



*What's the Lump?*

*Page 3*

*Ketamine Use in Complex Regional Pain Syndrome*

*Page 7*

*Use of a "Super Track" Model to Improve Emergency Department Flow*

*Page 23*

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# PRESIDENT'S MESSAGE



**Brahim Ardolic, MD FACEP**  
Chair, Department of Emergency Medicine  
Vice President, Department of Research  
Staten Island University Hospital

In the last twenty years, we have seen an absolute explosion in our ability to diagnose and treat emergent medical conditions. I distinctly remember getting my first one slice CT scan after two layers of approval. I remember ordering my first MRI and my first troponin. As you would expect, this also means that I remember treating abdominal pain, potential cord compression and non STEMI without those tests. Yet, many would characterize this as a very negative time in the development of medicine. I'm not sure that the patients would see it that way. I think for the patient, the medicine of yester-year would be less desirable.

Yet for the ED provider, the reasons are very well known. We are being scrutinized and asked for more in ways we never even considered just a decade ago. We are the front door to an ever more complex system that seems to need us more and more despite saying they want to utilize us less and less. As everyone tries to become even more productive and "do more with less" they are relying upon the only safety net they know. We have all seen patients with medical devices in their bodies that we have never heard of and yet, we are asked to treat their complications while maintaining excellent patient satisfaction and satisfying all quality metrics.

Lest we forget, we are doing this in a state that 1) trains the largest number of residents, 2) loses the largest number of residents 3) has one of the worst malpractice profiles 4) has a huge disparity in access between regions 5)

has tremendous physician shortages in some regions 6) has lower than average salaries and 7) has one of the highest overall costs of living in many areas.

Needless to say we have our challenges and yet many of us, myself included, would not want to work anywhere else, or in any other time. Every emergency doc should be proud of

the service we provide to our patients and to the system at large. We are in many ways, the last line of defense. If we fail, then the whole system may have failed that individual patient. This is critical, as many of us believe that emergency medicine is at its essence the treatment of that one patient that might have loss of life or limb if we hadn't been there.

We do need to acknowledge though that we need to do a better job of supporting one another and emergency medicine as a whole. Pride in purpose and acknowledgement of how important our job is to every American is often missing in our providers. This needs to change! I am asking you, our incredible emergency physicians to consider doing one thing that will help your specialty this year. I am not asking for any particular size of endeavor, just something. It can be making phone calls to support the ever ongoing battles in Albany. It can be supporting someone else's project with time or resources. It can be something as small as encouraging one of your colleagues or residents to join the college. You decide the size but do just one thing. You have two whole

months to do it. If every one of us did that, we will continue to grow stronger in ways we can't even imagine.

As George Bush said, everyone has health coverage, just go to the emergency room. I'm not sure that this will be any less true in the healthcare delivery system of the future than it was when he said it. As the captains of these safety nets, we need to have pride in what we do and remember that no one is going to fight for our patients and our doctors if we don't. So I for one want to surround myself with my colleagues and friends and get ready for these interesting times.

*Needless to say we have our challenges and yet many of us, myself included, would not want to work anywhere else, or in any other time.*

## WHAT'S INSIDE?

### Features

- Ask the Experts | 23
- Education | 13
- New York State of Mind | 17
- President's Message | 2
- Ultrasound | 3
- Toxicology | 7

### Insights

- Collaborative EMS Protocols – A Step Forward for Much of New York | 9
- Use of a "Super Track" Model to Improve Emergency Department Flow | 21

### Events

- Calendar | 16
- Career Day Supporters | 12
- ED Director Forum | 26
- New Fellows | 26
- New York ACEP Awards | 6,8,14
- Scientific Assembly | 16

# SOUND ROUNDS



**Penelope C. Lema, MD RDMS FACEP**  
Director, Emergency Ultrasound Division and Fellowship; Assistant Professor, Department of Emergency Medicine, University at Buffalo

## What's the Lump?



Guest Author:  
**Jonathan Harrill, PA**  
Fellow, Emergency Ultrasound  
Good Samaritan Hospital Medical Center  
Department of Emergency Medicine



Guest Author:  
**Robert Bramante, MD FACEP**  
Director, Emergency Ultrasound; Associate Chair, Emergency Medicine; Good Samaritan Hospital Medical Center Department of Emergency Medicine

### Indications for Soft Tissue Ultrasound:

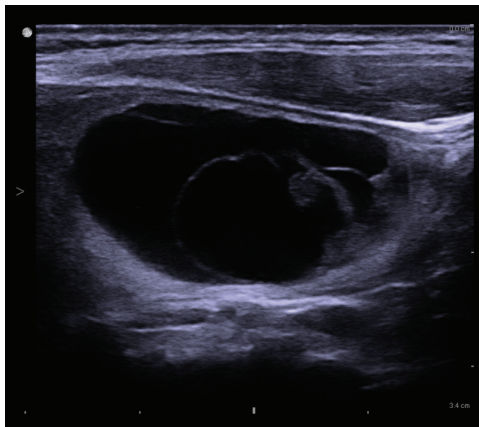
- Soft tissue mass
- Soft tissue infection concerning for abscess
- Evaluation for foreign body

### Technique:

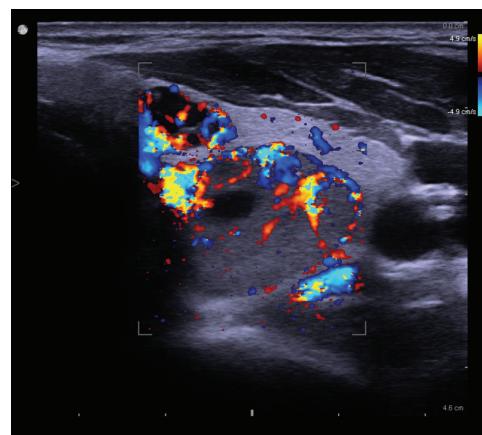
- Using a high-frequency linear transducer
- Scan through the area of concern in both longitudinal and transverse planes
- Color Doppler may be used to evaluate for the presence of internal blood flow or hyperemia in the adjacent tissues
- Consider utilizing a water bath, saline bag or copious coupling gel as an acoustic standoff to better visualize superficial structures in the near field

### Diagnosis: Cysts

- Found in various locations throughout the body, and classified as simple versus complex
  - **Simple cyst:**
    - Typically round or oval in shape
    - Thin-walled
    - Anechoic with no internal echoes
    - Demonstrate posterior acoustic enhancement
  - **Complex (Figure 1):**
    - Round or oval in shape
    - May not be thin-walled
    - Well defined borders
    - Heterogeneous with internal echoes and/or septations present



**Figure 1.** *Ultrasound of a complex cyst with internal echoes.*



**Figure 2.** *Thyroid mass with internal color Doppler flow concerning for malignancy.*

**Case 1:** A 30 year-old male presents to the ED at 2 AM with the chief complaint of a “lump.” You decide to use your clinical ultrasound skills to help differentiate the cause of this patient’s symptoms.

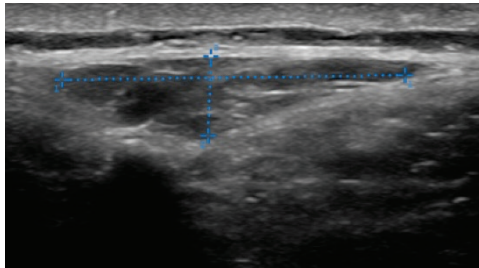
**Case 2:** The patient noted a 2 cm area of swelling on the anterior aspect of his neck, which has been increasing in size over the past 2 months. Your ultrasound reveals a hypoechoic focus within the thyroid gland. The area demonstrates internal color Doppler flow concerning for malignancy (Figure 2).



# SOUND ROUNDS

## Diagnosis: Masses

- May be hyperechoic, isoechoic or hypoechoic
- Sonographic characteristics concerning for malignancy
  - Presence of color Doppler flow, though this can be normal. If no Doppler flow, the mass is most likely benign
  - Irregular borders
  - Extension into or beyond the deep fascia
  - Presence of mass effect or displacement of surrounding structures
  - > 5cm in size

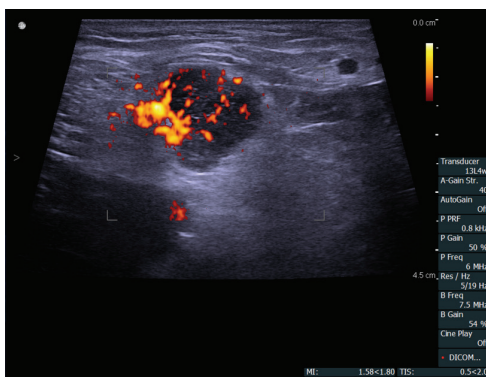


**Figure 3.** Ultrasound of a lipoma measuring 2.7cm x 0.62cm.

**Case 3:** The patient noted a swollen area over his right lateral rib cage without pain or erythema. The ultrasound demonstrates an ovoid, subcutaneous isoechoic focus without internal color Doppler flow (Figure 3).

## Diagnosis: Lipoma

- Typically, round or ovoid in shape and present in subcutaneous tissue
- Often appears similar in echotexture to surrounding tissue, and varies from anechoic to hyperechoic
- May have either well-defined or ill-defined borders
- Typically homogenous appearing, but can also have areas of heterogeneity
- Absent to minimal color Doppler flow



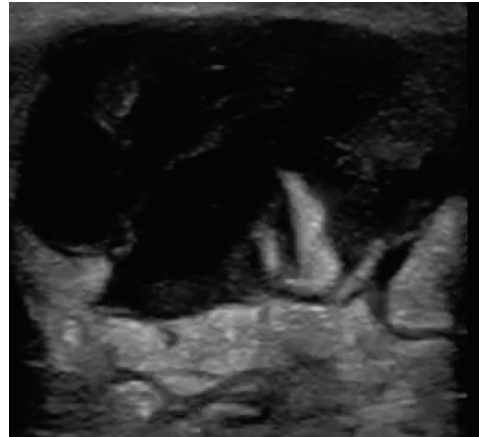
**Figure 4.** Lymph node with color Doppler demonstrating flow.

