutions (USACS) was founded by EMP and other like-minded groups that share an ironclad commitment to a physician-led and majority-owned, democratic business model. As a USACS physician, you'll have an equal voice as an owner, and unparalleled access to personal and professional growth resources. Our incredible benefits package includes excellent compensation, the best medical malpractice, an industry leading company-funded 401(k), exceptional healthcare and the camaraderie that is exclusive to a physician led and majority owned group. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Ownership matters! Contact Bernhard Beltran directly at 800-359-9117 or email bbeltran@usacs.com.

MARYLAND

Hagerstown: Meritus Medical Center is a 265-bed regional facility serving patients from western Maryland, southern Pennsylvania and the panhandle of West Virginia. Opened in 2010, the ED treats 78,000 pts./yr.. Hagerstown offers small-town living within reach of Washington, DC and Baltimore, MD, and is situated between the Blue Ridge and Allegheny Mountains. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Sandra Lee, Senior Recruiter: lees@usacs.com or (301) 944-0049.

EMPLOYMENT MODELS: WHICH FITS YOU BEST?

PHYSICIANS ARE ENJOYING A FAVORABLE EMPLOYMENT MARKET.

As a job seeker, you might be tempted to snag the best-paying opportunity. But there's another factor you should consider: culture. Each employment model has cultural benefits and limitations that will significantly impact your day-to-day practice. Below are the four major types to consider.



BY SURINDER YADAV, MD
Vice President of Hospital
Medicine for CEP America

HOSPITAL EMPLOYEE

For most of us, this is the most familiar model and the one we experienced during residency. Its attractions include defined benefits with predictable schedules and workloads. The hospital also assumes responsibility for billing, risk management and staffing. As a result, their physicians have relatively little administrative burden.

This model has potential downsides. For one, clinical autonomy is limited.

Directives affecting the practice often come from the top down. This can squelch engagement and limit opportunities for career development. In this model, highly-motivated physicians may find themselves working alongside those who only do the minimum for productivity requirements.

COMPANY EMPLOYEE

Several companies are in the business of managing physician practices for hospitals. Some focus on one specialty, while others offer multiple service lines. When it comes to designing hospital medicine programs, management companies often have a greater depth and breadth of experience than hospital leaders. They can bring expertise, fresh ideas, and best practices to the table.

Being employed by a management company has some of the same perks as working directly for a hospital, including predictable schedules and benefits. Most also offer practice management services, though the level of support varies.

Individual physicians employed in this model have very little voice in practice matters. In some large companies, the top clinical leaders oversee an enormous number of physicians and practice locations. Even if they are in touch with the needs of the front-line hospitalists, they may be spread too thin to offer meaningful support. In addition, some physicians find corporate culture at odds with clinical practice.

INDEPENDENT CONTRACTOR

Self-employment is another option. Physicians choosing this model work as independent contractors for hospitals and practice management companies.

Independent contractors can choose long- or short-term jobs, take breaks between assignments, and increase their workload to boost earnings. On the downside, these physicians have fewer opportunities to innovate or create change.

PHYSICIAN PARTNER

Another model to consider is a physician partnership or independent group. These can be local, regional, or national. CEP America is one example of a national physician partnership.

Partnerships are practices in which all physicians have the opportunity to become owners. Finances are transparent, and physician owners share profits, as well as responsibility for success.

This model fosters cooperation among physicians, because everyone is motivated toward the same goal. This collaborative spirit can also cross service lines. For example, when a partnership staffs both the hospital and emergency department, colleagues work together to facilitate admissions. Patients see everyone working together as one team, which is a great satisfier.

Partnership is ideal for physicians who hunger for autonomy, as well as collaboration. In larger groups, the partnership provides administrative support so that physicians can focus locally on patient care, workflows, schedules and so on.

Being an owner requires an entrepreneurial mindset. The partnership model is a good fit for physicians who want to be engaged in developing best practices and innovative protocols that fit the needs of their hospital and patient community.

Salary is an important consideration, but in the end, cultural fit will be the best predictor of your long-term career satisfaction.

MAKING THE RIGHT DECISION

Salary is an important consideration, but in the end, cultural fit will be the best predictor of your long-term career satisfaction. Being familiar with the basics of each employment model can help inform your decision.

For more information about CEP America's partnership model and employment opportunities, visit go.cep.com/ConsiderCulture

CEP
America



Emergency Medicine Faculty

The Department of Emergency Medicine at Rutgers Robert Wood Johnson Medical School, one of the nation's leading comprehensive medical schools, is currently recruiting Emergency Physicians to join our growing academic faculty.

