Nasal Medication Administration: Old Route, New Possibilities

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It is certainly not new or novel, but over the last few years I have seen ever increasing uses of intranasal medications. We have been using nasal vaccines for years, but it is only in the last few that my EMS system has added the intranasal route for commonly-used medications such as fentanyl, naloxone and midazolam. Recently, our emergency department followed suit by stocking mucosal atomizers to allow this medication route in the emergency department. A relatively inexpensive device ranging from three to 10 dollars, the mucosal atomizer creates a fine atomized mist of medication for intranasal administration. Generally, doses are split between each nare, with the highest drug concentration used so as to decrease the total volume administered.

Intranasal drug delivery works particularly well for lipophilic drugs, and so not surprisingly fentanyl has been found to have an equivalent Tmax of seven minutes or less via both the intranasal and intravenous route. I have found adding this as a medication route has increased our use of prehospital pain management in pediatric patients – a population we traditionally see poor use of narcotic analgesia even with clear indications (e.g. fracture) because of provider concern over placing an IV. The ability to give narcotic pain medication to injured children via a non-needle route was the primary interest of my pediatric emergency medicine colleagues supporting our addition of this equipment and administration route in our emergency department.

The other medication that has seen tremendous success is the use of naloxone via the intranasal route. Recently, my EMS system participated in a demonstration project with Albany and Suffolk regions, and under the leadership of New York ACEP member, Dr. Michael Dailey, we successfully demonstrated to the New York State Department of Health that EMTs can safely identify and administer intranasal naloxone. As a result, you will shortly see intranasal naloxone administration added to the scope of practice of all EMS personnel in the state of New York. The intranasal route is ideal for the EMS provider, law enforcement officer, or layperson as there is no concern regarding needlestick injury, and administration has been found to be equivalent to the intramuscular route.1

Intranasal midazolam is also gaining favor for use in both seizure patients and those with a behavioral emergency or excited delirium requiring sedation. In a prospective randomized trial there was no detectable difference in efficacy between intranasal midazolam and rectal diazepam,2 a welcome finding for my paramedics previously giving rectal benzodiazepines. This delivery method dramatically enhances provider safety and we have found similar rates of seizure and behavior control as intramuscular routes.

Ketamine and glucagon have also been found to be rapidly absorbed by the intranasal route and have been gaining favor in prehospital and in-hospital environments. Some important reminders about intranasal medication administration include:

1. Always inspect the nares for bleeding or large amounts of mucosal drainage – the presence of either will decrease absorption.
2. Always deliver half the medication up each nostril.
3. Always use the most concentrated form of the medication available.

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Congratulations Andy!

While in Seattle for the ACEP 13, I had the great honor to publicly acknowledge the outstanding career, contributions and achievements of my friend Andrew E. Sama, MD FACEP.

His term as president of national ACEP came to an end at the meeting. He turned over the gavel to his successor, Alexander Rosenau, DO CPE FACEP of Pennsylvania, after a remarkably successful term. My opportunity to acknowledge him came at New York ACEP’s reception held in a beautiful room on the 35th floor of the Sheraton Seattle Hotel.

Dr. Sama has been arguably the most important emergency physician in New York State for some time. Aside from managing a large and diverse group of emergency physicians and emergency departments, and growing scores of residents into emergency physicians year after year, he has been vital to the continued growth and expanding influence of our state chapter.

When I moved back home to New York from Chicago with a young family, it was Dr. Sama who welcomed me into New York ACEP. I was drawn to the Government Affairs Committee chaired by Samuel F. Bosco, MD FACEP. Dr. Sama was a very prominent and consistent contributor who went on to chair the committee. As a consequence, Andy and I have done numerous presentations to elected and appointed officials on behalf of emergency department patients.

Before I knew it, I was lucky enough to be elected to the Board of Directors of New York ACEP. There were many leaders to learn from, too many to mention — and learn I did. But it’s fair to say it was Dr. Sama who taught me how to run a committee and how to lead a board of directors.

When it was time for Dr. Sama to spread his wings even further in order to positively impact the national emergency medicine stage, he was elected to the national ACEP board of directors. His skills and acumen were quickly appreciated. After two strong terms as a board member, with numerous accomplishments, he was elected president-elect of our organization.

His national responsibilities will remain and will only gradually diminish. New York ACEP looks forward to having him around a little more often. We also know that Andy’s best years lie squarely ahead of him. Congratulations Andy!
Indications
• Difficult to palpate landmarks of the lumbar spine
• Obesity
• Failed lumbar puncture attempts
• Identification of the optimal location or positioning for lumbar puncture needle insertion

Technique
• Use a high-frequency linear transducer. Occasionally, a curvilinear transducer may be used for patients with increased body habitus.
• Patients may be placed either in the sitting position or lateral decubitus position.

Transverse view
• Place the ultrasound transducer perpendicular to the patient’s lumbar spine with the probe marker directed to the patient’s left in transverse view (Figure 1).
• Locate the hyperechoic (white) spinous process with posterior anechoic (black) shadow in transverse view to determine the midline location of the patient’s lumbar spine. Scan cephalad and caudal along the patient’s spine to locate the spinous processes at various levels along the lumbar spine. Center the ultrasound image of the spinous process in the middle of the screen (Figure 2).
• Mark the midline with a surgical marker (Figure 3).

Longitudinal view
• Place the ultrasound transducer parallel to the patient’s lumbar spine, along the midline, with the probe marker directed to the patient’s head in longitudinal view (Figure 4).
• Scan cephalad and caudal. Identify the lumbar spinal interspaces located between the hyperechoic, convex spinous processes (Figure 5). Scan side-to-side to ensure that you are in the patient’s midline to avoid inadvertent imaging of the lateral transverse processes.
• Mark the middle of the desired lumbar interspace with a horizontal line using a surgical marker (Figure 6).
• Proceed with lumbar puncture using standard sterile technique.

Figure 1. Placement of a linear ultrasound transducer in transverse view perpendicular to the patient’s lumbar spine to locate the patient’s midline of the lumbar spine.

Figure 2. Ultrasound image of lumbar spinous process in transverse view. Hyperechoic spinous process (red arrowheads) with posterior shadow, hyperechoic transverse processes (white arrows) and paraspinal muscles (asterisks).
Figure 3. Mark the midline with a surgical marker after identification of the lumbar spinous processes by ultrasound in transverse view.

Figure 4. Placement of a linear ultrasound transducer in longitudinal view parallel to the midline of the patient’s lumbar spine to locate the interspinous spaces.

Figure 5. Ultrasound image of lumbar spinous processes in longitudinal view. Hyperechoic, convex spinous processes (red arrowheads) and spinal interspace (asterisk).

Figure 6. Mark the middle of the lumbar interspace with a horizontal line using a surgical marker.

Tips

- Scan side-to-side and ascertain that you are in the patient’s midline when imaging the lumbar spine in the longitudinal view. This avoids inadvertent imaging of the lateral transverse processes and subsequent improper lumbar puncture site localization.
- Increased flexion of the lumbar spine will improve the interspinous space between the spinous processes (Figures 7a, 7b).
- Lumbar puncture must be performed immediately after ultrasound-guided localization of landmarks since any patient movement can alter the skin markings in relation to spinal anatomy.
- Practice ultrasound identification of lumbar spinal landmarks with thin patients prior to application on patients with difficult landmarks.
- Surgical marker ink may adhere to the transducer when mixed with ultrasound gel. Placement of Tegaderm™ over the transducer simplifies cleaning of the probe.

Pitfalls and Limitations

- Lumbar puncture landmarks may be difficult to identify in some patients due to increased body habitus.
- Inadvertent imaging of the lateral transverse processes and improper lumbar puncture location.

Special thanks to Dr. Joseph Hayek and Dr. Aaron Weaver for their assistance with image acquisition.
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How does one define “wilderness medicine?” Historically and commonly, it is defined as “the medical care given to a person who is more than an hour away from definitive medical care.” Additionally, wilderness medicine is described as providing “vital emergency care in remote settings.” There are many other definitions offered, but I find that the most accurate and descriptive definition of wilderness medicine is the “provision of resource limited medicine under austere conditions.”

Wilderness medicine has its roots in providing medical care for wilderness travelers with many of its first programs focused on mountain medicine. The current practice of wilderness medicine has expanded far beyond this scope and patient population. The limitation of resources may be due to location, time or distance from definitive care, or due to the availability of equipment at the time of medical necessity. Austere conditions exist in remote environments like Mount Everest or the Sahara Desert, but also in more developed locations. For example, providing health care in the coastal New York/New Jersey region after 8+ million residents lost power after Superstorm Sandy is working under austere conditions. Providing medical care in coastal Japan after the Miyako tsunami is working under austere conditions.

Wilderness medicine practice forces one to dig deep back to many of the basic skills learned in medical school, particularly the arts of history taking and of the physical exam. A wilderness practitioner may have to utilize his/her clinical skills alone in rendering medical care without the benefit of advanced technology like x-ray or CT during a humanitarian response situation or while in the backcountry. Further, the skill and ability to improvise medical tools like splints or spinal immobilizers is important as one may not have access to sufficient medical equipment in a resource limited situation. Wilderness medicine allows one to be William Osler and McGyver at the same time.

Wilderness medicine training and education draws its curriculum from several diverse, yet complementary disciplines in the house of medicine. This includes emergency, pre-hospital care, disaster, humanitarian response, environmental, search and rescue, sports, tactical, military, orthopedic, trauma, infectious disease and innumerable other disciplines in medicine. This diverse training and knowledge base allows the wilderness practitioner to utilize his/her skills in settings ranging from the emergency department, to the local national parks, to the peaks of the Himalayas.

