“I believe Health 2.0 represents an opportunity for us to better engage our patients, their caregivers, and their doctors.”

Healthcare is evolving. Expectations are changing. More and more of our patients are taking charge of their own healthcare and demanding the resources to become active and responsible partners in their care.

Just as there was a cultural shift on the Web, there is a similar cultural shift in healthcare where patients are maturing from passive consumers of information to active searchers, producers and collaborators. Industry has labeled this movement Health 2.0.

Health 2.0 is participatory healthcare that leverages information technology to share, categorize, and aggregate health information between key stakeholders in partnership with patients to improve communication, health delivery systems and outcomes. It encompasses social media networks, collaboration tools, personal health records, and other technologies.

Eighty million Americans, about 35 percent of the adult U.S. population, use social media for health and medical purposes, according to Manhattan Research, a research firm specializing in emerging healthcare technologies. Although most of the work currently being pursued is centered around primary care and chronic conditions, these technologies are slowly spreading into our emergency departments.

Think of the last time a patient came to the emergency department worried about a particular diagnosis after searching the Web. Or what about the patient that asked for his records to be sent to his doctor? These events are becoming increasingly common, and will continue to grow and evolve with or without our involvement. I believe Health 2.0 represents an opportunity for us to better engage our patients, their caregivers, and their doctors.

In the last two years, three personal health records have launched: Google Health, Microsoft HealthVault, and WebMD Health Manager. All three possess the ability to empower patients to make more informed decisions. They also promote data sharing and transparency between patients and physicians, as well as between physicians themselves.

continued on page 14
Great app ★★★★★
by BostonEDMD — Oct 5, 2009
“...Responsive, well designed and just enough info for a practicing community/academic ED MD of 9 years...”

A must have! ★★★★★
by PAZach — Sep 26, 2009
“A must have for any ER clinician.”

Great interface ★★★☆☆
by Noel Hastings — Sep 29, 2009
“The interface is easy and quick to load and navigate. It has a good feel when transitioning from the book and there are multiple ways to reference the info you need...”

Superb reference ★★★★★
by EyedocWV — Oct 5, 2009
“Practicing medicine in the front line daily is strenuous as best. A quick reference like this in your pocket is invaluable. I would give it 6 stars if I could.”

Easier than Sanford ★★★☆☆
by Geekstrap — Oct 13, 2009
“Great job. Very easy to navigate. This will be frequently used...”

EMRA Guide ★★★☆☆
by JPEDMD — Nov 5, 2009
“Very nice job on creation of a simple to use, intuitive and functional interface...”
Thank you very much for your interest in advertising with EM Resident. As the largest organization to represent the needs of the emergency medicine resident, we are able to reach a unique and important niche of our specialty. EMRA’s mission statement is to promote excellence in patient care through the education and development of emergency medicine residency-trained physicians. It is our belief that this provides the best patient care in an emergency department setting.

To support our mission and provide the greatest advantage to our residency-trained members searching for jobs, we welcome you to advertise in EM Resident, but require that all positions advertised in our publication be addressed only to board-certified/board-prepared, residency-trained emergency physicians.

For the sake of consistency, the use of the terms “ED,” “emergency department,” and “emergency physicians” are preferable to using “ER” or any such derivation.

Your support is very important to us, and we appreciate your compliance with these guidelines. Please respect this policy and reflect its sentiment in your advertisements. EM Resident has the right to refuse any advertisement that does not meet these guidelines.

Thank you again for advertising in EM Resident.

To place a classified or display ad in EM Resident, contact Leah Stefanini, 866.566.2492, ext. 3298, e-mail lstefanini@emra.org, or fax 972.580.2829. Information for advertisers can also be found at www.emra.org.

EM Resident is published six times per year. Ads received by January 1 will appear in the February/March issue.

EM Resident subscriptions are available only to individuals and institutions that are not considered eligible for EMRA membership as per the EMRA bylaws. For information on how to subscribe please contact Leah Stefanini, 866-566-2492 ext. 3298 or email lstefanini@emra.org.
President’s message

A diamond in the rough

“Someone with exceptional characteristics, that with some final touches would truly stand out.”

July through December represents a busy time for all residency programs nationwide. Medical students become interns, and junior residents become the “go-to” senior. While carrying a steadily-growing wealth of knowledge and experience through this process, here are a few practical suggestions that may add the final touch to a work-up.

“Doctor, we have Rite-Aid pharmacy on the phone calling about a patient who can’t afford her prescription medication.”

During most shifts, I’ll get a patient who suffered a complication from not taking their medication. Medical noncompliance is an easy diagnosis that doesn’t necessarily reflect the patient’s experience, whose story might be quite telling. It may involve an uninsured patient who can’t afford their Augmentin. Consider price. Many places such as Walmart and Target now offer an assortment of $4 medications which may offer viable treatment alternatives. They also offer pocket-sized booklets for your reference.

“Take this one for your cough, this one for vomiting, this one for diarrhea and this one for sore throat.”

Poly-pharmacy has become an illness in its own right. As a result, patients will often take it upon themselves to enter a “drug holiday.” They start to wonder what came first, their symptoms or their medications. Decreasing the number of prescriptions will increase the likelihood that they take the one that matters. Treat the primary issues and leave over-the-counter medications to address less important findings on the review of systems. In this sense, less is more.

“The nursing home documents indicate that the patient was febrile but the EMS run sheet mentions coffee-ground emesis. I called the facility, but the nurse has already transitioned care.”

Nothing replaces good communication. Most of the time, calling the nursing home will save time on work-ups, reduce testing and most importantly, improve patient care; while a different nurse will often be caring for the patient, a brief chart review is better than nothing. Additionally, patient presentations are more thorough when the history has been confirmed with the primary care provider.

“Thank you for waiting patiently, here’s what we’ve been doing for you.”

As boarding continues to be a leading problem in health care, patients will often feel neglected as if nothing has been done for them. Whenever possible, showing them their x-ray or lab results and explaining medical concerns and treatment plans will effectively alleviate some of the frustration. Their tone often changes once they realize that someone has been reviewing and thoughtfully considering what is in their best interest.

“Please come back to see us if you change your mind.”

It’s always unsettling when a patient signs-out against medical advice (AMA). This is especially true when extra effort has been made to have them stay. Offering some type of alternative plan demonstrates a desire not to simply give up on them. Some hospitals have a call back mechanism to contact these individuals and see how they are doing. Other physicians also advise these patients to return for re-evaluation during their next shift.

“See your primary physician in a week.”

“Sounds great, doc!”

Although this self-pay patient is nodding in agreement, she really just wants to get home. It may turn out that she doesn’t have a doctor to follow up with. Admittedly, it’s gratifying to disposition a patient on those chaotic days in the emergency department when everyone else seems to be getting admitted. This is precisely when details fall through the cracks. Verifying that a patient has a primary care physician before discharge maximizes the likelihood of a good outcome.
Board update

• Thank you for an incredible meeting in Boston! We were blown away by all of the EMRA members who attended ACEP’s Scientific Assembly this October—we had excellent turnout at our Medical Student Forum, Residency Fair, Representative Council, and all of our other events supporting your training in EM. Special thanks to our Council Representatives, volunteer committee members, and everyone else who participated in the Boston events.

• EMRA ABx iPhone App is a great success! The iPhone/iPod Touch version of your favorite publication, the 2009 EMRA Antibiotic Guide, has sold 2,000 copies as of this November, after eight weeks since its release. Haven’t seen it yet? It allows you to search by organ, diagnosis, organism, and special topics, with all the user-friendliness you love about your pocket guide. It’s available in the App Store, so download it today!

• New Board of Directors elected at Scientific Assembly! The EMRA Representative Council elected your new President-Elect Nathan Deal, MD; Vice Speaker Angela Fusaro, MD; Secretary/EM Resident Editor Carson Penkava, MD; Academic Affairs Representative Todd Guth, MD; Technology Coordinator Steven Horng, MD. Read their bios in this issue to learn all about your new board members.

• New Sepsis Card in THIS issue of EM Resident! Don’t miss the newly-updated EMRA Sepsis Card which has been tipped into this magazine for your convenience. Just another one of the great benefits provided free to all of our members! Need extra copies, or want to give one to a friend? Visit the EMRA Bookstore on www.emra.org to order more copies.

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December 2009/January 2010 5
“The time of your life is out there just waiting for you to have it.”

Lisa Bundy, MD
University of Alabama at Birmingham
Birmingham, AL
Immediate Past Editor EM Resident/Secretary

Emergency medicine offers ticket to world

I’m sitting here on my couch feeling very jet lagged, but very fortunate. It isn’t often people get the opportunity to travel, but this month I went to Sevilla, Spain, to see the sights and, yes, learn some Spanish.

I’m sure it’s this way all over the country, but even here in the Deep South, our Latino patient population continues to grow. It used to seem that I would see a Spanish-only speaking patient once or twice a week. Now it seems it’s every shift. And I’d had enough of my patients either not understanding me, giving me that “look,” as well as using our blue phone translator.

It was time for me to learn some useful Spanish.

A little background for ya. I’m from New Orleans. My family speaks French. My grandmother didn’t speak English until she was 5 years old. She only spoke French. There are actual recordings of me at age 3 saying various things in French.

It was because of this that I elected to take French instead of Spanish in high school. I mean I wanted to know what my old aunts were really saying to each other during those heated arguments.

And so, I took two years of honors French in high school and two semesters of 200 level French in college. Far from fluent, but I could get around Paris pretty well.

Enter medical school and my OB/GYN rotation.

So, I’m doing post-partum rounds and asking the typical questions. I come to a Spanish-speaking patient. And I ask her, “Sangria de la vagina?”

She looked at me like I had three heads. Then she looked at her husband.

“Sangria?!”

Well, I thought it was a logical question.

“Oh!!! Sangre!!!” he husband realized. “No sangria. Sangria es wine.”

Now, he was very understanding about my asking his wife if she had wine coming from her vagina, but I was certainly embarrassed. And I realized that I should’ve taken Spanish. Heck, my aunts weren’t even speaking real French anyway. They were always speaking a Cajun dialect.

The typical street in Sevilla boasts bright colors and architecture that reminds me of my hometown of New Orleans.
Fast forward to 2009 and my trip to Sevilla, and my two weeks of intensive medical Spanish at LINC Escuela de Espanol.

Man, what a difference two weeks and 60 hours of Spanish make! Never again will I say that wine comes from anywhere other than a Napa vineyard.

I can conjugate! I can name the parts of the body! I can, well, communicate! Very exciting!

Sevilla is an amazing town. The capital of Andalucia, Spain, Sevilla is at least 2,000 years old. An interesting blend of the modern and the ancient, Sevilla is packed with history and tradition.

I did get to experience one such tradition, flamenco, first hand. Dating back hundreds of years, flamenco is a fusion of many different musical and dance traditions common to Andalucia, including Spanish, Arabic, Gypsy and Hebrew.

Although there is much doubt about the true origins of flamenco, there is no doubt that it is fiery, rhythmic, passionate and technically spectacular close up. If you get the chance to see some authentic flamenco dancing, I suggest you jump at it.

Another favorite sight is the Cathedral of Sevilla, which is the third largest church in the world. Built on the site of the original mosque in Sevilla and completed in 1506, words cannot describe the intricate beauty and grandeur of this structure. I don’t even think photographs do it justice.

My traveling companion, fellow resident Cindy Zimmerman, and I also took a little day trip to Gibraltar, which is actually part of the United Kingdom. I was amazed to stand on one of the most Southern points of Europe, see the Atlantic meet the Mediterranean as well as the Spanish and Moroccan coasts in one view.

As I come to the end of my residency, as well as the end of my term on the EMRA Board of Directors, I think about all my experiences this specialty has given me. I encourage you to explore the best specialty in the world by traveling, getting involved, and learning about new cultures and languages to better serve your patients.

There are so many opportunities in emergency medicine to merge the things we love about medicine and the things we love about life. The time of your life is out there just waiting for you to have it.

Buena suerte, chicos. No se olvide, la vida es un regalo.
Nathan Deal was born and raised in Houston, Texas. He completed his undergraduate work at Rice University and then attended Baylor College of Medicine for medical school. He decided to move north to a colder climate for residency and is currently training at the University of Chicago.