**Case 4:** The “lump” was noted in his left axilla without erythema but with mild tenderness to palpation. Your imaging demonstrates a 2cm structure which is hyperechoic centrally and hypoechoic at the periphery with “stalk-like” color Doppler flow (figure 4).

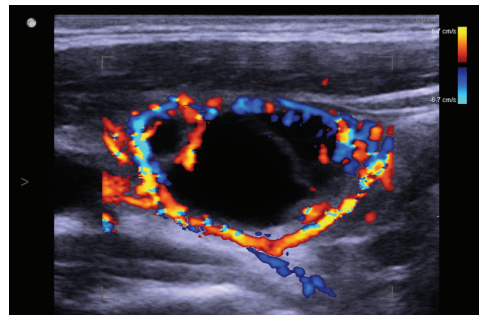
## Diagnosis: Lymph node

- Typically found in the neck or the inguinal area, but can be seen in other regions

- Elliptical, hypoechoic structure with a hyperechoic central hilum. “Mini kidney” appearance
- Demonstrates stalk-like flow on color Doppler with absence of flow at the periphery



**Figure 5.** Complex pilonidal abscess with internal echoes demonstrating posterior enhancement.



**Figure 6.** Complex mass demonstrating surrounding hyperemia concerning for abscess.



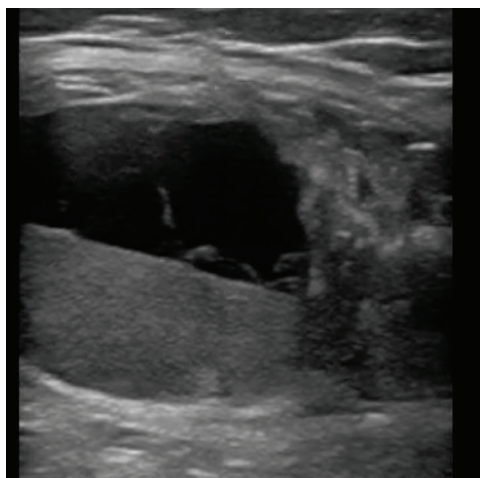
**Figure 7.** Cobblestone appearance due to fluid within subcutaneous tissue.

**Case 5:** A red tender “lump” was noted at the cranial aspect of his natal cleft. Ultrasound showed a complex cystic structure with peripheral color Doppler hyperemia and “cobblestoning” appearance in the adjacent soft tissue (Figures 5,6,7).

## Diagnosis: Abscess

- Typically spherical, complex structure found in the subcutaneous tissue
- Poorly defined borders
- No central flow; may have peripheral hyperemia
- Typically, anechoic or hypoechoic, with presence of internal echoes. May have loculations or septations

- On compression may visualize “swirling” of the internal fluid
- Overlying or surrounding cellulitis may demonstrate “cobblestoning,” as a result of edema in the subcutaneous tissue

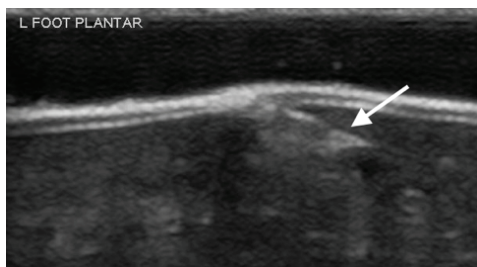


**Figure 8.** *Rectus sheath hematoma.*

**Case 6:** The patient complains of swelling to the abdominal wall after a strenuous “abs” workout the previous day. Your ultrasound demonstrates a complex, cystic structure with layering internal echoes, no soft tissue “cobblestoning” and no internal flow with color Doppler imaging (Figure 8).

**Diagnosis: Hematoma**

- Typically present in subcutaneous tissue after an injury
- Sonographic appearance progresses over time and may have a combination of liquid and solid properties
  - Acute hematomas are hypoechoic and heterogeneous throughout
  - May mimic an abscess
  - As healing begins, clot becomes hyperechoic and can develop cystic properties with either regular or irregular borders
- No Doppler flow present



**Figure 9.** *Hyperechoic foreign body identified with ultrasound in the plantar surface of a patient's foot. Note the use of a waterbath.*

**Case 7:** Prior to coming to your ED, the patient was walking on the boardwalk barefoot when he developed sudden pain and subsequently noted the swelling on the sole of his foot. Point-of-care ultrasound performed using a water bath demonstrates a linear hyperechoic focus in the plantar aspect of the foot (Figure 9).

**Diagnosis: Foreign bodies**

- More common in extremities
- Echogenicity dependent on the composition of the foreign body
- Some may cause shadowing (i.e. wood, glass and plastic) or reverberation artifact (metal, glass)
- Measure the depth of the foreign body to aid in removal
- If present for an extended period, an anechoic “halo” of edema will develop

**Tips:**

- Scan the surrounding area to appreciate the normal anatomy before the area of interest
- When possible, compare with the unaffected extremity
- For superficial ultrasound you can rest your wrist on the patient to stabilize the probe
- Consider utilizing a water bath when evaluating for a foreign body of the distal extremity

**Pitfalls and Limitations:**

- Difficult to differentiate benign from malignant masses
- Deep masses or patients with obese body habitus may require use of lower frequency transducers (curvilinear) for adequate evaluation

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## DO YOU KNOW A WORTHY CANDIDATE?

### Who will you Nominate?

Every year New York ACEP honors individuals for their contributions to the advancement of emergency care in New York State.

Nominees are reviewed and screened by the Awards Committee and recipients selected by the Board of Directors by majority vote.

As Chair of the New York ACEP Awards Committee, I am seeking nominations for the following awards by January 2, 2017:

- **Advancing Emergency Care**
- **Edward W. Filmore Lifetime Achievement**
- **Leadership in Government**
- **National Leadership**
- **Physician of the Year**

Award recipients will be announced at the New York ACEP annual meeting held in conjunction with the Scientific Assembly at the Sagamore Resort on Lake George Wednesday, July 12, 2017.

Jeremy T. Cushman, MD MS FACEP  
Chair, New York ACEP Awards Committee

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### Call for Board and Councilor Nominations

Deadline: April 1, 2017

Active members of New York ACEP interested in serving on the Board of Directors or as a New York ACEP Councilor are encouraged to submit their nominations to the 2017 Nominating Committee for consideration as the Committee develops the slate of candidates.



### Young Physician and Resident Leadership and Advocacy Award

This Award was created to promote leadership and to advance political action and advocacy among emergency physicians through attendance at the ACEP Legislative Advocacy Conference and Leadership Summit, *March 12 - 15, 2017* at the Grand Hyatt in Washington, DC.

For more information visit:  
[nyacep.org](http://nyacep.org)





Guest Author:  
**Ujas Shah, MD**  
 Emergency Medicine Resident  
 Long Island Jewish Medical Center



**David C. Lee, MD FACEP**  
 Research Director and Associate  
 Professor, Department of Emergency  
 Medicine, Hofstra North Shore  
 LIJ School of Medicine

## *Ketamine Use in Complex Regional Pain Syndrome*

Complex regional pain syndrome, formerly known as reflex sympathetic dystrophy is a chronic condition characterized by severe pain, abnormal sensation and vasculomotor changes in an affected region out of proportion to initial injury. Commonly involving an extremity, it may however, be present in more than one region, with some patients reporting symptoms throughout their whole body.<sup>1</sup> Although the exact definition and diagnostic criteria for CRPS are controversial and involving, broadly it can be broken down into type 1 and type 2. Type 1 affects about 90% of people and occurs after an illness or injury that did not cause direct obvious severe nerve damage to the affected limb. Type 2 follows a direct, obvious nerve injury. The exact cause and mechanism(s) behind complex regional pain syndrome are still not well understood, however literature shows treatment for the syndrome is most effective when started early and in many cases it is possible to induce remission. There is also some data suggesting Vitamin C may help prophylactically prevent CRPS from developing. Signs and symptoms of CRPS commonly include burning/throbbing pain, hyper-sensitivity to touch or cold, edema, mildly hyperthermic or hypothermic regions in the affected area, discoloration (erythema or blue/mottling), joint stiffness, muscle spasms, weakness and atrophy. These symptoms may begin after a variety of possible injuries including crush injuries, fractures and amputations, however, can also occur after minor injury like an ankle sprain. Although the exact mechanism(s) are poorly understood, overall inflammation appears to trigger abnormal peripheral and central nervous symptom responses to stimulation of the affected area which ultimately can lead to

disuse of the extremity resulting in atrophy and/or contractures.<sup>2</sup>

Treatment of patients with CRPS is complex and carefully tailored to individual patient needs. Often analgesia is provided with a combination of NSAIDs, opioids, antidepressants, anticonvulsants and neuropathic medications. In addition, often steroids, bisphosphonates, hot/cold therapy, physical therapy and topical analgesics are used. In severe, refractory cases transcutaneous electrical nerve stimulation and even spinal cord stimulation is used. One area of growing interest and study is the use of ketamine for pain relief within these patients.<sup>1,2,3</sup>

Ketamine is a dissociative anesthetic that is being used in some patients with complex regional pain syndrome. Ketamine is predominately a NMDA receptor antagonist, however it also exhibits effects at a wide variety of other receptors, for example, it is a weak agonist of the  $\mu$  and  $\kappa$ -opioid receptors and inhibits the reuptake of serotonin, dopamine, and norepinephrine. Research into the pathophysiology of CRPS suggests that the pain experiences causes prolonged glutamate release from nociceptive neurons which in turn stimulates NMDA receptors on second order- neurons within the spinal cord responsible for sensitization. Blocking/limiting this sensitization with ketamine may help relieve pain in some CRPS patients. However, up to date, there have been no large scale double blinded clinical trials to assess the effectiveness of ketamine use and to provide guidelines for medication administration.<sup>1,2,3</sup> A 2015 review of the literature by Connelly et. al. concluded, "There is no high quality evidence available evaluating the efficacy of ketamine for CRPS and all manuscripts examined in

this review were of moderate to low quality." However the studies analyzed overall weakly provided limited evidence to support the use of IV or subcutaneous ketamine for patients with CRPS. Even less information is available on use of oral ketamine, with only two case reports published to date.<sup>3</sup>