The interest in wilderness medicine is rapidly growing with medical students, emergency medicine residents and faculty alike. Currently, there are 18 or more medical student rotations in wilderness medicine. Additionally, the American College of Emergency Physicians (ACEP) has a wilderness medicine section, Society for Academic Emergency Medicine (SAEM) has a wilderness medicine interest group, and the Emergency Medicine Residents’ Association (EMRA) has a recently established wilderness medicine committee. Further, wilderness medicine is a fellowship of emergency medicine. Ten years ago, one wilderness fellowship existed. Now, twelve exist nationwide with additional programs being added every year. This pioneering group of fellowship directors has already developed a uniform curriculum and is planning to pursue eventual ACGME recognition of the subspecialty.

Numerous training and educational opportunities exist in wilderness medicine. Along with our emergency medicine professional societies, there exists the Wilderness Medical Society, which is solely dedicated to education, research, and the propagation of interest in wilderness medicine. Plentiful CME and outdoor programs exists to offer training to interested parties. Further, there are journals and magazines dedicated to wilderness medicine research and practice.

As human populations (and our patients) venture out into the farthest reaches of the globe, and are exposed to the scourges of extreme environmental conditions, tropical disease, natural catastrophes, and impoverished settings, a new breed of physician is necessary to deal with this globalization of health care. This physician can work in the most robust or spartan of conditions and will make clinical decisions based on the most minimal of medical resources. If you are looking for a new challenge in the house of emergency medicine, consider furthering your education in wilderness medicine.

I would like to acknowledge Dr. Jeremy Joslin and Dr. Stuart Harris for their assistance in writing this article.

References
What are the Most Common Cardiovascular Effects of Cannabinoids?

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The major cannabinoids are cannabinoil, cannabidiol, and tetrahydrocannabinol. The principal psychoactive cannabinoid is Δ⁹-tetrahydrocannabinol (THC) from the Cannabis sativa plant. There are at least two types of cannabinoid receptors, CB₁ and CB₂, each of which is G-protein-coupled. These receptors can be activated not only by cannabis-derived and synthetic agonists but also by endogenous cannabinoids ‘endocannabinoids’ such as anandamide and palmitoylethanolamide. CB₁ receptors are located primarily at the terminals (presynaptic) of central and peripheral neurons where they mediate inhibition of various neurotransmitters including acetylcholine, noradrenaline, dopamine, 5-hydroxytryptamine, GABA, and glutamate. Mainly immune cells express CB₂ receptors. When activated, they regulate immune responses and inflammatory reactions.

Cannabinoid receptor agonists have been used medicinally for nearly 30 years. One example is Marinol (dronabinol), which was introduced in 1985 as an appetite stimulant. The only cannabinoid receptor antagonist to have been licensed as a CB₁ antagonist/inverse agonist is Acomplia (rimonabant) in 1992 as an appetite stimulant. The CB₁ receptors were introduced in 1985 as an antiemetic and in 1992 as an appetite stimulant. The first cardiovascular studies on THC and endocannabinoids (namely anandamide) were carried out in anesthetized rodents. These studies showed that activation of CB₁ receptors led to bradycardia and prolonged hypotension, confirmed using CB₁⁻/⁻ and CB₂⁻/⁻ mice. Furthermore, a reduction in anandamide also causes hypotension and cardio depression in mice. However, anandamide also causes an initial steep hypotensive responsive that persists in both CB₁⁻/⁻ and CB₂⁻/⁻, suggesting another possible mechanism. In vitro isolated rat mesenteric artery, anandamide was able to produce vasodilation independently of CB₁ and CB₂ receptor mediated pathways. The vasodilatory effects are not quite known and may involve several mechanisms including stimulation of the transient receptor potential vanilloid type 1 (TRPV1) channel on perivascular neurons and subsequent release of vasodilatory peptides, and the participation of as yet unidentified endothelial receptors.

A reduction in cardiac damage after injury represents one for the most promising strategies for improving cardiac dysfunction. CB₂ receptor expression has been established in the rat myocardium and at lower levels in human cardiomyocytes. Both in vivo and in vitro animal models of cardiac ischemia-reperfusion suggested that selective activation of CB₂ receptors improves myocardial infarction. In a primary prevention study in rats, pretreatment with anandamide was associated with improvements in cardiac function and left ventricular wall thickness after doxorubicin treatment. Evidence from in vitro and in vivo models suggests that CB₂ activation might reduce atherosclerotic inflammation. In particular, treatment with JWH-015 reduced chemokine receptor expression and chemotaxis towards up regulation in atherosclerotic plaques in human monocytes.

Unfortunately these results have yet to be carried over to clinical practice. In fact, marijuana use may be a risk for individuals with coronary artery disease. An exploratory prospective study of self-reported marijuana use among patients admitted for myocardial infarction found that patients who used marijuana were at significantly increased risk for cardiovascular and noncardiovascular mortality compared with nonusers.

In conclusion, on the basis of animal studies, pharmacological modulation of CB₂ receptors may hold a unique therapeutic potential in cardiovascular diseases but successful integration of these results into clinical practice requires a better understanding of the underlying pathology and further testing.

References

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Nasal Medication

4. Don’t administer more than 0.5-1 ml per nostril as ideal volumes are 0.2-0.3 to assure absorption and the medication doesn’t run out the nose.

5. Particularly with sedation (midazolam or ketamine) titrate to effect.

6. Although pharmacokinetics of intranasal medications are not well described, most authors recommend that the intranasal dose is 50% higher than the intravenous dose.

Intranasal medications may provide a useful alternative for your EMS system or your emergency department. There may be some significant benefits particularly for pain management or procedural sedation in children, and first responders and laypersons may be able to render lifesaving care without the risk of a needle. Despite intranasal medications being used for years, increased efficacy of administration with modern nasal atomizers make this an old route, with new possibilities.

References


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Nomination deadline: January 2, 2014
An 86 year-old man stepped on the accelerator instead of the brake and plowed into a busy farmers market 10 years ago in Santa Monica, CA. He was found guilty of 10 counts of vehicular homicide and sentenced to five years of felony probation. If this had been your patient, what recourse would you have in New York to prevent him from causing further harm to himself and others?

The Department of Motor Vehicles (DMV) provides a form for physicians to report impaired drivers (see figure 1), however, the Office of Professional Medical Conduct (OPMC) could find you in violation of New York State Education law S6530 for disclosing personally identifiable health information without consent. This vulnerability to physicians exists because New York remains the only state in the country without a law either permitting or mandating reporting impaired drivers. I will leave the legislative advocacy component of this issue to the Government Affairs Committee with guidance from Weingarten, Reid and McNally for now, but I would like to delve into the ethical issues underlying the difficult decisions of taking away the keys.

The main ethical dilemma is between preserving the confidentiality of the physician/patient relationship and protecting the safety of the public. Precedents for breaching confidentiality include infectious diseases, injuries caused by weapons, threatened violence by psychiatric patients, child abuse, and elder abuse. Most recently, emergency physicians have become accustomed to reporting mentally ill patients, whom they think may be a risk to themselves or others, as per the New York Safe Act of 2013.

The American Medical Association (AMA) policy on reporting impaired drivers actually excludes emergency physicians along with trauma surgeons and sub-specialty surgeons, because we may not “be in a position to evaluate the extent or the effect of the impairment.” I argue that we may very well be in a position to recognize a driver who may cause significant harm to him or her self or others, especially when taking care of patients who have presented to the emergency department after a motor vehicle collision.

The National Highway Traffic Safety Association has conducted helpful research and educational programs in identifying patients who ought to be counseled and then reported not to drive. The basic driving skills can be boiled down to vision, cognition and motor function. While primary care physicians are charged with evaluating patients for these conditions on a routine basis, emergency physicians should be aware of patients who are at risk for recurrent motor vehicle collisions.

Vision can be measured by visual acuity and peripheral visual fields. Visual acuity less than 20/50 is not conducive to safe driving. Peripheral visual field deficits that are significant are not safe either. These patients should be referred to an ophthalmologist or optometrist before resuming driving.

Cognition is best correlated by the trail making test B and the clock drawing test. A patient who takes more than 180 seconds to complete a trail making test shows poor working memory, visual processing, visuospatial skills, selective and divided attention and psychomotor coordination. A patient who fails to make a detail-oriented clock picture shows poor long-term memory, short-term memory, visual perception, visuospatial skills, selective attention, abstract thinking and executive skills.

Motor skills can be evaluated by timing a rapid pace walk as well as testing range of motion and motor strength. A rapid pace walk is 10 feet of walking, turning around, and walking back in less than nine seconds. Patients who fail this test have higher automobile crash rates.

Therefore, a patient who cannot see well enough think well enough, or walk well enough should not drive for their safety and the safety of others. Attempts to counsel such a patient can be augmented by writing a prescription, “Do Not Drive, For Your Safety, and the Safety of Others.” But they can also be subverted and met with resistance. It is for just these patients that we need a law permitting us to report them to the DMV for evaluation of their driving privileges.

