

In case you missed it (Spring 2020)

Some non-COVID emergency updates selected from UptoDate and local research

Paul Atkinson, May 2020

You can go low(er): MAP target for older adults with septic shock

Previous studies in older adults with septic shock suggest that a mean arterial pressure (MAP) lower than the traditional target of ≥ 65 mmHg may have a mortality benefit. In an unblinded, randomized trial of 2600 older patients with vasodilatory shock (septic shock in 80 percent), 90-day mortality was 41 percent for individuals who received vasopressors at a MAP target of 60 to 65 mmHg ("permissive hypotension," mean achieved MAP 67 mmHg) compared with 44 percent for patients who received usual care (mean achieved MAP 73 mmHg), although this difference was not significant. Adjusted analysis suggested a significant mortality benefit for the lower MAP target. Adverse outcomes, including acute kidney injury and supraventricular arrhythmias, were similar in both groups. These findings support the safety of a lower MAP target in older patients with septic shock but are inconclusive regarding a mortality benefit. We continue to support a target MAP within a range of 60 to 70 mmHg that is individualized for such patients.

[Lamontagne F, Richards-Belle A, Thomas K, et al. Effect of Reduced Exposure to Vasopressors on 90-Day Mortality in Older Critically Ill Patients With Vasodilatory Hypotension: A Randomized Clinical Trial. JAMA 2020.](#)

Shock first – then epi: Updated guidelines for cardiopulmonary resuscitation

An update of the guidelines for cardiopulmonary resuscitation (CPR) recently published by the International Liaison Committee on Resuscitation and American Heart Association includes no major changes in treatment recommendations for adults. The committee writes that either bag mask ventilation or an advanced airway strategy may be used during CPR for adult cardiac arrest, but that a supraglottic airway is preferred in circumstances when clinicians choose an advanced strategy but successful tracheal intubation may be difficult. For nonshockable rhythms, *the committee recommends that epinephrine be given as soon as feasible during CPR, while for shockable rhythms epinephrine is given after initial defibrillation attempts are found to be unsuccessful.* Recommendations against the use of vasopressin remain in place

[Soar J, Maconochie I, Wyckoff MH, et al. 2019 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Pediatric Life Support; Neonatal Life Support; Education, Implementation, and Teams; and First Aid Task Forces. Circulation 2019; 140:e826.](#)

Take a hike: Exercise Prescription in the Emergency Department can Lead to Behavioral Change in Patients

The provision of exercise prescriptions to ED patients was shown to be feasible in a New Brunswick study. The reported improvement seen in patients receiving the intervention and the increase in reported exercise in both groups suggests that exercise prescription for ED patients may be beneficial.

[Milne F, Leech-Porter K, Atkinson P, et al. \(February 21, 2020\) Combatting Sedentary Lifestyles: Can Exercise Prescription in the Emergency Department Lead to Behavioral Change in Patients? . Cureus 12\(2\): e7071. doi:10.7759/cureus.7071](#)

Cooling is hot again? Temperature management following cardiac arrest from nonshockable rhythm

Targeted temperature management (TTM) has been found to improve outcomes following cardiac arrest, but few studies have examined its effectiveness in the subpopulation of patients with a nonshockable rhythm. In an international, multicenter, randomized trial of nearly 600 patients treated in an intensive care unit following resuscitation from cardiac arrest with nonshockable rhythm, those managed with therapeutic hypothermia (goal temperature 33°C) had a better neurologic outcome at 90 days compared with those managed with TTM (goal temperature 37°C) . There were no differences in mortality or adverse outcomes between groups. Temperature management is an important intervention for all adults recovering from cardiac arrest.

[Lascarrou JB, Merdji H, Le Gouge A, et al. Targeted Temperature Management for Cardiac Arrest with Nonshockable Rhythm. N Engl J Med 2019; 381:2327.](#)

Risky business: Adjusted D-dimer for patients at low risk for pulmonary embolism

In a prospective study of over 1300 patients with suspected pulmonary embolus (PE), no individuals developed symptomatic venous thromboembolism when a protocol that used D-dimer adjusted for clinical probability by Wells score was used (D-dimer <1000 ng/mL for low probability and <500 ng/mL for moderate probability) . The need for computed tomographic pulmonary angiographic imaging was reduced by an estimated 17 percent had the traditional D-dimer cut off of <500 ng/mL been used. Results from this study may not be generalizable to patients with moderate pretest probability,

inpatients, or populations with low prevalence of PE. Although high-sensitivity D-dimer testing is preferred, protocols that use D-dimer levels adjusted for pretest probability may be an alternative to unadjusted D-dimer in patients with a low pretest probability for PE.

[Kearon C, de Wit K, Parpia S, et al. Diagnosis of Pulmonary Embolism with d-Dimer Adjusted to Clinical Probability. N Engl J Med 2019; 381:2125.](#)

Choice remains: Antiseizure drugs for convulsive status epilepticus

There have been few high-quality data to guide the choice among antiseizure drugs that can be given intravenously for the initial treatment of convulsive status epilepticus after administering a benzodiazepine. The randomized, blinded ESETT trial enrolled nearly 400 children and adults with convulsive status epilepticus refractory to benzodiazepine treatment and showed that fosphenytoin, valproate, and levetiracetam had similar efficacy. Each drug resulted in seizure cessation and an improved level of consciousness within 60 minutes in approximately 50 percent of patients. These findings support our recommendation to give a benzodiazepine as the first agent, followed by either fosphenytoin, valproate, or levetiracetam as the second agent, for the initial treatment of generalized convulsive status epilepticus.

