Minnesota Statewide Trauma System

Est. 2005

www.health.state.mn.us/traumasystem
Major Trauma
Characteristics of a Trauma System

- Coordinated
- Prepared
- Fast
- Regionalized

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Elements of a Trauma System
Goals

- Reduce
  - mortality
  - morbidity
  - cost
  - variations
  - time outside of definitive care
- Improve outcomes
Strategies

- Identify resources
- Match patient w/ resources
- Equip providers
- Coordinate with partners
- Continuously improve

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### Age Groups

<table>
<thead>
<tr>
<th>Rank</th>
<th>&lt;1</th>
<th>1-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-24</th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
<th>65+</th>
<th>All Ages</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>SIDS 27</td>
<td>Heart Disease 5</td>
<td>Influenza &amp; Pneumonia 3</td>
<td>Unintentional Injury 1</td>
<td>Unintentional Injury 1</td>
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<tr>
<td>5</td>
<td>Maternal Pregnancy Comp. 26</td>
<td>Influenza &amp; Pneumonia 3</td>
<td>Heart Disease 3</td>
<td>Cerebrovascular 1</td>
<td>Homicide 3</td>
<td>Unintentional Injury 1</td>
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<tr>
<td>6</td>
<td>Placenta Cord Membranes 23</td>
<td>Homicide 1</td>
<td>Homicide 1</td>
<td>Cerebrovascular 1</td>
<td>Diabetes Mellitus 25</td>
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<td>Unintentional Injury 1</td>
<td>Unintentional Injury 1</td>
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<td>7</td>
<td>Congenital Anomalies 14</td>
<td>Cerebrovascular 2</td>
<td>Menigitis 1</td>
<td>Chronic Low, Respiratory Disease 4</td>
<td>Congenital Anomalies 14</td>
<td>Unintentional Injury 1</td>
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<tr>
<td>8</td>
<td>Respiratory Distress 10</td>
<td>Five Tied 1</td>
<td>Pneumococcal Infection 1</td>
<td>Complicated Pregnancy 3</td>
<td>Chronic Low, Respiratory Disease 4</td>
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<td>Unintentional Injury 1</td>
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<td>Bacterial Sepsis 9</td>
<td>Five Tied 1</td>
<td>Septicemia 3</td>
<td>HIV 4</td>
<td>Homicide 13</td>
<td>Chronic Low, Respiratory Disease 12</td>
<td>Septicemia 26</td>
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<td>Two Tied 8</td>
<td>Five Tied 1</td>
<td>Aortic Aneurism 2</td>
<td>Three Tied 3</td>
<td>Chronic Low, Respiratory Disease 12</td>
<td>Septicemia 26</td>
<td>Septicemia 40</td>
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</table>
Crash Mortality as a Function of Time From First Trauma Center Designation


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Tri-modal Death Distribution

1st Peak

% Total Deaths

- Severe brain injury
- High cord injury
- Major vascular
  - Heart
  - Aorta/great vessel

Remedy: Injury prevention

Time since injury
Tri-modal Death Distribution

2\textsuperscript{nd} Peak

- Cerebral hematomas
- Hemopneumothorax
- Ruptured spleen/liver
- Fractured pelvis
- Massive blood loss

Remedy: Immediate care, Injury Prevention

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Tri-modal Death Distribution

3rd Peak

% Total deaths

- Sepsis
- Multiple organ failure

Remedy: **Education, Performance improvement, Injury Prevention**
Designation Levels

**Level 1 + peds**
Definitive care for all trauma patients

**Level 2 + peds**
Definitive care for most patients

**Level 3**
Definitive care for some; most patients stabilized and transferred

**Level 4**
Major trauma patients stabilized and transferred

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Phased Implementation

**Phase 1:** System infrastructure (2005 - )
- Hospital participation

**Phase 2:** Data-driven performance improvement (2009 - )
- Data analysis

**Phase 3:** Full system integration (2011 - )
- Regionalization
Current Status

- **Designations**
  - 130 eligible hospitals
    - 124 designated
      - 4 level I
      - 3 level II
      - 33 level III
      - 84 level IV

[Graph of Number of State Designated Trauma Hospitals in Minnesota Aug 2005 - Dec 2011]

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Western Minnesota Regional Trauma Advisory Committee (WESTAC)

- 21 counties
- Rural area
  - Access challenges

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There's no "I" in WESTAC

Hospitals
Disaster Planning
Community Rep.
EMS

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Organization

- AEMS – financial agent
- 2 – Level II
- 2 – Level III
- 3 – Level IV
- 1 – AEMS

- 1 – 1st Responder
- 1 - BLS / Med. Dir.
- 1 – ALS / Med Dir.
- 1 – Air / Med. Dir.
- 1 – Disaster
- 1 - Dispatcher
- 1 - Community
Secondary Catchment

- \( \text{xxx,000} \)

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WESTAC - Purpose

- Guidance and recommendations to improve trauma care.
- Advise / consult STAC
  - Regional needs
  - Best practice
  - Data-driven evidence

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Goal

- Decrease death and disability due to injury.
Initial Challenges

- x out of xx undesignated (xx%)
  - PI difficult
  - Trauma triage / treatment inconsistent
  - Limited resources stretched

- Transport
  - Scene
  - Interfacility
A Work in Progress…

- Trauma Designation
  - 21 eligible hospitals
    - 18 designated
      - 3 level III
      - 15 level IV
    - 3 ND level IIs

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WESTAC Trauma Centers

Level 2
- Altru Health System (Grand Forks)
- Essentia Health (Fargo)
- Sanford Medical Center (Fargo)

Level 3
- Essentia Health St. Mary’s Hospital (Aitkin)
- Douglas County Hospital (Alexandria)
- Lake Regions Healthcare (Fergus Falls)

Level 4
- Essentia Health Ada
- Essentia Health Foston
- Essentia Health Bagley
- Glacial Ridge Health System (Glenwood)
- LifeCare Medical Center (Roseau)
- Mahnomen Health Center
- Perham Health
- Prairie Ridge Hospital (Elbow Lake)
- Riverview Health (Crookston)
- St. Francis Healthcare Campus (Breckenridge)
- St. Joseph’s Area Health Services (Park Rapids)
- Sanford Bemidji Medical Center
- Sanford Medical Center-Thief River Falls
- Sanford Wheaton Medical Center
- Stevens Community Medical Center (Morris)
EMS Involvement

- xx Providers
  - xx – BLS
  - x – ALS
  - x CC/Air Med

- xx 1st Responder Agencies

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Process Improvement (PI)

- Baseline Education
- Providing Feedback
  - Diagnosis / treatments / education
  - “Job well done”
  - Opportunities for improvement
- Resources
  - System Development
  - Benchmarks
- Recommendations
  - Blunt C-Spine
  - Tier I

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Education

- Blunt C-spine
  - Poster

- TNCC $

- Website

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TZD & WESTAC

- Mutual Goals

- Sharing Resources
  - One of the “E”
  - PI
  - IP
  - Media

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