



## FOAM & Education Newsletter

April 2021  
Volume #8



## Welcome to Rez's #FOAM Newsletter

This is a monthly newsletter brought to you by the Education Committee with the latest in the EM & FOAMed world, ranging from trials, news and pearls. We will also share with you the best podcasts & blog posts recently published in FOAM.

Your 20-21 Education Committee

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### FOAM Update: Nebulized Nitroglycerin for acute PE

### Evidence-Based Medicine Review: Heatstroke



### April FOAM Highlights

Podcasts of The Month:

**EM Cases Episodes 154 & 155: Bradycardia & Bradydysrhythmias**

Blog Post of The Month:

**EmDocs: Upper Airway Foreign Bodies (ED Management)**

Procedure of The Month:

**EMRAP: Suprapubic Catheter**

## Sepsis Update by Walid

### 1) ACEP consensus-based task force report [\[Link\]](#)

This report corrects many of the myths found in Surviving Sepsis Campaign

### 2) Are we causing harm by following the sepsis bundles? [\[Link\]](#)

- 60-75% of ED patients meeting Sepsis-3 criteria did not receive a Dx of sepsis at discharge.
- At least 1 risk factor for harm from large-volume fluid resuscitation was identified among 19-36% of patients meeting sepsis criteria in the ED but not diagnosed with sepsis at discharge.

**Think twice before reflexively ordering fluids & antibiotics on patient meeting "sepsis" criteria**

From Internet Book of Critical Care

	Surviving Sepsis Campaign 2016	ACEP task force
Fluid Resuscitation	At least 30 mL/kg of IV crystalloid fluid should be given within the first 3 hours.	We do not support a prespecified volume or body mass-adjusted volume of fluid for all patients, though we recognize that many patients benefit from 30 mL/kg of crystalloid.
Lactate	We suggest guiding resuscitation to normalize lactate in patients with elevated lactate levels as a marker of tissue hypoperfusion.	We support initially measuring blood lactate levels in the ED (venous or arterial) and repeating lactate measurement after initial resuscitation only if elevated above 4 mmol/L or if there is suspicion of clinical deterioration.
Antibiotic timing	We recommend that administration of IV antimicrobials be initiated as soon as possible after recognition and within 1 h for both sepsis and septic shock.	Shorter time to antibiotics is preferred, but the precise time frame to optimally support outcomes remains to be defined.
Antibiotic selection	We suggest empiric combination therapy (using at least two antibiotics of different antimicrobial classes) aimed at the most likely bacterial pathogen(s) for the initial management of septic shock.	We recommend initiation of broad-spectrum antibiotics with activity against gram-negative and gram-positive bacteria according to local susceptibility patterns.
Balanced crystalloids & albumin	- We suggest using either balanced crystalloids or saline for fluid resuscitation of patients with sepsis or septic shock. - We suggest using albumin in addition to crystalloids for initial resuscitation and subsequent intravascular volume replacement in patients with sepsis and septic shock when patients require substantial amounts of crystalloids.	We support using balanced crystalloid solutions (Ringer's solution or Plasmalyte) as the primary resuscitation fluid in patients with sepsis, especially if volumes of more than 1 L are used. Infusion of saline solution can cause hyperchloremic metabolic acidosis and may impair renal performance in commonly prescribed resuscitative doses.
Arterial catheter	We suggest that all patients requiring vasopressors have an arterial catheter placed as soon as practical if resources are available.	Invasive hemodynamic devices, including central venous and arterial catheters, may aid but are not routinely needed in early sepsis care.

## POCUS Update: Testicular Ultrasound for Diagnosis of Torsion & Successful Detorsion by Yalan

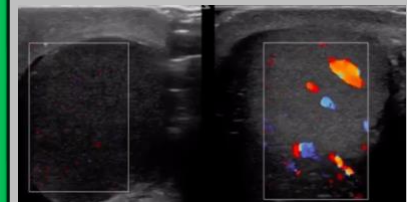
**Why use POCUS?** Time is testicle & there are many barriers that delay door to OR: calling in on-call sonographer, reading images by radiologist, travel time for urologist. Testicular POCUS in conjunction with manual detorsion is cheap, quick (appx 10 mins) & easy.

