18th ANNUAL CONFERENCE

RIVER of DREAMS

envisioning best practices in trauma care
Rural Trauma Centers: Challenges and Triumphs

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Learning Objectives

• To understand the challenges of rural trauma center development
• To list the resources available for rural trauma center support
• To identify long term strategies for rural trauma center sustainability
Disclosure Statement

- Faculty/Presenters/Authors/Content Reviewers/Planners disclose no conflict of interest relative to this educational activity.
Successful Completion

• To successfully complete this course, participants must attend the entire event and complete/submit the evaluation at the end of the session.

• Society of Trauma Nurses is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.
Audience Check

- Level I
- Level II
- Level III
- Level IV
- Level V
- Critical Access Hospitals
“Rural” is Relative
Access to Level 1 Trauma Center within 60 minutes by ground ambulance

57% of US population

Source: TraumaMaps.org (U Penn, ATS, CDC.gov)
Access to Level 1 Trauma Center within 60 minutes by ground EMS or Helicopter

83% of US Population

Source: TraumaMaps.org (U Penn, ATS, CDC.gov)
All Injury Death Rates/100,000
2004-2010

Source: CDC.gov
Trauma Stats

• All injury Deaths: 181,000
• Motor Vehicle: 34,000
• Firearms: 32,000

• Age is an independent risk factor for death after trauma
• 19,700 people died of fall-related injuries, 17,700 were over 65 y/o
Golden Hour

- The first hour after trauma is critical to intervene to correct shock and reduce mortality. After the first hour, trauma mortality rises.

- While trauma is a time-sensitive disease process, the validity of an actual 60 minutes is debatable.
Government Definition of “Rural”

- Federal Govt has 15 different definitions of “rural”
- HRSA uses US Census Bureau definition
  - Anything that isn’t an
    - Urban Area (UA) 50,000 people or more
    - Urban Cluster (UC) 2,500-50,000 people
- Using these definitions
  - 20-25% US pop rural
  - 95% land

Source:
Washington Post 6/8/2013
HRSA.gov
Rural Trauma Reality

- 25% of population (60-65 million people)
- 60% of trauma mortality
- 10% of physicians
ACS COT definition of Rural Trauma

• Optimal care of the injured patient is delayed or limited by
  • Geography
  • Weather
  • Distance
  • Resources
    • Transportation
    • Surgical capacity
    • Critical care capacity
    • Blood bank
    • Etc
Rural Trauma Challenges

- Low frequency, high acuity injured patients
- Education and training
- Financial resources for low frequency conditions
Resuscitation Phase

- Team preparation and education
- Diagnostic work up
- Transfer capabilities
Team Preparation and Education

- ATLS
- RTTDC
- Diagnostic capability
  - FAST
    - Rapid, inexpensive means of assessing intra-abdominal hemorrhage
Radiology

- Availability of newest technology and technicians
- Radiology reads in off hours
- Tele-radiology
Telemedicine

• With referral trauma center
• Via third party group
  • Credentialing
  • PI review
Relationship with Level I or II

- Optimal Resource Guide expects Level I/II trauma centers to participate in regional trauma systems
- Coordination/cooperation with Level III/IV centers expected
- Must go beyond accepting patients in transfer
Performance Improvement Review

- Provider review
  - Difficult with single group providers
  - Outside review from referral center
    - Case review
    - Participation in PI process
Transfer Decision Making

- Variability in capability in Level III
- COT Rural Trauma
- RTTDC
- Guidelines for transfer based on specific institution capabilities
### Rapid Triage and Transfer Guideline

**Mechanism:**
- Head Injury: Severe, Open

**Primary Survey:**
- Airway and C-Spine protection
- Breathing
- Circulation/Control hemorrhage
- Disability: Brief neurologic evaluation
- Exposure: Undress, but keep warm

**Positive Findings**
- Neuro deficits, GCS < 8
- GCS < 8, Intubate

**Transfer**
- Yes
- Yes

**Resuscitation:**
- Oxygen, 2 large bore IV’s or Level I infuser line

**Manage Life Threatening Injuries:**
- Chest Tubes
- ABG, EKG, Pulse Oximetry, NG, Foley
- X-Rays:
  - Lateral C-Spine
  - Chest
  - Pelvis
  - Deformed extremities

**X-Rays:**
- Fx/Subluxation
- Widened Mediastinum
- Open Book, Sacral, Acetabulum Fx
- Discussed with Ortho may need transfer

