PRE-HOSPITAL AND HOSPITAL TRAUMA CARE

November 2010
Objectives: To Discuss,

1. Completeness of pre-hospital (EMS) data.
2. What the Trauma Registry tells us about pre-hospital care.
Main Findings

1. Only 18% of Washington trauma patients transported by EMS from the scene have missing run-forms.
2. Availability of Pre-hospital Run Forms:
   
   Highest Availability: North
   Lowest Availability: North Central

Run-Form Availability By Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Empty Data Point</th>
<th>No Run Form</th>
<th>Run Form Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>2.8%</td>
<td>20.0%</td>
<td>77.2%</td>
</tr>
<tr>
<td>North</td>
<td>0.5%</td>
<td>7.6%</td>
<td>91.9%</td>
</tr>
<tr>
<td>NC</td>
<td>0.3%</td>
<td>24.6%</td>
<td>75.1%</td>
</tr>
<tr>
<td>NW</td>
<td>0.0%</td>
<td>15.1%</td>
<td>84.9%</td>
</tr>
<tr>
<td>SC</td>
<td>0.5%</td>
<td>17.4%</td>
<td>82.1%</td>
</tr>
<tr>
<td>SW</td>
<td>0.5%</td>
<td>12.8%</td>
<td>86.8%</td>
</tr>
<tr>
<td>East</td>
<td>0.3%</td>
<td>23.6%</td>
<td>76.1%</td>
</tr>
<tr>
<td>West</td>
<td>0.5%</td>
<td>16.2%</td>
<td>83.3%</td>
</tr>
<tr>
<td>Washington</td>
<td>1.3%</td>
<td>18.1%</td>
<td>80.5%</td>
</tr>
</tbody>
</table>
Main Findings

1. Statewide only about 7% (n=2,901) of EMS transports required extrication while the extrication information was missing in 22% (n=8,880) of cases.

2. Statewide, only about 26% (n=747) of extrications took longer than 20 minutes.

3. 62% (n=1,926) of extrications were accidents involving MV occupants.

4. 15% (n=514) of extrications were patients who fell.
Main Findings: Out of 185 major trauma (ISS 16+) deaths that reported field intubations, 1 was DOA, 52 died in ED, 9 died in OR, and 123 died later in the hospital.
Main Findings

1. 38% of EMS transports statewide did not have any vital signs reported.
2. GCS is developed to describe the consciousness level by measuring the best eye, motor, and verbal responses. Only a small percentage of EMS transport patients had GCS<9 indicating decreased consciousness.
3. ISS sums up anatomical severity of multiple injuries. The regional distribution of severe injuries (ISS 16+) concentrates around 20%. Central region hospitals report a slightly higher percentage of severely injured patients (ISS 16+).

Vitals Came from the First EMS Agency by GCS

Vitals Came from the First EMS Agency by ISS

Vitals Came from the First EMS Agency

N (Cases with Vitals) = 25,475
Objectives: To Discuss,

1. Hospital volumes by transfer status
2. Whether hospitals activate their full trauma team when necessary?
3. Hospital care of patients with penetrating injuries and with traumatic brain injuries.
Main Findings

1. Excluding transfers-in and HMC, Washington’s trauma volume increased three fold in 15 years.
2. Most of this increase happened during the first 10 years of the trauma system. Since 2006, this rapid rise in trauma volumes has stalled.
3. The West, East, and North regions showed the highest levels of volume increase during 1995-2005.
4. Patients coming from the scene constitute roughly half of Washington’s trauma volume.
**Age:** The majority of trauma patients are adults age 15-64.

**ISS:** One in every five trauma patients experiences severe and potentially life threatening injuries.

**Mechanism:** Falls are now the number one cause of trauma in all regions.
Full TTA: Hospital Outcomes

1,072 hypotensive patients received FTTA
450 patients died (42%)
   (46 DOA, 229 ED, 41 OR, 134 Floor/ICU)
404 (60%) had surgery
128 (12%) transferred to another ACF
299 (28%) discharged home
129 (12%) discharged to a facility
   (52 rehab and 77 nursing home)

Modified TTA: Hospital Outcomes

258 hypotensive patients received modified TTA
30 patients died (12%)
   (15 ED and 15 Floor/ICU)
93 (48%) had surgery
57 (22%) transferred to another ACF
115(45%) discharged home
42 (16%) discharged to a facility
   (11 rehab and 31 nursing home)
Main Findings

1. Statewide only one facility is performing significantly below the level I-II average while two are performing significantly better.

2. Two facilities are performing significantly worse than the level III average while only one facility is performing significantly better than the average.

Level I and Level II Hospital Comparisons
(DOH Criteria, BP < 90, Ages > 9, 2007-2009)

Level III Hospital Comparisons
(DOH Criteria, BP < 90, Ages > 9, 2007-2009)

HOW TO INTERPRET THE CHARTS: Vertical bars represent individual hospitals. Horizontal orange line shows the average of facility percentages of full TTA within each level of trauma care. Bars within the blue area show a performance similar to the average. Bars extending above the blue area are performing better than the average. Bars extending below the blue area are performing worse than the average.
Main Findings:

Median ED length of stay is on the rise in all:
1. ISS groups.
2. Levels of care.
3. Age groups even though the elderly (65+) tend to stay the longest in the ED.
Main Hospital Outcomes

- 684 patients died (20%) (21 DOA, 162 ED, 204 OR, 297 Floor/ICU)
- 1,501 (69%) had surgery
- 950 (28%) transferred to another ACF
- 1,797 (53%) discharged home
- 81 (2.4%) discharged to a facility (51 rehab and 30 nursing home)

Regional Comparisons of Penetrating Injuries (Excluding HMC)

<table>
<thead>
<tr>
<th>Region</th>
<th>Central</th>
<th>North</th>
<th>NC</th>
<th>NW</th>
<th>SC</th>
<th>SW</th>
<th>East</th>
<th>West</th>
<th>Washington</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Age</td>
<td>28</td>
<td>27</td>
<td>29</td>
<td>26</td>
<td>38</td>
<td>24</td>
<td>33</td>
<td>29</td>
<td>27</td>
</tr>
<tr>
<td>Median ISS</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
Main Hospital Outcomes

959 patients died (8%)
   (26 DOA, 213 ED, 25 OR, 695 Floor/ICU)
2,731 (34%) had surgery
4,307 (34%) transferred to another ACF
4,900 (39%) discharged home
2,089 (17%) discharged to a facility
   (774 rehab and 1,315 nursing home)

Regional Comparisons by Mechanism

<table>
<thead>
<tr>
<th>Region</th>
<th>Median Age</th>
<th>Median ISS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington</td>
<td>45</td>
<td>16</td>
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<tr>
<td>Central</td>
<td>61</td>
<td>16</td>
</tr>
<tr>
<td>North</td>
<td>43</td>
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<td>East</td>
<td>44</td>
<td>13</td>
</tr>
<tr>
<td>West</td>
<td>40</td>
<td>13</td>
</tr>
</tbody>
</table>
Level II: 2 facilities extending downward below the blue area are performing worse than the Level II average.

Level III: 2 facilities extending downward below the blue area are performing worse than the Level III average.

Level IV: 1 facility extending downward below the blue area is performing worse than the Level IV average.

HOW TO INTERPRET THE CHARTS:
Vertical bars represent individual hospitals. Horizontal orange line shows the average of all facilities within each level of trauma care. Bars within the blue area show a performance similar to the average. Bars extending above the blue area are performing better than the average. Bars extending below the blue area are performing worse than the average.
THANKS SO MUCH!!!

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