

Virginia Department of Health
Prehospital and Interhospital
State Trauma Triage Plan

Virginia Department of Health
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Executive Summary

Under the *Code of Virginia* § 32.1-111.3, The Virginia Department of Health (VDH), has been charged with the responsibility of maintaining a Statewide Trauma Triage Plan. EMS Regulation 12 VAC 5-31-390 states that all Emergency Medical Services (EMS) agencies shall participate in trauma triage plans. This plan is to include prehospital and inter-hospital patient transfers. All trauma triage plans must be submitted to the VDH Office of Emergency Medical Services, (OEMS) for approval.

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. Regional trauma triage plans may augment the Commonwealth’s minimum trauma triage standards by providing additional point of entry information such as hospital capabilities, air medical services and others. At no time shall a regional or local plan set standards lower than prescribed by the state trauma triage plan or trauma center criteria. Individual regional and local systems may adapt the trauma triage plan to reflect the operational context in which they function.

VDH and the Trauma System Oversight and Management Committee (TSO&MC) of the State EMS Advisory Board endorse the Centers for Disease Control (CDC) *Field Triage Decision Scheme: The National Trauma Triage Protocol* and its accompanying document the *Guidelines for Field Triage of Injured Patients: Recommendations of the National Expert Panel on Field Triage*, and utilized these documents as the basis for this plan. 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) who has traditionally developed these criteria. Table 1 lists the organizations that endorse the *Guidelines for Field Triage of Injured Patients; Recommendations of the National Expert Panel on Field Triage* (Centers for Disease Control and Injury Prevention, 2009).

Table 1

List of Organizations that have Endorsed the CDC Trauma Triage Scheme
<ul style="list-style-type: none"> • Air and Surface Transport Nurses Association • Air Medical Physician Association • American Academy of Pediatrics • American College of Emergency Physicians • American College of Surgeons • American Medical Association • American Pediatric Surgical Association • American Public Health Association • Commission on Accreditation of Medical Transport Systems • International Association of Flight Paramedics • National Association of Emergency Medical Technicians • National Association of Emergency Medical Services Educators • National Association of Physicians • National Association of State Emergency Medical Service Officials

- National Native American Emergency Medical Services Association
- National Ski Patrol
- The Joint Commission
- With concurrence from the National Highway and Traffic Safety Administration

Source: Centers for Disease Control and Prevention, 2009

The Virginia Trauma System is an inclusive system; 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 EMS 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.

Definition of a Trauma Victim

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:

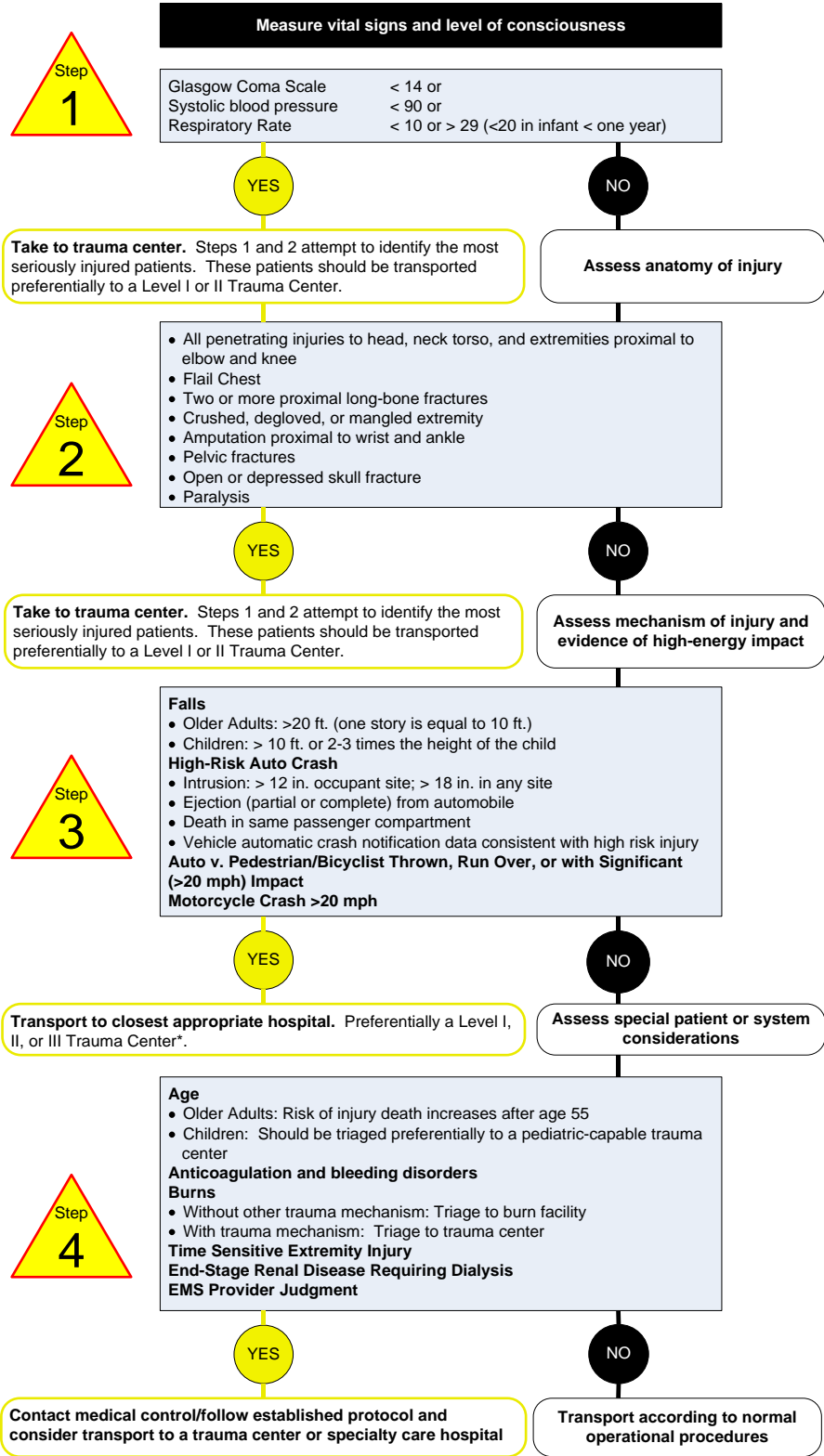
- Initial field triage in the prehospital environment (pre-hospital criteria), and;
- Secondary triage or trauma patient recognition and appropriate timely triage by all Virginia hospitals

Field Trauma Triage Decision Scheme

Figure 1 illustrates the Virginia Trauma Triage Decision Scheme. The Virginia scheme was developed by members of the Emergency Medical Service Advisory Board’s (EMS Advisory Board) TSO&MC with input from the Medical Direction Committee. The CDC *Field Triage Decision Scheme: The National Trauma Triage Protocol* was utilized as the basis for the development of the Virginia scheme.

The Virginia scheme differs from the CDC scheme in two ways. First, Steps One and Two replace the term “transported preferentially to the highest level of care within the trauma system” with “transported preferentially to a Level I and Level II trauma center.” Level I and Level II trauma centers are the highest level of trauma care in Virginia. The second difference is between Steps Three and Four. The CDC language that states; “transport to the closest appropriate trauma center” was changed to “transport to the closest appropriate hospital.” This was done to accommodate for the fact that the CDC document was created with consideration for systems that have Level IV and Level V trauma centers, which Virginia does not have.

Figure 1 Virginia Field Trauma Triage Decision Scheme



Note: Prehospital providers should transfer trauma patients with uncontrolled airway, uncontrolled hemorrhage, or if there is CPR in progress to the closest hospital for stabilization and transfer.