**DPL or FAST Exam**
- + - to OR for Trauma Lap
- Consider (See Crash to OR Policy) after Lap if needed

**Secondary Survey:**
- Head and Skull
  - Depressed Skull Fx, +CT head
- Maxillofacial
- Neck
  - Tender/Defortmity - Expedite CT
  - If + consult Spine/ Ortho
- Chest
- Abdomen
- Perineum/Rectum/Vagina
- Musculoskeletal
- Complete Neurological Exam
- Deficits - expedite CT

**LOG ROLL - Back**
- Tender/Deformity - Expedite CT
- (+) - consult Spine Ortho

*Evaluation and decision to transfer to a higher level Trauma Center should be made within the first 30 minutes of Trauma Team Leader arrival.*
## “Level 4 Trauma Center Example”
### Rapid Triage and Transfer Guideline

<table>
<thead>
<tr>
<th>Mechanism:</th>
<th>Positive Findings</th>
<th>Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Survey:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airway and C-Spine protection</td>
<td>Intubated</td>
<td>Yes</td>
</tr>
<tr>
<td>Breathing</td>
<td>Multiple rib Fx, Chest Tube</td>
<td>Yes</td>
</tr>
<tr>
<td>Circulation/Control hemorrhage</td>
<td>SBP &lt;80 on adult, age specific peds.</td>
<td>Yes</td>
</tr>
<tr>
<td>Disability: Brief neurologic evaluation</td>
<td>Neuro deficits</td>
<td>Yes</td>
</tr>
<tr>
<td>Exposure: Undress, but keep warm</td>
<td>GCS &lt; 13</td>
<td>Yes</td>
</tr>
<tr>
<td>Intoxicated and Can’t Evaluate</td>
<td>Signs of Traumatic injury</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Resuscitation:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen, 2 large bore IV’s or Level I infuser line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manage Life Threatening Injuries:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest Tubes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>ABG, EKG, Pulse Oximetry, NG, Foley X-Rays:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral C-Spine</td>
<td>Fracture/Subluxation</td>
<td>Yes</td>
</tr>
<tr>
<td>Chest</td>
<td>Widened Mediastinum, Multiple rib Fx</td>
<td>Yes</td>
</tr>
<tr>
<td>Pelvis</td>
<td>Open Book, Sacral, Acetabulum Fx</td>
<td>Yes</td>
</tr>
<tr>
<td>Deformed extremities</td>
<td>Splint, Traction splint,</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>FAST Ultrasound (if available)</td>
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<td></td>
</tr>
<tr>
<td><strong>Secondary Survey:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head and Skull</td>
<td>Depressed Skull Fx</td>
<td>Yes</td>
</tr>
<tr>
<td>Maxillofacial</td>
<td>Significant injury, diplopia,</td>
<td>Consider</td>
</tr>
<tr>
<td>Neck</td>
<td>Deformity</td>
<td>Yes</td>
</tr>
<tr>
<td>Chest</td>
<td>Bony Crepitance, Flail</td>
<td>Yes</td>
</tr>
<tr>
<td>Abdomen</td>
<td>Peritoneal signs</td>
<td>Yes</td>
</tr>
<tr>
<td>Perineum/Rectum/Vagina</td>
<td>Ecchymosis, bloody drainage</td>
<td>Yes</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>Open fractures, Dislocations</td>
<td>Yes</td>
</tr>
<tr>
<td>Complete Neurological Exam</td>
<td>Neuro Deficits</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>LOG ROLL - Back</strong></td>
<td>Deformity</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Evaluation and decision to transfer to a higher level Trauma Center should be made within the first 15 minutes of Trauma Team Leader arrival.*
Resources

- ATLS
- RTTDC
- ACS COT Rural Trauma Committee
- State Committee on Trauma
ATLS

• 10th edition in progress
• Input from Family Practice
• Some slide modifications to acknowledge difference in rural practice
Rural Trauma Team Development Course (RTTDC)

• Taught at rural hospital
• Team focused
• ABCDE with guidelines, algorithms
ACS Committee on Trauma

• Committed to addressing Rural Trauma issues
• State COT is committed to addressing rural trauma care needs at local level
Sustainability Strategies

- Develop and maintain a relationship with your referral Level I/II center
  - Timely transfer
  - Care feedback
  - PI review
- ATLS for providers
- RTTDC for team
Sustainability Strategies

- Know provider competency/comfort level
- Proactively develop transfer criteria
- Stay connected with state COT
Questions?