### How to POCUS the Testicles?

- Use high frequency linear probe, with indicator toward the patient's head for long axis & patient's right for transverse axis,
- Start with unaffected testis (decrease discomfort & establish a baseline). Fan through using b-mode & color doppler.
- Repeat with the affected testis. If no flow or reduced flow +/- parenchymal heterogeneity is obvious, move forward with open book detorsion (position testis near inguinal canal and rotate laterally 1.5 turns).
- If uncertain if decreased flow, position the testes close enough together to scan in tandem in a transverse plane & directly compare color flow to determine if flow is reduced, then move forward with detorsion if reduced.
- Repeat the exam on the affected testes to determine whether flow is present. Reperfusion hyperemia is frequently present post successful detorsion.



Left testicle normal with right testicular torsion & hypoechogenicity.



Right testicle with decreased flow compared to left [\[link for animation picture\]](#)

## AAEM Common Sense: Nebulizing Nitroglycerin for PE in ED [\[Link\]](#) by Walid

**MoA:** Acute PE triggers pulmonary vasoconstriction, platelet hyperactivation & microvascular obstruction. Inhaled Nitric Oxide (iNO) acutely decrease pulmonary arterial pressures & can improve symptoms

**Why Nebulized Nitro?** iNO & epoprostenol are not readily available in every hospital, let alone the ED & \$\$\$

**When to use?** unstable, decompensating PE pt in ED, as bridge to definitive treatment (tPA, thrombectomy)

**How?** Recommended dose: 2.5 - 5 µg/kg/min

- Use 200 or 400 µg/mL, comes out to 6 or 12 mL administered over 15 minutes
- Intubated pts: connected to vent similar to any other nebulized medication
- Non-intubated pts: O2 delivery should not be more than 6-8L/min (same as other neb treatments)

## Evidence-Based Review: Heatstroke Management by Lola

- Like strokes & STEMI, heatstroke is a time-sensitive diagnosis; EDs should consider implementing EMS-to-ICU level protocols. No studies at this time detail a pre-alert or pre-arrival protocol for early action on these critical patients
- Climate change → more record highs in heat islands (like cities)
- Medications like beta blockers, diuretics, SSRIs & anti-dopamine medications can blunt response or hide symptoms of heatstroke
- Recognition → rapid cooling → supportive care
- **Refer to proposed protocol based on review of current evidence below**

Source: Rublee, C., Dresser, C., Giudice, C., Lemery, J., & Sorensen, C. (2021). Evidence-Based Heatstroke Management in the Emergency Department. Western Journal of Emergency Medicine, 22(2). <https://doi.org/10.5811/westjem.2020.11.49007>

## Emergency Management of Heatstroke: AN EVIDENCE-BASED APPROACH

### 1 Heat Alert Triggered

Computer prompts triage clinician to consider heat alert if all of the following are present:

- Season = high risk season based on local climate patterns, active regional heat advisory, or high heat index
- Patient temperature  $\geq 40^{\circ}\text{C}$
- Chief complaint includes: Altered Mental Status OR Confusion OR Unresponsive OR Seizure

### 2 Triage Clinician Evaluation

Activate heat alert if clinical suspicion is high based on:

- Recent history of environmental (indoor or outdoor) heat exposure OR strenuous physical activity
- Central nervous system dysfunction
- Tachycardia, tachypnea, +/- hypotension
- Flushed or warm skin +/- sweating
- Lower suspicion for sepsis, toxidrome, or metabolic abnormality (e.g. hypoglycemia)

### 3 Begin Heat Response Algorithm

This guide to key actions does not replace clinician judgement; actions should be initiated simultaneously if feasible. More aggressive interventions are available at select facilities by professionals trained to do so.