Robert Wood Johnson Medical School and its principal teaching affiliate, Robert Wood Johnson University Hospital, comprise New Jersey's premier academic medical center. A 580-bed, Level 1 Trauma Center and New Jersey's only Level 2 Pediatric Trauma Center, Robert Wood Johnson University Hospital has an annual ED census of greater than 90,000 visits.

The department has a well-established, three-year residency program and an Emergency Ultrasound fellowship. The department is seeking physicians who can contribute to our clinical, education and research missions.

Qualified candidates must be ABEM/ABOEM certified/eligible. Salary and benefits are competitive and commensurate with experience. For consideration, please send a letter of intent and a curriculum vitae to: **Robert Eisenstein, MD, Chair, Department of Emergency Medicine, Rutgers Robert Wood Johnson Medical School, 1 Robert Wood Johnson Place, MEB 104, New Brunswick, NJ 08901; Email: Robert.Eisenstein@rutgers.edu; Phone: 732-235-8717; Fax: 732-235-7379.**

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Leonardtown: Medstar St. Mary's Hospital is a 114-bed, full-service facility seeing 52,000 emergency pts./yr. Situated in a beautiful waterfront community, the area also boasts excellent schools, housing, dining options and more. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Sandra Lee, Senior Recruiter at careers@usacs.com or (800) 828-0898.

Maryland/Washington DC area: Shady Grove Medical Center and Germantown Emergency Center offer a main ED, a Fast Track ED, a pediatric ED, and a psychiatric ED, plus an 18-bed Observation Unit created exclusively for ED patients. 70,000 pts./yr. are seen at SGAH and about 37,000 at GEC. Rockville is just minutes from Washington, DC and a short drive to Baltimore. US Acute Care Solutions (USACS) is a coalition of like-minded groups sharing a strong commitment to a physician-owned business model. USACS physicians are equity owners with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Sandra Lee, Senior Recruiter at careers@usacs.com or (800) 828-0898.

MICHIGAN

Grand Blanc: Genesis Regional Medical Center is located 45 minutes north of metro-Detroit and minutes from a number of desirable residential areas. This award-winning facility hosts both allopathic and osteopathic emergency medicine residency programs and sees 62,000 emergency pts./yr. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.



Contact us at recruitment@umem.org or 410-328-8025

UMEM is an EOE/AE



UNIVERSITY of MARYLAND EMERGENCY MEDICINE

Academic and Community Openings for BE/BC Emergency Physicians

Vibrant and varied career possibilities in academic and community settings in the Baltimore metropolitan area as well as near Washington, Philadelphia and Maryland's coastline.

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FOR MORE INFORMATION:

Alan W. Biggs
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Jim McMillin
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Florida Emergency Medicine Opportunity

Come live the Florida dream career! Our Southwest Florida and independent emergency medicine company, Cape Coral Emergency Physicians, has an outstanding career opportunity awaiting the right person. Immediate positions are open to board-certified or board eligible physicians.

We are physician owned and managed for over two decades, serving a community Hospital on the Gulf Coast with a volume of over 70,000 patients per year. We have a newly renovated 40 bed emergency department with full backup and consultation. Our opportunity has many benefits in a city recently rated by the WSJ as one of the top 50 cities to live in and projected to be one of the fastest growing in 2017. Please visit our website:

www.capecoralemergencyphysicians.com

For more immediate information, please contact me. We look forward to letting you know more about our dynamic and growing practice.

Ramon J Pabalan, MD, FAAEM
Recruitment Officer
941-737-9643
Flyerramon@comcast.net



Independent Quality Career

Las Vegas: Pediatrics – 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 30,000 pediatric patients annually. There is excellent sub-specialty coverage with 24 hour in-house intensivist coverage and a level 3 NICU. US Acute Care Solutions (USACS) was founded by EMP and other like-minded groups that share an ironclad commitment to a physician-led and majority-owned, democratic business model. As a USACS physician, you'll have an equal voice as an owner, and unparalleled access to personal and professional growth resources. Our incredible benefits package includes excellent compensation, the best medical malpractice, an industry leading company-funded 401(k), exceptional healthcare and the camaraderie that is exclusive to a physician led and majority owned group. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Ownership matters! Contact Bernhard Beltran directly at 800-359-9117 or email bbeltran@usacs.com.

Las Vegas: Micro-hospitals: Full time opportunities for Emergency Medicine Physicians to staff our Micro-hospitals. These are smaller facilities located in desirable suburban locations. Despite their size, they offer the same type of comprehensive healthcare services that are typically found on a larger hospital campus but with improved efficiency that results in better patient access and an overall more positive patient experience. US Acute Care Solutions (USACS) was founded by EMP and other like-minded groups that share an ironclad commitment to a physician-led and majority-owned, democratic business model. As a USACS physician, you'll have an equal voice as an owner, and unparalleled access to personal and professional growth resources. Our incredible benefits package includes excellent compensation, the best medical malpractice, an industry leading company-funded 401(k), exceptional healthcare and the camaraderie that is exclusive to a physician led and majority owned group. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Ownership matters! Contact Bernhard Beltran directly at 800-359-9117 or email bbeltran@usacs.com.