During his term on the board of directors, Nathan will have the opportunity to serve the membership of EMRA. One of the central goals of this organization is to support the continued education of emergency medicine residents. To that end, EMRA has made a commitment to provide residents with a collection of educational materials, including audio lectures, antibiotic guides, advocacy handbooks, and many, many others. In the next few years, the organization will further identify opportunities for novel products and continue to provide these vital resources to the EMRA membership. This dedication to support the membership in its training has been, and will continue to be, one of the highest priorities for the organization.

The landscape of the medical community at large, and specifically the emergency medicine community, is comprised of a wide variety of organizations and individuals. As the next generation of EM physicians, emergency medicine residents have the opportunity to shape the future of the specialty. One of the roles of the EMRA board of directors is to ensure that the passions and priorities of emergency medicine residents are represented throughout the EM community.

Nathan is excited to work with the board of directors and the EMRA membership to continue the growth of the organization. If you have any suggestion, questions, comments or concerns, please do not hesitate to contact him at presidentelect@emra.org.

Carson Penkava grew up in Evansville, Indiana. He went east to Virginia for college, obtaining a degree in Neuroscience from Washington & Lee University. During this time, he served for three years as an editor on W&L’s Journal of Science—first as the Neuroscience Editor and then as Editor-In-Chief. His next move was to Birmingham to attend the University of Alabama School of Medicine, where he is now a resident at UAB.

Some of his interests include football, golf, camping, and his two dogs. Whenever possible, he travels. After his first year of medical school, he spent a month on a medical mission trip in Ecuador, followed by another month backpacking through South America. After he finishes his residency, he plans on continuing his passion for medicine and travel by enlisting in more medical mission trips.

His experience on W&L’s Journal of Science sparked his interest in EM Resident. He contributed as a member of the Editorial Advisory Council last year. As EMRA’s Editor / Secretary, he looks forward to working with other residents from across the nation to continue the great tradition of EM Resident.

Angela Fusaro is currently a resident at Carolinas Medical Center in Charlotte, NC. Angela was born and raised in Danbury, Conn., she notes, “home of the Mad Hatter, and Stew Leonards, the world’s largest dairy store.” However, she is no newcomer to the south, as she attended Emory University in Atlanta for her undergraduate education, graduating with a B.S. in Neuroscience and Behavioral Biology.

After college graduation, Angela packed her car, adopted a Labrador retriever, and moved west. For two years, she taught physics and chemistry in a high school in Los Angeles. She spent the following year abroad, exploring Central and South America and volunteering with Paramedics for Children, a non-profit organization whose goal is to establish pre-hospital care in Latin America by training locals to staff medic bases. She then returned to New York and worked for The Michael J. Fox Foundation for Parkinson’s Research, before starting medical school at New York Medical College (NYMC) in 2005.

While serving as president of the student government at NYMC, Angela discovered her passion for health care policy. She is very excited about the opportunity to channel that energy into representing emergency medicine residents and believes that our collective efforts will help shape health care reform. When she is not busy with work, she enjoys good food, football, caring for both a dog and a cat, and obviously, long walks on the beach.

Angela is eager to embark on her career in emergency medicine, a field that allows her to be on the frontlines of individual patient care, while at the same time granting her the professional freedom to seek changes and advances in health care policy on a larger scale.
As EMRA’s new Academic Affairs Representative, Todd Guth, MD hopes to build upon the amazing work of his predecessors by strengthening the excellent educational programs and publications sponsored by EMRA. He also plans to expand the mentorship potential of the organization for both residents and medical students.

Born in Franklin, Pennsylvania, into a long family tradition of schoolteachers and educators, Dr. Guth plans to pursue a career in academics and medical education upon graduation from residency. He had an interest in education throughout his undergraduate days at John Carroll University in Cleveland, Ohio, which persisted during medical school training at the University of Chicago. Before starting emergency medicine training at Denver Health in Colorado, Dr. Guth also served his country on active duty as a Navy flight surgeon and intern at the National Naval Medical Center in Bethesda, Maryland.

Dr. Guth is currently a chief resident at Denver Health and he spends time trail running, road biking and skiing with his lovely fiancée, Joy, as much as his schedule allows. He hopes to involve as many residents and medical students as possible to assist in EMRA’s educational activities and publications. He would like to encourage members to get involved by making travel arrangements to the CORD Academic Assembly resident tract, by organizing a team for the SAEM Jeopardy Contest, and by signing up to mentor a student through EMRA’s Resident-Medical Student Mentorship Program on the EMRA Website. Send him an email at academicaffairsrep@emra.org with any questions, new ideas or interests.

Steven Horng was born and raised in New Jersey. From a young age, he has been fascinated by the potential synergy of combining medicine and technology.

He matriculated into the Honors Program in medicine and engineering at the Illinois Institute of Technology and Chicago Medical School where he earned a B.S. in Computer Science and M.D., respectively. During this time, he completed a medical informatics internship at the AMSA Foundation and an Emergency Medicine informatics externship at the Microsoft Medical Media (M3) Lab.

He is currently an emergency medicine resident in Brooklyn where he is actively engaged in the hospital’s Division of EM Informatics. He is Webmaster of the department’s Webpage and principal developer of the department’s intranet SharePoint portal. His research has focused on educational technology, advanced data visualization, and enterprise architecture integration. He is committed to a career in academic emergency medicine and medical informatics and plans to enter a fellowship in informatics following his residency completion next year.

He started his involvement with EMRA his intern year as Chair of the Technology Committee. He is also the EMRA representative to the ACEP Electronic Medical Education Subcommittee. He is thrilled to join the EMRA Board of Directors as Technology Coordinator. He plans to introduce disruptive technologies to empower the national membership to better organize, collaborate and advocate.
New council speaker encourages more involvement

It seems like only yesterday that I took my oath of induction for the position of Vice-Speaker in front of the fall 2008 Representative Council in Chicago, Ill. Time has flown by so fast.

During my first term, we have accomplished much, but there is still more that needs to get done. Now as I transition to speaker, I plan to continue and strengthen our efforts in emergency medicine resident and specialty advancement.

Let me start off by saying thank you to Edwin Lopez, our past speaker, for his dedication to EMRA and his specialty. Working with him, has truly been rewarding. Next I want to say thank you to the regional representatives and program representatives who helped make our pre-Scientific Assembly teleconferences a huge success.

I can’t forget to recognize the many resident volunteers who donated their time and participated on one of the conference committees. Conference committees help us conduct the business of the EMRA Representative Council.

A few members from the conference committees at this past Scientific Assembly are:

- Reference Committee: D. Ross Patrick, MD, (Chair), Landon Argo, MD, A.J. Hegg, MD, Jonathan Heidt, MD, Elif Yucebay, MD
- Tellers and Credentials: Jessica Jewart Kirby, DO, (Chair), Joshua Lynch, MD
- Sergeant-At-Arms: Nathaniel Hibbs, MD

There were a record number of residents who attended the Representative Council activities at the 41st annual ACEP Scientific Assembly. Our reference committee meeting had more than 50 resident attendees. There was lively, intellectual and thought-provoking discussion on the resolutions that would be presented to the Representative Council the next day. It was clear that these residents were leaders who took an interest in their specialty.

Our Representative Council did not fail to impress. In addition to electing the next EMRA Board of Directors, the Council reviewed five resolutions on a wide variety of issues that were germane to emergency medicine residents or the specialty of emergency medicine.

The Council voted to adopt a resolution introduced by Erin Griffith, DO, of the Naval Medical Center in San Diego that called for EMRA to encourage the replacement of live animal use with other training methods in emergency medicine residents’ curricula.

Like many other bodies of medicine, EMRA is going green. By adoption of resolution F-'09-5, the Council has directed EMRA to implement the necessary modifications in order to hold a paperless Representative Council.

There was a lengthy and spirited debate on two more resolutions at the reference committee meeting. One resolution, authored by Alfred Joshua, MD, of the University of California in San Diego, urged EMRA to create task force to consider a consensus on how long
emergency medicine residency training should be. This resolution was not adopted by the Council.

Omar Hammad, MD, of Allegheny General Hospital, presented a resolution that looked at mechanisms for protected time prior to didactic sessions. Although the majority agreed with spirit of the resolution, there were issues with the specifics. Ultimately, the Council voted to refer this resolution to a task force for final action at ACEP Scientific Assembly 2010.

This past Scientific Assembly took place in historic Boston, the birthplace of the American Revolution more than 200 years ago. At this meeting, I took my oath of induction and began my term as speaker. We have accomplished much, but more must be done. We face a new revolution called health care reform. With my new Vice-Speaker, Angela Fusaro, MD, of Carolinas Medical Center, I ask that you join us this year as we address the many issues facing all of us emergency medicine residents.

Working through reference committee proposals of the resolutions presented in Boston.

EMRA adopts many policies on diverse issues into its Policy Compendium. Over time, the compendium has grown in size and complexity, often containing outdated, unfulfilled, or internally inconsistent policies. Therefore, we periodically review the policy compendium and suggest revisions. Work alongside EMRA BOD members on this committee.

If interested please send an e-mail to speaker@emra.org January 8, 2010.
RRC Update: Welcome to five new programs!

Semiannually, the Residency Review Committee for Emergency Medicine (RRC-EM) meets to review both core emergency medicine and subspecialty programs. The purpose of the reviews is to ensure all residents graduating from an ACGME-accredited program receive equivalent and adequate training. Results from the September 2009 RRC-EM meeting in Chicago, IL are as follows:

Congratulations to the five new core emergency medicine programs approved bringing the total to 154 emergency medicine programs:

1. **University of Arizona/UPHK Graduate Medical Education Consortium Program**
   Tucson, AZ (PGY1-3; 6 residents/yr)
   Program Director: Kristi H. Grall, MD

2. **Southern Illinois University School of Medicine Program**
   Springfield, IL (PGY1-3; 8 residents/yr)
   Program Director: David Griffen, MD, PhD

3. **University of Kansas School of Medicine Program**
   Kansas City, KA (PGY1-3; 8 residents/yr)
   Program Director: David P. Lisbon, MD

4. **UMDNJ-Robert Wood Johnson Medical School Program**
   New Brunswick, NJ (PGY1-3; 6 residents/yr)
   Program Director: Amy Church, MD

5. **John Peter Smith Hospital (Tarrant County Hospital District) Program**
   Ft. Worth, TX (PGY1-3; 13 residents/yr)
   Program Director: Carl W. Gossett, MD

Additionally the committee accepted the voluntary withdrawal of medical toxicology program at Cincinnati as well as the pediatric fellowship program in Philadelphia. Eight duty hours violations were reviewed. Two format changes (PGY2-4 to PGY1-4) were also approved and one of two complement changes (number of residents in a program) was approved. Lastly, one medical toxicology application was denied and one core emergency medicine program was placed on probation.

The next RRC-EM meeting will be held in February 2010. If you have any questions, please refer to the ACGME website (www.acgme.org/acWebsite/navPages/nav_110.asp) or feel free to contact me at rrcemrep@emra.org.
ABEM Update: Two year internal medicine critical care fellowships recommended

During the ACEP Scientific Assembly held in Boston, Debra Perina, MD, president of the American Board of Emergency Medicine (ABEM), presented the report regarding subspecialty certification.

Discussions continue with ABIM on ABEM co-sponsorship of IM CCM

For many years, ABEM has sought a certification route for diplomates who go on to complete fellowships in critical care medicine. After discussions with the three ABMS member boards who currently offer certification – the American Board of Anesthesiology (ABA), the American Board of Internal Medicine (ABIM), and the American Board of Surgery (ABS) – no progress has been made with the ABA or the ABS. ABEM and ABIM have, however, agreed to prepare an application for co-sponsorship of CCM subspecialty certification.

As this application is not complete and currently not publicly available, the proposed details are not yet determined. As the ABS and the ABA have agreed that they would not oppose the application, if accepted it would be submitted for approval in 18-24 months. If approved, only those completing a two year internal medicine fellowship in CCM, would be eligible to sit for the examination.

There are currently 33 accredited internal medicine fellowship programs for Critical Care Medicine (CCM) as listed on the Accreditation Council for Graduate Medical Education (ACGME) Website (www.acgme.org/adspublic/reports/program_specialty.asp).

Continued work is still needed for details of the co-sponsorship, including an expected 5-year grandfather period. There may still be further discussion with the other specialty boards as surgical programs may have decreased applicants without emergency medicine participation. At this point, however, the current recommendation is that if you wish to pursue board certification in CCM, then you should train in an accredited 2-year internal medicine CCM fellowship.