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What can we learn from all of the other states who already have a law? In Pennsylvania, which has a mandatory law, 27,000 reports were received in 2008. Twenty-two percent of licenses were recalled and 21% were restricted. Half of the reports were for patients with seizures. A mandatory law might not be ideal, because of the low yield for actually impaired drivers. The American Academy of Neurology (AAN) released a consensus statement that patients with seizures should not drive for three months until their seizures are controlled, but it does not think that patients with seizures should be prohibited from driving.

Missouri, which has a permissive law, had 4,100 reports received in 2008. Only 3.5% of the individuals retained their licenses after the process. This implies a much more direct correlation between reporting an impaired driver who is actually impaired in a permissive law state. Interestingly, 45% of these patients had dementia and 30% had visual impairments. The Alzheimer’s Association has spoken out against a diagnosis of dementia equaling no driving. Given that 5% of people across the country use public transportation (with an obvious exception in New York City), the imposition of taking away the keys can lead to isolation and depression.

Oregon had a permissive law in 1993. Out of 5,300 reports, 37% were reported by health care providers. Of the drivers, 55% were older than 65, 19% of which had epilepsy and 15% had a stroke. The law was so popular among legislators that it became mandatory in 2003. No data has been reported since, but I suspect that the reports have increased and the yield for truly impaired drivers decreased.

Some states mandate reporting of individuals with specific diagnoses. California has mandatory reporting of patients with dementia. Nevada has mandatory reporting of patients with visual impairments or seizures. Delaware and New Jersey have mandatory reporting of patients with seizures. None of these diagnosis-based reporting mechanisms seem justified.

Many states have increased driving testing of elderly individuals, although Tennessee notably has less frequent testing after the age of 65. While crash rates are higher for drivers over 85 than any other age group except 15-19, age-based testing does not seem to be the most cost-effective, least discriminatory approach.

Physicians recognizing patients at risk and reporting them to the DMV on an individual basis seems to be on balance the best way to protect the public while minimizing damage to the dignity of our patients.

References
Emergency Medicine Career Bridge Building

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We have all passed through the gauntlet that is medical school and residency to find ourselves transitioning into our careers. Whether it be academic, community, clinical, non-clinical or any combination or variety of them, there have been those that taught, lead, and mentored along the way. As New York ACEP rolls out a mentorship program for our members, this article gathers the advice of three physicians at various stages in their careers. One may wonder why our colleagues are so eager to mentor and help after completing, or some may say surviving, the difficulties of balancing a professional career, family, social obligations and personal wellness. I believe as physicians who are all dealing with these various draws to our attention we are each like the “old man” of the Will Allen Dromgoole poem “The Bridge Builder.” If you are not familiar, the poem focuses on and “old man” who crossed a difficult path and an onlooker who questions why he stops to construct an easier path for those who follow.

“There followeth after me today, A youth whose feet must pass this way... He, too, must cross in the twilight dim; Good friend, I am building this bridge for him.”

It is with this spirit that the chief resident assists the intern on their first chest tube, the program director offers post graduation advice, the most senior physician for the day comes over to take a look at that pesky rash you mean that’s Steven Johnson’s not a viral exanthema??!!), the colleague from your past who assists with the transition into another setting, or the physician at the twilight of their career offering retirement planning advice (see you on the islands). With that in mind we look to career advice and thoughts from individuals at three distinct stages in the physician career.

What do I do after residency (or what is next in my career), and how do I balance my career and life? Three years out of residency I have an answer for the first question, but the second answer is hazy at best. The most interesting thing is how much these two issues are intertwined.

So what do you want to do when you grow up? Emergency medicine has perhaps the largest variety of practice options after residency. Options including community practice, an academic setting, locums, urgent care, a plethora of fellowships or some hybrid of these. Even within these settings there are a multitude of employment arrangements to decide on. My answer for this is to not discount any of the opportunities. The resident version of me would never have guessed I would be fellowship trained in an academic setting. Seek out opinions from people in different settings. Preferably find people you trust. Former co-residents, physicians from your medical school and physicians where you practice can all share a fresh perspective from what you see each day. The good news is you can be wrong. Again, you can, and it’s OK to be wrong. The bad news is you have to remember that you can be wrong and realize it is just the beginning of a long career and there are many opportunities. If given the chance, try multiple settings. If possible, pick up a few per diem shifts at another site. Most importantly look for opportunities that interest you and seek out a mentor for advice. Recruiters, advertisements and even friends will come to you with “great opportunities,” usually followed by dollar signs. While all these may seem lucrative especially after spending the past seven, or so, years in medical school and residency, remember the concept of value. What is it that matters most to you? Think about what motivates or excites you, is it location, time, research, growth potential, benefits, variety, money, or some other aspect. Money brings me to another point. Now that more money is coming in, reward yourself. You have worked hard, but keep in mind you will probably want to retire someday (more on that from Dr. Schneider later in this article).

Through residency you hear about wellness and burnout. Having a house, a family with two young kids and a career in emergency medicine has been a challenge, especially while taking on more responsibilities. There are two ways to avoid burnout, do something you enjoy and have a healthy “work/life balance.” Although many of us like the idea of working shifts and not having to be on-call, work often encroaches into life outside the hospital. Research, administrative projects, committee assignments, continuing education, or the always present smart phone e-mails are all in the physician’s mental briefcase.

Organization is crucial to management of these demands. Online calendars for the family allow live updating and access to all events for work and home. Plan time to deal with work related activities. Some allow a limited period of time to respond to work related messages or schedule a time while at home to finish a project. Others

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leave the phone by the door upon arriving home. Most importantly, plan to spend time with your family and friends. On many occasions this time home can feel like work, with cleaning, cooking, gardening, or even potty training feeling like a second job after a long clinical shift. However, these are the people who can support you, and they can help to remind you of your priorities. After you squeeze all these things into your easily accessible online calendar, remember to plan some time for yourself and your hobbies. The reason I say my answer to this is hazy, is I do not believe anyone fully masters this balance. All you can do is try your best. Again, value becomes important. Remember what you value from both home and your career as they both define your life.

Mark Su, MD MPH FACEP, Clinical Associate Professor of Emergency Medicine, New York University; Medical Director, New York City Poison Control Center

Feeling a little burnt out? Looking for a jump start to do something different from the daily grind of being in the trenches? How about school? I know what most of you are thinking, “SCHOOL?? Are you crazy?? I was finished with that a long time ago!”

In today’s day and age, having a medical degree, excellent training in emergency medicine (plus or minus a fellowship), and years of academic experience teaching residents, truthfully, might not be fulfilling enough. If you are looking to keep yourself fresh and motivated, graduate school might actually be the answer for some. Sure, there’s nothing in the world that replaces getting “down and dirty” with hands on experience in administration, research, advocacy, or some other area you may have only touched on briefly during residency. However, without the right opportunities, mentors or timing, higher education can open doors and your mind to a myriad of experiences you knew existed but did not know how to access.

The United States spends the most money per capita on healthcare in the entire world but outcomes are not commensurate. The face of healthcare has changed with controversial legislation that affects every single individual in the entire country. Health disparities are rampant and widening in underdeveloped and even, developed nations. Emergency departments are increasingly crowded. Understanding economics, being able to gather and interpret data, and acquiring management skills and business expertise are just some of the critical skills that can be acquired in graduate school. Examples of some of the various degrees include, the Masters in Business Administration (MBA), Masters in Public Health (MPH) and Masters of Health Administration (MHA), to name a few. With additional training, some of the largest dilemmas in healthcare can be better understood and attacked.

Going back to school for most emergency physicians may not be practical, or even possible, due to financial or other constraints. Taking time off and a reduction in salary and struggling to do homework again with people half your age, might be similar to pulling teeth without anesthesia. In some exceptional people, additional schooling could be superfluous and a complete waste of time. However, if you are the “average Joe” and want to look at your career in a different light, taking the plunge into graduate school can definitely change your perspective. It is the fundamental desire of all emergency physicians to discover reasonable solutions to solve difficult problems. With some sacrifices, a few less bubble teas and a lot of social support, graduate school might inspire you to take this desire to, and outside of the emergency department, to do more than you ever thought you could. The personal rewards could be immense. Is school for you? Only you can answer that.

Sandra M. Schneider, MD FACEP, Senior Research Director, North Shore University Hospital

Retirement – that’s too far into the future to worry about, right? Wrong! Before you realize it, you will be 55+. There are two major transitions that come with retirement – finances and self fulfillment. With good planning, finances should be secure. You should have started from day one of employment to put away the maximum allowable amount in your retirement account. Many institutions/groups have already set up a 401(k) or 403(b) so contributions are easy. A good financial planner should help you select the right balance of high risk and low risk investments within your account. It is always a good idea to diversify so a stock crash does not completely destroy your nest egg. As you approach retirement you will need to understand the rules around your investments. Some accounts require that once you start withdrawals from your 401(k or b), you must take a monthly payment. Others allow a one time withdrawal or permit you to borrow against the account. If you have children you should have an attorney protect your assets as much as possible so they can be passed to your children without heavy taxation. And you should have sufficient life and disability insurance. Getting life and disability insurance while you are young and healthy is cheaper. Long term care insurance is another investment to consider. The cost of a nursing home can wipe out even the largest nest egg. Regulations require that the patient spend their own money for care (around $300 per day or more for long term care) until their assets are under certain limits which may be around $100,000 for a couple or $30,000 or lower for an individual. Gifting money to family has become more complicated as the government now can ‘look back’ five years from the time the person enters long term care. Any gift from that five year period is penalized and can lead to payments far in excess of the gift amount.