Las Vegas – University Medical Center: Full time opportunities for residency trained and board certified Emergency Medicine Physicians. University Medical Center is the main teaching hospital of the University of Nevada School of Medicine and serves as the region's Trauma Center and Burn Center. Our department cares for 82,000 patients annually and we have an exceptional EM residency program. US Acute Care Solutions (USACS) was founded by EMP and other like-minded groups that share an ironclad commitment to a physician-led and majority-owned, democratic business model. As a USACS physician, you'll have an equal voice as an owner, and unparalleled access to personal and professional growth resources. Our incredible benefits package includes excellent compensation, the best medical malpractice, an industry leading company-funded 401(k), exceptional healthcare and the camaraderie that is exclusive to a physician led and majority owned group. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Ownership matters! Contact Bernhard Beltran directly at 800-359-9117 or email bbeltran@usacs.com.

RUTGERS

New Jersey Medical School

Academic Emergency Physician Rutgers New Jersey Medical School, Newark, NJ

The Department of Emergency Medicine at Rutgers New Jersey Medical School in Newark, NJ, is recruiting highly qualified, full-time BC/BE Emergency Medicine Faculty at the Assistant or Associate Professor level.

Join a diverse, enthusiastic faculty of academic Emergency Physicians in an expanding and dynamic department committed to scholarship, education, research, and outstanding clinical care. Clinical services are provided at University Hospital in Newark, NJ, a Level I trauma center.

Optimal candidates will have a desire for clinical, academic, or administrative excellence. Subspecialty of other training desired, but anyone with clinical and academic aspirations is strongly encouraged to begin or enhance your career at Rutgers NJMS. The salaries are competitive, the institutions and leadership are very supportive, and the patient population is highly in need of quality healthcare.

Live nearby in beautiful suburban or urban New Jersey or within a short commute from New York City. The medical school is blocks from the New Jersey Institute of Technology and the Rutgers Newark Campus, as well as the rejuvenating downtown Newark area, and is close to Newark Liberty Airport and Newark Penn Station Amtrak.

For more information or to submit a CV/cover letter please contact:

Lewis S. Nelson, MD
Chair, Department of Emergency Medicine
185 South Orange Avenue, MSB 609
Newark, NJ 07103
Email: Lewis.Nelson@njms.rutgers.edu

Rutgers University is an AA/EEO employer. All applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, citizenship, disability or protected veteran status.



Assistant/Associate Residency Program Director

Emergency Medicine Core Faculty

Pediatric Emergency Medicine Faculty

Community-Based Site Opportunity

The Emergency Medicine Department at Penn State Health Milton S. Hershey Medical Center seeks energetic, highly motivated and talented physicians to join our Penn State Hershey family. Opportunities exist in both teaching and community hospital sites. This is an excellent opportunity from both an academic and a clinical perspective.

As one of Pennsylvania's busiest Emergency Departments treating over 75,000 patients annually, Hershey Medical Center is a 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.

We offer salaries commensurate with qualifications, sign-on bonus, relocation assistance, physician incentive program and a CME allowance. Our comprehensive benefit package includes health insurance, education assistance, retirement options, on-campus fitness center, day care, credit union and so much more! For your health, Hershey Medical Center is a smoke-free campus.

Applicants must have graduated from an accredited Emergency Medicine Residency Program and be board eligible or board certified by ABEM or AOBEM. We seek candidates with strong interpersonal skills and the ability to work collaboratively within diverse academic and clinical environments. Observation experience is a plus.

For additional information, please contact:

**Susan B. Promes, Professor and Chair, Department of
Emergency Medicine, c/o Heather Peffley, Physician Recruiter,
Penn State Hershey Medical Center, Mail Code A590,
P.O. Box 850, 90 Hope Drive, Hershey PA 17033-0850,
Email: hpeffley@hmc.psu.edu OR apply online at
www.pennstatehersheycareers.com/EDPhysicians**



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Yale School of Medicine



Seeking qualified applicants for the Yale Drug Abuse, Addiction and HIV Research Scholars (DAHRS) program, a three year post-doctoral program preparing investigators for careers focusing on drug abuse, addiction and HIV in general medical settings. Scholars earn the Master in Health Sciences research degree that combines vigorous research methodology, statistics and design didactics in small group sessions and seminars covering topics related to drug abuse, addiction and HIV, leadership, grant writing and responsible conduct of research. Candidates complete mentored research project(s), multiple manuscripts, and apply for independent funding.