ABEM submits application to sponsor EMS subspecialty

With the support of American College of Emergency Physicians (ACEP) and the American Academy of Emergency Medicine (AAEM), ABEM has submitted an application to the American Board of Medical Specialties (ABMS) to sponsor the subspecialty of EMS. The application is expected to be submitted to the ABMS board of directors for approval at their September 2010 meeting.

Reference
Health 2.0 seeks to improve patient care

Integrated, longitudinal health records are good for chronic care; they are essential for acute care. Seamless integration between a patient’s personal health record, clinic health record, and regional health information organization would improve patient care. It would give us convenient, timely access to old ECGs, cardiac workups, lab tests, imaging and other information that is often unavailable when patients need it most. It also gives us an opportunity to reinforce discharge instructions by sending them to their personal records and primary physicians.

Health 2.0 benefits not only the individual, but also the community. Google has recently released Flu Trends, an application that harnesses aggregate Google search data to estimate local flu activity in near real time. It is surprisingly accurate and timely. It could possibly predict a local outbreak well before traditional surveillance systems that are only updated weekly. Earlier detection would allow us to better prepare our EDs for the surge in patients, and allow public health workers to institute policies to limit its spread.

There are several obstacles to the widespread adoption of Health 2.0 among providers. Physicians often worry about the privacy and security of patient’s protected health information. However, like online banking, I believe online health records, communication and data sharing will become more acceptable and convenient with time.

I believe the largest obstacle to widespread adoption will be reimbursement. There are numerous pilot studies that have demonstrated the efficacy of online tools in health management. However, reimbursement schedules do not support these initiatives and most of these pilot studies were no longer financially viable after their pilot funding was exhausted.

Health 2.0 represents both an opportunity and a challenge for providers. It is an opportunity for providers to provide more meaningful care to our patients. It is also a challenge that will change how we interact with our patients and the system.
AMERICA’S EMERGENCY PHYSICIANS WANT YOU TO KNOW:

...the difference between Myth and Fact could be the difference between Life and Death.

MYTH: America’s emergency departments are full of people who don’t need to be there.
FACT: Only 12 percent of emergency patients are classified as non-urgent, according to the Centers for Disease Control and Prevention, which compiles these statistics annually. Most emergency patients are truly sick and need emergency care.

MYTH: Emergency care is inefficient and expensive, and decreasing emergency visits will save significant health care dollars.
FACT: All emergency care is only 3 percent of total yearly health care spending. Emergency physicians have access to all the medical options patients need and can provide services in one place. Keeping personnel and facilities open 24 hours a day does cost more than keeping an office with no emergency facilities open 40 hours a week. No matter when patients are sick, we are open.

MYTH: Demand for emergency care will decrease when health reforms are passed.
FACT: Massachusetts experienced a 7 percent increase in emergency visits after providing universal coverage for its citizens. As America’s population increases and ages, demand for emergency services will increase. Emergency providers are the front-line for natural and man-made disasters, and as such, will be in even greater demand.

MYTH: Emergency care will be there when you need it.
FACT: Emergency care may not be fast enough to save your life if current trends continue. Emergency visits have increased an average of 3 million patients per year over the past decade. Hundreds of emergency departments have closed, leaving fewer facilities to see patients. Boarding, the practice of leaving patients in the emergency department instead of placing them in inpatient hospital beds, causes 30 percent of the nation’s emergency beds to be unusable for new emergency patients. This limits everyone’s access to care in their time of need.

As emergency physicians, we insist that vital, life-saving emergency care be available for all who need it.

Four crucial areas must be addressed by any health reform initiative:

1. Every person in America must have affordable and appropriate health insurance coverage.
   This is best provided through a combination of methods applied fairly and equitably to everyone involved.

2. Health care costs must be reduced.
   Eliminating the billions of dollars spent annually in defensive medicine and administrative overhead would greatly reduce costs. Health information technology must be used to its fullest — for communication and for achieving efficiencies.

3. Quality of care must improve.
   Emergency patients must be taken to their inpatient beds after the decision is made to admit them to the hospital. Languishing in an emergency hallway does not accomplish the purpose of hospital admission and is an affront to the patient’s dignity. Quality care must be supported 24/7.

4. A national surge capacity plan must be developed.
   Resources must be provided to help our nation’s hospital emergency departments be prepared for public health crises, such as the H1N1 pandemic, a terrorist attack or other catastrophes.

The nation’s emergency physicians want emergency care to be available for every American when and where they need it.

To get involved, visit www.acep.org/realities
These days it is hard to pick up a single newspaper or magazine, or to turn on the evening news without health care reform being mentioned in some way. Regardless of whether or not you agree with the plans being presented, health care reform appears to be inevitable sometime in the very near future.

Like many Americans, I don’t necessarily agree with all the plans that are being presented. However, I whole-heartedly feel that health care reform needs to happen, and it needs to happen soon. Over the course of the past month, I experienced first-hand one of the pressing reasons why our health care system is in desperate need of reform.

As you may remember from my last article, I started a new job this summer. Unfortunately, after my first few shifts it appears as if I have now been scientifically proven to be a horrific black cloud.

Shortly after my first shift began, the emergency department phone rang, delivering the news that a 49-year-old patient was inbound in cardiac arrest. Paramedics had been resuscitating this gentleman for more than 20 minutes before he arrived in the emergency department.

As I gathered what limited history was available from the paramedics, I found out that this young gentleman had gone to take an afternoon nap after attending church services in the morning, and was supposed to go out with his family for Sunday dinner. His son went to wake him up from his nap, and found his father to be unresponsive, in cardiac arrest. He began CPR, and the paramedics continued resuscitation during transport.

On his arrival in the emergency department, we continued efforts to resuscitate him for another 20 minutes before ultimately terminating the resuscitation. Though losing a patient is never easy, the most difficult part of this encounter was trying to reassure his son that he had done the right thing by performing CPR.

Later that afternoon, I had the opportunity to speak with the family’s pastor. He told me that he had seen the entire family in church that morning. He had just seen them a few hours ago, and reported that they all appeared to be doing well.

But he then also informed me that earlier in the day, the patient had told several of his fellow parishioners that he had been having chest pains for two days. Reportedly, he had not gone to the hospital because he did not have health insurance and didn’t want to place any additional burden on his family’s already difficult financial situation.
A few days later, I encountered the patient’s son, this time himself a patient. Throughout the course of treating him, one thought persisted in his mind, and he continuously asked me, “Could I have done anything different?” “Did I do something wrong?” Again the majority of the encounter was spent reassuring and comforting this grieving young man.

The following day, the emergency department phone again rang, this time to bring news that the paramedics were bringing in a patient who had been driving and drove his car into the side of a building. The paramedics reported that the patient was in cardiac arrest and CPR was in progress. When they arrived, the patient was in persistent asystolic arrest. Despite having run his car into a building, he exhibited no external signs of trauma, making the likely scenario that he suffered a cardiac arrest while driving, ultimately causing the inadvertent contact between his car and a house.

When the family arrived, they stated that the patient had a long history of heart problems but had not seen a physician recently. They attributed that to two things: a stubborn patient and strained finances.

These are just a couple of examples taken from the numerous patient encounters I have on a daily basis. Like these, many other severe illnesses or deaths could likely have been prevented had all of the patients had access to a primary care physician to address issues before it was too late.

As I stated earlier, I don’t necessarily agree with the plans that have been presented to reform our broken health care system. However, I do agree with President Obama’s statement from this summer, “Nobody in America should have to go broke because they get sick.” But I feel that he left out one very important corollary: Nobody in America should have to be sick because they are broke.
Scientific Assembly helps medical students take control of impending transition

As I rode in a cab from Logan International to Copley Square, the driver quickly rattled off many of the historical sights and let me know that the Red Sox, Bruins, Celtics and Patriots were all in town over the weekend.

He also told me that “some doctors’ convention” was in town, and these physicians were fired up about health care reform and were taking over Boylston Street at night.

A week later on my way back to Colorado, I realized that the cab driver offered an accurate perspective on the 2009 ACEP Scientific Assembly. Everywhere I turned I met informed, energetic people — students, residents, academic and community physicians — with insightful thoughts about the immediate and distant future of emergency medicine, who also enjoyed having fun.

The medical student forum was a tremendous success, as we had close to 230 students in attendance for informative presentations from some of the leaders in emergency medicine education. Topics included pearls on how to choose a residency, tips for interviewing, and mistakes to avoid in the application process.

Additionally, we had 121 residency programs attend our residency fair, and both students and residencies benefited from the high turnout. If you were unable to attend this year’s events, we have the audio and powerpoint files from the forum on the Website (www.emra.org). Thanks again to our speakers, sponsors and participants for all of their contributions — this event would not be possible without you.

It is an exciting time of year as interview season is at hand, and in the next several months many of us will experience great changes when we move on to residency.

The events at Scientific Assembly provided an opportunity to take control of these transitions and become educated on the entire match process.

Furthermore, we will all see immense changes and transitions in medicine and health care as we advance in our careers. Opportunities, such as the ACEP Leadership and Advocacy Conference in Washington, D.C., this May, also exist for us to become active participants and help take control of these larger changes as well.

Through self-education and public advocacy, we can be instrumental in a process that will ultimately influence our professional future, and perhaps more importantly influence the medical future of our patients.

I encourage us all to become more informed and more active in the continuing discussion on health care reform, and I look forward to seeing many of you on the interview trail.

——

John Anderson, MSIV
University of Colorado School of Medicine
Denver, CO
Medical Student Governing Council Chair

“It is an exciting time of year as interview season is at hand, and in the next several months many of us will experience great changes when we move on to residency.”
Shine on your emergency medicine rotation

A rotation in the emergency department will be your most exciting experience in medical school. It is your chance to see the specialty firsthand, help patients, and take in the aura of emergency medicine.

The emergency department is quite different from the hospital ward or outpatient clinic, so a little preparation will help you shine. Naturally, being an enthusiastic team player, and showing up on time are expected. The following tips will give you the extra edge to speed your transition to becoming an outstanding student in the emergency department.

First, take a thorough history and complete a good examination. You will see residents and attendings perform abbreviated histories and exams, but your job as a student is to know your patient cold. For example, discovering a family history of blood clots is important in a patient with chest pain. A full neurologic exam should be performed in patients with a chief complaint of headache, back pain, or altered mental status (even if they are just intoxicated!).

Keep your presentations to less than three minutes. Emergency physicians have short attention spans! Start with the age, gender and chief complaint so your listener will have a mental framework for your presentation. All relevant history should be included in the beginning of the history of present illness. This means excluding history that is not pertinent to the chief complaint. For instance, a remote history of appendectomy is not important with a headache, but certainly is relevant with abdominal pain. Remember to mention pertinent negatives, such as fever, cough, shortness of breath, and chest/abdominal pain.

In addition to stating the likely diagnosis, your assessment should include two or three life threatening diagnoses, now matter how improbable. Also, address abnormal vital signs in your assessment. A succinct plan should include treating pain, giving fluids if indicated, and diagnostic work-up. “IV, O2, monitor” is a mantra worth repeating! Potential disposition is often left out by students and should always be addressed.

Re-assess your patient frequently. Emergency medicine is a dynamic field. After an intervention is performed, assess to see if it helped. Tell your supervisor if symptoms improved or additional interventions are necessary. Likewise, if something acutely changes, i.e. shortness of breath, inform your supervisor immediately.

Make sure ordered medications, lab studies, and imaging were performed. Be the first to see the results and interpret them for your team. Also, track down old records and establish follow up with the patient’s primary care physician. Offer to call consultants if necessary. Make sure you know what you want from the specialist before you pick up the phone.

If you think your patient is ready to go home, use a checklist to make sure the patient is stable to discharge. First, remember the rule that if a patient walked into the emergency department, they need to walk out. A “road test” will save you a potentially embarrassing situation of trying to discharge a patient that is still orthostatic from dehydration. Next, verify that vital signs have stabilized if initially abnormal. Also, a patient’s pain should be treated before discharge.

Most importantly, make sure the chief complaint was addressed. Is there a plan for follow-up? Did you print and provide the patient with information about the diagnosis? Is it clear that the patient understands the symptoms that should prompt a return to the emergency department?

Always provide excellent documentation. Your medical decision making should be explained, including a broad differential diagnosis. You should address why you think the patient does not have any life threatening diagnoses on your differential. Always discuss abnormal vital signs, lab results, and physical exam findings. Lastly, if the patient was discharged, state why an admission was not necessary.