In addition to your 401 (k or b), you should carefully look at your employer’s retirement benefits at the time of employment. It is important to note that retirement benefits vary significantly among employers. Some provide nothing. Some provide low cost insurance supplements to Medicare. Some provide a pension payment.

For the past several decades you have been defined by your work — ‘Doctor.’ What will define your life when that is done? Travel? Grandchildren? Writing? My emergency physician friends who have quit practice tell me they feel a loss of identity. What will you do? Many want to travel, but find you can’t really travel 365 days a year. Some return to hobbies developed at younger ages – painting, writing, photography. Many have found filling the day with those hobbies has not been enough after their prior action life. Most have transitioned by working part time or urgent care. This stage of life is a lot like those early years, when you considered going into Medicine in the first place.
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The Quality of Cardiopulmonary Resuscitation Using Supraglottic Airways and Intraosseous Devices: A Simulation Trial.

Reiter DA, Strother CG, Weingart SD; Department of Emergency Medicine, Mount Sinai School of Medicine, New York. Resuscitation. 2013 Jan;84(1):93-7.

OBJECTIVE: To assess whether using interventions such as laryngeal mask airways (LMA) and IO lines lead to improved resuscitation in a simulated cardiac arrest when compared to standard methods of endotracheal intubation (ETI) and central line placement.

METHODS: Emergency medicine residents at a single academic center were grouped into teams of four. Each team participated in two simulated ventricular fibrillation cardiac arrests using a high fidelity simulator. Peripheral IV access was unobtainable. Only ETI supplies and a central line kit were available in one case (control) and in the other case those supplies were replaced by an LMA and an EZ-IO drill kit (experimental). Groups were randomized to which set up they were given first. Data examined included time to airway placement, time to vascular access, time to defibrillation, and percent hands off time.

RESULTS: 44 residents in 11 teams participated. Mean time to airway was shorter in the experimental group (122.8 seconds vs. 265.6 s, p=0.001). Mean duration of airway attempt was also shorter (7.6 s vs. 22.7 s, p=0.002). Time to access was shorter in the experimental group (49.0 s vs. 194.6 s, p=<0.001). Time to defibrillation and percent hands off time did not significantly differ between the two groups.

CONCLUSION: Use of an LMA and an IO device led to significantly faster establishment of an airway and vascular access in a simulated cardiac arrest. The variation in devices did not affect time to defibrillation or percent hands off time.

Hospital Administrators’ Views on Barriers and Opportunities to Delivering Palliative Care in the Emergency Department.


OBJECTIVE: We identify hospital-level factors from the administrative perspective that affect the availability and delivery of palliative care services in the emergency department (ED).

METHODS: Semistructured interviews were conducted with 14 key informants, including hospital executives, ED directors, and palliative care directors at a tertiary care center, a public hospital, and a community hospital. The discussions were digitally recorded and transcribed to conduct a thematic analysis using grounded theory. A coding scheme was iteratively developed to subsequently identify themes and subthemes that emerged from the interviews.

RESULTS: Barriers to integrating palliative care and emergency medicine from the administrative perspective include the ED culture of aggressive care, limited knowledge, palliative care staffing, and medicolegal concerns. Incentives to the delivery of palliative care in the ED from these key informants’ perspective include improved patient and family satisfaction, opportunities to provide meaningful care to patients, decreased costs of care for admitted patients, and avoidance of unnecessary admissions to more intensive hospital settings, such as the ICU, for patients who have little likelihood of benefit.

CONCLUSION: Though hospital administration at 3 urban hospitals on the East coast has great interest in integrating palliative care and emergency medicine to improve quality of care, patient and family satisfaction, and decrease length of stay for admitted patients, palliative care staffing, medicolegal concerns, and logistic issues need to be addressed.


BACKGROUND: The debate on the quality of health care provided in the United States has continued to be waged as concerns have grown over the years. Stress, sleep deprivation, poor diet, and lack of exercise may lead to inadequate work performance by physicians.

OBJECTIVE: This study was undertaken to determine whether Emergency Medicine (EM) residents satisfy daily recommendations for total number of steps taken per day set forth by the Centers for Disease Control and Prevention and Surgeon General in a 12-h shift.

METHODS: An observational prospective cohort study was conducted between August 2009 and November 2009 at an urban Level I trauma center with an annual census of over 165,000 Emergency Department (ED) visits per year. The mean number of steps taken by EM residents during 12-h shifts was measured.

RESULTS: Mean steps taken during a shift were 7333 (95% confidence interval 6901-7764). Only nine (9.9%) pedometer readings reached the target level of 10,000 (10 K) steps or above. A t-test was used to compare steps with the hypothesized 10 K steps target. Recordings of 10K steps or greater were not correlated with ED sections (p=0.60) shift (medical vs. surgical, p=0.65) or ED census (π2)=0.0017).
CONCLUSION: A majority of residents (90%) did not meet the target number of steps for shifts. More rigorous charting needs, overcrowding, or even spatial limitations may explain this. This warrants further investigation to determine if some daily physical activity regimens may help improve the overall well-being of EM residents.


OBJECTIVE: To understand the relations of mild traumatic brain injury (TBI), blast exposure, and brain white matter structure to severity of posttraumatic stress disorder (PTSD).

DESIGN: Nested cohort study using multivariate analyses.

PARTICIPANTS: Fifty-two OEF/OIF veterans who served in combat areas between 2001 and 2008 were studied approximately 4 years after the last tour of duty.

MAIN MEASURES: PTSD Checklist-Military; Combat Experiences Survey; interview questions concerning blast exposure and TBI symptoms; anatomical magnetic resonance imaging (MRI), and diffusion tensor imaging (DTI) scanning of the brain.

RESULTS: PTSD severity was associated with higher 1st percentile values of mean diffusivity on DTI (regression coefficient \( r = 4.2, P = .039 \)), abnormal MRI \( (r = 13.3, P = .046) \), and the severity of exposure to combat events \( (r = 5.4, P = .007) \). Mild TBI was not significantly associated with PTSD severity. Blast exposure was associated with lower 1st percentile values of fractional anisotropy on DTI (odds ratio \( [OR] = 0.38 \) per SD; 95% confidence interval \([CI], 0.15-0.92 \)), normal MRI (OR = 0.00, 95% likelihood ratio test CI, 0.00-0.09), and the severity of exposure to traumatic events (OR = 3.64 per SD; 95% CI, 1.40-9.43).

CONCLUSIONS: PTSD severity is related to both the severity of combat stress and underlying structural brain changes on MRI and DTI but not to a clinical diagnosis of mild TBI. The observed relation between blast exposure and abnormal DTI suggests that subclinical TBI may play a role in the genesis of PTSD in a combat environment.

A Case of an Unusual Hernia Associated with Gastrointestinal Bleeding.


BACKGROUND: Acute upper gastrointestinal (GI) bleed is a well-known presentation to the emergency department (ED) frequently accompanied by hematemesis. We describe the case of a patient with abdominal content herniation into the chest wall with a recent history of coronary artery bypass graft presenting with acute onset of hematemesis.

OBJECTIVES: To present an exceedingly rare herniation of abdominal contents into the chest wall that was accompanied by hematemesis and to present the rare visual findings inherent in this pathology.

CASE REPORT: A 65 year-old man presented to the ED vomiting large amounts of blood upon presentation, compromising hemodynamic stability and prompting emergent resuscitation. The patient’s presentation was complicated by a large 30 x 40-cm anterior chest wall mass extending 2 cm inferior to the sternal notch expanding with each episode of hematemesis. Computed tomography after stabilization revealed a large ventral hernia extending into the chest wall, containing small and large bowel. We suspected this large, unusual hernia to be the underlying cause of the patient’s GI bleeding.

CONCLUSION: The emergency physician must be able to assess hemodynamic stability of an upper GI bleed and resuscitate the unstable patient if warranted. Diagnosis is to be subsequently determined after stabilization.
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Case 1
An 8 year old previously healthy male presents to the pediatric emergency department for evaluation of a fever of one week’s duration. According to the parents, the patient had been previously well during their vacation in Orlando, Florida in the preceding week when he developed ‘low grade fever’ which the parents described as 100-101°F (oral temperature). The parents described mild URI symptoms that preceded the fever, mostly in the form of congestion and rhinorrhea. They deny headache, vomiting, respiratory symptoms, abdominal pain or rash. On further questioning, they do say that the patient had become ‘clumsy’ in the past few days, and ‘wasn’t walking right.’ Today, the patient remains febrile and is ‘more sleepy than normal.’ He has an identical twin brother, as well as two older sisters, all of whom traveled with the family to Florida, and are asymptomatic. Of note, his mother was treated for bacterial meningitis one month prior to presentation.

Physical Examination
- T.38.3 (tympanic). HR 101 bpm
- BP 110/70 mmHg RR 14
- O2 sat 100% RA
- Gen: Tired appearing, responsive to verbal stimuli, but with waxing and waning responsiveness, non-toxic, no acute distress
- HEENT: Normocephalic, atraumatic. PERRLA, Sharp optic discs on fundoscopy, Tympamic membranes normal bilaterally. Oropharynx is clear, without tonsilar hypertrophy, erythema, petechiae or exudates
- Neck: Supple, small bilateral anterior chain cervical adenopathy, no meningismus
- Chest: Atraumatic, equal expansion bilaterally. Lung sounds are clear and equal throughout, no wheezes/rhonchi/rales/cough. Normal S1+S2. II/VI soft, vibratory murmur at ULSB, which increases with valsalva
- Abd: Bowel sounds present, non-tender, non-distended, no hepatosplenomegaly, no masses
- GU: Circumcised male, Tanner II genitalia
- Ext: warm and well-perfused, capillary refill < 2 seconds in all extremities. No clubbing/edema/cyanosis

Neurological Exam
- Cranial nerves II-XII are grossly intact. An ataxic gait is noted, and is poor compliance with examiner instructions. Auditory acuity is grossly intact bilaterally. Patient is alert, but not oriented except to identification of parents.

