Prehospital and Interhospital Regional Trauma Triage Plan

Central Shenandoah EMS Council, Inc.

Serving Emergency Services Providers in:

Augusta, Bath, Highland, Rockbridge, Rockingham, Buena Vista, Harrisonburg, Lexington, Staunton and Waynesboro

Last reviewed: March 2017

This plan is written to coordinate with and be a supplement to Virginia’s State Trauma Triage Plan.
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Executive Summary

Under the Code of Virginia § 32.1-111.3, The Office of Emergency Medical Services acting on behalf of the Virginia Department of Health has been charged with the responsibility of maintaining a Statewide Trauma Triage Plan. Emergency Medical Services (EMS) Agencies are required by EMS Regulation 12 VAC 5-31-390 to follow triage plans. This regional plan was developed for use by agencies and hospitals in the Central Shenandoah EMS region, and follows the guidelines set forth in the Statewide plan, and addresses prehospital and inter-hospital patient transfers.

The Statewide Trauma Triage Plan establishes minimum criteria for identifying trauma patients and the expectation that these patients shall enter the “trauma system” and receive rapid definitive trauma care at appropriate hospitals. This regional trauma triage plan augments the Commonwealth’s minimum trauma triage standards by providing additional point of entry and resource information. This regional plan set forth standards equivalent to those prescribed by the state trauma triage plan.

The Virginia Department of Health, Office of Emergency Medical Services (OEMS) and the Trauma System Oversight and Management Committee endorses the January 23, 2009 Centers for Disease Control (CDC) Field Triage Decision Scheme: The National Trauma Triage Protocol and it accompanying document the Guidelines for Field Triage of Injured Patients. The CDC is now home to the national trauma program and has assumed responsibility for establishing the national standard for trauma triage in cooperation with the American College of Surgeons (ACS) which has traditionally developed these criterions. The 2009 CDC documents have been endorsed by the following organizations:

- The Joint Commission (JCAHO)
- National Association of State EMS Officials (NASEMSO)
- American Academy of Pediatrics (AAP)
- National Association of EMS Physicians (NAEMSP)
- National Association of EMS Educators
- National Native American EMS Association
- Commission on Accreditation of Medical Transport Systems (CAMTS)

- American Medical Association (AMA)
- The American Public Health Association (APHA)
- American Pediatric Surgical Association
- American College of Emergency Physicians (ACEP)
- National Association of EMT’s (NAEMT)
- International Association of Flight Paramedics (IAFP)
- Air Medical Physician Association (AMPA)
- National Ski Patrol

The Virginia Trauma System is an inclusive system and therefore all hospitals are required to participate in the Trauma Triage Plan. Establishing a comprehensive statewide emergency medical care system, incorporating healthcare facilities, transportation, human resources, communications, and other components as integral parts of a unified system serves to improve the delivery of emergency medical services and thereby decrease morbidity, hospitalization, disability, and mortality. This document will provide a uniform set of criteria for prehospital and inter hospital triage and transport of trauma patients.

Modifications to the Field Triage Decision Scheme have been made in accordance with guidance from the Guidelines for Field Triage of Injured Patients published by the Department of Health and Human Services, Centers for Disease Control and Prevention on January 23, 2009. The guidelines state the Decision Scheme continues to serve as the template for field triage protocols in the majority of EMS systems across the United States, with some local and regional adaptation. Individual EMS systems may adapt the Decision Scheme to reflect the operational context in which they function. For example, the Decision Scheme may be modified to a specific environment (densely urban or extremely rural), to resources available (presence or absence of a specialized pediatric trauma center), or at the discretion of the local EMS medical director.”

Augusta Health and RMH Healthcare have been identified as facilities with opportunities to contribute to the regional trauma system by becoming designated trauma centers. The region supports such a pursuit by both facilities and encourages medical directors and facility administration to actively work toward trauma center designation.
The Virginia Trauma System defines a “trauma victim” as a person who has acquired serious injuries and or wounds brought on by either an outside force or an outside energy. These injuries and or wounds may affect one or more body systems by blunt, penetrating or burn injuries. These injuries may be life altering, life threatening or ultimately fatal wounds.