The Medical Direction Committee of the EMS Advisory Board requested that the following statement from page 23 of the CDC's *Guidelines for Field Triage of Injured Patients; Recommendations of the National Expert Panel on Field Triage* be included in this document:

Transition from Step Three to Step Four of Field Trauma Triage Decision Scheme: The answer of "yes" at Step Three of the Decision Scheme mandates transport of the patient to the closest appropriate trauma center, not necessarily to a center offering the highest level of trauma care available, as is the case in Steps One and Two. Which center is the most appropriate at any given time will depend on multiple factors, including the level of trauma center readily available, the configuration of the local or regional trauma system, local EMS protocols, EMS system capacity and capability, transport distances and times, and hospital capability and capacity. Patients whose injuries meet mechanism-of-injury criteria but not physiologic or anatomic criteria do not necessarily require the highest level of care available. At the time of evaluation, these patients are hemodynamically stable, have a GCS of >14, and have no anatomic evidence of severe injury. Their risk lies only in the mechanism by which they were injured. Thus, they require evaluation but do not need immediate transport by EMS providers to a Level I or Level II facility. If a severe injury is identified at the initial hospital evaluation, these patients may be transferred subsequently to a higher level of trauma care. For patients who do not meet Step Three criteria, the EMS provider should proceed to Step Four of the Scheme (Centers for Disease Control and Injury Prevention, 2009, p. 23).

To review the above information, the evidence supporting the guideline and other detailed information about the rationale for field trauma triage the reader is referred to the document "*Guidelines for Field Triage of Injured Patients, Recommendations of the National Expert Panel of Field Triage.*" The document was released by the Centers for Disease Control and Injury Prevention via the Morbidity and Mortality Weekly Report (MMWR) on January 23, 2009 / Vol. 58 / No. RR-1. This report and other resource materials are available on-line at <http://www.cdc.gov/FieldTriage/>.

Trauma Patient Transport Considerations

EMS Patient Care Protocols must 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, or loss of resources such as electric power need to be made in advance of being on scene with a critical trauma patient.

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

The developers of this plan identified the following criteria to initiate field transports by helicopter of trauma patients as defined in this plan. Field transport of trauma patients by helicopter would be expected to:

1. Lessen the time from on scene to a hospital compared to ground transport;
2. Bypass a non-trauma designated hospital to transport directly to a trauma center in not greater than 30 minutes;
3. Meet the clinical triage criteria for transport to the closest Level I Trauma Center, or when appropriate the closest Level II Trauma Center;
4. Meet the greater level of care needed by the patient, provided that the Medevac unit can be on scene in a time shorter than the ground unit can transport to the closest hospital; and/or,
5. Document extenuating circumstances such as safety, egress/access similar to other “extraordinary” care scenarios.

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; and
- 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 or 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 VDH as a trauma center should expeditiously transfer injured patients who meet the physiological and/or anatomic criteria in Table 2 to an appropriate trauma center.

Table 2

<p>Adult Criteria: Based on the Resources for Optimal Care of the Injured Patient: 1999 (American College of Surgeons, 1999) and adapted by the TSO&MC.</p> <p>Respiratory</p> <ul style="list-style-type: none"> • Bilateral thoracic injuries • Significant unilateral injuries in patients under age 60 (e.g. pneumothorax, hemo-pneumothorax, pulmonary contusion, >5 rib fractures) • Significant unilateral injuries in patients with pre-existing cardiac and/or respiratory disease • Respiratory compromise requiring intubation • Flail chest <p>Central Nervous System</p> <ul style="list-style-type: none"> • Unable to follow commands • Open skull fracture • Extra-axial hemorrhage on CT, or any intracranial blood • Paralysis • Focal neurological deficits • Glasgow Coma Scale (GCS) ≤ 12 <p>Cardiovascular</p> <ul style="list-style-type: none"> • Hemodynamic instability as determined by the treating physician • Persistent hypotension Systolic B/P (<100) without immediate availability of surgical team <p>Injuries</p> <ul style="list-style-type: none"> • Any penetrating injury to the head, neck, torso or extremities proximal to the elbow or knee without a surgical team immediately available. • Serious burns/burns with trauma (see Table 5) Significant abdominal to thoracic injuries in patients where the physician in charge feels treatment of injuries would exceed capabilities of the medical center <p>Special Considerations</p> <ul style="list-style-type: none"> • Trauma in pregnancy (≥ 24 weeks gestation) • Special needs individuals • Geriatric • Bariatric