These tips should help you get off and running on your rotation. Good luck and have fun!
Great Medical Student Opportunity with the Society for Academic Emergency Medicine!

Jump Start a Career in Academic Emergency Medicine

SAEM’s Program Committee is looking for about 10 energetic, self-starting, responsible, and enthusiastic medical students to work with their Committee at the Annual Meeting in Phoenix in June 2010. The Program Committee is responsible for the planning, coordination, and execution of SAEM’s Annual Meeting. It is comprised of nearly 40 faculty members from Emergency Medicine programs all over the country.

Benefits for medical student committee members:

- Waiver of your registration fee to the SAEM Annual Meeting
- A member of the Program Committee will be assigned to you to serve in an advisory capacity for future EM pursuits
- Learn much more about the current research and educational activities taking place in the field of Emergency Medicine
- Have the opportunity to form relationships with faculty members from EM programs around the country.
- A personal letter from the Committee Chair will be sent to your Dean of Student Affairs, acknowledging your contributions to the Program Committee.

Requirements and expectations of medical student committee members:

- Arrive the evening of June 2; stay through the afternoon of June 6th.*
- Attend daily Program Committee Meetings
- Seeing to assigned tasks and responsibilities, which include, but are not limited to:
  - Approximately 6 hours of responsibilities per day
  - Soliciting reviews
  - Assisting in AV needs
  - Facilitating workshops
  - Being responsive and flexible to the needs of the Program Committee

Interested medical students should submit their name and contact information to the SAEM office at Jennifer@saem.org. Please write “Medical Student Program Committee Member Annual Meeting” in the subject line of the email. Please include a very short statement of interest (<150 words) and an updated electronic copy of your CV. Deadline is February 1st, 2010. Recipients will be notified in February.

* Travel and hotel will be the responsibility of the individual student.
The elections are over, the meeting winds down: newly-elected EMRA Board members, continuing board members, committee chairs and regional representatives put faces to names and get acquainted at the EMRA Leaders’ Transition Luncheon.

Emergency Medicine Interest Group leaders from medical schools across the nation met to mingle with EMRA’s Medical Student Governing Council members at the EMIG Mixer, where they share ideas and encouragement aimed at getting medical students excited about emergency medicine and providing the support they need to make it to residency.

EMRA gratefully acknowledges the generous support and time of the following programs for their sponsorship of this year’s Medical Student Roundtable Discussion Luncheon at Scientific Assembly.

- Lehigh Valley Health Network
- MSU Sparrow Hospital – Lansing
- New York Methodist Hospital
- North Shore University Hospital
- SUNY Downstate
- Texas Residency Programs (Texas College of Emergency Physicians)
- University of Alabama at Birmingham
- University of Chicago Hospital
- University of Rochester
- Upstate Emergency Medicine, Inc.
- Yale – New Haven Medical Center Emergency Medicine Residency
An unusual cause of status epilepticus

History and presentation

Paramedics bring a 19-year-old male from jail with URI symptoms for two days and persistent nausea and vomiting for one day after being diagnosed with influenza. Paramedics have come emergently as the patient started having a generalized seizure about 20 minutes prior and they have been unable to obtain IV or control the seizure enroute. The patient has been incarcerated for a week and according to jail records has no known past medical history and no current medications or allergies.

Physical exam

Vitals: Temp 37.2 rectally, pulse 122, blood/pressure 177/107, respiratory rate 26 with 100 percent O2 sat on a non-rebreather mask. The patient on arrival is having an active generalized seizure. The patient is unresponsive. The rest of the physical exam is unremarkable. D-stick is 126.

Differential diagnosis discussion

Status epilepticus is defined as continuous seizure activity or seizures that occur without return of full consciousness between episodes lasting longer than 30 minutes. As an emergency physician, if your patient is seizing longer than five minutes, then you should be actively pursuing a treatment algorithm to take control of the situation. This clinical case touches on the differential diagnosis of status epilepticus, but focuses upon the options and evidence behind an aggressive treatment algorithm.

The differential diagnosis of status epilepticus is vast. The most common etiologies can be organized into four main areas: metabolic causes, infectious causes, central nervous system lesions and toxins/drugs.

The most common metabolic cause of seizures is hypoglycemia, therefore, an upfront bedside determination of glucose levels in seizing patients is essential. Hyponatremia, the most common electrolyte disorder of hospitalized patients and a common side effect of many medications, can precipitate seizures once levels get below 120mEq/L. Often the rate of the decline and not the absolute magnitude of the sodium level determines the risk of seizure.

Unlike the simple febrile seizures induced by an acute rise in the temperature in a pediatric patient, status epilepticus caused by infectious etiologies arises from the acute inflammatory response provoked by the infection in the central nervous system. Viral and bacterial causes of meningitis, encephalitis, cerebral abscesses and primary HIV infection are all well known causes of seizures and must be evaluated for in all patients with status.

Because of the possibility of primary CNS lesions causing seizures, a CT scan of the brain is an essential part of the workup in status epilepticus. Toxins, particularly alcohol and sympathomimetics, are amazingly common causes of seizures in patients presenting to emergency departments. In overdose, several medications such as aspirin, isoniazid, and tricyclic antidepressants can cause status epilepticus and have specific antidotes that emergency physicians need to know.

Initial management

IV access was established with a central line and three doses of lorazepam 2 mg IV were given in quick succession as the patient was placed on a monitor and labs were sent. As the seizures continued despite a load of 20mg/kg of phenytoin, the team readied their airway equipment.
and intubated the patient using rapid sequence intubation. The patient had a foley catheter placed and was started on a propofol drip (10mg/min/hr) for sedation and further management of his seizures.

A 2005 Cochrane review and the ACEP clinical policy guidelines recommend benzodiazepines as first line treatment of status epilepticus. Lorazepam terminates status epilepticus in 60-90 percent of patients and is often recommended over other benzodiazepines due to its longer half-life. When IV access is not obtainable, diazepam can be given intrarectally and midazolam can be given intramuscularly as alternatives.

Although no prospective, randomized controlled trial compared treatments of seizures refractory to initial benzodiazepine treatment, most published guidelines recommend phenytoin as second line treatment. Because phenytoin can cause hypotension if given too rapidly and causes tissue damage if the line infiltrates, the prodrug fosphenytoin is recommended when available especially in children.

No convincing evidence points to the use of one third-line agent for the treatment of refractory status epilepticus. Pentobarbital, thiopental, valproate, propofol, and more recently, levetiracetam, have been used with success, but none has been demonstrated to be superior. Because of the respiratory depression caused by propofol and barbiturates, airway management is almost always needed when these agents are used at this point in the algorithm.

**Final thoughts**

The patient returned from radiology after an unremarkable head CT when labs began returning. LFTs, CBC, acetaminophen, salicylates, urinalysis and urine toxin screen were normal. The chemistry panel returned with a sodium of 111mEq/L. Knowing the potential risk of central pontine myelinolysis that occurs with the rapid correction of sodium, the team in conjunction with neurology consultants administered 3 percent hypertonic saline at 5ml/kg over one hour.

As the effect of the paralytic wore off, the patient was noted to have residual seizure activity. The patient was admitted to the ICU on a drip of phenobarbital for continuous EEG monitoring. In the ICU, the patient’s repeat sodium was 120mEq/L and an LP performed by the inpatient team was unremarkable.

The use of hypertonic saline in the setting of hyponatremic status epilepticus is still considered controversial given the risk of central pontine myelinolysis. In departments without access to 3 percent hypertonic saline, administration of 1 ampule of sodium bicarbonate in the setting of hyponatremic seizures is another alternative.

In this clinical case, an aggressive management strategy of status epilepticus led to a favorable outcome. The patient’s sodium slowly corrected to normal, cultures returned negative, and he was discharged on oral phenytoin at the recommendation of neurology.

For additional comments, on the management of status epilepticus in the setting of hyponatremia check out the October issue of EM:RAP using your free EMRA subscription.

**References**


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Have you ever had the difficult consultant? Or maybe the challenging patient encounter? Maybe you ran head long into the administration as you tried to implement a new strategy in your department. Whatever your tricky situation, you had a fundamental question to ask yourself: Divide or Unify? This question is at the core of how we must choose to address current healthcare reform.

Divided they conquer
Far too often, when pushed, the overwhelming desire is to push right back. If they insult you, go back for the jugular. If they try to push their agenda ahead of yours, push them down. In the emergency department, we see this daily as some consultants will work to fight against admissions or consults in favor of another service admitting the patient, additional personal shut-eye, or a host of other reasons.

Frequently, we revert to the kindergartener in all of us and hit back. The danger in this approach is that it often does more harm to your patients and their needs. It also leaves us frustrated and angry.

Similarly, we are seeing the cracks in the unified front forming in health care reform—specialists and primary care doctors are starting to turn on one another. With the help of the politicians driving these wedges by inviting select groups to the table, the danger is that divided we will fall.

If the fight is no longer between the big groups (physicians, hospitals, drug companies, insurers), but instead within the house of medicine, we all lose. The questions will not be about how big to make the pie, but how to divide it up among the many physicians. If we allow this division, we will all lose in the end.

United we stand
It is time that we work with our colleagues to advance the needs of our patients and the people who provide care to them. We must all stand in favor of fair reimbursement so that all specialists will take the Medicare patient in follow up or cover call for us in the emergency department. Beyond that, our patients need coverage, access to quality primary care services, and incentives to take good care of themselves. These are common goals that we must unite to advocate for if we are to have a hope for real and significant reform that does more good than harm.

We must also stop alienating ourselves from our patients. How many times have you heard a colleague talk about the “unneeded emergency department visits”
that are overwhelming the department? Complained about all of the drug seekers? Far too often, we tell friends and family the tales of our woe in these terms.

The truth though is that the CDC has shown that only 12 percent of visits are unnecessary. The overwhelming majority of patients are there because they need our help. Help your specialty and your patients by stopping this cancerous divisiveness. Go to www.emergencymedicinerealities.com and help spread the truth.

Find the middle

As we move forward with healthcare reform, it will not always be possible to stand united with all of our colleagues on all of the issues. But as often as we can, we must do so to advance our common goals. We must work to fix the system for all of our and our patients’ benefit. When the time comes to differ, we must do so in a respectful manner that recognizes our similarities while advocating for our differences.

Instead of seeing each disagreement as a fight, we should look to them as opportunities. They are chances to move a colleague forward on common ground, recognizing our differences, and advocating for our patients. The next time you want to fight, lay down the sword, and work to find the middle. It will serve you and your patients well, even if it is not as satisfying as that killer one-liner you thought up or the glare you had practiced for that off-service resident. Be the bigger person. It is what we do every day with a difficult patient. Why not do it with a difficult colleague, administrator, or politician? ■

EMRA gratefully acknowledges the following organizations for their generous support and partnering with us to make the EMRA events at the 2009 Scientific Assembly in Boston an unprecedented success!

**ArthroCare® ENT**

**Rapid Rhino**

**EMRA Party**

**EMRA Job Fair Refreshments**

**EMRA/FERNE Resident Sim Wars and EMRA Representative Council Luncheon**

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Record fundraising efforts at Scientific Assembly, particularly at the ACEP Council Meeting, spurred by the health care reform debate in Congress and ACEP/emergency physicians’ recognition that they need a seat at the table and a voice in the outcome of legislative efforts.

Coming into the Council meeting, NEMPAC had raised $880,000 from ACEP members. During the Council meeting and Scientific Assembly in general ACEP collected more than $183,167. This took us past what ACEP raised for the entire year in 2008, $1,045,000.
Signs of button battery ingestion critical to identify

**Case**

A 12-month-old boy was brought into the emergency department by his mother due to difficulty swallowing. His mother states that he began gagging and coughing approximately 90 minutes after he was given a new package of toys from family members. He refused to eat and had one episode of emesis prior to arrival. No one observed the child putting anything in his mouth.

The patient’s history is negative for stridor, wheezing, fever, upper respiratory infection symptoms, trauma, travel, nausea, vomiting or diarrhea. On exam, the patient was asymptomatic. X-rays revealed an esophageal foreign body at the thoracic inlet. The object was disk-shaped, approximately 2cm in diameter, and initially thought to be an ingested nickel.

The patient was subsequently admitted to the pediatric ICU for close observation. Pediatric surgery was consulted and the patient was scheduled for operative removal of the coin in the morning.

