



MACEP Pediatric Committee Newsletter

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Update on Development of our MA Pediatric Emergency Care Coordinator Network

We are excited to announce that the MACEP Pediatric Committee and the Massachusetts Emergency Nurses Association Pediatric Committee have teamed up with the goal of enhancing pediatric emergency care in Massachusetts. Our first initiative is to establish a nursing and physician pediatric emergency care coordinator (PECC) team in every ED in Massachusetts. We have already had several new PECCs added during the summer with this effort!

We have continued our work with providing resources and pearls to the PECCs on a monthly basis via e-mail. We have also added several new resources to our MA PECC support website,
www.MassPediatricToolkit.com,

including a PECC introduction letter which provides instruction and guidance on how to be most effective as a PECC. We celebrate the achievement of establishing PECCs in 100% of Massachusetts EDs and work to maintain the PECC database at 100%. We have implemented a new strategy of asking PECCs for advanced notice when he/she is planning to leave the position which has helped to reduce vacancies.

Our initial quality improvement survey on obtaining and documenting pediatric weight exclusively in kilograms was converted into an article published in The American Journal of Emergency Medicine (Foster et al. A weighty matter:

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Obtaining and documenting pediatric weight in the emergency department). Our goal is for all Massachusetts EDs to obtain and document pediatric weight in exclusively kilograms and hope to work with EDs in the future to achieve this goal.

Dr. Joyce Li is leading the effort to establish identification of a PECC in every emergency department in the New England area. This will include a New England PECC listserv where PECCs in the region can share ideas, challenges and solutions.

Finally, Dr. Joyce Li and Dr. Ashley Foster will speak about our efforts of establishing 100% PECCs in Massachusetts and within New England at the New England Rural Health RoundTable in November, 2019.



Community Outreach Mobile Education Training:

Bringing a robust, pediatric acute care simulation training program to your ED– anytime, anywhere for all providers to train together as a unified team

1. 4 standard medical scenarios are run in the resuscitation bay
2. Typical "resuscitation team" should run the scenarios – based on your unit's typical shift staffing model (1-2 MD, 2-3 RN, 1-2 tech, 1 RRT etc.
3. Cases are common pediatric diagnoses with an infant/child presenting in a critical state requiring resuscitation and more

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Websites to check out!

Every month we'll share some websites that may be of interest

Mass Pediatric Toolkit- Resources to improve pediatric care: [LINK](#)

EMS-C Pulse Newsletter: [LINK](#)

EMSC Resources/ Toolkit to improve pediatric readiness in your ED: [LINK](#)

EMS-C Webinars: [LINK](#)

National Pediatric Readiness Project: [LINK](#)

PEM Playbook (excellent and lively podcast on PEM topics): [LINK](#)

Webinar on Pediatric Airway Management by EMSWorld (free, requires registration): [LINK](#)

Upcoming Events

- **AAP National Conference, Pediatric Emergency Section**, Oct 25-29, 2019, New Orleans: [LINK](#)
- **ACEP Scientific Assembly**, Oct 27-30, 2019, Denver: [LINK](#)
- **MACEP Ultrasound Course**, Dec 7, 2019, Waltham, MA, [LINK](#)
- **MACEP Annual Meeting**, May 6, 2020, Waltham, MA, [LINK](#)
- **SAEM Annual Conference**, May 12-15, 2020, Denver: [LINK](#)



Non-Menstrual Causes of TSS? ...Truly shocking

Malek Mazzawi, MD, Pediatric Chief Resident
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It's the beginning of your shift and your first patient is a 16-year-old previously healthy female who presents with 3 days of fever, left shoulder pain, diffuse rash, and vomiting. She says that her shoulder pain has gotten progressively worse and has limited her ROM. It's a sharp persistent pain, 7-9/10 and occasionally radiating down her arm with tingling but no real weakness. She said she's taken Motrin for the pain with little relief. She has been vomiting every hour, denies abdominal pain but has had profuse diarrhea. She reports no recent illness and that her period was last week.