Trauma patient recognition and Triage is a Two-tiered System:
- Initial Field Triage in the prehospital environment (pre-hospital criteria) and;
- Secondary triage or trauma patient recognition and appropriate timely triage by all Virginia hospitals.
Field Trauma Triage Decision Scheme

1. **Measure vital signs and level of consciousness**
   - Glasgow Coma Scale \( \leq 13 \) or
   - Systolic blood pressure \(< 90\ mmHg\ (<100\ for\ patients\ > 65\ years)\) or
   - Respiratory rate \(< 10\ or\ > 29\ breaths/minute\ (<20\ in\ infant\ < one\ year)\) or need for ventilatory support

   **YES**

   **NO**

   **Assess anatomy of injury**
   - All penetrating injuries to head, neck, torso, & extremities proximal to elbow or knee
   - Chest wall instability or deformity (e.g., flail chest)
   - Two or more proximal long-bone fractures
   - Crushed, degloved, mangled, or pulseless extremity
   - Amputation proximal to wrist or ankle
   - Open or depressed skull fracture
   - Paralysis
   - Severe head, neck, chest, pelvic, abdominal and/or back pain.

   **YES**

   **NO**

   **Assess mechanism of injury and evidence of high-energy impact**
   - **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, including roof: \( > 12\ in.\) 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
     - Complex extrication by fire / rescue
   - **Auto v. Pedestrian/Bicyclist Thrown, Run Over, or with Significant (> 20 mph) Impact**
   - **Motorcycle Crash > 20 mph**

   **YES**

   **NO**

   **Assess special patient or system considerations**
   - **Age**
     - Older Adults: Risk of injury death increases after age 55 years
     - Older Adults: Low-impact mechanisms (e.g., ground-level falls) might result in severe injury
     - Children: Should be triaged preferentially to pediatric-capable trauma centers
   - **Anticoagulation and Bleeding Disorders**
     - Patients with head injury are at high risk for rapid deterioration
   - **Significant burns**
     - Pregnancy > 20 Weeks [Palpable uterus at or above umbilicus]
   - **EMS Provider Judgment**

   **YES**

   **NO**

   **Transport according to protocol**

* American Burn Association guidelines.
Trauma Patient Transport Considerations

Regional EMS Patient Care Protocols in the Central Shenandoah EMS region address transport considerations. Each jurisdiction is unique in its availability of trauma resources. Consideration should be given to the hospital(s) that is (are) available in the region and the resources that they have available to trauma patients when developing a point of entry plan. Pre-planning for times when the primary hospital is not available to receive trauma patients because of multiple patients, diversion, loss of resources such as power need to be made in advance of being on scene with a critical trauma patient. In general, field transports by helicopter (of trauma patients) as defined in this plan shall meet clinical triage criteria for transport and decrease the transport time as compared to ground transport.

Consideration should also be given to prehospital resources including, the level of care available by the ground EMS crews, and the closest Medevac service available at the time of the incident, and other conditions such as transport time and weather conditions. Use of Medevac (Air ambulances) services can assist with trauma patients reaching definitive trauma care in a timely fashion.

Scene Transfer Criteria

Transfer from the scene to a designated trauma center via helicopter should be made according to the following criteria. The decision to call for air transport should be made by the first public safety entity to arrive and assess the patient. First responders may request direct dispatch of aeromedical providers directly to scene. Transport should not be unduly delayed while waiting on Advanced Life Support personnel to arrive at the scene. However, consideration must be given to the anticipated arrival time of the aeromedical provider when EMS providers are making decisions regarding the decision to transport critically injured patients to hospitals that are not designated trauma centers.

If advanced care can be more expediently obtained at a nearby hospital than by waiting for aeromedical flight crews, local providers should consider requesting a change in LZ to the nearest hospital.

Patients who are entrapped or pinned and are critically ill as defined by the “Field Trauma Triage Decision Scheme” should have a helicopter summoned to the scene. When the patient becomes disentangled, the patient shall be rapidly transferred to the landing zone to rendezvous with the medevac helicopter OR proceed to an alternate landing zone between the scene and the closest hospital. The communication center must be notified as soon as possible for every planned change in landing zone or rendezvous point.

Because of the possibility of bad weather, mechanical failure or communication breakdown, all patients who have been extricated and prepared for transport prior to the arrival of the helicopter at the scene should consider initiating transport to the nearest medical facility.