In the operating room, esophagoscopy revealed that the object was not a coin, but in fact, a button battery. As a consequence, coagulation necrosis had occurred, creating a full-thickness erosion and perforation of the esophageal mucosa.

Following the procedure, the child was returned to the PICU for monitoring and intravenous antibiotics. He was kept NPO for a week and placed on total parenteral nutrition. There was no interim development of mediastinitis. Repeat esophagoscopy demonstrated no development of strictures.

**Discussion**

As infants and toddlers frequently use their mouths to explore the world around them, ingestion of foreign bodies is a common occurrence. With the trend toward miniaturization of electronics, the ingestion of disk batteries or “button batteries” occurs more frequently. These ingestions are associated with serious sequelae including mucosal injury to the esophagus. As a result, the National Capital Poison Control Center in Washington, D.C., has created a 24/7-telephone hotline to assist parents and medical practitioners, as well as collect data on button battery ingestions.

Button batteries range in size from 6 to 23mm in diameter. For purposes of comparison, a dime is 18mm, a nickel is 21mm, and a quarter is 24mm. Almost 96 percent of ingested batteries are small (7.9-11.6mm in diameter). Although fewer than 3 percent of reported cases involve larger batteries (>15mm), these present a much higher risk of becoming impacted and causing injury.

The most common location for batteries to become lodged is the esophagus, typically at one of the five anatomical sites of narrowing: cricopharyngeus muscle level at C6; thoracic inlet at T1; cardioesophageal level or aortic...
arch at T4; tracheal bifurcation at T6; and gastroesophageal junction or hiatal narrowing. Of these, the most common site of impaction is the cricopharyngeus.

Esophageal damage can occur rapidly, and perforation has been reported as quickly as 4 to 6 hours after ingestion. Tissue damage occurs when sodium hydroxide is generated by the electrochemical current, usually at the anode, resulting in an alkali burn and liquefaction necrosis.

In 1992, the estimated annual incidence of battery ingestion was 2,100 cases. Currently, the annual incidence has increased to more than 3,000 cases. Fifty-seven to sixty-seven percent of battery ingestions are by males. Sixty-one to seventy-one percent of ingestions involve children younger than 5 years old with a peak incidence at 1 to 2 years of age.

Presenting symptoms in battery ingestions vary widely. Most tend to be asymptomatic or have nonspecific gastrointestinal complaints such as nausea, vomiting or abdominal pain. Other complaints include coughing, gagging, dysphagia, fever, anorexia, hematemesis (rarely) or fever. As many batteries are coated in nickel, there have been a few reports of rash as a presenting symptom in patients with nickel sensitivity.

Due to potential lack of history of ingestion and initial nonspecific symptoms, esophageal impaction can be missed resulting in perforation of the esophagus. These children may then develop respiratory distress, fever, pain, evidence of subcutaneous emphysema, mediastinal crunch (Hamman’s sign), sepsis and shock.

When a child presents to the emergency department with suspected battery ingestion, PA and lateral radiographs are indicated to evaluate for presence of the object. Button batteries have a bilaminar structure, resulting in a characteristic “double density” or “halo” on PA view, and “step off” on lateral view. Recognition of these signs is critical, as mistaking the battery for a coin can significantly delay removal.

If the battery has passed into the stomach, generally no further treatment is necessary. However, some studies suggest that if the diameter of the battery is greater than 15mm, a repeat x-ray should be obtained in 48 hours as it may fail to pass through the pylorus.

When the battery is lodged in the esophagus, endoscopy is indicated for removal of the battery and visualization of the extent of mucosal damage. If severe damage is present, the child should be admitted to the ICU for observation and monitoring for development of perforation, mediastinitis and sepsis.

Blind removal techniques, such as with a foley catheter or esophageal magnet, are not recommended. If these techniques are attempted, endotracheal intubation should be considered to protect the airway as the battery is dislodged. Ipecac and emetics are contraindicated due to increased risk of perforation and aspiration.

Although serious complications are rare (1 percent of cases), the morbidity and mortality of battery ingestions are significant. Complications described in case reports include esophageal perforation, mediastinitis, aspiration pneumonia, tracheoesophageal fistula, esophageal stricture requiring repeated dilations or reconstruction, and aortic perforation with exsanguination. Additionally, heavy metal toxicity (mercury, lithium, zinc, etc.) has been suggested as a theoretical complication of ingestion due to leakage of battery contents, though there are few case reports showing significant clinical toxicity.

References

Pearls

In all cases of esophageal foreign body, have a high index of suspicion for battery ingestion.

If concerned about a battery ingestion, obtain an X-ray immediately to determine placement. You may call the National Button Battery Ingestion Hotline at (202) 625-3333 or your local Poison Control Center for advice.

If the battery has passed into the stomach or beyond and the patient is asymptomatic, they may be discharged to home to wait for the battery to pass. They should be instructed to watch for abdominal pain, vomiting or bloody stools, and if these symptoms develop they should be reported to the Battery Hotline.

If the battery is lodged in the esophagus, it must be removed immediately. Time is of the essence. Removal should be by endoscopy. Do not give ipecac.
Aggressive resuscitation of diabetic ketoacidosis reduces mortality

Each year, roughly 10,000 patients present to the emergency department in diabetic ketoacidosis (DKA). Prior to the advent of insulin, the mortality rate of DKA was 100 percent. In recent years, that rate has dropped to approximately 2 to 5 percent. Despite clinical advances, the mortality rate has remained constant over the last 10 years. With aggressive resuscitative measures and appropriate continued management this trend may change.

DKA is defined as the presence of hyperglycemia (glucose > 250mg/dl), acidosis (pH < 7.3) and ketosis. The pathology of DKA centers on the inability of cells to take up glucose secondary to an absolute deficiency of insulin. As a result, any rise in serum glucose leads to osmotic diuresis. In addition to glucosuria, this osmotic diuresis leads to loss of essential electrolytes including sodium, magnesium, calcium and phosphorous. The resultant volume depletion leads to impaired glomerular filtration rate (GFR) and acute renal failure.

Absolute insulin deficiency in the body results in increased lipolysis and proteolysis leading to the accumulation of ketone bodies and subsequent acidosis. Beta hydroxybutarate is the predominant ketone, but it is important to note that urine assays are only able to detect acetone and acetoacetic acid. Thus, false negatives may result.

As DKA is treated, beta hydroxybutarate is converted to acetoacetic acid. Thus, checking serial urine ketones may actually show increasing ketone bodies even as the patient’s clinical status is improving.

Reducing the morbidity and mortality associated with DKA necessitates the early identification of the disease. All patients with diabetes should have rapid assessment of blood glucose. In addition, as DKA is a common first presentation of insulin dependent diabetes mellitus (IDDM), all patients with altered mental status should have a rapid bedside glucose check as well. Urine should be obtained to look for ketones and a blood gas should be sent to assess acid base status as well as serum bicarbonate level and anion gap.

The key to the management of DKA is addressing each of the metabolic derangements. The most important aspect in the emergency department is aggressive fluid resuscitation. In most adults, there should be aggressive hydration with boluses of up to 2L of normal saline in the first hour. In patients who are at risk for pulmonary edema, one should be more cautious.

In general, pediatric resuscitation follows the 20-40cc/kg rule. Aggressive fluid resuscitation leads to a restoration of glomerular filtration rate and allows the kidneys to eliminate much of the excess glucose.

The next vital component of DKA therapy is addressing total body potassium depletion. Ten percent of patients with DKA have serum hypokalemia on presentation (serum K⁺ < 3.0), while all patients have total body potassium depletion. The initial serum potassium can be misleading because it represents extracellular potassium, which is falsely elevated (although rarely into the range of hyperkalemia) secondary to acidosis and fluid depletion.
During initial assessment, an ECG should be obtained to look for signs of hyperkalemia. If renal function is normal, potassium repletion is indicated regardless of the serum potassium level because subsequent insulin therapy will cause an intracellular shift of serum potassium potentially leading to hypokalemia. Serum potassium must be checked prior to initiation of insulin therapy.

Serum potassium should be repleted in the following manner:

K+ < 3.3mEq/ml: Give IV and PO potassium and hold insulin therapy until K+ documented as > 3.3mEq/ml
K+ > 3.3mEq/ml but < 5.5mEq/ml: Start IV and PO potassium repletion with insulin therapy
K+ > 5.5mEq/ml: Start PO potassium repletion with insulin therapy. Hold IV potassium until K+ < 5.0mEq/ml

Next, acidosis and ketosis should be corrected via insulin therapy. In critical patients, it is important to correct acidosis and ketosis rapidly and thus, IV insulin therapy is preferred over subcutaneous administration.

Recent literature and recommendations suggest that initial bolus insulin is unnecessary in the treatment of DKA as it only causes supranormal circulating insulin levels. An infusion starting at 0.1 units/kg/hr is ideal. Insulin infusion should be continued until the patient’s anion gap resolves. When the serum glucose drops below 250mg/dl, D5W should be added to the patient’s fluids to prevent hypoglycemia.

While hypokalemia is the most common complication in DKA, the most feared is cerebral edema. This complication occurs in approximately 1 percent of patients presenting with DKA. Although the pathophysiology of cerebral edema in DKA is not fully understood, it is clearly most common in the pediatric population and in new-onset diabetics.

The typical clinical scenario is one in which the patient is initially improving and then has a neurologic deterioration. This deterioration can often be as subtle as a new onset headache or as severe as altered mental status. The treatment for suspected cerebral edema is rapid infusion of mannitol 1 to 2g/kg IV over 15 minutes. When cerebral edema is missed, the mortality rate approaches 70 percent.

Finally, all patients with DKA should be investigated for underlying pathology leading to DKA. This includes infection, myocardial ischemia or infarction, GI bleeding, medical non-compliance, etc. All patients with DKA should be admitted to the ICU for continued management and close monitoring.

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Talking with Taku

Emergency medicine and sports medicine are a great fit

Dr. Moira Davenport is an attending physician at Allegheny General Hospital Drexel University School of Medicine with a joint appointment in the departments of Emergency Medicine (EM) and Orthopedic Surgery. Additionally she is the team physician for the Pittsburgh Pirates baseball team. In this interview, she sheds light on her career in EM and Sports Medicine (SM).

How did you develop your interest in SM?
I played sports through my entire life and was injured quite frequently. In college, I spent more time with my team physician than with my coach. Working with the team physician, I realized that it was an option. During medical school, I didn’t know what I was going to do, but did a lot of research in orthopedics. During my clinical rotations, however, I found that I really enjoyed EM. When I found that I could have a career in SM, it was an easy decision to combine the two fields.

What is it like working in a field that is not always welcoming to emergency physicians?
It is definitely one of the pitfalls in my job in Major League Baseball. Currently, Steven Adams from Northwestern, who is working for the Chicago Cubs, is the only other team physician trained in EM. I occasionally get a strange look when I say that I am EM trained. Despite what many orthopedists may think, EM and SM are a great fit. Our clinical practice includes a large number of acute orthopedic injuries. Additionally, our training helps us with treating non-orthopedic conditions. One of my mentors admitted that even though he had been an orthopedic surgeon for 25 years, it scares him when he is on the sideline and someone comes over to him short of breath.

What were the keys in building your career?
I am fortunate to have had several people advise me through this process. All of my mentors in both EM and orthopedics saw the benefit of combining EM and SM and were supportive of my career path. My medical school mentor is an orthopedic surgeon who got me involved in research from day one of medical school. She has been very supportive of me doing EM and following it with SM. My residency director gave me the flexibility to pursue my interests by doing an elective with my college team physician working with the football team. I was there for pre-season camp, two a day workouts, and for their home games. Additionally, I got to see patients in the office. This experience gave me an understanding of what it means to practice SM.

You went on to do a fellowship in SM. What is the advantage of doing a fellowship?
Now that SM is a boarded sub-specialty in EM, more Emergency Departments are looking for SM trained physicians. Therefore, a SM fellowship gives you career flexibility. Some people do the fellowship as a supplement to their orthopedic education and work exclusively
in the ED. Some people do strictly SM as the non-operative person in an orthopedic group. There are a few that work in the collegiate setting. Then, there are a few of us that do academic EM with a joint appointment.

Fellowships are run by their individual departments, and it is under their discretion whether to accept EM physicians. Presently, the primary care SM fellowships are mostly Family Medicine based. Depending on where we are in the certification process, there are five programs that are EM based. So it can be difficult to find a program that fits your needs and will accept your application.