Additional information and application instructions:
<http://medicine.yale.edu/dahrs>

Applicants may also contact Gail D'Onofrio, MD, MS
dahrs@yale.edu

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Las Vegas – Culinary Workers Clinic: Full time opportunities for Emergency Medicine Physicians to staff our Culinary Workers Clinic. The Culinary Health Center a 55,000 ft.² destination for healthcare. The project was designed and built from the ground up to provide emergency care as well as all other healthcare needs of the 160,000-member Union in Las Vegas. Beautiful new facility with state of the art amenities and services with improved efficiency that results in better patient access and an overall more positive patient experience. US Acute Care Solutions (USACS) was founded by EMP and other like-minded groups that share an ironclad commitment to a physician-led and majority-owned, democratic business model. As a USACS physician, you'll have an equal voice as an owner, and unparalleled access to personal and professional growth resources. Our incredible benefits package includes excellent compensation, the best medical malpractice, an industry leading company-funded 401(k), exceptional healthcare and the camaraderie that is exclusive to a physician led and majority owned group. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Ownership matters! Contact Bernhard Beltran directly at 800-359-9117 or email bbeltran@usacs.com.

NEW YORK

Albany area: Signing Bonus Available! Albany Memorial Hospital has a newer ED that sees 43,000 pts/yr. and hosts EM resident rotations. Samaritan Hospital in Troy is a respected community hospital situated minutes from Albany and treats 42,000 ED pts/yr. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Cortland: Signing bonus available at Cortland Regional Medical Center. This modern, full-service facility is 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. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

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Berkshire Medical Center is seeking full-time BC/BE Emergency Physicians to join our Emergency Services Team. We are a 302-bed community teaching hospital in the Berkshire Hills of Western Massachusetts. Annual volume is 60,000 at our main ED with an additional 30,000 visits at our Satellite ED and urgent care centers.

A regional referral center and trauma center, BMC boasts award-winning programs, nationally recognized physicians, world-class technology and a sincere commitment to our community; we are delivering the kind of advanced healthcare usually associated with larger urban centers. As a major teaching affiliate of UMass Medical School, BMC combines the best of academic and community practice, all in a beautiful location.

The Berkshires, one of the most picturesque regions in the nation, offers unique cultural opportunities, including Tanglewood (the summer home of the Boston Symphony Orchestra), Jacob's Pillow dance festival, and the Williamstown Theatre Festival, as well as year-round recreational activities from skiing to hiking and kayaking. Outstanding school systems make the Berkshires an ideal family location. Enjoy a high quality of life, located 2½ hours from both Boston & New York City.

Physician group is stable. Hospitalist support and specialty backup are excellent. Competitive salary and benefits package offered, including sign-on bonus, relocation assistance, paid time off, and CME.

Please apply online at our website
berkshirehealthsystems.org.

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Port Jefferson: John T. Mather Memorial Hospital is situated in a quaint coastal town on Long Island's north shore and sees 43,000 EM pts./yr. 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. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Saratoga — Practice in the Perfect Place: Vibrant Saratoga Springs, NY! Saratoga Emergency Physicians, P.C. (SEPPC) seeks enthusiastic, BE/BC Emergency Medicine physicians to join our comfortable, physician-owned practice in the small, but vibrant Upstate New York city of Saratoga Springs, near Albany, at the edge of the Adirondacks. This is an exceptional opportunity to join a stable practice at Saratoga Hospital, with annual volume of 40,000 visits, in a spacious, state-of-the-art, 41-bed ED, constructed six years ago. SEPPC has staffed the hospital for 28 years. We offer comprehensive benefits and locally competitive compensation. There is a two-year shareholder track with no financial buy-in. Check out our website at www.seppc.com. Contact: Denise Romand, Saratoga Hospital (518) 583-8436, email: docfind@saratogacare.org. Famous venues locally include Saratoga Race Course, Saratoga Spa State Park, and the Saratoga Performing Arts Center. View us: www.saratogahospital.org, www.saratoga.org, <http://discoversaratoga.org>, and <http://www.ilovesaratoga.us>.

NORTH CAROLINA

Charlotte: US Acute Care Solutions (USACS) is partnered with ten community hospitals and free-standing EDs in Charlotte, Concord, Harrisburg, Kannapolis, Lincolnton, Pineville and Statesville. A variety of opportunities are available in urban, suburban and smaller town settings with EDs seeing 12,000 – 83,000 pts./yr. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.



