Field Triage Decision Scheme: The National Trauma Triage Protocol

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Injury Prevention and Control
Introduction

- Injury is the leading cause of death for Americans aged 1-44.¹

10 Leading Causes of Death by Age Group, United States—2004

<table>
<thead>
<tr>
<th>Age Groups</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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<tbody>
<tr>
<td>1</td>
<td>Congenital Anomalies</td>
<td>5,622</td>
<td>Unintentional Injury</td>
<td>1,541</td>
<td>Unintentional Injury</td>
<td>1,126</td>
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<td>2</td>
<td>SIDS</td>
<td>2,236</td>
<td>Malignant Neoplasms</td>
<td>969</td>
<td>Malignant Neoplasms</td>
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<td>493</td>
<td>Suicide</td>
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<td>Malignant Neoplasms</td>
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<td>250</td>
<td>Malignant Neoplasms</td>
<td>250</td>
<td>Malignant Neoplasms</td>
<td>3,623</td>
<td>Suicide</td>
</tr>
<tr>
<td>4</td>
<td>Maternal &amp; Perinatal</td>
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<td>Malignant Neoplasms</td>
<td>1,709</td>
<td>Malignant Neoplasms</td>
<td>3,363</td>
<td>Suicide</td>
<td>6,638</td>
<td>Liver Disease</td>
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<td>5</td>
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<td>Heart Disease</td>
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<td>Influenza &amp; Pneumonia</td>
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<td>Chronic Lower Respiratory Disease</td>
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<td>Chronic Lower Respiratory Disease</td>
<td>60</td>
<td>Congenital Anomalies</td>
<td>148</td>
<td>HIV</td>
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<tr>
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<td>Respiratory Disease</td>
<td>1,042</td>
<td>Septoemia</td>
<td>94</td>
<td>Benign Neoplasms</td>
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<td>Chronic Lower Respiratory Disease</td>
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<td>Influenza &amp; Pneumonia</td>
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<td>81</td>
<td>Influenza &amp; Pneumonia</td>
<td>49</td>
<td>HIV</td>
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<td>Cerebrovascular Disease</td>
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</table>

¹ WISQARS™ Produced by Office of Statistics and Programming, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention

Data Source: National Center for Health Statistics (NCHS), National Vital Statistics System
Introduction (cont’d)

- Care at a Level I trauma center lowers the risk of death by 25% for severely injured patients compared to treatment received at nontrauma centers.\textsuperscript{2}
2006 Decision Scheme

FIELD TRIAGE DECISION SCHEME: THE NATIONAL TRAUMA TRIAGE PROTOCOL

Measure vital signs and level of consciousness

Glasgow Coma Score < 14 or
Apnea, absent spontaneous movement or
Hypotension (BP < 100/70 or CVP < 5 mm Hg) < 1800

YES

NO

Take to a trauma center: Steps 1 and 2 allowed to fluid by
the medical staff in charge of the trauma system. These patients should be
transported immediately to the highest level of care within
the trauma system.

YES

NO

Assess mechanism of injury

Rabies injury

YES

NO

Take to a trauma center: Steps 1 and 2 attempt to identify
the most seriously injured patients. These patients should be
transported immediately to the highest level of care within
the trauma system.

YES

NO

Rabies special patient or system considerations

Age

NO

YES

Other Medical: Risk of injury death increases after age 65

YES

NO

Anticoagulation and Bleeding Disorders

Contact medical control and consider transport to trauma
center or a specific resource hospital.

YES

NO

Transport according to protocol

When in doubt, transport to a trauma center.

For more information, visit: www.cdc.gov/FieldTriage

Wednesday, February 25, 2009
Endorsing Organizations

- American College of Surgeons
- American College of Emergency Physicians
- American Medical Association
- American Public Health Association
- American Academy of Pediatrics
- National Association of EMS Physicians
- National Association of Emergency Medical Technicians
- National Association of State EMS
- International Association of Flight Paramedics
- Air Medical Physician Association
- Air and Surface Transport Nurses Association
- Commission on Accreditation of Medical Transport Systems
- National Association of EMS Educators
- National Native American EMS Association
- National Ski Patrol
- The Joint Commission
- The National Highway Traffic Safety Administration
Step 1: Physiologic Criteria

Measure vital signs and level of consciousness

- Glasgow Coma Scale <14 or
- Systolic blood pressure <90 or
- Respiratory rate <10 or >29 (<20 in infant < one year)

**YES**
- Take to a trauma center. Steps 1 and 2 attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the trauma system.

**NO**
- Assess anatomy of injury
Step 1: Changes

- **Revised Trauma Score** was deleted. It was already contained in other vital sign parameters.

- The threshold for *respiratory rate in infants* was lowered to less than 20 breaths per minute to improve sensitivity.
Step 2: Anatomic Criteria

- All penetrating injuries to head, neck, torso, and extremities proximal to elbow and knee
- Flail chest
- Two or more proximal long-bone fractures
- Crush, degloved or mangled extremity
- Amputation proximal to wrist and ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis

YES

Take to a trauma center. Steps 1 and 2 attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the trauma system.

NO

Assess mechanism of injury and evidence of high-energy impact
Step 2: Criteria Changes

- Under *specific injuries*, the criterion “crushed, degloved, or mangled extremity” was added.

- For *skull fractures*, open and depressed was changed to open *or* depressed.

- The criteria on *burns* were removed and placed in Step 4 to emphasize the need to determine if there are other associated injuries.
Step 3: Mechanism of Injury

Criteria

Falls
- Adults: > 20 ft. (one story is equal to 10 ft.)
- Children: > 10 ft. or 2-3 times the height of the child

High-Risk Auto Crash
- Intrusion: > 12 in. occupant site; > 18 in. any site
- Ejection (partial or complete) from automobile
- Death in same passenger compartment
- Vehicle telemetry data consistent with high risk of injury

Auto v. Pedestrian/Bicyclist Thrown, Run Over, or with Significant (>20 MPH) Impact
Motorcycle Crash > 20 MPH

Transport to closest appropriate trauma center which, depending on the trauma system, need not be the highest level trauma center.