How do you and most of your colleagues balance SM and EM? Is there any fight back from the orthopedists?
I think it is easier to balance the two in the academic world. A sports-trained EM physician would fill needs for both the EM department and the orthopedic department. An academic ED needs people to do orthopedic teaching and the academic Orthopedics Departments need people to do medical teaching, especially now that the operative SM boards have a medical portion. However, when you are in two departments, it is very easy to be pulled in a lot of directions. It is important to be vocal about expressing your needs.

One of the most important elements has been the departmental support. The ED is willing to make my schedule around the Pirates home games, clinic, and the high school football season. It would be difficult to find that required flexibility in the community.

In regards to orthopedics, I do not experience a lot of resistance. I essentially give them everything that they want. I see the patients that either do not need or do not want surgery and gift wrap the patients that need surgery. I will see patients with an ACL tear, start them on therapy, get their MRI and then hand them off to the operative orthopedist. Additionally, because I spent a lot of time in the OR during fellowship, I can explain every step of an operation, saving the surgeon a lot of time when discussing surgery.

What does your typical workweek look like?
On average, I do two to three shifts in the emergency department, with a full day of sports clinic every week. During the baseball season I have usually one to two home games per week. I additionally do on-site medical high school football games.

What are your responsibilities during the baseball games?
I am at the stadium before the game, checking up on everyone and then I am on site for the game in case anything happens. As the team physician, I am responsible for both the Pirates and the visiting team. As a result, I don’t have to travel because the home physician covers the Pirates during their away games.

What practical advice would you give a resident contemplating a career in SM?
The two most important things are doing an elective in SM and developing a mentorship relationship. An elective in SM will let you see what the daily practice is like. It will also give you an understanding of the practical combination of SM and EM. After deciding on SM, mentorship is crucial. For residents without access to practicing SM doctors, you should participate in the SAEM SM interest group’s virtual mentor program.

Any last words?
I think that SM is fun. It gives you a dedicated area to focus on and, in a way, it carves out a career for you. In the ED, you will be referred to as the orthopedic expert. It is a diverse path that opens a lot of doors. Finally, when you have had a bad week and you find yourself in the ballpark watching a baseball game, you realize things really aren’t that bad.
THE BOSTON Beat!

35th Anniversary

EMRA Alumni mingle with present and past leaders, give toasts and well-wishes to EMRA and pick up great “trauma, not drama” t-shirts to celebrate the 35th Anniversary milestone (and had everyone in Boston wondering, “where’d you get that shirt?”).

Job Fair

Job-seekers checked out the opportunities available at the EMRA Job Fair, where more than 200 tables of independent groups and recruiting firms chatted about their open positions in emergency departments everywhere.
Residents soak in all the information they can at EMRA's Resident Forum, where topics range from financial planning and insurance needs to job hunting and contracts.

**Resident Lunch**

After a morning of absorbing information hungry residents enjoyed lunching with EMRA alumni for more Q&A opportunities.

**EMRA Party**

By Tuesday night, Boston knew EMRA had arrived. EMRA and ACEP members alike had a great time relaxing and living it up at The Estate, one of the most unique clubs in Boston, for the biggest and best EMRA party yet.
As the calendar points towards December, the EMRA Job Fair is behind you and the next choice for many will be which type of practice to choose? The three most common are working as an independent contractor, working with a democratic group or being a faculty member in an academic institution.

Each carries separate considerations from a financial standpoint. This article is intended to highlight some basic differences as you evaluate future opportunities.

I recommend that you consider the following factors:

**Clinical faculty/academic institution**

This is commonly the easiest financial position to understand. Income is typically paid as it is during residency. All taxes and other deductions are withheld by the hospital. You will commonly be provided health insurance paid by the hospital, basic life insurance and basic disability insurance. You do not have to qualify for any of these from a medical perspective.

Most hospitals have a 403(b) retirement plan that will allow you to contribute up to $16,500 per year (2009/2010) before taxes and will often have supplemental programs to allow greater contributions. In some cases you will also have a relationship with a private hospital practice that provides additional benefits.

**Pros:** Benefits are automatically provided, retirement matching is common, and the contract is stable. Teaching opportunities are available.

**Cons:** Salaries are typically more limited than other arrangements. Retirement funding may not provide the opportunities of private practice. Tax deductions are limited. State, local and hospital political considerations can impact your practice.

**Independent contractor**

As an independent contractor, you take on the responsibilities of being self-employed. You will likely contract with one or more staffing groups at a fixed hourly rate. There are not commonly any benefits provided and you will be responsible for understanding your tax liability and scheduling appropriate payments.

You will want to establish a separate checking and credit account for your business and either become proficient with an accounting software program or hire a bookkeeper/practice manager. You will need to understand and qualify for your own health insurance, disability insurance and life insurance. You will need to establish your own retirement plan, and fund it with your own money.

**Pros:** Maximum flexibility in scheduling, Health insurance and retirement funding to reduce taxable income. Many common expenses can become tax deductible. Can employ spouse and further reduce taxation.
“Once you can articulate your own objectives, you can understand how your future practice will allow you to reach them.”

Incredibly high level of retirement funding possible, although reduces personal income pro-rata.

- **Cons:** You pay an extra 7.5% in tax as a self employed physician. All benefits must be qualified for and paid for. Personal medical history can make some benefits prohibitively expensive or unavailable.

### Democratic group

This often provides the best of both hospital and independent contract work. A decent sized group will provide health insurance, basic life insurance and may provide basic disability insurance. Commonly a 401(k) plan will allow you to defer $15,500 per year towards retirement and will often be matched up to the maximum federal contribution (+/- $45,000).

The group shift schedule often provides greater flexibility than a hospital can offer. There is often a partnership track allowing greater income potential through ownership of the practice and a percent of the profit. As an employee you are taxed the same as hospital faculty. As a partner you are probably taxed as an independent contractor.

- **Pros:** Camaraderie of peers/partners. Ownership potential. Tax management. Income potential of IC with benefits of hospital.

- **Cons:** Contract with hospital(s) can be lost. Decisions made by group consensus. Group revenue and expenses determine profitability and ultimate income.

As you explore potential practices, take the time to consider your personal retirement, debt repayment needs, family and lifestyle objectives and use them to determine which type of practice will best allow you to accomplish your goals.

Once you can articulate your own objectives, you can understand how your future practice will allow you to reach them. This should become your guide for an efficient and effective transition plan, allowing you to confidently take advantage of opportunities and avoid common mistakes.

Please note that this article contains brief guidelines only and you should always discuss your individual situation with your tax, legal and financial council.

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EMRA gratefully acknowledges the following organizations for their generous support and partnering with us to make the EMRA events at the 2009 Scientific Assembly in Boston an unprecedented success!
The student/resident researcher and mentor relationship is a vital component to professional development. The student-mentor interaction is a unique professional relationship that must be cultivated and supported in order to be successful. There are numerous resources that allude to the importance of this relationship. This article aims to shed light on various tactics which can be employed in order to strengthen the interaction between researcher and mentor.

Initiating a search for a research mentor should be conducted as early as possible in order to provide time for the research relationship to grow. When starting the search, take advantage of any and all resources, such as formal mentoring programs through the medical school or hospital.

If there is no such program, the office of student affairs or research director of the emergency department may have lists of faculty research interests with contacts. Once a research mentor with similar interest has been identified, contact and meet with the faculty researcher.

The first meeting with a research mentor is essential to the student-mentor relationship. Be honest about your level of interest and your goals. Without faith and genuine interest in the topic being studied, true success and productivity in research is unlikely. What do you hope to gain from working on this project? How much time do you realistically have to commit?

Not being totally forthcoming during this crucial first meeting can damage the researcher-mentor relationship in its
EMF/EMRA Resident Research Grant

Maria Glenn, MD

The Emergency Medicine Foundation (EMF) and Emergency Medicine Residents’ Association (EMRA) are pleased to announce one of the EMF/EMRA Resident Research Grantees for the 2009-2010 grant cycle, Maria Glenn, MD, from the Carolinas Medical Center. She was awarded $5,000 to fund “Prediction of Moderate/Severe Post-Thrombophlebitic Syndrome after Acute Deep Venous Thrombosis of the Leg.” Jeffrey Kline, MD, FACEP will serve as her mentor.

Dr. Glenn looks forward to a career in academic emergency medicine where she “can be involved in the forefront of furthering our specialty through teaching and seeking answers to the unanswered questions that can truly impact our patients,” the resident states.

Dr. Glenn continues, “without EMF and EMRA’s support, I would not be able to take on a project of this magnitude—a project that has positive ramifications for not only the patients we care for on a daily basis but also for me as a young investigator.”

If you are interested in applying for an emergency medicine research grant, please go to www.emfoundation.org or contact the Emergency Medicine Foundation by calling (800) 798-1822. Grant deadlines are Tuesday, January 12, 2010.

“The student-mentor interaction is a unique professional relationship that must be cultivated and supported in order to be successful.”

Entirely. Additionally, ask the research mentor what he or she hopes to gain from their involvement. This type of open communication will ensure a good foundation for the relationship.

Once you define a project and it is underway, maintain proper communication. During my first research project, my mentor made sure we had a short meeting once a week to discuss the progress I made that week, and any difficulties that I may have encountered. This consistent communication with my mentor not only ensured project success, but also strengthened our relationship.

Lastly, continue to be proactive! Take the time to ask for constructive criticism from your mentor. Attend scheduled staff research meetings. Understanding the greater goals of your research mentor and staff will help you find a better home for your own research. Consider preparing a small project presentation to ask for ideas and feedback from fellow research staff. These additional efforts will be evident to your research mentor and can aid in strengthening the relationship.

Building a strong and lasting relationship with your mentor may require hard work, patience and tremendous resolve, but it will open a world of research opportunities and provide a meaningful contribution to your career.
EM reflections

EMRA Resident Sim Wars winners

Congratulations to University of Florida, Jacksonville, winners of the 2009 EMRA/FERNE Sim Wars Competition

Pictured left to right: Haru Okuda, MD, Andy Godwin, MD, Mark Laperouse, MD, John Lissoway, MD, Jack Forrest, MD and David Caro, MD.

Participating Teams

University of Mississippi, Medical Center, MS
Robert Galli, MD, Program Director

Synergy Medical Education Alliance, MI
Mary Jo Wagner, MD, Program Director

Carl Darnall Army Medical Center, TX
Melissa Givens, MD, Program Director

Case Western Reserve University, OH
Jeff Pennington, MD, Program Director

Denver Health Medical Center, CO
Stephen Wolf, MD, Program Director

Defending Champions
University of Florida, Jacksonville, FL
Dave Caro, MD, Program Director

Alphabet Soup  Benjamin Lawner, DO, University of Maryland

Somewhere down deep in the recesses of a dark yet comfortable reading room, radiologists feel the recession’s merciless effects.
1. Which of the following trauma patients is classified as having a low probability of cervical spine injury?
   A. 21-year-old man with no neck tenderness who is intoxicated after a motor vehicle crash
   B. 24-year-old pedestrian with no neck tenderness and left lower extremity weakness after being struck by a motor vehicle
   C. 32-year-old woman with no neck tenderness and a through-and-through lip laceration after a motor vehicle crash
   D. 48-year-old man with no neck tenderness and a right shoulder dislocation after falling from scaffolding
   E. 82-year-old woman with no neck tenderness and a left femoral neck fracture after a fall

2. A 20-year-old gymnast presents with knee pain. During practice, she came down on a flexed knee and was unable to continue. She can bear weight, although with some pain. She can walk but feels as though her knee is going to “give out.” She also says that she heard a “pop” when she landed. Which of the following injuries does this patient have?
   A. Anterior cruciate ligament tear
   B. Lateral collateral ligament tear
   C. Medial meniscal tear
   D. Patellar tendon rupture
   E. Posterior cruciate ligament tear

3. Which of the following methods of reducing an anterior shoulder dislocation is associated with the highest incidence of complications and is no longer recommended?
   A. External rotation maneuver of Liedelmeyer
   B. Forward elevation maneuver of Cooper and Milch
   C. Hippocratic method of traction with foot in axilla
   D. Snowbird traction technique
   E. Stimson hanging weight technique

4. Avascular necrosis is commonly associated with:
   A. Colles fracture
   B. Lunate fracture
   C. Mallet finger
   D. Smith fracture
   E. Triquetral fracture

5. A 23-year-old woman presents after a motor vehicle crash. She is 22 weeks pregnant and complaining of abdominal pain. Vital signs include blood pressure 110/78, pulse rate 124, and respiratory rate 28. Which of the following statements regarding her vital signs is correct?
   A. Cardiac output is increased in pregnancy, which means that she can tolerate larger blood losses than a nonpregnant trauma patient can
   B. Elevation of the diaphragm and reduced functional residual capacity are causing the elevated respiratory rate
   C. Heart rate increases in the second trimester, which means that the tachycardia is caused by pregnancy, not hypovolemia
   D. Hypotension might not develop until 35% of her blood volume is lost due to relative hypervolemia of pregnancy
   E. Systolic and diastolic blood pressure decrease in the second trimester, which means that the blood pressure indicates she is not hypovolemic

For a complete reference and answer explanation for the questions below, visit www.emra.org.