Lehigh Valley Health Network (LVHN) seeks BE/BC EM physicians to join our employed group of 75 emergency medicine physicians (including 4 toxicologists) and 31 advanced practice clinicians. LVHN emergency medicine physicians staff 5 emergency departments and treat approximately 240,000 annual patient visits. We have locations that range from 90k annual patient visits to a variety of small town locations that treat approximately 30k. To provide Eastern Pennsylvania access to excellent healthcare, our continued growth is projected to add multiple emergency departments over the upcoming years. LVHN has a Level I Trauma Center with primary angioplasty, MI alert and stroke alert programs, 4 helicopters and PACs. Our large, physician-led network offers advanced career opportunities in teaching, research and leadership. LVHN has the third largest EM residency program in the U.S. and our physicians are eligible for academic appointment at the University of South Florida. In the world of rapidly changing healthcare, the Department of Emergency Medicine at LVHN provides a cohesive, team-



Interest? Please contact Craig Bleiler at 484-862-3908 or craig.bleiler@lvhn.org

CLINICAL & ACADEMIC EMERGENCY PHYSICIANS

South Carolina

**Rapid expansion in Greenville, SC
due to new EM Residency Program starting 2017
and community hospital growth.**

Greenville Health System (GHS) seeks BC/BE Emergency Physicians to become faculty in the newly established Department of Emergency Medicine. Successful candidates should be prepared to shape the future Emergency Medicine Residency Program and contribute to the academic output of the department.

GHS is the largest healthcare provider in South Carolina and serves as a tertiary referral center for the entire Upstate region. The flagship Greenville Academic Department of Emergency Medicine is integral to the patient care services for the:

- **Level 1 Trauma Center**
- **Dedicated Pediatric Emergency Department within the Children's Hospital**
- **Five Community Hospital Emergency Departments**
- **Accredited Chest Pain Center**
- **STEMI and Comprehensive Stroke Center**
- **Emergency Department Observation Center**
- **Regional Ground and Air Emergency Medical Systems**
- **Accredited 3 year Emergency Medicine Residency Program**

The campus hosts 15 other residency and fellowship programs and one of the nation's newest allopathic medical schools – University of South Carolina School of Medicine Greenville.

Emergency Department Faculty enjoy a flexible work schedule, highly competitive salary, generous benefits, and additional incentives based on clinical, operational and academic productivity.

Greenville, South Carolina is a beautiful place to live and work. It is one of the fastest growing areas in the country, and is ideally situated near beautiful mountains, beaches and lakes. We enjoy a diverse and thriving economy, excellent quality of life, and wonderful cultural and educational opportunities.

CURRENTLY SEEKING PHYSICIANS FOR THE FOLLOWING ROLES:

- **Clinician Educator**
- **Medical Toxicology**
- **Prehospital Medicine**
- **Observation Medicine**
- **Advanced Practice**
- **Research**

Public Service Loan Forgiveness (PSLF) Program Qualified Employer

Qualified candidates should submit a letter of interest and CV to:
Kendra Hall, Sr. Physician Recruiter, kbhall@ghs.org, ph: 800-772-6987

GHS does not offer sponsorship at this time. EOE



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Charlotte/Statesville: Iredell Memorial Hospital is a respected community hospital situated north of Charlotte and seeing 42,000 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. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Morehead City: Modern community hospital on the Atlantic coast minutes from Atlantic Beach and Emerald Isle! This 135-bed facility sees 38,000 emergency pts./yr., is active in EMS, and has a supportive medical staff and administration. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

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. 71,000 ED pts./yr. are seen in the ED. Beautiful small city setting offers great quality of life. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

WESTERN PENNSYLVANIA

EMERGENCY MEDICINE

UPMC and University of Pittsburgh

UPMC has a long history of emergency medicine excellence, with a deep and diverse EM faculty also a part of the University of Pittsburgh. We are internationally recognized for superiority in research, teaching and clinical care. With a large integrated insurance division and over 20 hospitals in Western Pennsylvania and growing, UPMC is one of the nation's leading health care systems. We do what others dream — cutting edge emergency care inside a thriving top-tier academic health system.

We can match opportunities with growth in pure clinical or mixed careers with teaching, research, and administration/ leadership in all settings — urban, suburban and rural, with both community and teaching hospitals. Our outstanding compensation and benefits package includes malpractice without the need for tail coverage, an employer-funded retirement plan, generous CME allowance and more.

To discuss joining our large and successful physician group, email emcareers@upmc.edu or call 412-432-7400.

