What’s new in pediatric emergency medicine

*Top ten articles 2013*

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Disclosures

• I don’t own a Harley
• I don’t own a Mercedes Benz
Awareness test
# 1 How frequently do pediatric emergency medicine physicians perform critical procedures?

- Retrospective study from Cincinnati
- One of the busiest Peds ER in the US
- Over 120,000 visits a year
- Looked at the critical care procedure experience of their pediatric EM MD’s
Results

• 261 critical care procedures in 194 resuscitations in a one year period (.2% of their patients)
• 147 of these procedures were intubation

Of note:
• 63% of the PEM physicians did not perform a single intubation
• Median procedures for PEM fellows was 3
Table 1. Critical procedures performed during 194 pediatric ED patient resuscitations during 12 months.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Medical (n=147)</th>
<th>Trauma (n=47)</th>
<th>Total (n=194)</th>
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</thead>
<tbody>
<tr>
<td>Orotracheal intubation</td>
<td>114</td>
<td>33</td>
<td>147</td>
</tr>
<tr>
<td>Intraosseous line placement</td>
<td>32</td>
<td>9</td>
<td>41</td>
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<tr>
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<td>23</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>Tube thoracostomy</td>
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<td>12</td>
<td>18</td>
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<td>Central venous line placement</td>
<td>9</td>
<td>6</td>
<td>15</td>
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<td>7</td>
<td>9</td>
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<tr>
<td>Electrocardioversion</td>
<td>6</td>
<td>0</td>
<td>6</td>
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<tr>
<td>Defibrillation</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Pericardiocentesis</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>193</strong></td>
<td><strong>68</strong></td>
<td><strong>261</strong></td>
</tr>
<tr>
<td>Procedure</td>
<td>Median</td>
<td>Range</td>
<td>Faculty Performing at Least 1, %</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------</td>
<td>---------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Any critical procedure</td>
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<td>0–6</td>
<td>39</td>
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<td>0–5</td>
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<td>Central venous line placement</td>
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<td>5</td>
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<tr>
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<td>0</td>
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<tr>
<td>Tube thoracostomy</td>
<td>0</td>
<td>0–1</td>
<td>2</td>
</tr>
<tr>
<td>Pharmacologic cardioversion</td>
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<tr>
<td>Pericardiocentesis</td>
<td>0</td>
<td>0</td>
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</tr>
</tbody>
</table>

* Credit was not assigned to an individual provider for performance of the procedure because cardioversion and defibrillation in our setting are carried out by a multidisciplinary team, with the physician's primary role focusing on cognitive aspects such as timing and delivery of medications or energy. We report supervision only for these procedures.
Importance of study

• Trainees won’t learn skill by just exposure in large pediatric emergency department
• Attendings are at risk to have skill deterioration
• This study heightens awareness that we need to be giving more emphasis to simulation training for trainees and skill retention
• PEM physicians face same problem as paramedics and adult EM physician – on a per person basis/don’t see that many sick kids
• Realize that these procedures can cause greater harm if not properly
Bottom line

- You need simulation equipment wherever you are to keep resuscitation skills up in pediatrics
# 2 Skull fracture: Trends in Management in US pediatric emergency departments

- Retrospective multicenter study of children < 19 years
- Looked at rates of admission, neurosurgery procedures, length of hospitalization, repeat CT scans, and financial costs
Results

• 78% were hospitalized
• 85% discharged in 1 day
• 95% discharged in 2 days
• 47 patients had a repeat CT
• 1 child had a neurosurgical procedure
• Hospital costs $2,064 average for admitted patients
• Discharged patients $619
Results

• None of these children needed neurosurgical intervention
• This study supports that it's okay to send a child home with a skull fracture that has
  • A negative CT
  • No concern of child abuse
Skull fractures – need to admit?

- 846 children with skull fractures discharged from ER
Study significance

• Brings into question if these children need admission
• Definitely more expensive to admit
• Are we practicing evidence based medicine?
• Gives more evidence that pediatric patients with isolated skull fractures do not need to be admitted
Commercial break
# 3 Bronchiolitis treatment – fixed vs on demand breathing treatments?

• Multicenter trial looking at infants hospitalized with bronchiolitis
• Looked at 2 questions
  • 1st – Is racemic epi aerosol better than saline?
  • 2nd – is fixed schedule for treatments better than on demand?
Results

• Racemic epi no better than saline
• On demand schedule better than fixed schedule
Study significance

• Infants with less “handling” had shorter length of stay
• Supports “minimal handling” management
# 4 Wound packing, can you skip?