The first is a 2012 literature review and case report by Soto et. al. that highlights a case of a 38 year old female with neurofibromatosis type 1, who developed CRPS after numerous glomus tumors developed at her finger tips. She had tried multiple treatments including tumor resection, steroid injections, gabapentin, pregabalin, topical lidocaine, hydromorphone, oxycodone and digital nerve blocks. However, her pain was still refractory and she was started on methadone, also without adequate relief. She was eventually admitted to a NIH Clinical Center for a three day infusion of low dose ketamine at 0.1 mg/kg/hr for 72 hours. No adverse reactions were reported during transfusion attributed to ketamine and she was discharged with instructions to taper methadone as tolerated. One week after discharge the patient reported 0/10 pain in both hands and remained essentially pain free for nine weeks with the exception of several small bursts of pain over five days despite being completely off methadone. The patient returned to NIH and received a second infusion at 0.1mg/kg/hr and reported all pain had resolved, this time for 11 weeks with the exception of two episodes of brief pain. During this infusion however the patient reported having a panic attack which she had never had before, nevertheless ketamine was continued without additional reported psychological occurrences. However, her pain returned and the patient returned to



NIH and this time was started on oral ketamine with an initial dose of 10mg every 8 hours. The next day, the patient stated her pain was 0/10. The patient was discharged on ketamine 10mg every 12 hours and she began to taper her methadone dose. She remained pain-free for one and half weeks. However, thereafter, her pain gradually started to return and she started using lower doses of methadone again.<sup>4</sup>

A second case report was published by Villanueva-Perez et al. which described a 33 year old female nurse who initially suffered left ulnar neuropathy secondary to ulnar tunnel syndrome and who then underwent an epithrochleotomy. One month later she began developing symptoms of CRPS-Type I in her left forearm. The patient received a trial of NSAIDs, anticonvulsants, transcutaneous nerve stimulation and opioid pain medications without significant relief and then underwent a cervical spinal cord stimulator implantation which relieved her pain for eight months. At that point the patient began treatment with oral ketamine starting at 30mg every 8 hours while continuing her adjuvant pain medications (topiramate, clonazepam, tramadol, amitriptyline, ibuprofen and fluoxetine). The ketamine dose was titrated up by 5mg until a final dose of 60mg po every 8 hours. The patients VAS score improved from 10 to 3-4 over the next four to five months, with only adverse effects reported included nausea and vomiting, responsive to haloperidol. Thereafter however, the patient's symptoms returned and progressed from her extremity to include her neck. The patient was continued on the above medications, including ketamine at 60mg every 6 hours, and pregabalin, fentanyl, perphenazine and trimetazidine were added, while tramadol was tapered off. The patient experienced partial relief with the combination of medications, reporting a VAS score of 5-6.<sup>5</sup>

The current literature on the use of ketamine in patients with CRPS is limited, with most authors agreeing that theoretically ketamine's role to prevent/reduce central sensitization to painful stimuli is alluring. Most data at present involves studies of IV infusions of ketamine and only two case reports currently available/published in this author's literature review supporting the use of oral ketamine. In both cases the patients described had undergone an extensive medical and interventional approach to CRPS pain relief prior to initiation of ketamine therapy. In the first report, by Soto et. al. oral ketamine was initiated after an IV infusion trial and was successfully able to help the patient titrate off methadone for several months at a time. In the second report by Villanueva-Perez et. al., oral ketamine initiated without initial IV infusion had good, albeit also somewhat transient results. Commonly reported sided effects of ketamine, such as an emergence reaction, psychosis or even more severe, but rare reactions like apnea were not observed in these two cases; the patients were able to tolerate the medication well at the doses given. Further research is needed to better elucidate whether oral ketamine may serve as a viable alternative/adjuvant medication for the treatment of CRPS. Further research is also needed to ascribe dosing guidelines. Soto et. al. suggests a trial of IV infusion to assess for tolerance and then conversion to oral as tolerated, beginning with at least 15% of the parental dose and then up-titrating. However, if one must start with an oral dose, Soto et. al. suggests starting at 0.3 to 0.5 mg/kg in four divided doses per day and then up tritulating by 0.3 mg/kg until adequate analgesia or intolerable side effects occur. Soto et. al. also suggests adding benzodiazepines and antisialagogue therapies as needed. Alternatively, a review by Blonk et. al. on the generalized use of ketamine

in the treatment of patients with chronic pain recommended starting ketamine-naive patient at 0.25 mg/kg S-ketamine as a single oral dose, to be increased as tolerated and given three to four times a day. For patients who are initially started on IV ketamine, the review recommends a 1:1 conversion for IV to Oral and then to continue titrating up as tolerated.<sup>6</sup> Overall, it seems that the dosages of oral ketamine to be used for patients with CRPS vary, and should be generously titrated up as tolerated. Although there is very limited data on the use of oral ketamine in treating CRPS, the current case reports available show possible benefit in selected patients. Further research is needed in this area.

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**Michael W. Dailey, MD FACEP**  
Associate Professor of Emergency Medicine  
Albany Medical Center



**Jeremy T. Cushman, MD MS EMT-P FACEP**  
Associate Professor and Chief, Division of  
Prehospital Medicine, University of Rochester

## Collaborative EMS Protocols – A Step Forward for Much of New York

EMS care in New York is legislated by Article 30 of the public health law. This cedes local control of protocol development to the Regional Emergency Medical Advisory Committees across the state. The protocols then require approval by the State Emergency Medical Advisory Committee and the State EMS Council. This pathway has served the state well for many years, but led to duplicated efforts and redundant conversations. As there are 18 regions, there were 18 different sets of protocols. This also led to confusion, as EMS providers and physicians would travel from region to region across the state and have to remember subtle differences in protocol. Clearly this structure was ripe for change.

Starting in 2005, EMS physicians of the upstate regions began to share protocols and reduce work. While it would seem that cardiac arrest protocols would be first to share, the initial protocols that were widely shared pertained to pain management. The standing order pain management protocols that were initially adopted in the Albany area were rapidly emulated in other regions. Following this, with the adoption of the AHA ACLS guidelines as the standard for prehospital care across the state, those protocols also became more similar.

Over the course of the next ten years, protocols continued to coalesce. EMS physicians focused on improving care within their catchment areas, and devoted time and energy to ensuring the protocols their providers were following were evidenced-based and operationally prudent. Over the course of the last three years this has taken a significant advance, as the group of collaborative physicians has developed a memorandum of understanding between the regions and created a set of protocols that has been adopted by every EMS region north of the Bronx. Key to this is respect and understanding, as each region has but one vote, regardless of the size of the region. Few questions are carried to a full vote because discussion and consensus tend to carry the development of the protocols.

Beginning this winter, these Collaborative Protocols will become standard across the majority of the state and although the entire set of protocols are available at [www.nyacep.org](http://www.nyacep.org), we'll take a few minutes to share some highlights.

**(2-38) General: Pulmonary Edema – Acute Cardiogenic**

<b>EMT</b>
<ul style="list-style-type: none"> <li>• ABCs and vital signs</li> <li>• Airway management and appropriate oxygen therapy</li> <li>• Sit patient upright, if possible</li> <li>• Continuous Positive Airway Pressure (CPAP) 5-10 cm H<sub>2</sub>O as needed, if equipped and trained</li> </ul> <p><b>EMT STOP</b></p>
<b>ADVANCED</b>
<ul style="list-style-type: none"> <li>• Vascular access</li> </ul> <p><b>ADVANCED STOP</b></p>
<b>CC</b>
<b>PARAMEDIC</b>
<ul style="list-style-type: none"> <li>• Cardiac monitor</li> <li>• Aggressive nitroglycerin 0.4 mg SL or equivalent, as needed:                         <ul style="list-style-type: none"> <li>○ One dose/tablet every 5 minutes if the patient's systolic BP 120 – 160 mmHg</li> <li>○ Two doses/tablets every 5 minutes if the patient's systolic BP 160 – 200 mmHg</li> <li>○ Three doses/tablets every 5 minutes if the patient's systolic BP &gt; 200 mmHg</li> </ul> </li> <li>• Consider albuterol 2.5 mg in 3 mL (unit dose) + ipratropium (Atrovent) 0.5 mg in 2.5 mL (unit dose) mixed together, via nebulizer, only if wheezes are present</li> <li>• 12-lead ECG</li> </ul>

**(2-32) General: Pain Management**  
For the pediatric patient, "Pediatric: Pain Management"

<b>Criteria</b>
<ul style="list-style-type: none"> <li>• Contraindications to standing order pain management: altered mental status, hypoventilation, SBP &lt; 100 mmHg</li> <li>• Consider consultation with medical control prior to pain management in the third trimester pregnant women with pain complaints</li> </ul>
<b>EMT</b>
<ul style="list-style-type: none"> <li>• ABCs and vital signs</li> <li>• Airway management and appropriate oxygen therapy</li> </ul> <p><b>EMT STOP</b></p>
<b>ADVANCED</b>
<ul style="list-style-type: none"> <li>• Vascular access</li> <li>• Nitrous oxide by self-administered inhalation, if equipped</li> </ul> <p><b>ADVANCED STOP</b></p>
<b>CC</b>
<b>PARAMEDIC</b>
<ul style="list-style-type: none"> <li>• Morphine 0.05 mg/kg IV or 0.1 mg/kg IM                         <ul style="list-style-type: none"> <li>○ Morphine may be repeated after 5 minutes; maximum total dose of 10 mg</li> </ul> </li> <li>• Fentanyl 1-1.5 mcg/kg IN, IV, or IM                         <ul style="list-style-type: none"> <li>○ Fentanyl may be repeated after 5 minutes; maximum total dose of 200 mcg</li> </ul> </li> <li>• For nausea or vomiting see "General: Nausea and/or Vomiting" protocol</li> </ul> <p><b>CC AND PARAMEDIC STOP</b></p>
<b>MEDICAL CONTROL CONSIDERATIONS</b>
<ul style="list-style-type: none"> <li>• Additional morphine IV or IM</li> <li>• Additional fentanyl IV, IM, or IN</li> <li>• Ketamine 25 mg IV over 5 minutes or 50 mg IM                         <ul style="list-style-type: none"> <li>○ May consider weight-based dosing ketamine 0.1-0.3 mg/kg IV</li> <li>○ Use caution when ordering &gt;250 mg IM of ketamine after midazolam (Versed) because apnea may occur</li> </ul> </li> <li>• Midazolam (Versed) IV, IM, or IN</li> <li>• Ketorolac (Toradol) 30 mg IV or 30 - 60 mg IM</li> </ul>



Acute cardiogenic pulmonary edema will be treated with graduated doses of nitrates based on the patient's blood pressure (Inset 2-38). This has been found to be safe and effective in achieving the necessary afterload reduction and is a significant advance in the prehospital management of acute cardiogenic pulmonary edema.