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Department of Emergency Medicine Yale University School of Medicine



Advancing the Science and Practice of Emergency Medicine

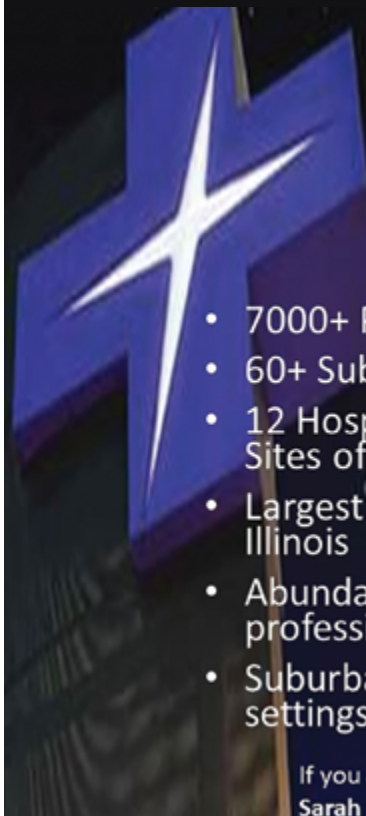
The Department of Emergency Medicine at the Yale University School of Medicine has a total of 4 clinical sites: Adult Emergency Services at York Street Campus; Shoreline Medical Center; Saint Raphael's Campus; and the West Haven VA Emergency Department with a combined ED volume of 195,000 visits per year. We are seeking faculty at all levels with interests in clinical care, education or research to enhance our existing strengths. Interest and/or experience in observation medicine is a plus. The successful candidate may be a full time clinician committed to excellence in patient care and emergency medicine education or one that would want to join the academic faculty promoting scholarship to enhance the field of emergency medicine. We offer an extensive faculty development program for junior and more senior faculty. We have a well-established track record of interdisciplinary collaboration with other renowned faculty, obtaining federal and private foundation funding, and a mature research infrastructure supported by a faculty Research Director, a staff of research associates and administrative assistants.

Eligible candidates must be residency-trained and board-certified/-prepared in emergency medicine. Rank, protected time and salary will be commensurate with education, training and experience.

Yale University is a world-class institution providing a wide array of benefits and research opportunities.

To apply, please forward your CV and cover letter to Gail D'Onofrio, MD, MS, Chair, via email: jamie.petrone@yale.edu, or mail: Yale University School of Medicine, Department of Emergency Medicine
464 Congress Ave, P.O. Box 208062, New Haven, CT 06519-1315.

Yale University is an affirmative action, equal opportunity employer. Women and members of minority groups are encouraged to apply.



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Sarah Smith, Physician Recruiter at Sarah.Smith5@advocatehealth.com

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Akron area: Signing bonus available! USACS is pleased to announce our affiliation with the Summa Health System. Outstanding opportunities are available at Akron City Hospital (Level I trauma with EM residency and 100,000 ED visits/yr.), Barberton Hospital (community hospital; 41,000 ED pts./yr.), Medina Medical Center (freestanding ED; 9,000 pts./yr.), Wadsworth-Rittman Hospital (beautiful suburban area; 10,000 pts./yr.) and Green Emergency Department (21,000 visits/yr.). US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Cincinnati Region: Signing bonus available! 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. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Concord, Madison and Willoughby: New increased compensation and signing bonus! Lake Health is situated in the eastern Cleveland suburbs and includes TriPoint Medical Center (modern facility seeing 27,000 emergency pts./yr.), Madison Medical Campus (freestanding ED seeing 12,000 pts./yr.) and West Medical Center (state-of-the-art acute care hospital serving 35,000 ED pts./yr.). US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our

outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Lancaster: Signing bonus available! Located 30 minutes SE of Columbus, Fairfield Medical Center sees 55,000 emergency patients per year. Modern facility, excellent back up, easy access to metro amenities, and dedicated partners make this a great place to live and work. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Springfield: Signing bonus available! 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 76,000 patients/yr. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

Urbana: Mercy Memorial Hospital services the SW Ohio region's residents in Champaign County. The facility treats approximately 16,000 emergency pts./yr. Desirable residential areas in Dayton are easily accessible. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and



Bakersfield, California

Pinnacle Emergency Physicians (2007-present) with 3 local ED's (10h shifts) seeking FT/PT, BC/BE docs (all trauma goes to the County Hospital)

Memorial Hospital: 80k/y, STEMI, Stroke & Burn Receiving Center, currently 24/7 Peds, PICU, OB and adult hospitalist services.....Peds ED opening 4/2017

Mercy Downtown: 37k/y, Stroke Receiving Center w/ adult hospitalist services

Mercy Southwest: 52k/y, Stroke Receiving Center w/ adult hospitalist services

Staffed by 40 FT/PT physicians and 40 FT/PT mid-levels.

FT: 120h/mo, full profit sharing after 2 1/2y plus \$5k CME, \$12k/y health insurance, retirement contribution, paid malpractice with no tail, quarterly bonus, sign on bonus, interest free loan for moving expenses.

