Impact on pediatric drowning mortality with Pediatric Trauma Center involvement

Emily E.K. Murphy, MD
Mark D. Cipolle, MD/PhD
Stephen G. Murphy, MD

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Disclosures

- No authors have any relevant financial or personal disclosures
Background

- After implementing an inclusive trauma system, trauma-related mortality decreased significantly in Delaware.

- This system did not include an ACS-verified, designated pediatric trauma center until 2006.

- Pediatric trauma center without walls.
Background

- Discrepancies exist in the care of the pediatric trauma patient at adult and pediatric centers.
- According to the WHO, drowning accounts for 7% of all injury-related deaths.
Background
Hypothesis

- Integration of a freestanding ACS-verified, designated pediatric trauma center within an established inclusive trauma system would decrease mortality of pediatric and adolescent drowning and near drowning victims
Methods

- **Delaware Trauma Registry (1998-2013)**
  - Ecode diagnoses 830, 910 and 984
  - Children and adolescents 18 years and younger
  - Study was categorized into three time periods according to PTC contribution
    - Level-III-PTC (2003-2008)
    - Level-I-and-II-PTC (2009-2013)
Methods

- Groups were compared for
  - Age
  - Gender
  - Length of stay
  - Presenting GCS
  - Season of injury
  - Mortality
  - Hospital of discharge
Results

- 138 children and adolescents
- No significant differences in age, gender, length of stay or season of injury
## Results

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<tbody>
<tr>
<td><strong>Age</strong></td>
<td>6.37 years (+4.92)</td>
<td>5 years (+4.62)</td>
<td>6 years (+4.93)</td>
<td>0.403</td>
</tr>
<tr>
<td><strong>Gender ( % male )</strong></td>
<td>70.3% (n=19)</td>
<td>67.3% (n=33)</td>
<td>61.3% (n=38)</td>
<td>0.659</td>
</tr>
<tr>
<td><strong>Length of stay</strong></td>
<td>1.41 days (+1.28)</td>
<td>3.12 days (+7.58)</td>
<td>2.32 days (+4.18)</td>
<td>0.402</td>
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<tr>
<td><strong>GCS</strong></td>
<td>9.24 (+5.35)</td>
<td>11.63 (+5.33)</td>
<td>12.37 (+4.47)</td>
<td>0.031</td>
</tr>
<tr>
<td><strong>Season ( % off season )</strong></td>
<td>14.8% (n=4)</td>
<td>20.4% (n=10)</td>
<td>14.5% (n=9)</td>
<td>0.681</td>
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<tr>
<td><strong>Discharged from PTC</strong></td>
<td>0% (n=29)</td>
<td>59.2% (n=29)</td>
<td>79% (n=49)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Mortality</strong></td>
<td>25.9% (n=7)</td>
<td>12.2% (n=6)</td>
<td>8.1% (n=5)</td>
<td>0.069</td>
</tr>
</tbody>
</table>
Results

![Bar chart showing data from 1998-2013 with categories for Alive and Dead. The chart displays the following numbers:
- 2003-2008: 43 (6 Alive, 37 Dead)
- 2009-2013: 57 (5 Alive, 52 Dead)
Results

- Overall mortality of children cared for at the PTC was 1.75% compared to 25.8% and 27.27% at adult Level I and Level III trauma centers, respectively (p=0.001).
Conclusion

- As the free-standing pediatric hospital increased its designated trauma level, pediatric drowning mortality decreased.
- Despite increasing incidence of drowning and near-drowning over the study period, a decline in mortality occurred.
Limitations

- Small sample size
- Retrospective design
- Selection bias of a registry-based study
- Missed victims
Distribution of trauma centers
Conclusions

- Integration of an ACS-verified, designated pediatric trauma center in an inclusive trauma system is an influential factor in decreasing mortality from drowning and near drowning among pediatric and adolescent patients.
- Questions
Questions
Conclusions

- **Contributing factors**
  - Mindset of care of pediatric patients
  - Maturing trauma system
  - Getting the right patient to the right place
  - Pediatric critical care expertise