### Best Articles from the Pediatric Emergency Literature 2015

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@EMtogether

### Pediatric Advanced Life Support 2015

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<tbody>
<tr>
<td>Chest compression depth 1/3 of chest, up to 4 cm infants, 5 cm most children</td>
<td>Same except no more than 6 cm in adolescents (evidence of harm)</td>
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<tr>
<td>“Push Fast”, rate of at least 100/min</td>
<td>Use recommended adult compression rate of 100-120/min</td>
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<tr>
<td>Minimum atropine dose 0.1 mg due to paradoxical bradycardia</td>
<td>No minimum dose No routine in ETI Consider if bradycardia</td>
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<tr>
<td>Amiodarone recommended; Lidocaine 2nd line</td>
<td>Amiodarone or Lidocaine equally acceptable</td>
</tr>
<tr>
<td>Epinephrine should be given in cardiac arrest</td>
<td>Therapeutic hypothermia (32° to 34°F) may be considered</td>
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<tr>
<td>OHCA: normothermia or brief hypothermia</td>
<td>IHCA: no data</td>
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<tr>
<td>Benefit to delay cord clamping for 1 min</td>
<td>Delay cord clamp 30 sec if not requiring resuscitation</td>
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<tr>
<td>Non-vigorous, meconium staining = endotracheal suctioning</td>
<td>No routine suctioning Treat under warmer PPV for apnea, HR&lt;100</td>
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<tr>
<td>Auscultate precordial pulse, Palpate umbilical pulse</td>
<td>Add 3-lead ECG</td>
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</table>
• Ultrasound for appendicitis

• Is it really pneumonia?

• Can you nebulize magnesium for asthma?

• Does rest matter after concussion?

What This Study Adds

• Retrospective, 1,383 pts, 0-18 y
• Majority (63.4%) non-diagnostic/non-visualized

• NPV 84.7-86.36%

• IF WBC <7.5x10^9/L AND non-diagnostic: NPV 97.1-98.7%

Cohen et al.

The non-diagnostic ultrasound in appendicitis: is a non-visualized appendix the same as a negative study?

Journal of Pediatric Surgery. 2015
Clinical Practice

- **Not** basis for rule-out
- May inform your post-test probability
- More options for re-examination

Rambaud-Althaus C et al.

**Clinical features** for diagnosis of **pneumonia** in children younger than 5 years: a systematic review and meta-analysis.


What This Study Adds

- 18 articles
- Fast breathing: Sens 62% Spec 59%
- Lower chest wall indrawing: Sens 48% Spec 72%

- **RR > 50:** LR+ 1.9 [1.45 – 2.48]
- **Nasal flaring:** LR+ 1.75 [1.2 – 2.56]
- **Cough:** LR- 0.3 [0.09 – 0.96]
- **Fever:** LR- 0.53 [0.41 – 0.69]

Clinical Practice

- **No one** clinical feature was sufficient to diagnose pneumonia
- Be aware of poor performance of predictors
- Use your best judgement and be the good doctor you are
What This Study Adds

- Pts 2 to 14 y, moderate-severe asthma; Qatar
- All had standard bronchodilators
- RCT: 800 mg nebulized magnesium or placebo
- No harm

- Non-significant shortened time to discharge
  - OR = 1.14 [0.93 – 1.4]
  - Discharge times 14.7 h [SD 9.7] v 156 h [SD 11.3]

Clinical Practice

- No harm
- No help
- Probably not worth effort

What This Study Adds

- 88 subjects, 11 to 22 years, within 24 h of concussion
- Neurocognitive, balance, symptom assessment
- RCT: 5 days rest versus usual 1-2 days rest
- Daily diary of activity, intake, sleep
- Testing at 3 and 10 days

- No clinically significant difference outcomes
- Intervention group more post-concussive symptoms, slower resolution
**Clinical Practice**

- Brain rest may not be helpful
- May prompt more symptoms (Hawthorne effect)
- **Editorial:** Children often self-regulate activity
- Usual care: 1-2 days rest

**Clinical Practice**

- Should we provide therapeutic hypothermia after cardiac arrest in children?

