

Trauma Team Activation Guideline

December 16, 2024



OFFICE OF COMMUNITY HEALTH
Emergency Care Systems



Publication Number

DOH 689-154

For more information:

Health Services Quality Assurance
Office of Community Health
111 Israel Road SE
Tumwater, WA 98504

Authors:

Tim Orcutt, MSN, RN
Emergency Care Systems Nurse Advisor
Department of Health
360-628-0583
tim.orcutt@doh.wa.gov

Jacob Glaser MD, FACS CAPT USNR
Trauma Medical Director
Trauma, Acute Care, Surgical Critical Care
Madigan Army Medical Center
Adjunct Professor USUHS
jacob.j.glaser.civ@health.mil

We thank the members of the Hospital Technical Advisory Committee and representatives from many of Washington State's designated trauma services for their participation in the development of this guideline.

The Washington State Department of Health distributes this guideline on behalf of the Emergency Medical Services and Trauma Care Steering Committee to assist trauma services with providing care to injured patients.

The Department of Health does not mandate the use of this guideline. The department recognizes the varying resources of different services, and approaches that work for one trauma service may not be suitable for others. The decision to use the content in this guideline depends on the independent judgment of program administrators. We recommend trauma services who choose to use this guideline consult with the department regularly for any updates to its content. The department appreciates receiving any information regarding program experiences using this guideline. Comments can be directed to traumadesignation@doh.wa.gov.

The content in this guideline was adapted from professional literature and the expertise of the trauma community. The guideline was reviewed, and input sought from program administrators throughout Washington state, and used that input to make changes. Both the Emergency Medical Services and Trauma Care Steering Committee and the Department Health, Office of Resilience and Health Security, Emergency Care Systems endorse the guideline.

Contents

- Contents.....4
- Background.....6
- Trauma Team Activation Policy.....7
- Prehospital Trauma Triage Destination Criteria.....8
- Trauma Team Activation.....9
- Full Trauma Team Activation.....9
- Modified Trauma Team Activation.....10
- Table 1 Glasgow Coma Scale.....11
- Table 2 Pediatric Vital Sign Considerations.....12
- Quality Improvement.....13
- References.....14
- Figure 1. Trauma Team Activation Criteria.....16

Background

Trauma team activations are based on the patient's physiologic and anatomic condition as well as the mechanism of injury. Criteria based on these three elements is developed and included in the facility's Trauma Team Activation Policy. If a patient meets any of the criteria, the trauma team should be activated.

The policy may include one or two types of activations depending on the facility's level of designation and available resources. These levels are generally titled as either full or modified activation. The full trauma team activation refers to automatic activation of the entire trauma team, including the general/trauma surgeon, based on the predefined criteria in the facility's policy. Patients meeting any of the full activation criteria items are considered high risk for serious injury. The modified trauma team activation allows for initial activation of a portion of the trauma team (usually excluding the general/trauma surgeon) with subsequent activation of the full team if an upgrade is necessary. Patients meeting any of the modified activation criteria are at moderate risk for serious injury. Trauma services without surgical services in their scope of care (level IV and V) should have one activation level which includes the criteria for both full and modified activation as described below and in [Figure 1](#).