Table 3

<p>Pediatric Criteria: Based on the Resources for Optimal Care of the Injured Patient: 1999 (American College of Surgeons, 1999) and adapted by the TSO&MC.</p> <p>All pediatric patients with Pediatric Trauma Scores ≤ 6 * See pediatric trauma score in Table 4</p> <p>Respiratory</p> <ul style="list-style-type: none"> • Bilateral thoracic injuries • Significant unilateral injuries in patients with pre-existing cardiac and/or respiratory disease • Flail chest <p>Central Nervous System</p> <ul style="list-style-type: none"> • Open skull fracture • Extra-axial hemorrhage on CT Scan • Focal neurological deficits <p>Injuries</p> <ul style="list-style-type: none"> • Any penetrating injury to the head, neck, chest abdomen or extremities proximal to the knee or elbows without a surgical team immediately available • Combination of trauma with burn injuries • Any injury or combination of injuries where the physician in charge feels treatment of the injuries would exceed the capabilities of the medical center

Pediatric Trauma Score

Table 4

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

Source: The Pediatric Trauma Score was first released as an accurate predictor of injury severity in pediatric trauma patients in 1987 (Tepas, 1987)

Key for Pediatric Trauma Score

B/P – Blood Pressure	Cm – centimeter	ETT – Endotracheal tube
mm – millimeter	Kg - kilogram	EOA – Esophageal Obturator Airway
Hg – mercury	O2 – oxygen	GSW – gunshot wound

BURN-RELATED INJURIES

Table 5

<p>The American Burn Association has identified the following injuries that usually require referral to a burn center.</p> <ul style="list-style-type: none"> • Partial thickness and full thickness burns greater than 10 percent of the total body surface area (BSA) in patients under 10 or over 50 years of age. • Partial thickness burns and full thickness burns greater than 20 percent BSA in other age groups. • Partial thickness and full-thickness burns involving the face, eyes, ears, hands, feet, genitalia or perineum of those that involve skin overlying major joints. • Full-thickness burns greater than five percent BSA in any age group. • Electrical burns, including lightning injuries; (significant volumes of tissue beneath the surface may be injured and result in acute renal failure and other complications). • Significant chemical burns. • Inhalation injuries. • Burn injury in patients with pre-existing illness that could complicate management, prolong recovery, or affect mortality. • Any burn patient in whom concomitant trauma poses an increased risk of morbidity or mortality may be treated initially in a trauma center until stable before transfer to a burn center. • Children with burns seen in hospitals without qualified personnel or equipment for their care should be transferred to a burn center with these capabilities. • Burn injury in patients who will require special social and emotional or long term rehabilitative support, including cases involving child abuse and neglect.

Inter-Hospital Transports by Helicopter

The developers of this plan determined that any one or more of the following criteria should be met in order to initiate inter-hospital transports by helicopter of trauma patients as defined in this plan:

1. All trauma patients meeting the inter-hospital triage criteria as identified in Table 2 and being transported by helicopter must be transferred to the closest appropriate 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