[Kapur J, Elm J, Chamberlain JM, et al. Randomized Trial of Three Anticonvulsant Medications for Status Epilepticus. N Engl J Med 2019; 381:2103.](#)

Are they safe? Intimate Partner Violence Documentation and Awareness in an Urban Emergency Department

A New Brunswick study on intimate partner violence suggests that current intimate partner violence documentation tools are not being properly utilized. Low rates of intimate partner violence documentation in high-risk patients and a lack of education among the ED staff indicate that there is a need to improve current practices. In order to improve the identification of this important problem, appropriate training and education about intimate partner violence/domestic violence are required as this will definitely instill awareness among the ED staff about available community resources for victims.

[Vonkeman J, Atkinson P, Fraser J, et al. \(December 28, 2019\) Intimate Partner Violence Documentation and Awareness in an Urban Emergency Department. Cureus 11\(12\): e6493. doi:10.7759/cureus.6493](#)

Bigger is still badder: Surgery versus conservative treatment for cerebellar hemorrhage

Current guidelines recommend surgical evacuation for cerebellar hemorrhages >3 cm in diameter. Although there are no randomized trials to guide treatment, this practice is supported by a recent meta-analysis of individual patient data from four observational studies matching 152 patients who had surgical hematoma evacuation with 152 patients who had conservative treatment. In the adjusted analysis, surgical hematoma evacuation was associated with improved survival at three months (78 versus 61 percent) yet similar rates of a favorable functional outcome. However, in the subgroup with a hematoma volume ≥ 15 cm³ (a comparable size to >3 cm diameter), a favorable functional outcome was more likely with hematoma evacuation. Limitations of the study include retrospective design, lack of randomization, and small sample size for subgroup analyses.

[Kuramatsu JB, Biffi A, Gerner ST, et al. Association of Surgical Hematoma Evacuation vs Conservative Treatment With Functional Outcome in Patients With Cerebellar Intracerebral Hemorrhage. JAMA 2019; 322:1392.](#)

No kidding: CSF analysis in well-appearing young febrile infants with UTIs

The need to perform a lumbar puncture to obtain cerebrospinal fluid (CSF) for analysis in otherwise low-risk, well-appearing febrile infants with urinary tract infections (UTIs) has been questioned. In a systematic review and meta-analysis of nearly 3900 infants 29 to 90 days of age (20 observational studies), the pooled prevalence of bacterial meningitis in those infants with UTIs was 0.25 percent. Sterile CSF pleocytosis was variably reported (in up to 29 percent of patients with UTIs), leading to unnecessary additional antibiotic coverage for suspected meningitis pending culture results. These findings support avoiding lumbar puncture in otherwise low-risk, well-appearing febrile young infants 29 to 90 days of age with UTIs.

[Nugent J, Childers M, Singh-Miller N, et al. Risk of Meningitis in Infants Aged 29 to 90 Days with Urinary Tract Infection: A Systematic Review and Meta-Analysis. J Pediatr 2019; 212:102.](#)

Mini-ECMO: 2019 AHA update on pediatric advanced life support

The 2019 American Heart Association focused update on pediatric advanced life support provides evidence review and treatment recommendations for the use of extracorporeal membrane oxygenation (ECMO) with CPR (ECPR) and targeted

temperature management after resuscitation. According to the update, use of ECPR in settings with existing ECMO protocols, expertise, and equipment may be beneficial for selected patients for whom conventional CPR is ineffective after in-hospital cardiac arrest. In addition, for infants and children who remain comatose after resuscitation from in- or out-of-hospital cardiac arrest, it is reasonable to provide five days of normothermia (temperature 36 to 37.5°C), or to provide two days of therapeutic hypothermia (targeted temperature range 32 to 34°C) followed by three days of continuous normothermia.

[Duff JP, Topjian AA, Berg MD, et al. 2019 American Heart Association Focused Update on Pediatric Advanced Life Support: An Update to the American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Pediatrics 2020; 145.](#)

Wait a minute (or 10): Opioid analgesia and adverse events during procedural sedation in children

In children undergoing moderate to severely painful procedures, intravenous opioids (eg, fentanyl or morphine) are frequently used for pain control prior to sedation. In a prospective, multicenter observational study of almost 6,300 children undergoing sedation for painful procedures (primarily fracture reductions) in the emergency department, opioid administration prior to the procedure versus no opioid analgesia was associated with an increased risk of oxygen desaturation (9 versus 4 percent), vomiting (7 versus 5 percent), and need for positive pressure ventilation (1.5 versus 0.9 percent). These risks were greatest when opioid analgesia was administered closer to the time of sedation. These findings confirm the increased risk for adverse events during procedural sedation for children who also receive intravenous opioids for pain control; clinicians should anticipate and be prepared to handle these adverse events and, when possible, avoid opioid administration just prior to sedation.

[Bhatt M, Cheng W, Roback MG, et al. Impact of Timing of Preprocedural Opioids on Adverse Events in Procedural Sedation. Acad Emerg Med 2020; 27:217.](#)