Income in top 5-10% nationwide

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Contact: Les Burson, DO, Medical Director phogku@aol.com
661-332-1064 or
Dr. Kian Azimian, MD, Assistant Medical Director kianazimian@yahoo.com
661-616-8930

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- **115 bed Emergency Department**
- **3 ERs (Community, Trauma and Pediatric)**
- **150,000 patient visits annually**
- **Level I Trauma/ Regional Referral Center**
- **40+ Physicians in current employed group**

The position offers an excellent compensation package including above MGMA average salary with RVU-based incentives, paid vacation, CME allowance, health and life insurance, malpractice insurance, and a 401k plan with employer contribution. The hospital has 24/7 in-house Hospitalist, Radiology, Cardiology, Trauma, Orthopaedic and Neurosurgical Coverage as well as EMR and Mid-Level support. Four different units make up our Emergency Department: Level I Trauma Center downtown with 75 beds and fast track, Medical Observation Unit with 16 beds, Pediatric ER at Children's hospital with 16 beds, and a 21 bed community hospital ER in Madison. Teaching opportunities with 3rd/4th year medical students from UAB and Family Medicine and Internal Medicine Residents at UAB-Huntsville rotate through our ED. Qualified candidates include: Emergency Medicine, Med/Peds, Pediatric Emergency and Family Medicine Physicians.

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**For further information, please contact Suzanne LeCroix
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OKLAHOMA

Tulsa: Brand new, state-of-the-art, 85-room ED opened in Fall 2014. Saint Francis Hospital is a modern 971-bed regional tertiary care center seeing 99,000 ED patients per year, with broad pathology, high acuity, modern facilities and supportive environment. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

OREGON

Salem – Outstanding BC/BE EM physician partnership opportunity at Salem Health Emergency Department (SEPS). Well-established, independent, democratic group with 37 physicians and 6 APPs who staff 110K annual visit, Level II trauma center, with excellent specialty backup. Competitive pay and benefits including scribes, flexible scheduling, malpractice, 401k, and more. We structure our practice to minimize turnover through maximizing work-life balance. We love living in Salem, the heart of Oregon wine country, as it is convenient to the bounty of Oregon's recreational opportunities, and is a safe and affordable community. See what we're about at sepspc.com, then send your CV, cover letter, and a recent photo to sepspc@salemhealth.org or call us at 503-814-1278.

PENNSYLVANIA

Clarion – signing bonus available! Clarion Hospital is situated in the college town home of Clarion University 75 miles N-NE of Pittsburgh on the banks of the Clarion River near Cook Forest. A dedicated ED staff treats 19,000 pts./yr. in a modern, efficient ED. Allegheny Health Network Emergency Medicine Management is a partnership with USACS – a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As an AHNEMM physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking



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Connellsville: Highlands Hospital is a respected 70-bed community hospital seeing 14,000 emergency patients/yr. Well-equipped facility has full diagnostic capabilities. Integrated hospitalist program provides for efficient, collaborative care. Connellsville is located in the beautiful Laurel Highlands region of SW PA 50 miles southeast of Pittsburgh. Allegheny Health Network Emergency Medicine Management is part of USACS – a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As an AHNEMM physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. Visit us at www.usacs.com. Contact Jim Nicholas (jnicholas@usacs.com) or call (800) 828-0898.

Indiana: Signing bonus! New scribe and hospitalist programs! Indiana Regional Medical Center is a full-service community hospital seeing 45,000 ED pts./yr. College town setting is 50 miles NE of Pittsburgh and offers very reasonable housing costs and easy access to metropolitan and outdoor recreation including ski areas, lakes and bike trails. Allegheny Health Network Emergency Medicine Management is a partnership with USACS – a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As an AHNEMM physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. Visit us at www.usacs.com. Contact Jim Nicholas (jnicholas@usacs.com) or call (800) 828-0898.

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 18,000 pts./yr., and most major services are available on-site. Allegheny Health Network Emergency Medicine Management is a partnership with USACS – a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As an AHNEMM physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental

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Pittsburgh – Natrona Heights: Allegheny Valley Hospital is situated just 18 miles north of Pittsburgh and sees 39,000 ED pts./yr. A newer, state of the art ED and strong medical staff, administration and community support make for a great work environment. Allegheny Health Network Emergency Medicine Management is a partnership with USACS - a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As an AHNEMM physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Jim Nicholas (jnicholas@usacs.com) or call (800) 828-0898.