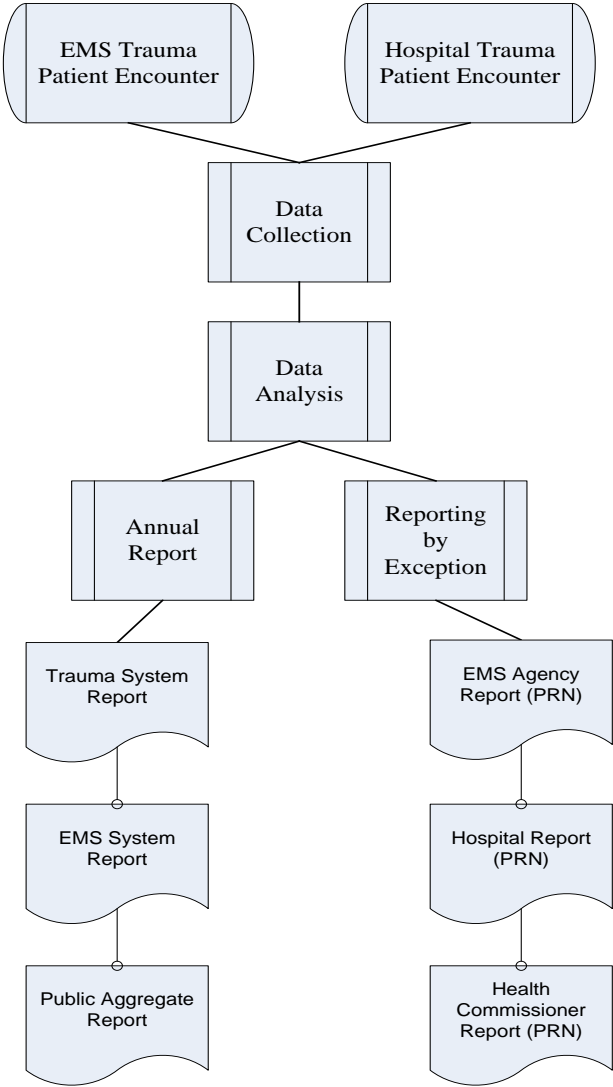
VDH's OEMS is responsible for monitoring and ensuring the quality of trauma care and trauma triage in the Commonwealth. Quality monitoring and assurance is accomplished through several means including, but not limited to, the trauma center designation process, analysis of data from the Emergency Medical Services Patient Care Information System (EMS and Trauma Registries) and from other existing validated sources such as the trauma performance improvement committee, feedback mechanisms, and performance improvement groups throughout the Commonwealth. Figure 2 illustrates the quality monitoring and assurance process.

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 EMS 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. The program will also 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.

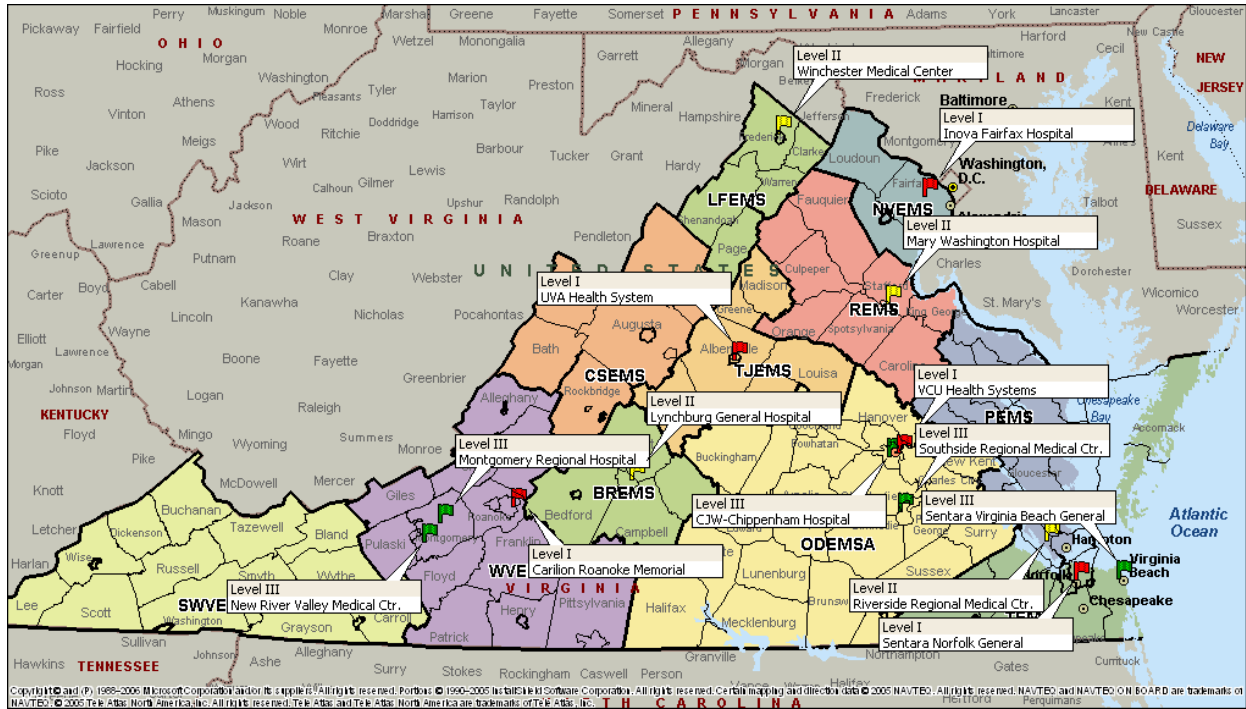
The Commissioner shall ensure the confidentiality of patient information, in accordance with § [32.1-116.1](#). Such data or information in the possession of or transmitted to the Commissioner, the EMS Advisory Board, or any committee acting on behalf of the EMS Advisory Board, any hospital or prehospital 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.