Her initial set of vitals were T 38.5, HR 150, BP 84/55, RR 40, Sat 96% on room air. On exam she was awake, alert, in no distress, but with flushed skin. HEENT exam was unremarkable aside from injected sclera bilaterally and dry lips. Her lung exam showed mildly labored breaths but clear to auscultation. On cardiac exam she was tachycardic, but with regular rhythm, normal S1/S2, no murmur. Abdominal exam was unremarkable. Musculoskeletal exam revealed she was tender in her left upper back with a large 20 x 25 cm swelling over the left paraspinal region extending to axillary line from T4-T10. She had cold extremities with capillary refill 4 seconds. She was alert and oriented, with strength 5/5 in upper and lower extremities. Lastly, she had a diffuse, non-raised erythematous blanching rash on her entire body.

Initial labwork included a chemistry with hyponatremia (Na 129), acidosis (HCO₃ 13) and mild AKI (BUN/Cr of 33/1.6) but otherwise normal. LFTs were elevated and her CBC was 2.7>11.0/32.9<102 (S93, L3). Initial gas was 7.32/27/72/14 with a lactate of 5.2. Inflammatory markers were elevated with CRP 180 and a CPK of 3455. Her U/A showed 3+ blood with hyaline and granular casts, 5 WBCs, no nitrite/LE. Respiratory viral panel was negative and blood cultures were sent.

Given her characteristic rash, her vital signs indicating shock, and her labwork, you are rightfully concerned for toxic shock syndrome. On further menstrual history, you learn that she uses pads instead of tampons and on pelvic exam there are no retained tampons. So what could be causing this toxic shock syndrome then? It is important for emergency physicians to remember that there are other causes of

toxic shock and that removing the inciting factor as soon as possible is crucial to treatment.

Toxic shock syndrome (TSS) is a multi-system disease caused by bacterial toxins from either *Staph aureus* or *Strep pyogenes*. A toxin called *TSST-1* was the initial exotoxin isolated from *S. aureus* isolates implicated in TSS and is produced by 90 to 100 percent of *S. aureus* strains associated with menstrual cases of TSS and by 40 to 60 percent of strains associated with non-menstrual cases. The major criteria for TSS (all 5 must be present) include fever > 38.9° C, diffuse macular erythroderma rash, hypotension, skin desquamation, and multisystem involvement.

Many people associate feminine hygiene products as the cause of TSS; however, it is important to remember that there are other inciting factors such as surgical wound infections, skin abscesses, infected burns, osteomyelitis, or even nasal packing. Because toxic shock syndrome presents as multisystem disease, there is a wide list of signs and symptoms that may include vomiting, diarrhea, myalgia, mucous membrane hyperemia, pyuria, renal dysfunction, transaminitis, thrombocytopenia, and/or altered mental status.

The main complications include persistent hypotension with secondary organ damage, respiratory failure possibly leading to intubation, renal failure, and bleeding from thrombocytopenia. Therefore, in cases of suspected TSS, initial treatment should include oxygen therapy, continuous respiratory monitoring, airway management, IV access, fluid resuscitation, and removing the inciting focus (e.g. removing the tampon, draining the abscess or removing any nasal packing). Antibiotic choice is usually Vancomycin 60 mg/kg per day IV plus Clindamycin 25 to 40 mg/kg IV for 10-14 days. Of note, mortality for *non-menstrual TSS* is higher, and has remained essentially unchanged between 1980 and 1996, at approximately 6%.

In the case above, the cause of toxic shock was, in fact, a paraspinal abscess confirmed on MRI. Initial stabilization of the patient was critical, as she quickly decompensated, just like many patients with TSS. Clinical improvement for her was dependent on incision and drainage of the abscess with concurrent antibiotic therapy.



Enjoy the Fall!

Acadia National Park

Taken Oct 9, 2019

by Emory Petrack