For asthma and allergic reactions, the corticosteroid of choice will be dexamethasone, which will allow for IV, IM, and even PO dosing. It will be important for receiving facilities to obtain an accurate patient handoff to determine if this has been given as it may change affect in-hospital and discharge prescribing.

Building off of previous collaborations, the pain management protocol has been refined and enhanced (Inset 2-32), and although every region may not have every treatment modality (i.e. nitrous oxide or ketorolac), they all have narcotic analgesia (either fentanyl, morphine, or both). Important to note are the various Medical Control Considerations every emergency physician should be aware of.

Respecting end of life care choices has been enhanced significantly thanks to the efforts of Dr. Pat Bomba and her colleagues in geriatric care. The development of the MOLST and eMOLST allows patient self-determination and the Collaborative Protocols extend the ability of EMS providers to respect patient wishes (Inset 2-3). Important for the Emergency Physician is the role they have in assisting the EMS provider with non-standing order advanced directives to respect the wishes of the patient.

As we all know, a patella dislocation is profoundly painful, yet a quick and simple reduction. Often our paramedics will medicate the patient aggressively for pain, which ironically increases their risk for hypoventilation when they arrive to the ED and quickly have the patella reduced. An exciting medically appropriate change to the protocols is the ability of EMS providers to reduce patella dislocations in the field (Inset 2-33). This diagnosis is relatively easy to make, the reduction is easy to perform, and this has the potential to dramatically reduce the need for narcotic analgesia. We will be collecting quality improvement data from this intervention in a prospective manner, so please encourage your EMS providers to report each use of the protocol so that we can learn how this implementation is progressing.

Standardizing protocols across nearly the entire state will undoubtedly decrease confusion and medical errors, while advancing the care of patients in the field. The Collaborative Protocol effort is a living one, and will adjust and reflect the ever changing scope of prehospital medicine. Each region will communicate any specific changes in scope and implementation of these protocols to emergency physicians within their region, but know the complete set of protocols are available at [www.nyacep.org](http://www.nyacep.org), and do not hesitate to contact any member of the EMS Committee if you have recommendations for future protocol updates.

### (2-3) General: Advance Directives

Criteria
The following procedure is to be used in determining course of action for all patients
<b>EMT</b>
<b>ADVANCED</b>
<b>CC</b>
<b>PARAMEDIC</b>
<ul style="list-style-type: none"> <li>For conscious and alert patients, their wishes are to be followed in accordance with standard consent procedures</li> <li>For patients unable to consent, including the unconscious, determine the presence of valid MOLST, eMOLST or DNR forms at the scene:                             <ul style="list-style-type: none"> <li>Properly completed "Medical Orders for Life Sustaining Treatment" (MOLST) form</li> <li>Signed New York State approved document, bracelet, or necklace</li> <li>Properly documented nursing home or nonhospital DNR form</li> </ul> </li> <li>If MOLST, eMOLST, or DNR (document, bracelet, or necklace) is not present – begin standard treatment, per protocol</li> <li>If MOLST, eMOLST, or DNR (document, bracelet, or necklace) is present, and is valid for the patient's clinical state (e.g. cardiac arrest), follow the orders as written, inclusive of either terminating or not beginning resuscitation</li> <li>Any valid directive indicated on the MOLST or eMOLST should be honored, including the directive for the patient not to be transported to the hospital</li> <li>If advanced directives not mentioned above are present (living will or health care proxy), contact medical control for direction</li> </ul>
<b>EMT, ADVANCED, CC, AND PARAMEDIC STOP</b>
<b>MEDICAL CONTROL CONSIDERATIONS</b>
<ul style="list-style-type: none"> <li>Direction regarding wishes expressed via other forms of advanced directives including living wills, health care proxies, and in-hospital do not resuscitate orders</li> </ul>
<b>Key Points/Considerations</b>
<ul style="list-style-type: none"> <li>A copy of the DNR, MOLST, or eMOLST form should be attached to the PCR and retained by the agency whenever possible</li> <li>If a patient with a DNR (stand-alone DNR form or as directed by a MOLST or eMOLST form) is a resident of a nursing home and expires during transport back to that facility, contact the receiving staff to determine if they are willing to accept the patient. If not, return the patient to the sending facility. A copy of the DNR, MOLST, or eMOLST must be attached to the PCR and retained by the agency for all transports from a sending facility to a nursing home</li> </ul>

### (2-33) General: Patella Dislocation

Criteria
<ul style="list-style-type: none"> <li>For isolated, clinically obvious, medial or lateral dislocation of the patella</li> <li>Usually described as "knee went out"</li> <li>Intraarticular and superior dislocations are not reducible in the prehospital environment</li> </ul>
<b>EMT</b>
<b>ADVANCED</b>
<b>CC</b>
<b>PARAMEDIC</b>
<ul style="list-style-type: none"> <li>ABCs and vital signs</li> <li>Airway management and appropriate oxygen therapy</li> <li>Address hemorrhage and other, more serious injuries first (if there are other serious injuries, this protocol does not apply)</li> <li>Obvious medial or lateral patella dislocation                             <ul style="list-style-type: none"> <li>If body habitus precludes assessment, stop and immobilize in position found</li> </ul> </li> <li>Gradually extend the knee while, at the same time, a second provider applies pressure on the patella towards the midline of the knee</li> <li>When straight, place the entire knee joint in a knee immobilizer or posterior splint</li> <li>Initiate "General: Pain Management" protocol, as your level of training allows</li> </ul>
<b>EMT, ADVANCED, CC, AND PARAMEDIC STOP</b>
<b>Key Points/Considerations</b>
<ul style="list-style-type: none"> <li>Some increased pain may occur during reduction</li> <li>If there is severe increased pain or resistance, stop and splint in the position found</li> <li>Patient usually feel significantly better after reduction, but they still need transport to a hospital for further evaluation and possible treatment</li> </ul>

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# EDUCATION



**Kaushal H. Shah, MD FACEP**  
Residency Director, Emergency Medicine  
Icahn School of Medicine at Mt. Sinai

## Guest Authors:

### **Suzanne Bentley, MD MPH**

Medical Director, Health and Hospital NYC Simulation Center at Elmhurst, Attending Physician, Emergency Medicine, Elmhurst Hospital Center, Assistant Professor, Department of Emergency Medicine and Medical Education, Icahn School of Medicine at Mount Sinai

### **Lorraine Boehm, RN MSN BSN RN-BC CCRN-K WCC**

Simulation Specialist, Health and Hospital NYC Simulation Center at Elmhurst, Senior Nurse Educator, Elmhurst Hospital Center

### **Michael Meguerdichian, MD MHPEd**

Medical Director, Health and Hospital NYC Simulation Center at Harlem, Clinical Co-Director of the Health and Hospital NYC Simulation Center, Attending Physician, Emergency Medicine, Harlem Hospital Center, Assistant Professor, Department of Emergency Medicine

### **Julia LaMonica, RN MSN ACNP-BC**

Simulation Fellow, Health and Hospital NYC Simulation Center  
Advanced Practice Nurse, Emergency Department, Elmhurst Hospital Center,

## *In-situ Simulation in the Emergency Department: Benefits, Challenges, and Getting Started*

Simulation is increasingly valued and employed as a teaching tool across many medical specialties and disciplines, especially emergency medicine. Management of critically ill and injured patients requires teams to work quickly and collaboratively and to form with little advanced notice or preparation. In addition to team factors, clinicians must be prepared to deal with a wide range of clinical pathologies including rare, time critical, but life-threatening procedures and conditions, some of which providers may never have previously managed.<sup>1</sup>

Simulation has been defined as “a technique that creates a situation or environment to allow persons to experience a representation of a real event for the purpose of practice, learning, evaluation, testing, or to gain understanding of systems of human actions.” Simulation is further described as an “educational technique that replaces or amplifies real experiences with guided experiences that evoke or replicate substantial aspects of the real work in a fully interactive manner.”<sup>2</sup> Or as some say, “zebras abound.” Therefore, simulation is most importantly a technique, not simply a tool, which can be employed to meet a variety of educational and systems-based objectives.

In-situ or unit based simulation training takes simulation directly into the workplace environment. It has evolved as a particular form of simulation, distinct from those conducted in a formal simulation center, which provides a method to improve reliability and safety in high-risk areas, such as the emergency department. Potential applications include its use to: examine work flow, improve culture, practice teamwork and communication, orient staff to new policies and procedures, assess efficiency of a system and identify gaps, and practice rare events.<sup>2</sup> It allows teams to test their effectiveness in a controlled manner and to interrogate departmental and hospital processes in real time and in real locations.<sup>1</sup>

In-situ simulation scenarios may offer added benefits in that they provide an opportunity for daily, inter-disciplinary teams to practice together in a familiar setting. More formally, it can be used as a “team-based training technique conducted in actual patient care units using equipment and resources from that unit and involving actual members of the healthcare team”.<sup>4</sup> Less formally, in-situ simulation has been described as ‘crash testing the dummy’.<sup>3</sup> Deliberate practice and integration of teamwork skills in the time-pressured clinical environment provides

great realism and is a rich resource to identify latent threats and system issues that can compromise patient safety.