Differential Diagnosis
- This 8 year-old male presents with one week of fever accompanied by mild URI symptoms, now with altered mental status concerning for encephalopathy. The etiology is mostly likely infectious, but malignancy, metabolic and environmental exposures must be considered.

Workup in the Emergency Department
- 12 lead EKG: NRS, rate 90bpm, no ectopy

Laboratory
- CBC: WBC 3.1 Hb 11.7 HCT 35.2%.PLT 167 ANC 0.0
- CMP: Na 134 K 3.5 Cl 97 CO2 25 BUN 10 Cr 0.56 Glu 113 Ca 8.8
- CRP 2.4
- Lead level 3
- Ammonia 44
- Urine analysis WNL
- Urine/Serum Toxicological studies negative
- Blood and urine cultures

Imaging
- Non-contrast CT of the brain: No mass, infarct, space-occupying lesion. No midline shift

Clinical Course of Disease
Our patient became more alert during the time in the emergency department, and was admitted to the floor for further evaluation. Twenty-four hours later, the patient experienced a generalized tonic-clonic seizure on the ward, and was transferred to the PICU. In the PICU, he went into status epilepticus, eventually requiring pentobarbital and Propofol infusions to cease clinical seizures, though he remained in sub-clinical status per his EEG.

The results of his New York State Encephalitis panel, Lyme PCR, NMDA-receptor evaluation were negative, as were cultures and evaluations for HSV, HIV, Enterovirus, etc. Based on his ongoing status in the setting of a recent febrile illness, he was given the diagnosis of Fever Induced Refractory Epilepsy Syndrome (FIRES). Care was withdrawn after 12 weeks of sustained seizure activity, and the patient expired.

Case 2
A 17 year-old female presented to the PED for evaluation of two-week history of intermittent ‘abnormal behavior,’ as well as episodes of staring, unresponsiveness and ‘inability to understand speech.’ Two weeks prior to presentation, this previously healthy 17 y/o was noted to have an

continued on next page
A Tale of Two Encephalopathies

continued from page 19

episode marked by sudden onset headache, with abnormal arm movements and acute confusion. She was seen in a local ED where a set of routine labs were drawn which, were unremarkable by report, the patient received intravenous fluids, and was discharged home with a diagnosis of ‘dehydration.’ Over the following 5-7 days, the patient began to demonstrate ‘regression,’ which the parents described as ‘holding a teddy bear, speaking like a child, and becoming easily upset.’ She continued to complain of a left sided headache, in the absence of vomiting, nausea or incoordination. Intermittently, she would ‘pick at things in the air.’ In the six days prior to presenting to our PED, the patient was noted to have episodes of ‘acute confusion and memory loss,’ where she did not recognize her best friend since childhood, became ‘frantic’ in school because ‘she didn’t know where she was.’ Her parents describe an inability to perform activities of daily living, because ‘she couldn’t find her toothbrush, and when she did, she didn’t know what to do with it.’ She was seen again at another outside institution, didn’t know what to do with it.’ She was unable to follow verbal or written commands without significant demonstration. Seemed unconcerned. CN II-XII grossly intact. Normal tone and muscle bulk throughout. Poor performance with evaluation for dysdiadochokinesia. Normal gait.

Negative romberg. 2+ DTRs throughout, Downward Babinski.

• Skin: No neurocutaneous stigmata, no rash.

Workup in the Emergency Department

• CBC:
  • WBC 8.8 (51.6% neutrophils, 32.5% lymphocytes)
  • Hb 11.6
  • HCT 35.5
  • PLT 238

Chemistry

• Na 139 K 4 Cl 103 Bicarb 26 BUN 12 Cr 0.69 Gluc 110 Ca 9.4
• AST 19 ALT 10
• Ammonia 22
• Lead level undetected
• NC-CT Brain: No focal infraction, hemorrhage, space-occupying lesion
• Urine/Serum Toxicology negative
• EKG: NSR, no ectopy

CSF Studies

• Glucose 76, Protein 14.6, RBC 1, WBC 2
• Subsequent CSF Studies (all negative)
• Lyme CSF PCR, Enterovirus, HSV 1&2, HIV, EBV, CMV, Mycoplasma, HHV6, Viral culture, Bacterial culture
• Immunologic: All negative studies
• ANA, Anti-DS DNA, Anti-Sm, Anti-SS, Anti-TPO, Anti-Cardiolipin

Differential Diagnosis

• Seizure disorder, toxic encephalopathy, infectious etiology, intra-cranial lesion, psychiatric

Clinical Course of the Disease

This 17 year old with memory loss, global aphasia and regression was admitted to the floor for video EEG (VEEG) and evaluation by neurology and psychiatry. An MRI of the brain identified abnormal T2 prolongation in the left temporal, parietal cortical regions, as well as the left thalamus. VEEG identified posterior-temporal seizure activity during episodes of global aphasia. Seizure activity failed to respond to benzodiazepines, Keppra and fosphenytoin, and the patient was transferred to the PICU for management of partial status epilepticus, where she was started on solumedrol, valproate and Dilantin. She continued to have episodes of disorientation.

At the suggestion of the infectious disease team, she was started on acyclovir (60mg/kg/day) with HSV DNA PCR pending. Burst suppression was achieved with the above-mentioned anti-epileptics. She remained hemodynamically stable and repeat EEGs did not show seizure activity. On hospital day 10, the lab was notified that CSF evaluation for N-methyl-D-aspartate (NDMA) receptor antibodies were present, providing the diagnosis of NDMA-receptor encephalopathy. A pelvic sonogram did not reveal ovarian pathology.

Discussion

The approach to the pediatric patient with altered sensorium requires a wide differential diagnosis. The etiology of altered mental status in this population varies widely and, as is the case with most of pediatric medicine, can depend on the age at presentation. These two cases, ultimately leading to the rare diagnoses of FIRES and NDMA-receptor encephalopathy (AKA limbic-encephalopathy), are clearly ‘zebras’ in the differential diagnosis, but the complexity of their presentation underlay the importance of a detailed history and physical exam, and the need for casting a ‘wide net’ in the diagnostic evaluation.

In younger patients, altered sensorium can be the result of both intrinsic and extrinsic factors. Trauma, toxic ingestion, infection, metabolic disorders, seizure activity, neoplasm and psychiatric disorders include many of the more common etiologies of altered mental status in this age group.

Our two patients presented with differing manifestations of encephalopathy, and as such, we shall discuss them individually.

The first patient presented with waxing and waning consciousness in the setting of low-grade fever, prompting the emergency department team to initially pursue an infectious etiology. On exam, the patient was lethargic but arousable, with appropriate vital signs and no evidence of meningeal irritation. There was no focal source of infection. Given his clinical picture, accompanied by unexplained neutropenia, the patient underwent a non-contrast CT of the brain which was unrevealing, followed by a diagnostic lumbar puncture, which was also non-diagnostic. He was empirically covered with both anti-bacterial and anti-viral agents, and admitted for further evaluation. As he presented in the summer months in this New York City hospital, a New York State Encephalitis Panel was sent, in addition to a number of other viral and bacterial evaluations (Lyman, EBV,
CMV, HSV, etc). His rapid progression in to status epilepticus and subsequent decline in the PICU prompted further evaluation.

This patient was ultimately diagnostic with Fever Induced Refractory Epileptic Encephalopathy in school-aged children (FIRES), a diagnosis of exclusion. FIRES is defined by many references in the literature as a 'catastrophic epileptic encephalopathy.'

While little is known about the syndrome, including a specific pro-syndromal infectious etiology, it is widely accepted as an inflammation-mediated encephalopathy. Also referred to as Acute Encephalitis with refractory, repetitive partial seizures (AERRPS) and Devastating epileptic encephalopathy in school-aged children (DESC), amongst other acronyms, its clinical presentation is often similar to the case described, with the presence of fever and other non-specific symptoms, followed by the insidious onset of encephalopathy and eventually seizure activity. In their case series of 22 patients, Van Baalen et al found a male predominance (8:3), a median age of onset of 6.5 (range 3-15 years), little uniformity in clinical presentation, and the requirement of multiple anti-epileptic drugs (AEDs) to achieve burst suppression. Two patients (9%) expired, and 36% remained in a persistent vegetative state.

Our second patient, with a seemingly more insidious onset, was ultimately diagnosed with anti-NMDA-receptor encephalitis, also known as limbic encephalopathy. Seemingly the result of a para-neoplastic syndrome associated with ovarian teratomas, researchers have identified anti-bodies for the admitted patient. The decision to image patients to exclude the possibility of increased ICP or a mass-lesion is also one worth considering.

The spectrum of pathology that can present in the form of encephalopathy to the pediatric emergency department is vast, and having a broad differential diagnose can help emergency medicine physicians to exclude the more life threatening etiologies, as well as facilitate the identification of more exotic diagnoses, such as FIRES and Anti-NMDA Receptor Encephalopathy.