Pittsburgh: West Penn Hospital is located in the desirable Bloomfield/Shadyside area in the city of Pittsburgh and sees 22,000 emergency pts./yr. Beautiful facility hosts a wide range of services including stroke center designation, full cardiac capabilities, busy obstetrics program and NICU. The ED also hosts EM resident rotations. Allegheny Health Network Emergency Medicine Management is a partnership with USACS – a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As an AHNEMM physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence – includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Jim Nicholas (jnicholas@usacs.com) or call (800) 828-0898.

Sharon: Signing bonus available at Sharon Regional Health System. An extremely supportive director/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, great schools and abundant recreation just an hour north of Pittsburgh. Allegheny Health Network Emergency Medicine Management

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

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- the benefits of NSMC's membership in the Partners Healthcare System, founded by Massachusetts General Hospital and Brigham and Women's Hospital
- our combined annual adult ED volume of 80,000 visits provides an array of pathology with a fast track and PA program in place and excellent multispecialty backup
- a culture focused on communication, growth, and work/life balance
- excellent compensation and comprehensive fringe benefits
- being an active contributor to quality of care, patient safety, and process improvement initiatives

Do you share our philosophy? It's time to join our team.

Interested candidates should send their CV to: Louis Caligiuri, Director of Physician Services, at lcaligiuri@partners.org.

Kettering Health Network, a not-for-profit network of eight hospitals serving southwest Ohio, is assisting a highly regarded, regional group in their search for full-time **Board Certified/Board Prepared Emergency Medicine physicians**. These positions offer competitive salary, sign-on bonus of up to \$40,000, a rich benefits package, and moving expense reimbursement.

This group, comprised of 63 physicians and advanced practice providers, currently staffs six of Kettering Health Network's Emergency Departments; four hospital locations (Trauma Level II/III choices); and two freestanding Emergency Centers. Choose your perfect setting!

The network has received numerous awards for excellent clinical care and service. In fact, CareChex named Kettering Medical Center #1 in Ohio for trauma care - a testament to our team and the exceptional care it provides at its level II Trauma Center.

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Contact Audrey Barker, Physician Recruitment Manager, at audrey.barker@khnetwork.org; (740) 607-5924 cell; (937) 558-3476 office; (937) 522-7331 fax.

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Somerset - signing bonus available!: Somerset Hospital is located in western Pennsylvania's Laurel Highlands. Easy access is afforded to the mountains and great ski resorts, biking/hiking, rivers and lakes, all within an hour of metropolitan amenities in Pittsburgh. A brand new ED sees 18,000 pts./yr. Integrated hospitalist program provides for efficient, collaborative care. Allegheny Health Network Emergency Medicine Management is part of USACS - a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As an AHNEMM physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. Visit us at www.usacs.com. Contact Jim Nicholas (jnicholas@usacs.com) or call (800) 828-0898.

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 21,000 pts./yr. US Acute Care Solutions (USACS) is a coalition of like-minded groups that share a strong commitment to a physician-owned business model. As a USACS physician, you'll be an equity owner with unparalleled access to personal and professional growth resources. Our outstanding benefits package includes groundbreaking 100% paid parental leave, student/med. school loan refinancing as low as 2.99%, excellent compensation, the best medical malpractice (occurrence - includes tail), industry leading company-funded retirement plan, family healthcare and our legendary camaraderie. At USACS, we control our careers and love our lives! Visit us at www.usacs.com. Contact Darrin Grella, Vice President of Recruiting: careers@usacs.com or (800) 828-0898.

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Upstate: Seeking Emergency Medicine Physicians, PAs, & NPs. Independent, democratic group offering partnership for BC/BE emergency physicians with exceptional daily coverage, equal pay and scheduling from day one; occurrence malpractice insurance; Level II Trauma Center and area referral center; Emergency department with adjacent fast track facility have combined annual volume of 85k visits. Affordable, lakefront property on beautiful Lake Hartwell; Short drive to mountains and beaches. Contact: Brandy Vaughn at brandy.vaughn@anmedhealth.org or (864) 512-3897.

TEXAS



Northeast: Leading Edge Medical Associates is a one-of-a-kind, private, independent group of all board-certified EM physicians in northeast Texas, offering a full range of clinical opportunities in EM. Our physicians enjoy shifts in a tertiary care trauma center as well as in nearby, lower volume clinical settings, all with high compensation and excellent full benefits. We are known for innovation in the industry and for developing strong EM leaders through LEMA's Leadership Development Institute. Almost half our physicians are former chief residents. LEMA is unique in its ability to offer physicians the best of both worlds, hospital-based and freestanding, academic and community medicine. LEMA is a group of exemplary physicians who work together as a team, value each member's input, and have a level of integrity, honesty, and trust that makes this innovative group truly one-of-a-kind. Interested in joining Texas's premier private group? Contact: SUZY MEEK, MD, SMEEK@LEMA-EM.COM or call 903.235.9493.

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