While simulation has often been used as a strategy to train individuals in both technical and non-technical (e.g. leadership, communication and teamwork) skills, in-situ simulation can be used to evaluate system competence and identify latent conditions that predispose to medical error.<sup>4</sup> Given that the simulations are conducted in the actual clinical space, there are opportunities to identify hazards, deficiencies, and latent safety threats in the clinical systems, the environment, and the provider team.<sup>3</sup> In-situ simulation training may provide a better evaluation of the patient care units in relation to hidden or latent safety threats and in studies has led to a higher rate of detection of such threats than that seen in the simulation lab setting.<sup>4</sup>

The benefits of conducting simulations in-situ in the clinical environment are numerous and justified by a number of rationales. These include everything from improved training logistics to adult learning theory. Kolb’s theory of experiential learning, for example, provides a rationale for conducting in-situ simulation from the perspective of the educator and the participant. This theory relies on concrete experiences, reflection on the experiences, and active experimentation so that “new ideas and concepts can be used in actual practice.” As an educational tool, in-situ simulation promotes experiential learning by training the health care provider in the actual environment in which the provider is expected to use the skills. Experiences in simulation labs may also accomplish this to some degree, but in-situ simulation, by definition, is more closely aligned with the actual “work” of the health care provider and is more likely to achieve certain training objectives.<sup>3</sup>

In-situ simulation also offers the advantage of training efficiency. In-situ simulation occurs during the actual workday, often utilizing on-duty clinical providers thus alleviating the need to schedule participants, pay overtime, or schedule additional providers to “backfill” while one team of clinical workers is off in a simulation training center. It also provides an opportunity to more frequently review the skills related to high-risk or infrequent events and frequent skills reinforcement has been shown to often result in improved retention. This enhanced efficiency, however, must be balanced by the necessity of conducting in-situ

simulations for all shifts, not just the convenient day shift, in order to achieve competency for all providers.<sup>3</sup>

A majority of in-situ studies focus, at least in part, on non-technical skills and inter-professional education. Inter-professional teamwork has been shown to be paramount for patient safety and team trainings have been shown to be an effective strategy to improve patient outcomes.<sup>5</sup> Many nurses and doctors working in emergency departments experience critical care events, such as that of a rapidly deteriorating patient. Recent studies suggest that hospital staff members feel inadequately prepared and perceive deficits and a high level of anxiety when managing cardiopulmonary arrest situations. Optimal management of these events requires knowledge, technical skills, and teamwork and can be enhanced by inter-professional training of hospital staff.<sup>5</sup>

Other notable outcomes by researchers using in-situ simulation include: individual participant technical proficiency and clinical competence evaluation and improvement<sup>2</sup>; increase in positive individual and team behaviors such as desirable communication and teamwork and their continue reinforcement<sup>3,4</sup>; active and latent systems issues are readily identified<sup>3</sup>; contribution to changing the safety culture of the system<sup>3</sup>; and that in-situ simulation can be a catalyst for change in clinical care systems and lead to improved clinical outcomes.<sup>3</sup> Additionally, in-situ simulation, similar to in-center simulations, allows routine opportunity to formally debrief participants, something that rarely occurs after actual patient encounters. Multidisciplinary training and debriefing encourages sharing of information and perceptions between team members and across disciplines.<sup>5</sup>

Despite these many benefits, the implementation of in-situ simulation with working clinical teams presents challenges related to time pressures, acuity and patient census in a busy ED, as well as technical issues and equipment availability and costs, lack of privacy, frequent distractions and logistical issues. Performance anxiety of healthcare providers may pose a significant challenge with reluctance on the part of staff to participate in the care of simulated patients. Concerns are frequently voiced regarding the impact of in-situ simulations on patient care and reinforce the need for creation of institution specific 'no go' guidelines developed and agreed to by the simulation team and the ED leadership (e.g. census limits or staffing constraints under which the in-situ simulation will be postponed).<sup>3,4,6</sup> Additionally, cultural obstacles such as patient and family perceptions have been expressed and some providers anecdotally noted concerns that family members would find the in-situ simulation exercises disruptive or intimidating. Conversely, many providers noted that families have expressed interest and appreciation for the training their providers are receiving. This suggests that deliberate attention and provision of information to patients and family members who are in the department

during simulation can advertise benefits of the educational exercise versus "scare" those that may observe the in-situ case in progress.<sup>3</sup>

In conclusion, in-situ simulation is a relatively new strategy with emerging data to support its efficacy. Multiple recently published reports have discussed strategies for how to implement efficient in-situ simulations, but best practices for the design, delivery and implementation of an in-situ program have yet to be established. A programmatic approach to training and assessment based on system thinking is required for a sustained improvement of team performance and patient safety.<sup>1,3,5</sup>

If you recognize the need and are interested, go get started! Top tips from Spurr et. al.<sup>1</sup> for getting started with in-situ simulation include:

1. Think about your location and equipment
2. Encourage departmental leaders to support simulation
3. Agree on your learning objectives for participants and the department
4. Be a multi-professional simulation program
5. Make your simulations as real as you can
6. Start simple, then complex
7. Make sure everyone knows the rules and feels safe
8. Link what you find in simulation to your clinical governance systems
9. The debrief is (almost) everything; be careful, skillful and safe
10. Keep the real patients safe and remember where you are
11. Have fun

#### References:

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4. Patterson MD, Geis GL, Falcone RA, LeMaster T, Wears RL. In situ simulation: detection of safety threats and teamwork training in a high risk emergency department. *BMJ Qual Saf*. 2013;22(6):468-477.
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## Young Physician and Resident Leadership & Advocacy Award



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### December 2016

- 7 Emergency Medicine Resident Committee Conference Call, 2:00 pm
- 8 Practice Management Conference Call, 1:00
- 14 Education Committee Conference Call, 2:45 pm
- 14 Professional Development Conference Call, 3:30 pm
- 15 EMS Committee Conference Call, 2:30 pm
- 21 Government Affairs Conference Call, 11:00 am
- 21 Research Committee Conference Call, 3:00 pm
- 26-30 New York ACEP Office Closed

### January 2017

- 4 Emergency Medicine Resident Committee Conference Call, 2:00 pm
- 11 Education Committee Conference Call, 2:45 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

### February 2017

- 1 Emergency Medicine Resident Committee Conference Call, 2:00 pm
- 8 Education Committee Conference Call, 2:45 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

### March 2017

- 1 Emergency Medicine Resident Committee Conference Call, 2:00 pm
- 7 Lobby Day 9:00 am - 1:30 pm - Albany, New York
- 7 Board of Directors Meeting - 1:30 pm - 4:30 pm - Albany, New York
- 8 Education Committee Conference Call, 2:45 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





# NEW YORK STATE OF MIND



Compiled By:  
**Theodore J. Gaeta, DO MPH FACEP**  
 Residency Program Director  
 New York Methodist Hospital

## Improving Transfer Times for Acute Ischemic Stroke Patients to a Comprehensive Stroke Center.

*Kodankandath TV, Wright P, Power PM, De Geronimo M, Libman R, Kwiatkowski T, Katz JM; North Shore University Hospital, Hofstra Northwell School of Medicine, Manhasset, New York; J Stroke Cerebrovasc Dis. 2016 Oct 12.*

**BACKGROUND AND OBJECTIVE:** The transfer of acute ischemic stroke (AIS) patients to a comprehensive stroke center (CSC) must be rapid. Delays pose an obstacle to time-sensitive stroke treatments and, therefore, increase the likelihood of exclusion from endovascular stroke therapy. This study aims to evaluate the impact of the Stroke Rescue Program, with its goal of minimizing interfacility transfer delays and increasing the number of transport times completed within 60 minutes.

**METHODS:** The Stroke Rescue Program was initiated to facilitate the rapid transfer of AIS patients from regional primary stroke centers (PSCs) to the network's CSC. The transfer process was divided into 3 time elements: transport 1 time (initial phone call from the PSC until emergency medical service [EMS] arrival at the PSC), emergency department (ED) time (EMS PSC arrival to PSC departure), and transport 2 time (PSC departure to CSC arrival). The total transport time target was set at less than 60 minutes. Protocols and procedures were implemented with a focus on decreasing the ED time.

**RESULTS:** Comparing baseline (preimplementation) quarter to postproject quarter (1 year later), the percent transported within 60 minutes increased from 62% to 81%. A statistically significant improvement was seen for both median ED time (23 minutes versus 14 minutes) and median total transport time (56 minutes versus 44 minutes).

**CONCLUSION:** Interfacility transfer protocols minimizing the time paramedics spend in a PSC ED can significantly reduce total transfer time to a comprehensive stroke center.

## Radiologists' Training, Experience, and Attitudes About Elder Abuse Detection.

*Rosen T, Bloemen EM, Harpe J, Sanchez AM, Mennitt KW, McCarthy TJ, Nicola R, Murphy K, LoFaso VM, Flomenbaum N, Lachs MS; Division of Emergency Medicine, Weill Cornell Medical College, New York, NY; AJR Am J Roentgenol. 2016 Oct 12:1-5.*

**OBJECTIVE:** Elder abuse is underrecognized, and identification of subtle cases requires a high index of suspicion among all health care providers. Because many geriatric injury victims undergo radiographic imaging, diagnostic radiologists may be well positioned to identify injury patterns suggestive of abuse. Little is known about radiologists' experience with elder abuse. Our goal was to describe knowledge, attitudes, training, and practice experience in elder abuse detection among diagnostic radiologists.

**SUBJECTS AND METHODS:** We conducted 19 interviews with diagnostic radiologists at a large urban academic medical center using a semistructured format. Data from these sessions were coded and analyzed to identify themes.

**RESULTS:** Only two radiologists reported any formal or informal training in elder abuse detection. All subjects believed they had missed cases of elder abuse. Even experienced radiologists reported never having received a request from a referring physician to assess images for evidence suggestive of elder abuse. All subjects reported a desire for additional elder abuse training. Also, subjects identified radiographic findings or patterns potentially suggestive of elder abuse, including high-energy injuries such as upper rib fractures, injuries in multiple stages of healing, and injuries inconsistent with reported mechanism.

**CONCLUSION:** Radiologists are uniquely positioned to identify elder abuse. Though training in detection is currently lacking, providers expressed a desire for increased knowledge. In addition, radiologists were able

to identify radiographic findings suggestive of elder abuse. On the basis of these findings, we plan to conduct additional studies to define pathognomonic injury patterns and to explore how to empower radiologists to incorporate detection into their practice.