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How to Become an Effective Teacher

Kaushal H. Shah, MD FACEP, Residency Director, Department of Emergency Medicine, Icahn School of Medicine at Mount Sinai
Raashee Kedia, MD, Emergency Medicine Resident, Icahn School of Medicine at Mount Sinai

The equation is simple: Approach to teaching \( \times \) Technical competencies \( \times \) Professionalism = Effective teacher. The implementation, however, requires a little bit of work. This short essay will elaborate on this equation developed by Harden and Laidlaw and will hopefully give you some pointers on how to become a more effective teacher. Since the scope of teaching is fairly broad, we are going to focus on teaching specifically in the clinical emergency department environment. Regardless of the type of institution you practice in, there is always a learner present (e.g. nurse or PA) that will appreciate your teaching and education. We want to start with two caveats that are well accepted in education circles:

1. There are naturally excellent teachers and those that are not; however, everyone can improve with the right guidance (such as tidbits from this essay).

2. There is no single best way to teach a topic (lecture, small group, demonstration, pimping, case-based, etc) and retention is most likely to occur if the same point is made through various educational methods.

The approach to teaching in the emergency department should always begin with the FAIR principle in mind, especially when there is limited time. We are listing them in the reverse order because we think it’s in the order of importance: Relevant, Individualized, Active and with Feedback. Make the teaching point relevant and individualized to your learner. The medical student and resident need to know why you treat a UTI for a different length of time in a man compared to a women and the nurse may want to know why you ordered ciprofloxacin orally when the UTI patient has a running intravenous line. Active learning is in abundant supply in the emergency department. Have your learner calculate a Wells score or a CHADS score and they are much more likely to remember than if you wax eloquently about the various components of the Wells score and how one element is particularly annoying. Finally, tell the learner you’re giving feedback and share your experience – they will appreciate it much more. “You have to set up the end-tidal carbon-dioxide (CO2) detection device before the intubation” is not as effective as “Let me give you some feedback on that intubation. End-tidal CO2 is the gold standard for endotracheal tube placement and should be part of your intubation preparation. Oxygen saturation and breath sounds are notoriously unreliable.”

Technical competency refers to the mechanics of the teaching. In the emergency department, case-based and bedside teaching are the most common forms of education. A simple technique to make a straight-forward case (e.g. chest pain presentation) become a teachable moment includes asking a ‘what if’ question. What if this patient complained of chest pain radiating to both shoulders or the right shoulder only? How does that change your likelihood ratios for chest pain radiating to both shoulders or the right shoulder? How does that change your suspicion of this being ACS? Then you refer them to the JAMA article that says likelihood ratios for chest pain radiating to both shoulders or the right shoulder are higher than “typical CP radiating to the left shoulder.” Another tool is micro-skill teaching. This involves learning one small topic really well. For example, when do you do a lumbar puncture for a potential SAH? You can discuss the strength/limitations of CT and the value of xanthochromia based on the timing of symptoms. These are things you already know but if you remember a few associated numbers and keep teaching the same points, you will be excellent at it and your future students will appreciate the clarification on a confusing topic. There is no shortage of headache patients in the emergency department so you always have a springboard to start this micro-skill.

Professionalism, the last component in the equation, is the responsibility of the teacher to ensure they remain competent and up-to-date. If you are reading this, you’re a member of New York ACEP and likely attending Scientific Assembly every year so you can consider this box checked off.

Rob Rogers developed ‘The Seven Habits of Highly Effective Teachers’ that is worth reading and should be mandatory for all serious educators. We have his permission to summarize his key points here.

Rob Rogers begins by stating “Teaching is frequently the easy part. It is making the teaching hit its mark that is the most challenging.” He then breaks down habits of those medical educators that are able to effectively do this (see Figure 1). This involves:

1. teaching
2. being enthusiastic
3. providing appropriate feedback correctly
4. tailoring teaching to the learner
5. creating professional intimacy
6. stimulating the learner, and lastly
7. serving as an influential role model.

As you can see, only one of the habits is about the actual content construction and physical aspects of teaching. This involves preparing yourself beforehand and creating

continued on next page
The least favorite and most difficult habit is probably "enthusiasm" to teach. This can be difficult in the busy emergency department but Rob Rogers recommends learning how to optimize those teacher-learner interactions, tailoring teaching to the situation and actively seek those opportunities to teach.

The most important of the habits he lists is probably "enthusiasm" to teach. This can have the greatest impact on the learner. The least favorite and most difficult habit is probably the ability to provide constructive feedback to the learner. However, this can be incredibly valuable. It is important to provide continuous and timely feedback throughout a shift and the article recommends starting with "I am going to give feedback now" to make it clear. You should not be scared of giving negative feedback (the learners will really appreciate it), and must remember that your role is to teach and help develop future physicians.

The last few points and habits of the article discuss the importance of knowing your learner and tailoring to their needs and expectations. Get to know them and their interests; for example, the medical student interested in ophthalmology as a career who is not particularly interested in the gore of trauma would probably love to learn about pupillary changes with cerebral herniation. This can make the learner feel like you are interested in them and makes the interaction enjoyable on both sides. Rogers discusses professional intimacy as being emotionally close without being personal. This openness allows the learner to feel more comfortable sharing their thoughts and asking questions. And lastly, serve as a role model and stimulate your learner to become a critical thinker and independent learner.

Hopefully, you realize that while there may be an easy equation to be an effective teacher, this is a skill that needs to be developed and takes practice to perfect. Do not be discouraged and remember: despite the busy setting of the emergency department, there is always ample opportunity to teach!

References

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**letter to the editor**

Thank you for the most recent edition of The New York ACEP Empire State EPIC. The articles were timely and insightful as always. With that, I feel compelled to respond to the "Ask the Experts" column and take exception to the response offered by Dr. Eric Shaw, “What are the differences between working for an academic vs. a community emergency department? What are the pros and cons of each?”

I believe Dr. Shaw’s response does a disservice to the majority of practicing emergency physicians and is a nullification of the quality that occurs in community emergency departments on a daily basis. I have worked in and held leadership positions in academic and community emergency departments over the years. The community emergency physicians that I have worked with are current, capable, efficient, and extremely independent. Their decision making and judgment is sound and reflects evidence based medicine blended with experience, nothing different than their colleagues in the academic centers. Their patient satisfaction scores, stroke metrics, sepsis metrics, and other core measures equal or exceed their colleagues at the academic centers.

Academic practice does not reflect higher acuity over community practice. The vast majority of emergency departments in this country are still community based. Trauma presents without warning. Toxicology challenges are common. Sepsis is our mainstay. The “sick” patients originate here and are referred to the academic centers once a broad differential or definitive plan has been developed and takes practice to perfect. Do not be discouraged and remember: despite the busy setting of the emergency department, there is always ample opportunity to teach!

Michael Guttenberg, DO FACEP
Medical Director, Forest Hills Hospital
Time to Rethink Spinal Immobilization

Jeff Rabrich, DO FACEP EMT-P, Medical Director,
Department of Emergency Medicine, St. Luke’s Roosevelt Hospital

We all see it everyday we work in the emergency department, EMS arriving with a patient fully immobilized with a C-collar and long spine board. On my last shift I received a 25 year-old female via EMS who arrived immobilized with a complaint of back pain. The patient explained that she had been the restrained driver in a motor vehicle collision the previous day when she was stopped at a traffic light and was struck from behind. She further reported that she felt OK at first so declined medical care at the scene and walked home. The next morning when she awoke she had pain in her lumbar back and left side of her neck so she called EMS. As you might expect the patient arrived in the emergency department immobilized and when I asked the EMS crew why she was immobilized, I got the expected response of, “it’s the protocol” and “in case she has a spinal cord injury.”

The use of spinal immobilization by EMS has been around almost since the beginning of organized EMS in the late 1960s. Like many EMS devices and protocols, there has historically been little in any literature-based evidence that shows benefit to this practice. In fact, several studies in the 1990s have demonstrated harm with long spine board immobilization, and yet it has remained dogma in EMS that if you do not immobilize the patient with neck or back pain they could become paralyzed. Before we can convince our EMS providers that they need to change their practice, we must convince ourselves as emergency physicians that this is the right thing to do by understanding that the harms outweigh any potential benefit we might see from this practice. Most of the harms from spinal immobilization are related to prolonged time spent lying on the backboard and not from its brief use as an extrication tool.

The negative effects of prolonged immobilization are well described in the literature by several studies performed in the 1990s. A study of 21 healthy volunteers by Chan, Et. Al. in 1994 demonstrated that all subjects had developed pain after 30 minutes on a spine board, most commonly occipital headache or lumbo-sacral pain and the mean age of the volunteers was 23.6 years.1 Numerous other authors found similar increases in occipital and low back pain as well as increased likelihood of pressure sore development.2-4 In 1988, Bauer studied the effects of spinal immobilization in non-smoking males on pulmonary function and found a restrictive effect of immobilization similar to restrictive lung disease.5 In 1999, Totten and Sugarman similarly found a 15% reduction in pulmonary function with immobilization.6 While numerous studies have demonstrated harm from immobilization, none have been able to demonstrate that neurologic injury is prevented or that neurologic outcomes are improved. Hauswald, Et. Al. looked at this in 1998 with a five year retrospective chart review of two university hospitals with patients at one hospital receiving immobilization and the other group were not immobilized. The results showed the un-immobilized group to have less neurologic disability and led the authors to conclude that immobilization had a less than 2% chance of beneficial effect.7

So why not have EMTs and paramedics “clear” the c-spine in the field using NEXUS or the Canadian C-spine rule as we do in the emergency department? This too has been looked at in the pre-hospital environment with promising results. Several regions around the country have implemented both selective spinal immobilization protocols as well as pre-hospital clearance of the c-spine. In 2001, Stroh and Braude reported a 99% sensitivity of their selective spinal immobilization protocol in Fresno County, CA in a five year retrospective chart review.8 In 2005, Domeier Et. Al. reported a 92% sensitivity of their selective spinal immobilization protocols performance in Michigan in a four year study of over 13,000 patients.9 New York State EMS release a selective spinal immobilization protocol in 2008 that followed criteria very similar to NEXUS and a large statewide straining initiative was undertaken with EMS providers. Despite this protocol change and the training effort, a full five years later not much has changed in New York State and at least anecdotally there does not seem to be an appreciable decrease in the rate of immobilization.