Want More PEER VII questions?
Go to http://acep.spaceded.com, sign up for the—FREE—PEER VII Sampler, and help ACEP test a new learning strategy called spaced education. In return for your feedback on a short survey that will be sent out midway through the program, you’ll get a total of 40 PEER VII questions delivered daily via e-mail.
Question

A 52-year-old man arrived via EMS to the emergency department with midsternal chest pain radiating into both arms, palpitations, dyspnea and diaphoresis that awoke him from sleep approximately one hour earlier.

Reported past medical history included hyperlipidemia and Parkinson’s disease. The patient denied alcohol and illicit drug use, but did report a remote history of smoking 20 years prior, and a strong family history of heart disease with his brother and father with early myocardial infarctions.

On physical examination, he was diaphoretic with a blood pressure of 146/119, respiratory rate of 18, heart rate of 54, and an oxygen saturation of 98 percent on 2 liters of oxygen. An electrocardiogram (ECG) was obtained (Figure 1). What medication(s) are contraindicated given the ECG?

Answer

Nitrates and Beta-blockers

In the patient’s ECG, there are ST segment elevations 1 mm or greater in leads II, III and aVF with reciprocal changes in I, aVL, V2 through V6 illustrating an acute inferior wall ST-elevation myocardial infarction (STEMI). In addition a bradycardic junctional rhythm is noted.

Initially the patient was triaged to the resuscitation bay, placed on a cardiac monitor, bilateral large bore IV access obtained, placed on 2 liters oxygen via nasal cannula, the initial ECG was obtained, initial labs including point-of-care cardiac biomarkers were obtained, a chest x-ray was ordered, and a normal saline bolus was initiated.

The ECG was interpreted at the bedside and a heart attack alert was called, notifying the cardiac catheterization laboratory and the on-call interventional cardiologist. An additional right-sided ECG was then obtained (Figure 2). The right-sided ECG revealed a sinus rhythm of 62 beats per minute without obvious ST-segment elevations.

The patient was given 325mg of aspirin, 300mg of clopidogrel, and 2mg of morphine. Beta-blockers were withheld from this patient given the junctional rhythm and bradycardia. Nitrates were also not given due to the possibility of a developing right-sided infarction.

In consultation with cardiology at bedside the patient was started on an unfractionated heparin drip, eptifibatide and consented for percutaneous coronary intervention with possible stent placement.

Cardiac catheterization revealed a right dominant coronary artery (RCA) with diffuse atheromatous disease with 50 percent stenosis followed by a 90 percent diffuse stenosis with filling defect in mid-segment of the RCA. Diffuse disease was also noted in the left coronary artery with stenoses ranging from 40 to 50 percent. A stent was successfully placed in the right coronary artery reducing the stenosis to zero, and an ejection fraction of 65 percent with normal left ventricular wall motion was noted.
The American Heart Association (AHA) Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care have strong indications for the use of beta-blockers and nitrates for the emergency stabilization of STEMI. However, this ECG highlights some of the contraindications to common medications used in the resuscitation of STEMI. AHA contraindications include:

- **Beta-blocker contraindications**:1
  - Signs of heart failure
  - Evidence of a low output state
  - Increased risk* for cardiogenic shock
  - Other relative contraindications to beta blockade (PR interval greater than 0.24 seconds, second- or third-degree heart block, active asthma, or reactive airway disease)

- **Nitrate contraindications**:2
  - Systolic blood pressure less than 90mm Hg or greater than or equal to 120mm Hg
  - Sinus tachycardia greater than 110 bpm or heart rate less than 60 bpm
  - Increased time since onset of symptoms of STEMI.

- *Risk factors for cardiogenic shock
  - Age greater than 70 years
  - Systolic blood pressure less than 120mm Hg
  - Sinus tachycardia greater than 110 bpm or heart rate less than 60 bpm
  - Increased time since onset of symptoms of STEMI.

Also, nitrates should not be used if hypotension limits the administration of beta-blockers.

**References**


EM Practice Guidelines Update Subscription

EMRA has partnered with EB Medicine to bring EMRA Resident & Medical Student members a great benefit—a free online subscription to EM Practice Guidelines Update!

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Pediatric pearls
Risk management pitfalls for pediatric advanced life support

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1. “No one in the patient’s family knew CPR.”
   Encourage patient families to take a CPR course—it could save their own child’s life.

2. “I couldn’t tell whether or not pulses were present or if the patient was breathing.”
   When in doubt, initiate CPR until 9-1-1 arrives.

3. “I didn’t want to do mouth-to-mouth.”
   Be aware that chest-compression only CPR is better than no CPR at all. For healthcare professionals—utilize a bag and mask or carry a key-chain face shield.

4. “We didn’t think that he needed a cervical collar.”
   If there is any suspicion of spine injury based on physical examination, history, or mechanism of injury—it is safer to utilize a collar and a backboard until the child is in a place where the proper examination and radiographs can be performed.

5. “We don’t have pediatric sized equipment.”
   Clinics of all types should try to stock adult and pediatric-sized basic equipment so that they can provide basic life support until 9-1-1 can arrive. Emergency rooms should try to stock all emergency equipment in all sizes and defibrillators that can provide appropriate levels of energy for patients of all sizes.

6. “We use verapamil for adults; I assumed that we could use it in children too.”
   Verapamil is not safe to use in young children, especially children younger than one year of age. In this age group, IV administration of verapamil can cause hypotension and asystole. Adenosine is the first-line medication for children with SVT. Amiodarone can be considered in cases of refractory, unstable SVT.

7. “We couldn’t get IV access.”
   Emergently, intraosseous cannulation can be performed and lidocaine, epinephrine, atropine, and naloxone can be delivered endotracheally.

8. “I don’t feel comfortable intubating the patient.”
   Bag-mask-ventilate the patient until the patient is in a place where experienced medical personnel can intubate the patient. Make sure that there is a good seal between the mask and the face of the patient.

9. “The child has a pacemaker; I don’t know where to put the defibrillator pads.”
   Do not place the defibrillator pads over the pacemaker. Give the pacemaker a one-inch clearance. The pacemaker can block or interfere with the electrical current.

10. “The child has so many injuries, I don’t know where to start.”
   ALWAYS start with the ABCs: Airway, Breathing, and Circulation.
Risk management pitfalls for influenza

From the November 2009 issue of Emergency Medicine Practice. Reprinted with permission. To access your EMRA member benefit of free online access to all EM Practice and Pediatric EM Practice issues, go to www.ebmedicine.net/emra, call 1-800-249-5770, or email ebm@ebmedicine.net.

1. “The fever was low grade; I thought the baby just had a cold.”
   The presenting signs and symptoms of influenza infection are nonspecific, and a diagnosis based on clinical presentation alone becomes less accurate in children under 3 years of age. Although children with a mild disease course and can be managed with supportive therapy, patients under age 2 years are at high risk for a more severe clinical course. Therefore, emergency clinicians need to be vigilant and have a high index of suspicion for possible influenza infection in high-risk populations, especially when disease prevalence is high.

2. “The patient had an infiltrate on chest x-ray, so bacterial pneumonia appeared to be the clear diagnosis.”
   Numerous secondary complications can stem from an initial primary influenza infection. When addressing and treating these complications, the emergency clinician must not overlook the possibility of a primary influenza infection and the need for medical management. Some of the most common influenza-related complications include acute bronchitis, bacterial pneumonia, and otitis media. In certain clinical situations, treatment with antiviral medications as well as antibacterial medications may be indicated.

3. “I thought I would just let it run its course.”
   Many previously healthy people can be treated with supportive therapy alone. However, it is crucial for the emergency clinician to be aware of the numerous risk factors that are likely to result in a more severe disease course. For those patients deemed well enough to be safely discharged from the ED, the clinician must ensure that the patient’s primary care provider will maintain close follow-up and that possible reasons for needing to return to the ED are discussed.

4. “It is the summer. Influenza occurs in the winter, so I do not need to be concerned about it at this time of the year.”
   Although influenza certainly exhibits seasonal fluctuations and regional outbreaks, the disease can occur year round. Testing and possible empiric treatment of patients with an influenza-like illness are influenced by the regional prevalence of the disease, so emergency clinicians should be aware of medical agencies that track the prevalence of influenza on a regional and national level, such as the Centers for Disease Control and Prevention.

5. “Swine flu appears to be everywhere. I don’t have the time to consult the CDC website. I will just give oseltamivir to my patient and be done with it.”
   Even in times of epidemic influenza infection, numerous strains can be circulating at a given time within a particular region. During the 2008–2009 influenza season, a strain of influenza circulated that was resistant to oseltamivir. In April 2009, a novel H1N1 influenza strain emerged that showed antiviral susceptibilities different from those of the seasonal influenza strain. Thus, without knowing the prevalence of local strains, the emergency clinician might mistakenly choose an antiviral agent that will prove less effective on those strains. Treatment with more than 1 agent may even be indicated in some regions until more formal strain-specific diagnostic testing can be undertaken. Since certain medications are effective only against influenza type A, the local prevalence of any type B influenza should be determined in order to select the appropriate drug therapy.

6. “The World Health Organization has declared a pandemic. I feel better giving all my suspected influenza patients antiviral therapy, since I don’t want anyone to have a poor outcome.”
   Such a declaration does not necessarily mean that the particular infectious organism is more virulent. It merely recognizes that the disease is spreading worldwide. Pandemics thus can occur during both mild and more severe disease courses.

7. “I see so many patients in the ED every hour. I can’t possibly wear a mask and wash my hands for every patient. Plus, I must have been exposed to influenza 100 times already.”
   Maintaining effective infection control is crucial to protect not only other patients in the ED but also the health care staff. Patients suspected of having influenza require appropriate isolation, and strict hand washing as well as personal protective equipment (e.g., masks) are necessary to protect health care staff who are in direct contact with patients. Absenteeism due to influenza infection can be a significant drain on health care personnel and staffing. The Strategic Plan for Management of an Influenza Outbreak, published by the American College of Emergency Physicians, is a great resource to ensure the highest level of preparedness on the part of the ED staff as well as their ability to handle a surge in patient volume that can be expected during a disease pandemic.

8. “I performed a rapid influenza test and it was negative, so I am safe sending home my patient on supportive therapy alone.”
   Numerous forms of testing are available to detect influenza infection. Rapid diagnostic tests help guide clinicians in their immediate management decisions, but the quality of the specimen and skill of the technician performing the assay can significantly influence results. Certain rapid assays are specific for influenza type A, so knowing what strains are circulating locally is important. In times of high disease prevalence, the chance that a given patient with an influenza-like illness actually has the disease is increased, as are the number of false-positive results obtained from rapid diagnostic testing. At such times, empiric therapy based on clinical presentation alone is advised for patients at high risk. In more severely ill patients, viral culture and PCR testing is indicated when the initial rapid test yields a negative result.

9. “My patient is pregnant and has influenza. The side effect profile of antiviral medications concerns me, so I feel better treating her with supportive care.”
   Pregnancy is a risk factor for a more severe disease course during an influenza infection. Initial epidemiologic data from the influenza pandemic of 2009 indicate that some of the highest rates of morbidity and mortality are among pregnant women. Although any medication taken during pregnancy can have a deleterious effect on the fetus, the potential for complications and significant morbidity is too great to forgo antiviral therapy in this population.