Assess special patient or system considerations
Step 3: Changes

- The criteria for *falls* have been clarified to include the following:
  - Adults: Greater than 20 feet (one story is equal to 10 feet).
  - Children: Greater than 10 feet, or 2-3 times the child’s height.

- *Rollover crash* was deleted. Studies indicate rollovers, without ejection, are not associated with ISS > 15 or AIS > 3.

- *High speed auto crash* was changed to *high-risk auto crash*.

- *Extrication time* greater than 20 minutes was
Step 3: Changes (cont’d)

- *Intrusion criteria* were modified to include intrusion greater than 18 inches at any site.

- *Crush depth* criterion was deleted given the difficulty of determining this in the field.

- *Vehicle telemetry data* consistent with high risk of injury was added due to the ability of Advanced Automatic Collision Notification (AACN) technology to measure crash principal direction of force and crash severity.
Step 3: Changes (cont’d)

- Auto-pedestrian/auto-bicycle injury with significant (greater than 5 mph) impact and pedestrian struck or run over have been revised to read “Auto v. pedestrian/bicyclist thrown, run over, or with significant (greater than 20 mph) impact.”
Step 3: Changes (cont’d)

- *Vehicle deformity* greater than 20 inches and vehicle speed greater than 40 mph were deleted due to difficulty in accurate determination.

- *Motorcycle crash greater than 20 mph with separation of rider from bike* has been shortened to *Motorcycle crash greater than 20 mph*.
Step 4: Special Considerations

- Age
  - Older Adults: Risk of injury death increases after age 55
  - Children: Should be triaged preferentially to pediatric-capable trauma centers
- Anticoagulation and Bleeding Disorders
- Burns
  - Without other trauma mechanism: Triage to burn facility
  - With trauma mechanism: Triage to trauma center
- Time Sensitive Extremity Injury
- End-Stage Renal Disease Requiring Dialysis
- Pregnancy > 20 Weeks
- EMS Provider Judgment

When in doubt, transport to a trauma center.

Contact medical control and consider transport to trauma center or a specific resource hospital.

Transport according to protocol.
Step 4: Changes

- **Age less than 5 or greater than 55** has been clarified to read:
  - Older adults: Risk of injury death increases after age 55.
  - Children: Should be triaged preferentially to pediatric-capable trauma centers.

- The criteria on *burns* were moved from Step 2 to Step 4 in order to emphasize the need to determine if the burn occurred with or without other injuries.
Step 4: Changes (cont’d)

- *Time-sensitive extremity injured patients* require transport to a trauma center or specific resource hospital.

- *End-stage renal disease* patients require transport to a facility able to provide dialysis (a Level I or II trauma center).
Step 4: Changes (cont’d)

- Pregnancy has been changed to read Pregnancy greater than 20 weeks.

- EMS Provider Judgment was added as a criterion.
The following patients were removed from special consideration:

- Patients with cardiac and respiratory disease
- Patients with diabetes
- Morbidly obese patients
- Immunosuppressed patients
- Patients with cirrhosis
Advanced Automatic Collision Notification

- AACN alerts emergency services of a vehicle crash via call centers.

- EMS receives information on the:
  - Location of the crash
  - Severity of the crash
Advanced Automatic Collision Notification

- Location
- Change in velocity ($\Delta V$)
- Principal direction of force (PDOF)
- Airbag deployment
- Multiple crash identification
- Rollover
For more information or to order or download materials,
Thank You!
Specific Changes to the Field Triage Decision Scheme
History of the Decision Scheme

In 1976, the American College of Surgeons-Committee on Trauma (ACS-COT) developed guidelines to authenticate “trauma centers” and set standards for personnel, facilities, and processes necessary for the best care of injured persons.
Since 1987, this Decision Scheme has served as the basis for the field triage of trauma patients in the majority of EMS systems in the United States.

Since its initial publication, the Decision Scheme has been revised four times: in 1990, 1993, 1999, and 2006.
History of the Decision Scheme (cont’d)

- In 2005-2006, the Centers for Disease Control and Prevention (CDC) convened the National Field Triage Expert Panel to revise the Field Triage Decision Scheme intended for standard and nationwide use by EMS providers. This is the Decision Scheme we will be discussing today.
Why this Decision Scheme is Unique

- It takes into account recent changes in assessment and care of the injured patient in the U.S.

- It adds the views of a broader range of disciplines and expertise into the process.
Purpose

- This Decision Scheme was revised to help you conduct more effective triage so that you can better match your trauma patients’ conditions with the medical facility best equipped to treat them.
Advanced Automatic Collision Notification
Implementation: Tool Kit

FIELD TRIAGE DECISION SCHEME: THE NATIONAL TRAUMA TRIAGE PROTOCOL

1. Assess mechanism of injury:
   - Skin lacerations
   - Head lacerations
   - Fractures

2. Assess major body system:
   - Airway integrity
   - Breathing integrity
   - Circulation
   - Other body systems

3. Transport to trauma center:
   - Immediate arrival of trauma center
   - Transport to the regional trauma center

When in doubt, transport to a trauma center.

For more information on the Triage Scheme, visit www.traumacenter.org
CDC’s Educational Initiative

- CDC, in collaboration with multiple partners and experts, has developed:
  - A guide for EMS leaders outlining the specifics of the revised Decision Scheme
  - A poster and laminated, pocket-sized reference card illustrating the Decision Scheme
References
