BACKGROUND

- Initial training in pediatric emergencies is limited to several hours for many prehospital providers.
- Pediatric continuing education is not mandatory for 35% of Emergency Medical Technician-Basics (EMT-B) and 25% of EMT-Paramedics (EMT-P).
- Even if Emergency Medical Services (EMS) personnel receive pediatric training, retention of knowledge and skills in pediatric resuscitation declines rapidly over time.
- Training deficiencies prompted the Institute of Medicine to recommend increased primary and continuing education in pediatrics for prehospital providers.

OBJECTIVES

- To assess prehospital providers' perceived pediatric continuing education needs
- To assess differences in confidence for skills between EMT-B vs. EMT-P and non-rural and rural providers

METHODS

- Study Design and Setting: Cross-sectional survey of prehospital providers who attended the 2009 Texas EMS Conference
- Inclusion Criteria:
  - EMS personnel who primarily work in Texas
  - Providers of prehospital patient care who primarily function as an: Emergency Medical Technician Basic (EMT-B) or EMT-Intermediate (EMT-I, EMT-85, and EMT-99) or EMT-Paramedic (EMT-P)
- Data Collection:
  - Written survey of 65 pediatric education skills and knowledge domains
  - Level of confidence rated using a 7 point Likert scale.
  - Desire for further training assessed for each topic.
- Outcomes Measures:
  - Primary: Likert scores for level of confidence and desire for future training for specific pediatric topics
  - Secondary: Preferred mode of education
- Data Analysis:
  - Comparison of Likert scores between groups (EMT-Basic vs. EMT-Paramedic; non-rural vs. rural) using the Wilcoxon rank sum test
  - Small number of EMT-I, EMT-85, and EMT-99 level providers grouped with EMT-Basics for analysis

RESULTS

- 172 were approached to take the survey.
- 32 declined to participate, and 11 did not return the survey.
- 129 participants completed the survey, 22 of whom did not meet inclusion criteria.
- 107 surveys were analyzed.

Discordant Skill Confidence: Provider Level

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>NO DIFFERENCE</th>
<th>BLS LESS CONFIDENT*</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIRWAY</td>
<td>Managing airway suction</td>
<td>Placing an airway adjunct</td>
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<tr>
<td></td>
<td>Managing a hoist ventilator</td>
<td>Oxygen therapy</td>
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<tr>
<td>CARDIAC</td>
<td>Using an AED for patients arrest</td>
<td>Withdrawing blood line due to hemorrhages</td>
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<td></td>
<td></td>
<td>Recognizing pediatric heart disease</td>
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<td></td>
<td></td>
<td>Performing chest compressions</td>
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<td></td>
<td>Medications</td>
<td>Monitoring blood pressure</td>
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<tr>
<td>ENVIRONMENT</td>
<td>Tools ingestion</td>
<td>Monitoring management</td>
</tr>
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<td></td>
<td>Submersion injury management</td>
<td>Blunting management</td>
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<tr>
<td></td>
<td>Mass casualty incident management</td>
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<tr>
<td>MEDICATIONS</td>
<td>Assessing with appropriate use</td>
<td>Using weight-based drug for weight estimation</td>
</tr>
<tr>
<td></td>
<td>Administering IV medications</td>
<td>Converting pounds to kilograms</td>
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<tr>
<td></td>
<td>Using height-based dose for weight estimation</td>
<td>Administering oral medications</td>
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<td>Administering subcutaneous injections</td>
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<td>Intravenous management</td>
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<td></td>
<td></td>
<td>Intravenous management</td>
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<tr>
<td>NEURO</td>
<td>Managing suspected cerebral trauma</td>
<td>Managing hypoglycemia</td>
</tr>
<tr>
<td>TRAUMA</td>
<td>Managing trauma</td>
<td>Evaluating intracranial pressure</td>
</tr>
<tr>
<td></td>
<td>Managing children with special health care needs</td>
<td>Identifying child behavior and development technologies</td>
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<tr>
<td></td>
<td>Assessing child behavior and development technologies</td>
<td>Identifying resuscitation needs</td>
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<tr>
<td></td>
<td></td>
<td>Identifying ventilatory needs</td>
</tr>
<tr>
<td>OTHER</td>
<td>Use of child restraints for transport</td>
<td>Managing a patient’s home ventilator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Using non-invasive ventilation devices</td>
</tr>
</tbody>
</table>

*p<0.05 for Wilcoxon Rank Sum Test

Further Training Desired (Top 5 Skills)

- Recognizing a child with heart disease (33%)
- Managing a patient’s home ventilator (30%)
- Managing a patient with increased intracranial pressure (30%)
- Differentiating between pediatric respiratory diseases (28%)
- Managing a patient with increased intracranial pressure (30%)

CONCLUSION

- Even for skills within the EMT-B scope of practice, EMT-Bs are less confident than EMT-Ps in performing many of these skills on children.
- There were few differences between the skill confidence levels of rural and non-rural providers.
- EMTs desire further training with uncommon, yet potentially life-threatening conditions.
- Preferred modes of training include hands-on demonstrations, lectures, and direct observation in the emergency department.
- Training was desired most for management of newborns and infants and decreased for management of older children.

LIMITATIONS

- Limited sample size
- Combining EMT-B with EMT-I may underestimate confidence levels for certain knowledge and skills.
- Level of confidence may not reflect actual knowledge and skills.
- Selection bias: those who attended the conference may have educational needs that do not represent all EMS providers.

REFERENCES


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