## Geriatric Assault Victims Treated at U.S. Trauma Centers: Five-Year Analysis of the National Trauma Data Bank.

*Rosen T, Clark S, Bloemen EM, Mulcare MR, Stern ME, Hall JE, Flomenbaum NE, Lachs MS, Eachempati SR; Division of Emergency Medicine, Weill Cornell Medical College, New York; Injury. 2016 Sep 3.*

**INTRODUCTION:** While geriatric trauma patients have begun to receive increased attention, little research has investigated assault-related injuries among older adults. Our goal was to describe characteristics, treatment, and outcomes of geriatric assault victims and compare them both to geriatric victims of accidental injury and younger assault victims.

**PATIENTS AND METHODS:** We conducted a retrospective analysis of the 2008-2012 National Trauma Data Bank. We identified cases of assault-related injury admitted to trauma centers in patients aged  $\geq 60$  using the variable "intent of injury."

**RESULTS:** 3,564 victims of assault-related injury in patients aged  $\geq 60$  were identified and compared to 200,194 geriatric accident victims and 94,511 assault victims aged 18-59. Geriatric assault victims were more likely than geriatric accidental injury victims to be male (81% vs. 47%) and were younger than accidental injury victims ( $67 \pm 7$  vs.  $74 \pm 9$  years). More geriatric assault victims tested positive for alcohol or drugs than geriatric accident victims (30% vs. 9%). Injuries for geriatric assault victims were more commonly on the face (30%) and head (27%) than for either comparison group. Traumatic brain injury (34%) and penetrating injury (32%) occurred commonly. The median injury severity score (ISS) for geriatric



# NEW YORK STATE OF MIND

assault victims was 9, with 34% having severe trauma (ISS  $\geq 16$ ). Median length of stay was 3 days, 39% required ICU care, and in-hospital mortality was 8%. Injury severity was greater in geriatric than younger adult assault victims, and, even when controlling for injury severity, in-hospital mortality, length of hospitalization, and need for ICU-level care were significantly higher in older adults.

**CONCLUSIONS:** Geriatric assault victims have characteristics and injury patterns that differ significantly from geriatric accidental injury victims. These victims also have more severe injuries, higher mortality, and poorer outcomes than younger victims. Additional research is necessary to improve identification of these victims and inform treatment strategies for this unique population.

## Endotracheal Intubation After Acute Drug Overdoses: Incidence, Complications, and Risk Factors.

Hua A, Haight S, Hoffman RS, Manini AF, Icahn School of Medicine at Mount Sinai, New York; *J Emerg Med.* 2016 Oct 4.

**BACKGROUND:** Drug overdose is the leading cause of injury-related fatality in the United States, and respiratory failure remains a major source of morbidity and mortality.

**OBJECTIVES:** We aimed to identify the incidence and risk factors for endotracheal intubation after acute drug overdose.

**METHODS:** This secondary data analysis was performed on a 5-year prospective cohort at two urban tertiary-care hospitals. The present study analyzed adult patients with suspected acute drug overdose to derive independent clinical predictors of endotracheal intubation.

**RESULTS:** We analyzed 2,497 patients with acute drug overdose, of whom 87 (3.5%) underwent endotracheal intubation. Independent clinical risk factors for endotracheal intubation were: younger age (odds ratio [OR] 0.97, 95% confidence interval [CI] 0.96-0.98), and history of obstructive lung disease (OR 6.6, 95% CI 3.5-12.3); however, heart failure had no association. Patients with obstructive lung disease had significantly more hypercapnia (mean difference 6.8mm Hg, 95% CI 2.3-11.3) and a higher degree of acidemia (mean pH difference 0.04, 95% CI 0.01-0.07) than patients without obstructive lung disease. Lack of rapid sequence sedative/paralytic was associated with in-hospital fatality. Early complications of endotracheal intubation itself included

desaturation (3.4%) and bradycardia (1%).

**CONCLUSIONS:** Endotracheal intubation was infrequently performed on patients with acute drug overdose, and complications were rare when performed. Risk factors associated with endotracheal intubation included younger age and prior obstructive lung disease.

## Role of Pediatric Emergency Physicians in Identifying Bullying.

Waseem M, Paul A, Schwartz G, Pauzi D, Eakin P, Barata I, Holtzman D, Benjamin LS, Wright JL, Nickerson AB, Joseph M; Lincoln Medical and Mental Health Center, Bronx; *J Emerg Med.* 2016 Sep 29.

**BACKGROUND:** Bullying is an important public health issue with broad implications. Although this issue has been studied extensively, there is limited emergency medicine literature addressing bullying. The emergency department (ED) physician has a unique opportunity to identify children and adolescents that are victims of bullying, and make a difference in their lives.

**OBJECTIVE:** Our aim is to discuss the role of the emergency physician (EP) in identifying patients who have been victims of bullying and how to provide effective management as well as referral for further resources.

**DISCUSSION:** This document provides a framework for recognizing, stabilizing, and managing children who have experienced bullying. With the advent of social media, bullying behavior is not limited to in-person situations, and often occurs via electronic communication, further complicating recognition because it may not impart any physical harm to the child. Recognition of bullying requires a high level of suspicion, as patients may not offer this history. After the stabilization of any acute or overt indications of physical injury, along with obtaining a history of the mechanism of injury, the EP has the opportunity to identify the existence of bullying as the cause of the injury, and can address the issue in the ED while collaborating with "physician-extenders," such as social workers, toward identifying local resources for further support.

**CONCLUSIONS:** The ED is an important arena for the assessment and management of children who have experienced bullying. It is imperative that EPs on the front lines of patient care address this public health epidemic. They have the opportunity to exert a positive impact on the lives of the children and families

who are the victims of bullying.

## Is There a Role for Intravenous Subdissociative-Dose Ketamine Administered as an Adjunct to Opioids or as a Single Agent for Acute Pain Management in the Emergency Department?

Motov S, Rosenbaum S, Vilke GM, Nakajima Y; Maimonides Medical Center, Brooklyn; *J Emerg Med.* 2016 Sep 29.

**BACKGROUND:** Whether acute or chronic, emergency physicians frequently encounter patients reporting pain. It is the responsibility of the emergency physician to assess and evaluate, and if appropriate, safely and effectively reduce pain.



## Young Physician and Resident Leadership & Advocacy Award

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# NEW YORK STATE OF MIND

Recently, analgesics other than opioids are being considered in an effort to provide safe alternatives for pain management in the emergency department (ED). Opioids have significant adverse effects such as respiratory depression, hypotension, and sedation, to say nothing of their potential for abuse. Although ketamine has long been used in the ED for procedural sedation and rapid sequence intubation, it is used infrequently for analgesia. Recent evidence suggests that ketamine use in subdissociative doses proves to be effective for pain control and serves as a feasible alternative to traditional opioids. This paper evaluates ketamine's analgesic effectiveness and safety in the ED.

**METHODS:** This is a literature review of randomized controlled trials, systematic reviews, meta-analyses, and observational studies evaluating ketamine for pain control in the ED setting. Based on these search parameters, eight studies were included in the final analysis and graded based on the American Academy of Emergency Medicine Clinical Practice Committee manuscript review process.

**RESULTS:** A total of eight papers were reviewed in detail and graded. Recommendations were given based upon this review process.

**CONCLUSIONS:** Subdissociative-dose ketamine (low-dose ketamine) is effective and safe to use alone or in combination with opioid analgesics for the treatment of acute pain in the ED. Its use is associated with higher rates of minor, but well-tolerated adverse side effects.

## Severe Traumatic Brain Injury In Children: An Evidence-Based Review of Emergency Department Management.

*Morrissey K, Fairbrother H.; Pediatric Emergency Medicine, Albany Medical College, Albany; Pediatr Emerg Med Pract. 2016 Oct;13(10):1-28.*

More than 1.7 million traumatic brain injuries occur in adults and children each year in the United States, with approximately 30% occurring in children aged < 14 years. Traumatic brain injury is a significant cause of morbidity and mortality in pediatric trauma patients. Early identification and management of severe traumatic brain injury is crucial in decreasing the risk of secondary brain injury and optimizing outcome. The main focus for early management of severe traumatic brain injury is to mitigate and prevent secondary injury, specifically by avoiding hypotension and hypoxia, which have been associated with

poorer outcomes. This issue discusses methods to maintain adequate oxygenation, maximize management of intracranial hypertension, and optimize blood pressure in the emergency department to improve neurologic outcomes following pediatric severe traumatic brain injury.

## Biological Risk Factors for Suicidal Behaviors: A Meta-Analysis.

*Chang BP, Franklin JC, Ribeiro JD, Fox KR, Bentley KH, Kleiman EM, Nock MK.; Columbia University Medical Center, New York; Transl Psychiatry. 2016 Sep 13;6(9):e887.*

Prior studies have proposed a wide range of potential biological risk factors for future suicidal behaviors. Although strong evidence exists for biological correlates of suicidal behaviors, it remains unclear if these correlates are also risk factors for suicidal behaviors. We performed a meta-analysis to integrate the existing literature on biological risk factors for suicidal behaviors and to determine their statistical significance. We conducted a systematic search of PubMed, PsycInfo and Google Scholar for studies that used a biological factor to predict either suicide attempt or death by suicide. Inclusion criteria included studies with at least one longitudinal analysis using a biological factor to predict either of these outcomes in any population through 2015. From an initial screen of 2,541 studies we identified 94 cases. Random effects models were used for both meta-analyses and meta-regression. The combined effect of biological factors produced statistically significant but relatively weak prediction of suicide attempts (weighted mean odds ratio (wOR)=1.41; CI: 1.09-1.81) and suicide death (wOR=1.28; CI: 1.13-1.45). After accounting for publication bias, prediction was nonsignificant for both suicide attempts and suicide death. Only two factors remained significant after accounting for publication bias-cytokines (wOR=2.87; CI: 1.40-5.93) and low levels of fish oil nutrients (wOR=1.09; CI: 1.01-1.19). Our meta-analysis revealed that currently known biological factors are weak predictors of future suicidal behaviors. This conclusion should be interpreted within the context of the limitations of the existing literature, including long follow-up intervals and a lack of tests of interactions with other risk factors. Future studies addressing these limitations may more effectively test for potential biological risk factors.