Pre-designated landing zones (LZ) will continue to be developed. The ECC will assign the LZ in such a way that the helicopter would be expected to arrive before the ambulance transporting the patient.
EMS Mass Casualty Incident (MCI) Plans and Disaster/Weapons of Mass Destruction (WMD) Plans

Both prehospital and hospital providers should become familiar with other related plans. These plans represent a tiered response to a growing numbers of patients:

- MCI Plan
- Disaster/WMD Plans
- Surge Capacity Plans

The plans build upon one another. The Trauma Triage Plan is intended to guide treatment for a smaller number of patients that can be managed by resources available during normal day to day operations. MCI Plans provide additional guidance to agencies, municipalities and medical facilities when their normal resources are being strained. Surge plans are developed to meet the need of large scale events that may require caring for hundreds even thousands of patients. The Trauma Triage Plan is intended for incidents that occur during normal EMS operations.
**Inter-Hospital Triage Criteria**

Hospitals not designated by the Virginia Department of Health as a Trauma Center should enter injured patients that meet the below physiological and/or anatomic criteria into the trauma system (rapid transfer to an appropriate level designated Trauma Center). Facilities not designated as trauma centers that receive severely injured patients should limit interventions and imaging to those required for emergent resuscitation. Emergency department times should be kept as short as possible. A goal of 15-minute emergency department times for severely injured patients is reasonable for the typical critically injured patient.

<table>
<thead>
<tr>
<th><strong>Adult Patient</strong></th>
<th><strong>Pediatric Patient</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respiratory</strong></td>
<td><strong>Respiratory</strong></td>
</tr>
<tr>
<td>• Bilateral thoracic injuries</td>
<td>• Bilateral thoracic injuries</td>
</tr>
<tr>
<td>• Significant unilateral injuries in pt’s &gt;60 (e.g. pneumothorax, hemo- pneumothorax, pulmonary contusion, &gt;5 rib fractures)</td>
<td>• Significant unilateral injuries in patients with pre-existing cardiac and/or respiratory disease</td>
</tr>
<tr>
<td>• Significant unilateral injuries in patients with pre-existing cardiac and/or respiratory disease</td>
<td>• Flail chest</td>
</tr>
<tr>
<td>• Respiratory compromise requiring intubation</td>
<td></td>
</tr>
<tr>
<td>• Flail chest</td>
<td></td>
</tr>
<tr>
<td><strong>CNS</strong></td>
<td><strong>CNS</strong></td>
</tr>
<tr>
<td>• Unable to follow commands</td>
<td>• Open skull fracture</td>
</tr>
<tr>
<td>• Open skull fracture</td>
<td>• Extra-axial hemorrhage on CT Scan</td>
</tr>
<tr>
<td>• Extra-axial hemorrhage on CT, or any intracranial blood</td>
<td>• Focal neurological deficits</td>
</tr>
<tr>
<td>• Paralysis</td>
<td></td>
</tr>
<tr>
<td>• Focal neurological deficits</td>
<td></td>
</tr>
<tr>
<td>• GCS ≤ 12</td>
<td></td>
</tr>
<tr>
<td><strong>Cardiovascular</strong></td>
<td><strong>Cardiovascular</strong></td>
</tr>
<tr>
<td>• Hemodynamic instability as determined by the treating physician</td>
<td>• Hemodynamic instability as determined by the treating physician</td>
</tr>
<tr>
<td>• Persistent hypotension</td>
<td>• Persistent hypotension</td>
</tr>
<tr>
<td>• Systolic B/P (&lt;100) without immediate availability of surgical team</td>
<td></td>
</tr>
<tr>
<td><strong>Injuries</strong></td>
<td><strong>Injuries</strong></td>
</tr>
<tr>
<td>• Any penetrating injury to the head, neck, torso or extremities proximal to the elbow or knee without a surgical team immediately available</td>
<td>• Any penetrating injury to the head, neck, chest abdomen or extremities proximal to the knee or elbows without a surgical team immediately available</td>
</tr>
<tr>
<td>• Serious burns/burns with trauma (see below)</td>
<td>• Combination of trauma with burn injuries</td>
</tr>
<tr>
<td>• Persistent abdominal pain or tenderness (2 or more exams)</td>
<td>• Any injury or combination of injuries where the physician in charge feels treatment of the injuries would exceed the capabilities of the medical center</td>
</tr>
<tr>
<td>• Positive Focused Assessment with Sonography for Trauma (FAST) examination.</td>
<td>• Persistent abdominal pain or tenderness (2 or more exams)</td>
</tr>
<tr>
<td>• Significant abdominal to thoracic injuries in patients where the physician in charge feels treatment of injuries would exceed capabilities of the medical center</td>
<td>• Positive Focused Assessment with Sonography for Trauma (FAST) examination.</td>
</tr>
</tbody>
</table>
| **Special Considerations** | |}