Figure 2 Trauma Triage Quality Monitoring and Assurance Process



Virginia Designated Trauma Centers and Designation Level Description

Figure 3 Map of Virginia Trauma Centers



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 staffs 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 Specialties for Trauma Designation by Level of Designation

Table 6

Surgical Clinical Capabilities: (On call and promptly available)	Level of Designation		
	I	II	III
Trauma/General Surgery	X	X	X
Anesthesiology	X	X	X
Orthopedic Surgery	X	X	X
Thoracic Surgery	X	X	
Cardiac Surgery	X		
Pediatric Surgery	X		
Hand Surgery	X		
Microvascular/Replant Surgery	X		
Neurological Surgery	X	X	
Plastic Surgery	X	X	
Maxillofacial Surgery	X	X	
Ear, Nose & Throat Surgery	X	X	
Oral Surgery	X		
Ophthalmic Surgery	X	X	
Gynecological Surgery/Obstetrical Surgery	X	X	

Source: Virginia Statewide Trauma Center Designation Program Hospital Resource Manual (Health, 2006)

Minimum Medical Specialties for Trauma Designation by Level of Designation

Table 7

Medical Clinical Capabilities: (On call and promptly available)	Level of Designation		
	I	II	III
Cardiology	X	X	
Pulmonology	X		
Gastroenterology	X		
Hematology	X		
Infectious Disease	X		
Internal Medicine	X	X	X
Nephrology	X		
Pathology	X	X	X
Pediatrics	X		
Radiology	X	X	X
Interventional Radiology.	X		

Source: Virginia Statewide Trauma Center Designation Program Hospital Resource Manual (Health, 2006)

Trauma Triage Related Resources

Virginia Office of EMS Trauma Web page:

<http://www.vdh.virginia.gov/OEMS/Trauma/index.htm>

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>

Works Cited

- American College of Surgeons. (1999). *Resources for Optimal Care of the Injured Patient: 1999*. U.S.A: American College of Surgeons.
- Centers for Disease Control and Injury Prevention. (2009). *Guidelines for Field Triage of Injured Patients; Recommendation of the National Expert Panel*. Atlanta: Morbidity and Mortality Weekly Report.
- Committee, T. S. (2009, March). Virginia Trauma Triage Decision Scheme. Richmond, Virginia: Virginia Department of Health.
- Health, V. D. (2006, January). Virginia Statewide Trauma Center Designation Program Hospital Resource Manual. *Virginia Statewide Trauma Center Designation Program Hospital Resource Manual* . Richmond, Virginia, U.S.A: Virginia Department of Health.
- Prevention, C. f. (2009, January 23). *Injury Prevention and Control: Field Triage*. Retrieved January 2009, from Centers for Disease Control and Prevention: <http://www.cdc.gov/FieldTriage/>
- Tepas. (1987). The pediatric trauma score as a predictor of injury in the injured child. *Journall of Pediatric Surgery* , 14.
- Virginia, C. o. (2008). *Code of Virginia*. Retrieved March 2009, from Legislative Information System: <http://leg1.state.va.us/000/src.htm>