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**What This Study Adds**

- 295 Out-of-Hospital Cardiac Arrests
- 2 days of age to 18 years
- RCT: 33°C versus 36.8°C

- No significant difference in survival at 1 y
- Similar infection rates, 28-day mortality

**Clinical Practice**

- Comatose children who survive OHCA: no significant survival benefit for therapeutic hypothermia

- Bottom Line: Just keep them afebrile and normothermic
- Who needs a CT of the abdomen after trauma?
- Risk stratify syncope?
- Target saturations for bronchiolitis?

**What This Study Adds**

- 12,044 subjects, subanalysis PECARN
- Sensitivity 42.5% [41.6 to 43.4] IF:
  - No evidence of abd wall trauma, seatbelt sign
  - GCS > 13
  - No abdominal tenderness
  - No evidence of thoracic wall trauma
  - No complaints of abdominal pain
  - No decreased breath sounds
  - No history of vomiting after injury

**Clinical Practice**

- So restrictive – helpful?
- Must be validated
- Bottom line: difficult to predict IAI; use mechanism, exam, labs, judgement

Mahajan P et al. *Comparison of Clinician Suspicion Versus a Clinical Prediction Rule in Identifying Children at Risk for Intra-abdominal Injuries After Blunt Torso Trauma.*

_Acad Emerg Med. 2015;_
Hurst et al.

**Syncope in the Pediatric Emergency Department – Can We Predict Cardiac Disease Based on History Alone?**

*J Emerg Med. 2015; 49(1):1-7*

**What This Study Adds**

- Cross-sectional, 3,445 subjects over 4 y
- 68 with previous dx, 3 new diagnosis: 2 with SVT, 1 with myocarditis
- If at least two features, 100% sens/spec:
  - Syncope during exertion
  - Exertion and chest pain
  - Palpitations
  - No prodrome

**Clinical Practice**

- **Low prevalence** in this study
- **Populations** differ
- Use these as red flags in addition to your typical approach

Cunningham et al.

**Oxygen Saturation Targets in Infants with Bronchiolitis (BIDS): a Double-Blind, Randomized, Equivalence Trial**


**What This Study Adds**

- 615 infants, 1:1 allocation standard/mod
- Standard SpO₂: if <94%, then treat
- Modified SpO₂: set monitor to display 90% as 94%
- **No difference** in adverse events
- 2 death occurred in standard group
Clinical Practice

- Careful with interpretation
- **Multiple factors** to consider in bronchiolitis
- Don’t let this be used against you!
- Use it to substantiate your decision to discharge

What This Study Adds

- Randomized, open-label, non-inferiority
- 245 subjects, prednisolone 1 mg/kg x 3 days versus dexamethasone 0.3 mg/kg x 1

- No difference in PRAM scores at day 4
- Prednisolone associated with vomiting
- No difference in return or hospitalization

Cronin et al.

**A Randomized Trial of Single-Dose Oral Dexamethsone Versus Multidose Prednisolone for Acute Exacerbations of Asthma in Children who Attend the Emergency Department**

Ann Emerg Med. 2015; In Press

Clinical Practice

- Options for **steroids** in asthma?
- Risk factors for **infant death** in pertussis?
- Oxygen saturation for bronchiolitis?
- Best **vasopressor** in pediatric septic shock?
Winter et al.

Risk Factors Associated with Infant Deaths from Pertussis: a Case-Control Study

CID. 2015; 61

What This Study Adds

- Retrospective analysis of fatal pertussis in children <120 days; 1998-2014
- 53 fatalities compared to 183 nonfatal hospitalized infants
  - Significantly low birth weight
  - Younger gestational age
  - Younger age at onset
  - Higher WBC; higher lymphocyte
  - Multivariable: WBC, birth weight, ETI, NO

Clinical Practice

- Recognize and treat early
- Age, weight, WBC are red flags
- Take <3-month-old infant with possible pertussis seriously

Ventura et al.

Double-Blind Prospective Randomized Controlled Trial of Dopamine versus Epinephrine as First-Line Vasoactive Drugs in Pediatric Septic Shock.

What This Study Adds

- Double-blind prospective RCT, 1 mo to 15 y
- Dopamine 5-10 mcg/kg/min versus epinephrine 0.1-0. mcg/kg/min
- Dopamine associated with death OR 6.5 [1.1 to 37.8]
- Dopamine associated with infection OR 67.7 [5-910.8]
- Epinephrine associated with survival OR 6.49

Clinical Practice

- Dopamine was never a good drug
- We have better vasopressors
- No problem using peripheral lines initially

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Thank You!

PEMplaybook.org/lectures/