## The Inter-rater Reliability of Echocardiographic Diastolic Function Evaluation Among Emergency Physician Sonographers.

*Saul T(1), Avitabile NC(1), Berkowitz R(1), Siadeci SD(1), Rose G(1), Toomarian M(1), Kaban NL(1), Governatori N(1), Suprun M(2); Department of Emergency Medicine, Mount Sinai St. Luke's Hospital, New York; J Emerg Med. 2016 Oct;51(4):411-417.*

**STUDY OBJECTIVES:** In a patient with dyspnea and suspected CHF, the evaluation of diastolic function involves: tissue Doppler of the mitral annulus and 2) pulsed wave Doppler of the mitral inflow. We aimed to 1) determine the inter-rater reliability for overall diastolic function and 2) evaluate the reliability of the individual Doppler measurements.

**METHODS:** A convenience sample of adult emergency department patients was prospectively enrolled by eight EPs who had participated in a one-hour didactic session. Patients were selected if they had a history of CHF or suspected abnormal diastolic function due to chronic hypertension. Diastolic function was considered to be abnormal if Tissue Doppler of the septal e' was <8 cm/s and if the lateral e' was <10 cm/s. In cases of discordance, the E/e' ratio was calculated with, ≤ considered normal and >8 considered abnormal. A Kappa coefficient. Bland-Altman plot and a fixed effect regression model were used in the analysis.

**RESULTS:** Thirty-two patients were enrolled, and three (9.4%) were excluded due to technical inadequacy. The inter-rater reliability among sonographers for overall interpretation was very good:  $\kappa = 0.86$  (95% CL [0.67, 1.0]). Based on the Bland-Altman plot, was no consistent bias between readers. There was no evidence to conclude that the readings differed among sonographers: septal e' (p = 0.77), lateral e' (p = 0.89) and E (p = 0.15).

**CONCLUSION:** EP sonographers obtained similar Doppler measurements for diastolic function evaluation with very good inter-rater reliability for the assessment of overall diastolic function.

## Increase in Moped Injuries Requiring Emergency Care.

*Bandzar S, Gupta S, Atallah H.; New York-Presbyterian Hospital, New York; Am J Emerg Med. 2016 Oct;34(10):2000-2002.*

**BACKGROUND:** There has been a marked

increased in moped use over the past few years. In addition, there has been an increase in moped-related injuries presenting to the emergency department (ED). The objective of this study is to characterize moped-related injuries presenting to US EDs and obtain national estimates of moped injury incidence over time.

**METHODS:** Data regarding moped injuries were queried from the National Electronic Injury Surveillance System from calendar year 2007 to 2015. Data included diagnosis, body part injured, ED disposition, and patient demographics.

**RESULTS:** There were an estimated 114,729 moped-related injuries treated in US EDs from 2007 to 2015 (95% confidence interval, 102 156-127 302). In addition, there was an increase in the number of moped injuries annually ( $B = 762.1, P < .01$ ). The average number of moped injuries yearly was 12,748. The mean age was 34 years. Patients between ages 19 and 38 years represented 42% of the study population. Men (74%) and whites (55%) accounted for most of the injured population. Most injuries were stabilized in the ED and discharged home (85%). Approximately 9% of injuries were admitted to the hospital, and fractures constituted 59% of all diagnoses admitted to the hospital. Contusions (27%) and fractures (24%) accounted for most diagnoses. The most common body part injured was the head (16%).

**CONCLUSIONS:** Moped injuries have increased since 2007 and mopeds are associated with severe injuries. Education and reexamination of current moped laws may decrease the number and severity of moped-related injuries.

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- BC in Emergency Medicine with administrative experience, preferred

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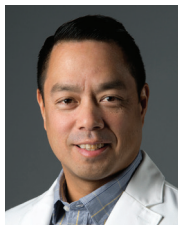
JoAnne Tarantelli, Executive Director  
New York American College of Emergency Physicians  
1130 Crosspointe Lane, Suite 10B  
Webster, NY 14580-2986

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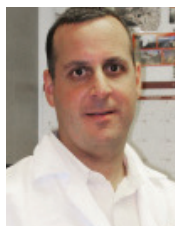




**Eric F. Decena, MD, FACEP**  
Vice Chairman, Department of Emergency  
Medicine, Good Samaritan Hospital Medical Center  
Progressive Emergency Physicians, PLLC



**Catherine Kelly, DO**  
Administrative Fellow, Department of Emergency  
Medicine, Good Samaritan Hospital Medical Center  
Progressive Emergency Physicians, PLLC



**Christopher C. Raio, MD MBA FACEP**  
Chairman, Department of Emergency  
Medicine, Good Samaritan Hospital  
Medical Center  
Progressive Emergency Physicians, PLLC

## Use of a “Super Track” Model to Improve Emergency Department Flow

Emergency Department (ED) Overcrowding is a common problem frustrating both clinicians and patients. A lack of hospital bed capacity eventually leads to longer waiting times for patients gaining entry into the ED. These delays routinely lead to decreased patient satisfaction, staff satisfaction and potentially poor patient outcomes.<sup>1,2,3</sup> Emergency physicians, nurses, advanced practice professionals, and ancillary support staff are challenged in not having full control over patient flow even through the ED. ED overcrowding is a hospital problem, not an “ED” problem. There are, however, multiple effective and innovative process improvement initiatives within the ED that can help.

The American College of Emergency Physician (ACEP) Task Force on Boarding outlines a number of “high impact” solutions to improve front-end operations of ED throughput. The Good Samaritan Hospital Medical Center in West Islip, NY, is an academic community hospital with an ED that evaluates more than 88,000 patients annually. Like many EDs across the state, and country, in 2015, the department was faced with challenges directly related to these front-end operations: decreasing door-to-provider times, left without being seen rates (LWBS), and length of stay for treat and release patients. ED leadership collaboratively decided to engage in one potential intervention, the implementation of a “Super Track.” This is a modified split-flow model designed to maximize use of departmental resources and ultimately improve patient experience and care.

Previously, distribution of patients to the “Fast Track” followed the traditional model; ESI level 4 and 5 patients were seen by the patient care team in a timely manner and efficiently treated, then given an appropriate disposition. However, on review of the patients who left prior to evaluation, it was noted that “middle acuity” ESI 3 patients were often left in limbo. They were at times considered “too sick” for fast track while not critical enough to be assigned a bed in the main treatment area rapidly. The dilemma was most evident at peak hours and during times

of patient surges which is experienced in most EDs. The ability to treat patients with minor illness and injury quickly was typically preserved, but patients with abdominal pain and potentially dangerous complaints at times were faced with treatment delays. This created a system that left a subset of patients feeling ignored and ultimately less satisfied.

Multiple studies have shown that a split-flow model decreases overall length of stay, door to provider times, left without being seen rates, and improves patient satisfaction.<sup>4,5</sup> Previous work has also shown that ED triage nurses can predict which patients will be discharged with 90% accuracy.<sup>6</sup> ED leadership believed that targeting the “mid-acuity” subset of patients would decrease the strain on ED staff while improving patient experience and outcomes.

### Implementation

Prior to implementation, a formalized plan was developed to obtain buy-in from all disciplines contributing to the new Super Track model (Table 1). Front-line staff was involved to review the proposed model and provide feedback to leadership prior to finalizing the plan. The department is fortunate enough to have Radiology services (plain-film and ultrasound) located within the Super Track space, with computerized tomography just a short walk down the hall. In addition, five rooms, formerly designated as triage cubicles located immediately upon entry into the department, were re-engineered with lounge chairs and appropriate equipment to provide an additional patient care area for more “vertical” patients. These rooms were added to the seven individual rooms in the previous Fast Track zone. Large, comfortable chairs were also available just outside the internal Radiology suite.

Patient complaints tracked to the new “Super Track” area were expanded to include “lower acuity” ESI level 3 patients. Abnormal vital signs, multiple comorbid illnesses, pregnancy, and vaginal bleeding were defined as exclusion criteria. In addition, the Super Track care

team was given the ability to transfer any patient to the main treatment area after patient contact; however, they were also instructed to continue to care for those transferred patients thus limiting “dumping” of patients out of Super Track. Being placed in Super Track does not pose any additional risk on patients. “If a patient is found to be more critical than initially thought, they are transferred to the main treatment area while simultaneously initiating a suitable workup,” explains Eric Decena, MD FACEP, Vice Chairman of the Emergency Department. “Any room in our department is safer for patients than the waiting room. The faster we can get patients seen by a provider, the faster we can have them evaluated and treated.”

Nurse and ancillary support was increased in the new Super Track as well to allow rapid initiation of laboratory testing and treatment. Previously without this added staff, the processing of FT patients often was delayed. No additional FTE’s were added. Modification of the previously rigid model allowed more effective distribution of patients to maximize use of departmental resources.

Another key piece of the performance improvement initiative has been the routine and transparent evaluation of specified metrics for the Super Track Area. In addition to those listed below in the Results section, provider specific volume of patients, door-to-provider times, and door-to-discharge times are tracked and shared with the entire group on a monthly basis. This has provided consistent motivation and feedback to the team and has kept everyone engaged.

### Results:

This program has changed the front-end flow of patients into the ED and has resulted in huge improvements in operational metrics. Left without being seen rates dropped from 2.33% to 1.20% thus far in 2016.

Monthly LWBS rates have recently consistently been reduced to <1%. Median door-to-provider time improved drastically from 29.33 min to 13.9 min. Length of stay for all patients discharged from the department, regardless of location in the ED, improved by 10%, from 211 min to 190 min; and finally length of stay for Super Track patients is approximately 109 minutes, also a sharp improvement.

### Conclusions:

Modification of split flow models can substantially improve front-end operations. While many high impact solutions can require a large investment of capital and system-based support, this program was implemented simply by maximizing use of existing resources.