In January of this year the National Association of EMS Physicians jointly with the American College of Surgeons Committee on Trauma released a position statement on EMS spinal precautions and the use of the long backboard.10 The statement recognizes the limitations discussed above, largely that the efficacy of backboards to immobilize the spine is largely unproven, that they cause pain, agitation and respiratory compromise. They state that, “utilization of backboards for spinal immobilization during transport should be judicious, so that the potential benefits outweigh the risks.” The statement goes on to identify that patients who may be appropriate for immobilization include:

- Blunt trauma and altered level of consciousness
  - Spinal pain or tenderness
  - Neurologic complaint (e.g., numbness or motor weakness)
  - Anatomic deformity of the spine
  - High-energy mechanism of injury and any of the following:
    - Drug or alcohol intoxication
    - Inability to communicate
    - Distracting injury

The statement then discusses patients who do not need immobilization and include findings similar to most existing

continued on next page
selective spinal immobilization protocols, such as GCS 15, no spinal tenderness, distracting injury, no neurologic complaints or intoxication. Interestingly, it states, “Patients with penetrating trauma to the head, neck, or torso and no evidence of spinal injury should not be immobilized on a backboard.” This is a paradigm shift for our EMS providers, as currently they are taught and in fact do immobilize patients with penetrating trauma. Finally, they are taught and in fact do immobilize.

shift for our EMS providers, as currently they are taught and in fact do immobilize patients with penetrating trauma. Finally, they are taught and in fact do immobilize.

“Spinal precautions can be maintained by application of a rigid cervical collar and securing the patient firmly to the EMS stretcher, and may be most appropriate for:

• Patients who are found to be ambulatory at the scene
• Patients who must be transported for a protracted time, particularly prior to interfacility transfer
• Patients for whom a backboard is not otherwise indicated

Lastly, they recommend “patients should be removed from backboards as soon as practical in an emergency department.”

Clearly we EMS physicians have work to do in first updating protocols for our providers as well as explaining the rationale to get buy-in and change the culture of EMS to decrease the inappropriate use of backboards, but we need the help of all emergency physicians to affect change. Here are some things we can do as emergency physicians that will go a long way to supporting our EMS providers and affecting change in practice. Most importantly, we must speak with a singular voice regarding backboards and send one clear message to our providers. When speaking with EMS crews or providing CME for them, we must emphasize that the backboard is an extrication and transfer tool, not a transportation device. Additionally, it is okay in a non-judgmental way to point out when appropriate that the patient did not require immobilization and review the criteria with them. If you work at a non-trauma center and routinely transfer patients to a trauma center, work with your receiving facility to develop a protocol in advance so that when the transfer crew arrives they do not insist on re-immobilizing the patient for transport to the trauma center, as this has no benefit to the patient and may cause harm. Finally, emergency departments need to have protocols in place, such as triaging to a higher level (ESI 2 for example at my facility) to ensure that a provider evaluates patients for removal of the backboard as soon as possible after arrival. Change in EMS can be slow to develop, but with all our support we will change practice, and our patients will thank us.

References
New York ACEP Research Forum
An Update from the Research Committee

Nicholas Nacca, MD, Medical Toxicology Fellow,
SUNY Upstate Medical University;
Member, New York ACEP Research Committee

“Authors “post” the diagrams, graphs etc. and a small amount of text on large boards throughout a convenient hall. They stay with their stand for, say, one and a half hours and are ready to discuss their work. Those attending can then decide whether they want to just glance at the boards to glean the salient details, or get into detailed discussion.” - Physics Bulletin 1981

Originally a forum for oral presentation, the first scientific conferences are thought to have been held in the mid 1600s on the topic of Falconry (Schmidmeier 1981). These “conferences” became less efficient as production of scientific data grew. Around 1970, the presentation of poster sessions first appeared in Europe, with the United States following along in the mid 70s in an effort to allow for a more economical presentation of numerous scientific findings (Maugh 1974).

Within our own organization the popularity of the New York ACEP Research Forum has quickly grown since its first occurrence in 1995. Thirty abstracts were submitted for 30 presentation slots last year. The academic community finds itself facing increasing pressure to publish and present research projects as the volume of new findings expands. The New York ACEP experience reflects increasing national competition for scientific presentation acceptance.

The underlying purpose of our conference and research forum is to share knowledge in an effort to improve emergency care, and the New York ACEP Research Committee seeks to foster the production and publication of quality research in emergency medicine. Yet often, despite being juried by peer review panels and deemed scientifically worthy of presentation, presentations at scientific meetings are not disseminated beyond the meeting itself. The reason for this is murky and sometimes difficult to discern. We sought to learn more about how often, and for which reasons, authors of presented, quality abstracts do not develop publishable manuscripts.

Thanks to the strong support of authors of abstracts presented at the New York ACEP research forum, we were able to collect data regarding the status of their already presented scientific findings that were presented either as posters or fully developed oral presentations. Over three years (2009-2011), 90 reports (papers and posters) were presented by representatives of 16 different institutions, with a large variability in the institutional representation (Figure 1). Of those that responded, the lead authors of the presented projects were: 34% junior faculty, 27% senior faculty and 18% residents.

We conducted a literature search of the titles of the 90 projects (as titled at the time of presentation). We were able to find five matching publications. We then surveyed the authors of the remaining 85 abstracts, and received a 39% response rate (Figure 2). A total of 66% of the respondents reported that their abstract had been also presented at either a National ACEP or SAEM conference. Assuming that none of the 50 non-responders published manuscripts from their presented abstracts, we calculate our publication rate to be 11%. Notably, of the 10 published manuscripts, eight were published in primary emergency medicine journals (Figure 3).

The New York ACEP Research Forum abstract-to-publication rate is significantly lower than reported publication rates from the SAEM annual meeting which ranged 35% to 40% [1997 to 2001] (Li et al. 2004). By far the most commonly listed reason for lack of manuscript development was a perceived lack of time. This may not come as a surprise, as the lifestyle of an academic emergency physician is finely balanced between educational and clinical responsibilities, often with minimal time allotted for research projects. Other barriers included lack of motivation, lack of faculty support, inexperience, uncertainty as to which journal to submit their project, and a perceived lack of value to the author’s own data.

Our calculations are likely an underestimation of the true abstract to publication rate based on our 39% response rate. Rather than hard data for reference, they are meant to foster conversation, interest, and feedback to those authors that have participated. The Research Committee offers several recommendations for improvement of the publication rate (Figure 4).

At the level of the individual, setting aside time for manuscript production and compulsively using deadlines for manuscript contributors may lead to successful manuscript publication of presented abstracts. The use of mentorship from within one’s own institution, or from New York ACEP Research Committee members, might revive those quality abstracts that would have otherwise been lost to self doubt, lack of support, or lack of motivation. A research mentor can aid in motivation by encouraging authors, and helping to set deadlines and keep to them. Mentors can review manuscript drafts, make grammatical corrections as well as structural improvements. Additionally, they offer expertise in targeting manuscripts toward specific journals, and offer experience in the nuances of the submission process.

At the level of institutional leadership, some programs have taken steps toward incentivizing. It has been suggested that reimbursement for travel to present abstracts be restricted to those authors who have also developed a draft of a manuscript for publication. Additionally, publication might be fostered culturally by ensuring public praise of successful faculty.

The Research Committee continues to seek ways to offer guidance and support to the New York ACEP community. Our intent is to begin monitoring manuscript publication of presented abstracts prospectively. Additionally, we are working on ways to connect researchers with peers with similar research interests. Finally, we extend an invitation to the New York ACEP community to contact any research committee member for guidance on research projects or manuscript development.
References

Figure 1: Institutional variability in abstract presentation at New York ACEP Research Forum

Figure 2: Survey respondents and non-respondents based on manuscript status

Figure 3: Of the 10 known manuscripts published from New York ACEP Research Forum abstracts, 8 are in primary emergency literature.

Figure 4: Suggested strategies for fostering manuscript publication of presented abstracts

Strategies for Increasing Publication Rate of Presented Abstracts

Individual
- Start manuscript prior to abstract presentation
- Seek out core faculty mentors
- Seek out New York ACEP Research Committee Mentors

Institutional
- Incentivize manuscript publication
- Formal mentorship program development
- Publicize faculty achievement
- Encourage resident participation and attendance at Research Forum

New York ACEP Research Committee
- Prospectively monitor publication of New York ACEP Research Forum abstracts
- Provide direct mentorship to New York ACEP members
- Connect researchers with common interests
State budget planning at the Capitol has been underway since August and will continue for the remainder of the year. Governor Andrew Cuomo’s 2014-15 proposed State Budget scheduled to be released in mid-January is expected to be austere. On September 24 the Director of the Budget, Robert Mega, released the annual “call letter” to state agency heads asking them to submit zero growth budgets for next year. The Governor is committed to keeping overall spending growth to two percent or less during his administration.