*All pediatric patients with Pediatric Trauma Scores ≤ 6
*See pediatric trauma score below

- Trauma in pregnancy (≥ 20 weeks gestation [Palpable uterus at or above umbilicus])
- Geriatric, Bariatric
- Special needs individuals
- Individuals with co-morbid illness/disease
- Anticoagulation and bleeding disorders, including antiplatelet agents
**Pediatric Trauma Score**

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>+2</th>
<th>+1</th>
<th>-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>Child/adolescent, &gt;20 Kg.</td>
<td>Toddler, 11-20 Kg.</td>
<td>Infant, &lt;10 Kg.</td>
</tr>
<tr>
<td>Airway</td>
<td>Normal</td>
<td>Assisted O2, mask, cannula</td>
<td>Intubated: ETT, EOA, Cric</td>
</tr>
<tr>
<td>Consciousness</td>
<td>Awake</td>
<td>Obtunded; loss of consciousness</td>
<td>Coma; unresponsiveness</td>
</tr>
<tr>
<td>Systolic B/P</td>
<td>&gt;90 mm Hg; good peripheral pulses, perfusion</td>
<td>51-90 mm Hg; peripheral pulses, pulses palpable</td>
<td>&lt;50 mm Hg.; weak or no pulses</td>
</tr>
<tr>
<td>Fracture</td>
<td>None seen or suspected</td>
<td>Single closed fracture anywhere</td>
<td>Open, multiple fractures</td>
</tr>
<tr>
<td>Cutaneous</td>
<td>No visible injury</td>
<td>Contusion, abrasion; laceration &lt;7 cm; not through fascia</td>
<td>Tissue loss; any GSW/Stabbing; through fascia</td>
</tr>
</tbody>
</table>

**Burn Related Injuries**

<table>
<thead>
<tr>
<th>American Burn Association – Burn Center Referral Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A burn center may treat adults, children, or both. Burn injuries that should be referred to a burn center include the following:</td>
</tr>
<tr>
<td>• Partial-thickness burns of greater than 10% of the total body surface area</td>
</tr>
<tr>
<td>• Burns that involve the face, hands, feet, genitalia, perineum, or major joints</td>
</tr>
<tr>
<td>• Third-degree burns in any age group</td>
</tr>
<tr>
<td>• Electrical burns, including lightning injury</td>
</tr>
<tr>
<td>• Chemical burns</td>
</tr>
<tr>
<td>• Inhalation injury</td>
</tr>
<tr>
<td>• Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality</td>
</tr>
<tr>
<td>• Any patients with burns and concomitant trauma (such as fractures) in which the burn injury poses the greatest risk of morbidity or mortality. In such cases, if the trauma poses the greater immediate risk, the patient’s condition may be stabilized initially in a trauma center before transfer to a burn center.</td>
</tr>
<tr>
<td>• Burned children in hospitals without qualified personnel or equipment for the care of children</td>
</tr>
<tr>
<td>• Burn injury in patients who will require special social, emotional, or rehabilitative intervention</td>
</tr>
</tbody>
</table>
Inter-hospital Transports by Helicopter

1. All trauma patients transported by air must meet the clinical trauma triage criteria for transport to the closest Level I or Level II trauma center or burn center.

2. Patient requires a level of care greater than can be provided by the local hospital.

3. Patient requires time critical intervention, out of hospital time needs to be minimal, or distance to definitive care is long.

4. Utilization of local ground ambulance leaves local community without ground ambulance coverage.
Trauma Triage Quality Monitoring

The Office of EMS is responsible for monitoring and ensuring the quality of trauma care and trauma triage in the Commonwealth. Quality monitoring and assurance is accomplished through several means including, but not limited to, the trauma center designation process, analysis of data from the Emergency Medical Services Patient Care Information System (EMS and Trauma Registries) and from other existing validated sources, the trauma performance improvement committee, feedback mechanisms, and the regional Trauma Performance Improvement Committee.

The Office of EMS, acting on behalf of the Commissioner of Health, will report aggregate trauma triage findings annually to assist the EMS and Trauma Systems to improve local, regional and statewide trauma triage programs. A de-identified version of the report will be available to the public and will include, minimally, as defined in the statewide plan, the frequency of (i) incorrect triage in comparison to the total number of trauma patients delivered to a hospital prior to pronouncement of death and (ii) incorrect interfacility transfer for each region.