10. “Medical knowledge has advanced considerably over the past few decades, and now we have great antiviral medications. I simply do not need to worry about a devastating influenza infection today.”
   While it is true that medical science has advanced considerably since the pandemic of 1918, influenza remains a significant threat. The ability of the virus to undergo genetic reassortment allows for the rapid development of new influenza strains to which the population has little or no previous immunity. Resistance to antiviral medications has been known to develop quickly for certain influenza strains and appears to be a rapidly increasing concern over time.
Emergency Medicine Advocacy Handbook
Nathaniel R. Schlicher, MD, JD
In this clear, well-thought-out handbook, Dr. Schlicher and the chapter authors outline the essential advocacy issues surrounding emergency medicine today. Not just for the politically-minded, this resource is useful for the student, resident, physician, healthcare worker, patient or concerned citizen to help understand the important issues affecting all aspects of emergency care.
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The Department of Emergency Medicine at the Brody School of Medicine at East Carolina University is expanding its faculty. We are seeking BC/BP emergency physicians for tenure or clinical track positions at the rank of assistant professor or above, depending on qualifications. Our current faculty possesses diverse interests and expertise leading to extensive state and national-level involvement. Through this expansion we hope to increase our depth and further develop programs in clinical toxicology and clinical research, and our cadre of clinician-educators. The emergency medicine residency is well-established and includes 12 EM and 2 EM/IM residents per year. We treat more than 90,000 patients per year in a state-of-the-art ED at Pitt County Memorial Hospital. PCMH is a rapidly growing level I trauma, cardiac and regional stroke center. Our tertiary care catchment area includes more than 1.5 million people in eastern North Carolina, many of whom arrive via our integrated mobile critical care and air medical service. Greenville, NC is a livable, family-oriented university community located ninety minutes from the Crystal Coast. Cultural and recreational opportunities are abundant. Compensation is competitive and commensurate with qualifications; excellent fringe benefits are provided. Successful applicants will possess outstanding clinical and teaching skills and qualify for appropriate privileges from ECU Physicians and PCMH. Screening will remain open until filled.

Confidential inquiry may be made to Theodore Delbridge, MD, MPH, Chair, Department of Emergency Medicine (delbridget@ecu.edu). Must apply online by using ECU OneStop on the main ECU page: www.ecu.edu.

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Ohio, Cambridge: Southeastern Ohio Regional Medical Center is a 177-bed, full-service facility and Level III Trauma Center treating 34,000 ED pts./yr. Outstanding partnership opportunity includes equal profit sharing, equity ownership, funded pension, open books, full benefits and more. Contact Steve Rudis, MD (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd, NW, Canton, OH 44718. 800-828-0898 or fax 330-493-8677.

Ohio, Cincinnati: Opportunity for BC/BP EM physician with democratic group. 60,000 volume ED is located in a desirable suburb and has 58 hours of daily physician coverage plus additional PA coverage. Excellent package includes incentive income, malpractice, employer-funded pension, family medical plan, CME, more. Contact Kim Avalos Rooney, Premier Health Care Services, (800) 726-3627, ext. 3674, krooney@phcsday.com, fax (937) 312-3673.

Ohio, Dayton area: EM physician opportunity with Democratic group at 27,000 volume ED in Greenville - a family-oriented town commutable from Dayton. Excellent package includes malpractice, family medical plan, employer-funded pension, expense account, incentive income plus shareholder opportunity at one year with no buy-in. Contact Michele Wilkerson, Premier Health Care Services, (800) 726-3627, ext 3672; mwilkerson@phcsday.com, fax (937) 312-3673.

Ohio, Dayton: An academic practice opportunity awaits you in Dayton, OH! Dayton is the birthplace of aviation. The city boasts of culturally rich museums and visual arts centers and is home to the United States Air Force Museum. Hospital Physician Partners is seeking FT/PT AOBEM or ABEM certified physicians for a two hospital system with volumes at 27K and 16K. If you enjoy teaching this is a perfect opportunity. Join our physician-led team of medical professionals. What’s important to you is what matters to us… physician-led, attractive compensation, paid malpractice, flexible scheduling and excellent team support. Contact Molly

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Ohio, Hillsboro: Join democratic group in 20,000 volume ED one hour from Cincinnati or Columbus. Appealing, community ED with excellent support staff. Enjoy equity ownership opportunity, malpractice, incentive income, family medical plan, employer-funded pension, CFM & more. Contact Ryan Fix, Premier Health Care Services, (888)-792-6349, e-mail fix@phcsday.com, fax (937) 312-3686.

Ohio, Lima: Outstanding package with democratic group. Level II, 57K volume ED has separate pediatric ED and hospitalist support. Features shareholder status without buy-in, loan repayment, pension, family medical, and more. Full benefits included and not deducted from outstanding clinical compensation. Contact Kim Avalos Rooney, Premier Health Care Services, (800) 726-3627, ext 3674, krooney@phcsday.com, fax (937) 312-3675.

Ohio, Lodi: Fully accredited 30-bed hospital with acute and skilled care facilities is part of the Akron General Health System. Brand new 12-bed ED has 12 private rooms including cardiac and trauma. 10,000 ED pts./yr. with 12 and 24 hr. shifts. Outstanding partnership opportunity includes equal profit sharing, equity ownership, funded pension, open books, full benefits and more. Contact Steve Rudis, MD (career@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd, NW, Canton, OH 44718. 800-828-0898 or fax 330-493-8677.

Ohio, Marion: Appealing Columbus area opportunity. Enjoy equity ownership with democratic group in 48,000 volume ED, 45 miles north of Columbus. State-of-the-art ED, excellent coverage of 62 physician & 18 PA hours daily. Benefits include incentive compensation, employer-funded pension, malpractice and family medical plan. Contact Amy Spegal, Premier Health Care Services, (800) 726-3627, ext 3682, aspegal@phcsday.com, fax (937) 312-3683.

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**Pennsylvania, Pittsburgh:** Alle-Kiski Medical Center in Natrona Heights is currently building a brand new ED to see 34,000 emergency pts./yr. The Western Pennsylvania Hospital-Forbes Campus sees 40,000 EM pts./yr. in Monroeville. Both are proximate Pittsburgh’s most desirable residential communities. Outstanding partnership opportunity includes equal profit sharing, equity ownership, funded pension, open books, full benefits and more. Contact Steve Rudis, MD, (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd, NW, Canton, OH 44718. 800-828-0898 or fax 330-493-8677. ■

**Pennsylvania, Uniontown:** Outstanding financial opportunity with Emergency Resource Management’s newest site. Uniontown Hospital is a full service community hospital with modern ED and excellent physician and mid-level provider coverage. The surrounding community offers a great lifestyle with plentiful outdoor activities, a low cost of living and the amenities of Pittsburgh are easily accessible. We offer an outstanding compensation/benefit package including paid malpractice insurance with tail, employer-funded retirement plan, paid health insurance, CME allowance, and much more. Board certification/prepared in EM. Contact Dr. Robert Maha at 888-647-9077/ Fax 412-432-7480 or e-mail at mahar@upmc.edu. EOE. ■

**Pennsylvania, York:** Memorial Hospital in York is host to a respected osteopathic EM residency program and sees 41,000 annual ED visits. Outstanding partnership opportunity includes equal profit sharing, equity ownership, funded pension, open books, full benefits and more. Contact Steve Rudis, MD, (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd, NW, Canton, OH 44718. 800-828-0898 or fax 330-493-8677. ■

**Texas, Multiple Cities:** Everything’s bigger and BETTER in Texas; Hospital Physician Partners welcomes you to explore the fantastic opportunities available in the great Texas cities of San Antonio, Odessa, Port Arthur and the Dallas/Fort Worth vicinity! Whether you are looking for a slower pace or a bustling metropolis, Hospital Physician Partners has a Texas location just right for you. We offer a wide range of facility emergency department volumes and patient mix, as diverse as Texas itself! Attractive compensation packages, sign-on & tuition bonuses, paid malpractice, flexible scheduling and great Team support are just a few of the things that are important to you, and matter to us. Let us help you find the right Texas location to call home, Partner! For more information on facility details contact Deanna Maloney: Toll free - 866-maloney (866-625-6639) or fax your CV to 972-562-7991; email: dmaloney@hppartners.com or visit www.hppartners.com/emra. ■

**Texas, Longview:** BC/BP Residency-trained Emergency Physicians are invited to join an established, growing practice. Physicians will provide service to Good Shepherd Medical Center, Longview and Marshall, Texas (GSMC). Physicians are independent contractors working with Longview Emergency Medicine Associates (LEMA), a locally owned and operated Emergency Medicine Physician group. Physicians receive productivity compensation, and paid professional liability insurance. In addition to this, a two year partnership track is also available. GSMC-Longview, a Level II regional trauma referral center, and Marshall, a Level III trauma center, both state-of-the-art facilities, have a combined annual volume of 120,000 patients. The EDs feature bed-side ultrasound administered by Emergency physicians, a dedicated scribe service, and EMR implemented in 2005. Physicians cover 88 hours while PAs cover 56 hours. Just 121 miles east of Dallas, Longview features captivating lakes, lush countryside, and excellent schools. Experience great shopping, fine dining, or the fine arts of the symphony orchestra in your leisure time. Contact Teri Geen at 800-346-0747, ext. 3168, or email CV to tgeen@psrinc.net. ■

**Virginia, North Central:** An emergency medicine group at a 175 bed acute care hospital with 35,000 ED visits and growing, near Richmond Virginia, is seeking an additional emergency medicine residency trained physician for a full time position. Competitive hourly rate plus benefits,urances, and opportunity for additional hours. For details contact Scott Berger at scott@mdsearch.com or 800-327-1585 x203. ■

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David Pelini, MD, FACEP, Regional Medical Director, on the right, helps his son refuel a generator during Hurricane Ike.
Physicians, Inc - a well established highly regarded democratic ED group - is looking for BC/BP EM physician to join their expanding practice. Sentara Williamsburg Regional Medical Center is a brand new, state of the art hospital which opened Aug. 2007 in historic York County. ED sees 40,000 visits per year with a 6 bed Fast Track. Staffing is supported by ED trained full time PA’s and a strong Scribe program affiliated with the College of William & Mary. Competitive salary and compensation package which includes health insurance, malpractice and retirement plan. Position to lead to Partnership tract with productivity based compensation package. Williamsburg is one of the fastest growing areas in Virginia with excellent schools, housing and a plethora of recreational activities. With easy access to Norfolk and Richmond, Williamsburg offers the best of all worlds, old and new, along with a wonderful quality of life. For more information please contact: Myrna Brown @ 757 941-6026 or email CV to wepi6@aol.com.

West Virginia, Bluefield: EM physician opportunity with democratic group. This 36,000 volume ED is on the WV/VA border. Excellent coverage of 36 physician hours plus 20 PA/NP hours daily. Benefits include shareholder opportunity, family medical plan, malpractice, pension, incentive income. Scenic location with appealing sports/recreational opportunities. Contact Rachel Klockow, Premier Health Care Services, (800) 406-8118, e-mail rklockow@phcsday.com, fax (954) 986-8820.

West Virginia, Multiple Cities: Unparalleled opportunities available in southern WV! Let our country roads take you to a new home in the beautiful, rolling hills of the Appalachians. Full-time opportunities are available for BC/BP EM physicians at facilities in Beckley and Ronceverte, located southeast of Charleston. Join our progressive, physician-led group and earn attractive compensation and productivity-based incentives. Beckley’s 23K volume ED is a Level IV trauma center with 20 hrs of mid-level coverage daily, while Ronceverte’s 22K volume ED is a community-based setting that treats adults and pediatrics with moderate acuity cases. Live a laid-back lifestyle while enjoying the beautiful change in seasons, exceptional schools and an abundance of outdoor activities. Candidates must have completed residency and hold ACLS/ATLS/PALS. What’s important to you is what matters to us…scheduling flexibility, paid malpractice and regional leadership. For details, contact Debra Baumel at Hospital Physician Partners: (800)815-8377; email: dbaumel@HPPartners.com or visit www.hppartners.com/emra.

West Virginia, Wheeling: Ohio Valley Medical Center is a 250-bed community teaching hospital with a brand new-ED under construction. AOA approved Osteopathic EM and EM/IM residency program. Enjoy teaching opportunities, full-specialty back up, active EMS, and two campuses seeing 26,000 and 22,000 pts./yr. Outstanding partnership opportunity includes equal profit sharing, equity ownership, funded pension, open books, full benefits and more. Contact Steve Rudis, MD, (careers@emp.com), Emergency Medicine Physicians, 4535 Dressler Rd, NW, Canton, OH 44718. 800-828-0898 or fax 330-493-8677.
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