The Legislature has been in recess since June 22. They are not expected to return to Albany until early January 2014. Final actions on the New York American College of Emergency Physicians’ (New York ACEP) 2013 legislative priorities are summarized below.

**Patient Notice of Observation Services: S3926-A (Hannon)/A7257-A (People Stokes)**

Legislation to require hospitals to provide oral and written notice within 24 hours of a placement of a patient in observation services passed both houses and was signed by Governor Cuomo, Chapter 397 of the Laws of 2013. The written notice to the patient must include a statement that observation status may affect the patient’s Medicare, Medicaid and/or private insurance coverage for hospital services, medications and any subsequent discharge to a skilled nursing facility or home and community based care. The bill takes effect January 19, 2014.

New York ACEP worked hard to get amendments to this bill. Dr. Samuel Bosco and Weingarten, Reid and McNally met in August with the Governor’s Counsel and the New York State Health Department to express New York ACEP’s concerns with the bill. It was noted at the meeting that New York ACEP supports the intent of this bill to ensure that a patient who is placed in observation status in a hospital clearly understands that they have not been admitted as an inpatient, but rather, are an outpatient at the hospital. In addition, we acknowledged that patients have a right to know that their status as a hospital outpatient may affect their insurance coverage and out-of-pocket costs.

However, we expressed great concern that this bill could have the unintentional effect of causing a patient to leave the hospital prematurely against medical advice. In addition, the bill could result in violations of the federal Emergency Medical Treatment and Active Labor Act (EMTALA) by delaying medical evaluations and treatments. New York ACEP recommended that the bill be amended by passage of a new bill or “Chapter Law” to exempt patients who come to hospital emergency departments.

**Required Offering of Hepatitis C Testing: S2750-A (Hannon)/A1286-A (Zebrowski)**

Legislation passed both houses this year to require that individuals born between 1945 and 1965 be offered a hepatitis C screening test or hepatitis C diagnostic test by hospitals when patients are receiving inpatient or outpatient care or care in a diagnostic and treatment center or by primary care practitioners in the fields of family medicine, general pediatrics, primary care, internal medicine, primary care obstetrics and primary care gynecology.

This bill was amended to exempt emergency departments from these requirements. This amendment was made after New York ACEP issued a memo requesting it and Weingarten, Reid & McNally addressed the impracticality of offering this test in emergency departments with the bill sponsors.

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**EM Physician Opportunities**

**ALBANY: Albany Memorial Hospital** is located at the edge of the city near desirable residential areas. This 165-bed hospital has a new ED and sees 47,000 emergency patients per year. Enjoy EM resident rotations and a great pathology mix.

**CORTLAND: Cortland Regional Medical Center** is a modern, full-service facility situated in the Finger Lakes Region between Syracuse and Ithaca seeing 35,000 ED patients per year. The region offers a variety of living options including metro, rural and waterside communities.

**LONG ISLAND: Brookhaven Memorial Hospital Medical Center** is in East Patchogue on the southern shore of Long Island in central Suffolk County. This ED sees 73,000 annual visits with a 23% admission rate. This is a high volume, high acuity Area Trauma Center (ATC) with Level II Trauma Center designation. Busy EMS program with on-site medical director serves 28 separate ambulance services. Support services from radiology, laboratory and pharmacy are excellent.

**TROY: Samaritan Hospital** is a respected community hospital just minutes from Albany, near the campus of Rensselaer Polytechnic Institute. The facility has an excellent reputation in the community and sees about 47,000 emergency patients per year.

Visit emp.com/jobs or call Ann Benson at 800-828-0898.
As of this writing, this bill has not been transmitted by the Legislature to the Governor. The bill must be transmitted prior to December 31, 2013. The Governor has 10 days from the date of transmission to sign or veto the bill.

2014 Legislative Session

As noted earlier, the State is facing a $1.7 billion State Budget deficit next year so the economy will continue to occupy center stage. We expect a renewed effort by the house of medicine and consumer groups to reach an agreement on rules affecting insurance companies and health care providers for medical bills for “out-of-network” providers. Independent practice for nurse practitioners will continue to be an issue.

New York ACEP will continue to work to ensure patient access to the highest quality emergency services in New York State.

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Congratulations are extended to the following new fellows of the American College of Emergency Physicians

Douglas Peter Barnaby, MD FACEP
Edward Bennett, MD FACEP
Robert M Bramante, MD FACEP
Ethan Brandler, MD FACEP
Carlton E Cash, MD FACEP
Hong Y Chong, MD FACEP
Angela Cirilli, MD FACEP
Brian M Clemency, DO FACEP
Jason Zemmel D’Amore, MD FACEP
Sydney E DeAngelis, MD FACEP
Robert Philip Favelukes, MD, FACEP
Wendy Bittel Gelbard, MD FACEP
Barry Geller, MD FACEP
Rosetta Grella, MD FACEP
Elizabeth Haines, DO FACEP
Mark Heller, MD FACEP
Abbas Husain, MD FACEP
Carrie R Jackson, MD FACEP
Edward B Jarvis, MD FACEP
Jeremy Joslin, MD FACEP
Benjamin Robert Kavinoky, DO FACEP
Jay Khadpe, MD FACEP
Robin Kim, MD FACEP
Tadeusz Korszun, MD FACEP
Tamara Kuittinen, MD FACEP
Seth Kurtz, MD FACEP
Resa Ellen Lewiss, MD FACEP
Lawrence Chew Lo, MD FACEP
Jeremy Lux, DO FACEP
Dan M Mayer, MD FACEP
Katharine H Miao, MD FACEP
Joshua B Moskowitz, MD MPH FACEP
Erica Lynn Olsen, MD FACEP
Matthew John Sarsfield, MD FACEP
Michael Secko, MD FACEP
Deepika Singh, MD FACEP
Joseph A Zito, MD FACEP
**December**

11 Education Committee Conference Call, 1:30 pm  
11 Professional Development Conference Call, 3:30 pm  
12 Practice Management Conference Call, 1:00 pm  
18 Government Affairs Conference Call, 11:00 am  
18 Research Committee Conference Call, 3:00 pm  
19 EMS Committee Conference Call, 2:30 pm  

**January 2014**

8 Education Committee Conference Call, 1:30 pm  
8 Professional Development Conference Call, 3:30 pm  
9 Practice Management Conference Call, 1:00 pm  
15 Government Affairs Conference Call, 11:00 am  
15 Research Committee Conference Call, 3:00 pm  
16 EMS Committee Conference Call, 2:30 pm  

**February**

12 Education Committee Conference Call, 1:30 pm  
12 Professional Development Conference Call, 3:30 pm  
13 Practice Management Conference Call, 1:00 pm  
19 Government Affairs Conference Call, 11:00 am  
19 Research Committee Conference Call, 3:00 pm  
20 EMS Committee Conference Call, 2:30 pm  

**March**

4 Lobby Day, 9:00 am-1:00 pm  
4 Board of Directors Meeting, 1:30-4:30 pm  
12 Education Committee Conference Call, 1:30 pm  
12 Professional Development Conference Call, 3:30 pm  
13 Practice Management Conference Call, 1:00 pm  
19 Government Affairs Conference Call, 11:00 am  
19 Research Committee Conference Call, 3:00 pm  
20 EMS Committee Conference Call, 2:30 pm  

**April**

9 Education Committee Conference Call, 1:30 pm  
9 Professional Development Conference Call, 3:30 pm  
10 Practice Management Conference Call, 1:00 pm  
16 Government Affairs Conference Call, 11:00 am  
16 Research Committee Conference Call, 3:00 pm  
17 EMS Committee Conference Call, 2:30 pm  

**May**

1 Board of Directors Meeting, New York Academy of Medicine, 1:30-5:30 pm  
2 ED Leadership Forum, New York Academy of Medicine, 8:00 am-4:00 pm  
8 Practice Management Conference Call, 1:00 pm  
14 Education Committee Conference Call, 1:30 pm  
14 Professional Development Conference Call, 3:30 pm  
15 EMS Committee Conference Call, 2:30 pm  
18-21 ACEP Leadership & Advocacy Conference, Omni Shoreham Hotel, Washington, DC  
21 Government Affairs Conference Call, 11:00 am  
21 Research Committee Conference Call, 3:00 pm  

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**New Jersey.** Immediate need for Emergency Medicine physicians for academic Level I Trauma Center in Northern New Jersey within an easy drive into Manhattan. This university health center has an Emergency Medicine residency program and fellowship program. The busy Emergency Department of this excellent comprehensive stroke center treats over 70,000 patients annually with separate Pediatric Emergency Care. The department has a growing toxicology service and an active clinical research program. New initiatives are currently being planned for an observation unit and an urgent care center. Responsibilities will include delivery of clinical services, research and teaching residents/PAs/medical students. Candidates must be board certified/board eligible in Emergency Medicine. This is an excellent opportunity with an Affirmative Action/Equal Opportunity employer offering great benefits and a very competitive compensation package. For full details, please contact Daniel Stern at Daniel Stern & Associates 800-438-2476 or sternd@danielstern.com

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**Warm Holiday Wishes**

The New York ACEP office will be closed December 23-27 and January 1
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