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**Table 1**

	Description of Work	Start and End Dates
Phase One	E.D. Leadership to meet and develop process, algorithm, and flow of new area	October 5, 2015 – October 19, 2015
Phase Two	An E.D. Inter-professional team will meet to review E.D. Leadership proposal and make any suggested changes to plan	October 26, 2015- November 8, 2015
Phase Three	Final plan designed and approved by E.D. Leadership	November 16, 2015
Phase Four	Training of all staff members on new processes	November 23, 2015 – December 15, 2015

# ASK THE EXPERTS



**Manish Sharma, DO MBA FACEP**  
Director, Emergency Services  
NewYork-Presbyterian/Queens



**John K. D'Angelo, MD FACEP**  
Senior Vice President and Executive Director  
Emergency Services Northwell Health



**Nicole Berwald, MD FACEP**  
Associate Chair  
Department of Emergency Medicine  
Staten Island University Hospital

## How To Get Ahead in Emergency Medicine Education

Dr. John D'Angelo is the Senior Vice President and Executive Director of the Northwell Health (formerly North Shore-LIJ) Emergency Medicine Service Line (EMSL). I have known him since September 2015 and worked closely with him since January 2016. Dr. D'Angelo is the "boss who hires bosses," as he is on the search committee for all emergency medicine (EM) leadership positions at Northwell Health. I spent time with him to inquire about his past, his present and to see what he looks for in leaders.

### Why did you choose medicine as a career?

For the same reason that most people do: I knew what I liked and was good at the sciences and was drawn by the prospect of having a positive impact on the life of others. I focused on what I both liked and was good at.

### Why did you choose emergency medicine?

I went into medical school not knowing what field I wanted to pursue. I initially thought it was surgery, and then orthopedics. During my third year, I liked all my clinical rotations and had an identity crisis. I met with Fred Schiavone and, because I had been an EMS volunteer before medical school, decided to shadow EM residents at Stony Brook, go to the first-year EM resident orientation and do electives at Christiana & Thomas Jefferson.

All of these experiences helped me decide that EM was the right field for me.

### What was your first job after residency?

I was a frontline attending at Holyoke Hospital in western Massachusetts, which was an urban, inner city, non-teaching environment. Holyoke Hospital appealed to me because I looked at this job as an opportunity to challenge myself and grow in an environment that was just the opposite of that in which I had trained in central Pennsylvania. There were no EM residents, and the EM physician responded to all hospital codes and emergencies. I chose this job knowing that I wanted to face these challenges and hone my skills as an EM physician.

### What was your first administrative position in emergency medicine?

I was the chief resident in my EM residency at Geisinger Medical Center. There was one chief resident for 21 residents, and my responsibilities included scheduling, contract negotiations for resident moonlighting, senior leadership meetings, teaching, working a full compliment of clinical shifts and studying for my EM boards. It was the most challenging professional year of my life and led to the most personal growth.

### Why did you pursue an administrative role(s)?

I did not consciously pursue them. The roles almost always presented themselves to me. I worked hard and tried to excel at everything I did. Due to that, others thought I was ready to do more. At Holyoke Hospital, I was asked to be in charge of the hospital based paramedic program and then lead the occupational health clinic. I was honored to be offered these roles, said yes to both, and, learned a lot from the responsibilities that came with each position.

### What was your last administrative position before becoming an EMSL Director?

I was the Emergency Department (ED) Chairman at Glen Cove Hospital, a member of Northwell Health. Prior to that, I was a clinical attending at Glen Cove for five years. I took on scheduling responsibilities, EMS responsibilities, and took the lead in various projects. This is why I was offered the chairman position when it became available.

### What is the EMSL?

The Emergency Medicine Service Line is a division that is responsible for the clinical and operational performance of Northwell Health's 17 emergency departments, hospital based observation units and urgent care centers. The goal is to standardize clinical care across the health system in order to gain



optimal outcomes. There are various subdivisions within the EMSL, which include finance and revenue, recruitment and physician engagement, data analytics, clinical operations and new business development to address growth and market share. The EMSL was formed in 2009 and has both grown and transformed over the past seven years. In the beginning, only the ED Chairmen met regularly, now our meetings include ED site leaders, including nursing, advanced practitioners and physician leaders, and the members of the EMSL executive offices. The physician-nursing leadership team runs the EDs and the EMSL provides support and guidance at all levels.

**When did you become the director of the EMSL?**

In September 2012. I was the chairman at Glen Cove Hospital and had taken the lead from the emergency medicine perspective on various projects within the Northwell Health System, including the task force for sepsis mortality and the integration of an electronic medical record.

**How is your role different from a regional medical director?**

My role goes beyond the medical director role. I am involved in all clinical and business aspects of emergency medicine including quality, academics, research, clinical care, operations, strategic vision, business development, growth and market share.

**What is your typical day/week?**

A large portion of my time is spent in meetings. I represent EM at all system initiative discussions, take part in interdepartmental meetings with other service lines, take part in senior executive meetings and have regular meetings and conference calls with the ED site leaders. I try to spend at least 20 hours per week within one of the system hospitals. I do site visits to hospitals to have discussions with site ED leadership, hospital executives and front line staff to promote EMSL objectives and foster staff engagement. I also attend site ED faculty meetings and have either breakfast or dinner with new hires throughout the years.

**How many ED chairpersons or ED associate chairpersons have you helped select?**

Ten chairpersons. While I give my impressions on associate chairperson candidates, I leave

that final decision to the site chairperson who will need to both work with and mentor them.

**What are the three most important qualities you look for in an ED leader?**

I look for an overall style of leading and the person’s philosophy on leadership. I look for someone who can inspire others to share a vision to achieve a common goal. I look for someone who can get people to work together, not because of the authority they have over them, but because people want to follow him/her. Simply put, are they a leader or simply a good manager?

**What can someone who wants to work towards a leadership role do to gain the skills that are valuable?**

Get involved beyond your clinical responsibilities. Volunteer to do things. Offer to help with pre-hospital care, quality assurance reviews, answering complaints, join hospital or health system committees, and ask to attend finance or department budget meetings. Find people who excel at things that you are weak in and spend time with them; learn everything you can from them.

**Is an MBA/MPH/CPE/CPHQ necessary for someone who wants to pursue a leadership role?**

These degrees are helpful, but not essential. Get the degree to gain the knowledge from it, not simply for the letters.

**How many years of experience do you think an ED physician needs before being ready to be a chairperson?**

While some may be ready earlier, in my opinion, it takes ten years post residency to obtain both the clinical and leadership maturity needed to be a chairperson. In rare cases, a person can be ready in five to seven years, but it depends on the person, as well as the size and complexity of the site.

**If you had to do it all over again, would you be doing what you do now?**

Yes, definitely. The path was not planned, and I never thought I would be in this position, but I am honored to be here doing what I do.

**What is the most satisfying part of your job?**

It is very satisfying to be part of a team that

is bringing medical care to a new level and delivering the best care possible to all patients. It is also very satisfying to be part of leadership development and physician engagement. It is an honor to represent emergency medicine in the health system.

**What is the most enjoyable part of your job?**

Having an influence on how emergency medicine will affect and be a part of the developing healthcare community in the years to come.

**What is the least enjoyable part of your job?**

Saying no. Making tough decisions. The reality is that we all work within budgets with regard to resources, time and money. Health systems run with small profit margins. We cannot have everything we want. Tough choices have to be made daily. The focus is on keeping the system afloat and the lights on, while at the same time doing what is best for our patients and the people who take care of them. Finding a balance and being responsible is not always enjoyable.

**Where do you see yourself five years from today?**

In the same/similar role. There is a lot to still get done. The EMSL has evolved dramatically over the past four years and will continue to do so. I want to help develop the healthcare landscape and ensure that emergency medicine assumes its proper role in that landscape, as the central hub for all acute unscheduled care needs of the populations we serve. I do see my role evolving and growing within the Northwell Health as the health system, and the medical environment around us, continues to grow and evolve.

**LEADERSHIP OPPORTUNITY:** TeamHealth is looking for an experienced Medical Director to lead our team at Kenmore Mercy Hospital in Kenmore, New York.

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**Qualifications:**

- Strong communication and leadership skills
- BC in Emergency Medicine

Contact: Anne Brewer, Physician Recruiter, at [anne\\_brewer@teamhealth.com](mailto:anne_brewer@teamhealth.com) or (865) 985-7177.



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Christopher C. Raio, MD MBA FACEP  
Good Samaritan Hospital Center  
631.376.3819







## ED DIRECTOR FORUM

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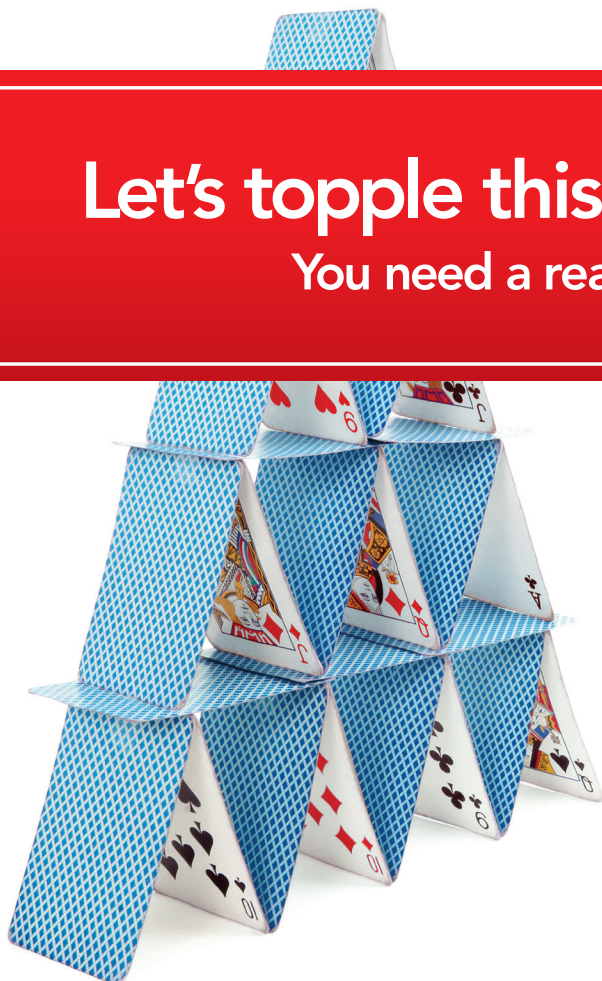
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