- Randomized trial of 57 subjects who received either packing or no packing after Incision and drainage
- Reassessment by masked observer at 48 hours
- Failure defined as major
  - Repeat I&D
  - Re-exploration
- Failure defines as minor
  - Change in antibiotics
  - Need for repacking
  - Repeat visit
Results wound packing

• Failure rates similar
• Pain score similar
Study significance

• Supports other studies that packing doesn’t improve outcome in abscesses < 5 cm
• Other studies have demonstrated packing is more painful
• Packing makes follow up more difficult
# 5 The Mercy Tape: Better than Broselow??

- Comparison of the Broselow tape to the 2-D and 3-D Mercy Tape to estimate pediatric weights in 624 children
- Mercy Tape measures mid-humerus circumference and $\frac{1}{2}$ humerus length to determine body weight
- Advantages of Mercy Tape
  - Factors in extremes of weight
  - Only need arm
  - Works in patients over 145 cm (4 feet 9 inches) upper limit of Broselow
Study results

• Mercy tape out performed Broselow
• The Broselow tape had a mean error difference of 1 kg greater than the Mercy tape
• 209 (33%) Children in the study were excluded from the Broselow analysis because they were too tall
Study significance

- Good illustration of never stop trying to make a better device
- Mercy tape can be used in wider range of children
#6 Ultrasound guidance for difficult peripheral IV access

- Review of 7 trials comparing placement of IV’s in 300 adults and children with and without ultrasound
Ultrasound study results

• Higher success rate with ultrasound 79% vs 62% (without)
• No difference in number of sticks or time to successful cannulation
Ultrasound study significance

- Can be useful tool in improving success rates of obtaining peripheral IV access in difficult cases
- But to use you have to
  - Have a machine
  - Learn and practice technique
Commercial break
#7 Suicide contagion among adolescents

• Suicide attempts and deaths are on the rise
• Does exposure to a schoolmate or someone a teen personally knows increase the likelihood of suicide
• Study of 17,000 Canadian youths
Study results

• After controlling for age, sex, SES, prior depression and anxiety, and substance abuse

• The risk for a 14-15 year old committing suicide was 4 times greater when exposed to someone else who committed suicide than someone who had not
Significance of study

• Parents, schools, and care providers need to be aware of the impact of having a teen be exposed to someone who commits suicide
# 8 Infant colic and migraines: are they related?

- Large case control study
- Compared children (n=208) with migraines being seen by a pediatric neurologist to children in an ER being treated for minor injuries (471)
Study results

• Children with migraines were 6.6 times more likely to have experience infant colic than patients without migraines

• Association was specific for migraines, not found with tension headaches
Study significance

• Problem of colic may not end with infancy!
• Brings question of whether tylenol or other pain treatment might help in infant colic
# 9 Bedside ultrasound prior to skin abscess drainage

- Looked at bedside ultrasound use in patients with soft tissue infections
- Studied 400 children and adults with soft tissue infections
Ultrasound study results

• 159 patients without a clinically evident abscess (no drainage or fluctuance)
• Ultrasound better than clinical evaluation
• Ultrasound sensitivity 78% vs clinical 44%
• Ultrasound specificity 61% vs 42% clinical
Study significance

• Ultrasound can be a useful tool in deciding whether to do an incision and drainage of a soft tissue abscess when it is not draining and fluctuance cannot be determined.
#10 Hands free cell phones while driving? Are they safe?

- Psychologist David Strayer of the University of Utah studied drivers using devices that used speech recognition technology while driving
- Hands were still on the wheel and eyes on the road
- Drivers still had a high level of cognitive distraction
References


References

• 5 Abdel-Rahman et al Evaluation of the Mercy Tape Annals Emergency Medicine 62 2013


• 7 Swanson SA, Colman I. Association between exposure to suicide and suicidality outcomes in youth. CMAJ 2013; 185:870.
• # 8 Association Between Childhood Migraine and History of Infantile Colic Silvia Romanello, MD; et al). JAMA. 2013;309(15):1607-1612.


• #10 http://articles.latimes.com/2013/jun/12/science/la-sci-sn-hands-free-phone-driving-aaa-20130612