The program will ensure that each emergency medical services director or hospital is informed of any patterns of incorrect prehospital or interfacility missed triage, delayed or missed interfacility transfer as defined in the statewide plan, specific to the provider and will give the entity an opportunity to correct any facts on which such a determination is based, if the entity or its providers assert that such facts are inaccurate.

The Commissioner shall ensure the confidentiality of patient information, in accordance with § 32.1-116.2. Such data or information in the possession of or transmitted to the Commissioner, the EMS Advisory Board, or any committee acting on behalf of the EMS Advisory Board, any hospital or prehospital care provider, or any other person shall be privileged and shall not be disclosed or obtained by legal discovery proceedings as is written in the Code of Virginia, unless a circuit court, after a hearing and for good cause shown arising from extraordinary circumstances, orders disclosure of such data.

Each hospital in the region will designate a trauma performance improvement coordinator and participate in performance improvement initiatives with designated trauma centers.

To initiate a prehospital trauma case review in the Central Shenandoah EMS Region, you may contact the Central Shenandoah EMS Council, or visit the Performance Improvement section of our website at http://www.csems.vaems.org/pi/.
Virginia Designated Trauma Centers and Designation Level Description

Trauma Center Designation Levels Defined

**Level I Trauma Centers**

Level I trauma centers have an organized trauma response and are required to provide total care for every aspect of injury, from prevention through rehabilitation. These facilities must have adequate depth of resources and personnel with the capability of providing leadership, education, research, and system planning.

- **Carilion Roanoke Memorial Hospital**
  Bellevue @ Jefferson Streets, Roanoke

- **Inova Fairfax Hospital**
  3300 Gallows Road, Falls Church

- **Sentara Norfolk General Hospital**
  600 Gresham Drive, Norfolk

- **UVA Medical Center**
  1224 West Main Street, Charlottesville

- **VCU Medical Center**
  12th & Marshall Streets, Richmond
Level II Trauma Centers

Level II trauma centers have an organized trauma response and are also expected to provide initial definitive care, regardless of the severity of injury. The specialty requirements may be fulfilled by on call staff, that are promptly available to the patient. Due to some limited resources, Level II centers may have to transfer more complex injuries to a Level I center. Level II centers should also take on responsibility for education and system leadership within their region.

Lynchburg General Hospital
1901 Tate Springs Road, Lynchburg

Mary Washington Hospital
1001 Sam Perry Boulevard,
Fredericksburg

Riverside Regional Medical Center
500 J. Clyde Morris Boulevard,
Newport News

Winchester Medical Center
1840 Amherst Street, Winchester

Level III Trauma Centers

Level III centers, through an organized trauma response, can provide prompt assessment, resuscitation, stabilization, emergency operations and also arrange for the transfer of the patient to a facility that can provide definitive trauma care. Level III centers should also take on responsibility for education and system leadership within their region.

Carilion New River Valley Medical Center
2900 Lamb Circle, Christiansburg

CJW Medical Center, Chippenham
7101 Jahnke Road, Richmond

Montgomery Regional Hospital
3700 South Main Street, Blacksburg

Sentara Virginia Beach General Hospital
1060 First Colonial Road, Virginia Beach

Southside Regional Medical Center
200 Medical Park Blvd, Petersburg
## Minimum Surgical & Medical Specialties for Trauma Designation

<table>
<thead>
<tr>
<th>Surgical Clinical Capabilities: (On call and promptly available)</th>
<th>Level of Designation</th>
<th>Medical Clinical Capabilities: (On call and promptly available)</th>
<th>Level of Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
</tr>
<tr>
<td>Trauma/General Surgery</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Orthopedic Surgery</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Thoracic Surgery</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Cardiac Surgery</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatric Surgery</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hand Surgery</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microvascular/Replant Surgery</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Neurological Surgery</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Plastic Surgery</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Maxillofacial Surgery</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Trauma Triage Related Resources


Centers for disease Control and Injury Prevention
CDC Field Triage Main page: http://www.cdc.gov/fieldtriage/
CDC National Trauma Triage Protocol Podcast:  http://www2a.cdc.gov/podcasts/player.asp?f=10649
CDC Field Triage PowerPoint:
http://search.msn.com/results.aspx?q=CDC+Trauma+triage&FORM=CBPW&first=1

American College of Surgeons – Committee on Trauma
http://www.facs.org/trauma/index.html