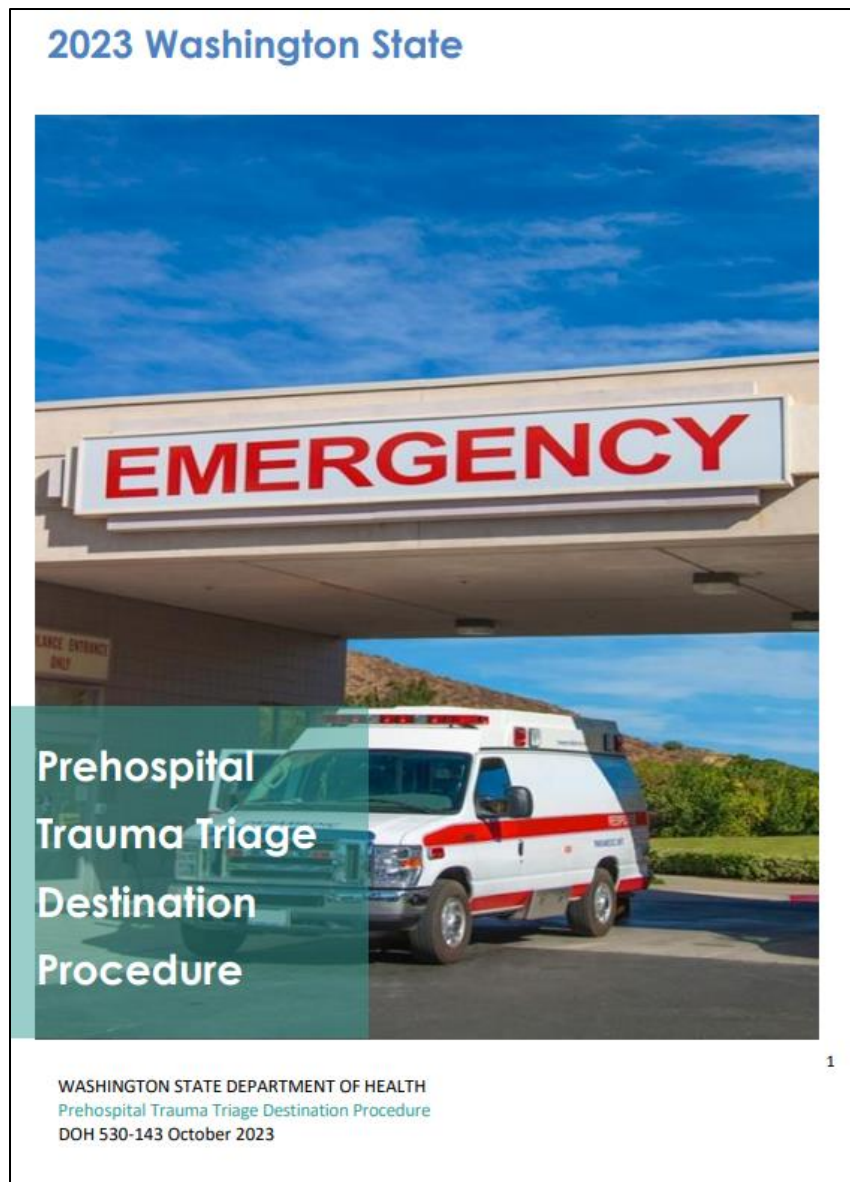
Trauma Team Activation Policy

Designated trauma services in Washington must define their facility trauma team activation criteria in a policy.

The policy must include physiologic, anatomic, and mechanism of injury criteria. In addition, it must define the team members and the process used to activate the team. The policy must require the trauma team to be activated based on prehospital information when available and be applied regardless of the time post injury or previous care. Additional specific facility trauma team activation requirements are found in [WAC 246-976-700](#).

Prehospital Trauma Triage Destination Criteria

Prehospital agencies are required to follow the state [Prehospital Trauma Triage Destination Procedure](#) which provides criteria to guide prehospital providers to determine the best location/facility to transfer trauma patients to, based on their anatomical and physiological condition along with the mechanism of injury. In an attempt to standardize care, the prehospital criteria has been incorporated into this hospital-based guideline. All trauma services are required to activate the trauma team based on prehospital information when the individual hospital trauma team activation criteria are met in the field.



Trauma Team Activation

This guideline outlines trauma team members and defines the minimum physiologic, anatomic, and mechanism of injury criteria for full and modified trauma team activations. Additional criteria may need to be added based on community need and local hospital resources. There is a summary of criteria in [Figure 1](#).

Full Trauma Team Activation

The full trauma team is the top level of activation for patients at **high risk for serious injury**. It includes the mandatory presence of the general surgeon for facilities with surgical services in their scope of care. This guideline defines the overall patient criteria with the recommended minimum full activation criteria **bolded**. The minimum activation criteria is based on the recommendations from the American College of Surgeons Committee on Trauma.

Full Trauma Team Activation Criteria

- Unable to follow commands, **Glasgow Coma Scale (GCS) score less than 9**, motor score less than six (as report by prehospital providers, consider full or modified activation), or AVPU (responsive to pain or unresponsive).
An age specific GCS scoring reference is available in [Table 1](#).
- **Hypotension at any time in the field or emergency department (ED) with injury mechanism:**
 - Ages 0-9 years with systolic blood pressure (SBP) less than $70\text{mmHg} + (2 \times \text{age in years})$.
 - Ages 10-64 with SBP less than 90mmHg or heart rate greater than SBP.
 - Ages greater than or equal to 65 with SBP less than 110mmHg (relative hypotension, consider full or modified activation) or HR greater than SBP.

* Consider the need to confirm SBP by second measurement in rapid succession.
- Respiratory rate less than 10 or greater than 29 breaths per minute for adults.
- Pediatric patients with signs of poor perfusion: tachycardia, tachypnea, capillary refill greater than three seconds, skin mottling, and cyanosis. SBP alone in children is a poor predictor and may be a late sign of shock. Pediatric vital sign activation considerations are found in [Table 2](#).
- Respiratory distress or need for respiratory support.
- Room air pulse oximetry less than 90%.
- **Intubated or need for emergent airway, respiratory distress needing respiratory support.**
- **Penetrating injuries to head, neck, chest, abdomen, and proximal extremities.**
- Skull deformity, suspected skull fracture.
- Spinal injury with new motor or sensory loss.
- Chest wall instability, deformity, suspected flail chest. Multiple (three or more) rib fractures, hemothorax or pneumothorax.
- Suspected pelvic fracture with high mechanism of injury (MOI).
- Suspected fracture of two or more proximal long bones with high MOI.
- Crushed, degloved, mangled, or pulseless extremity.
- Amputation to proximal to wrist or ankle.
- Active bleeding requiring a tourniquet or wound packing with continuous pressure.

- Any trauma patient requiring a blood product transfusion to maintain vital signs.
- Multiple casualties beyond available resources.
- Patients not meeting criteria, but physician or nurse concerned, or additional resources needed.

Full Trauma Team Members

- General Surgeon
- Emergency Physician
- Respiratory Therapists
- Anesthesiologist or Certified Registered Nurse Anesthetist (upon request)
- Trauma Registered Nurse
- Laboratory / Blood Bank Staff
- Radiologic Technologist

Full Trauma Team Activation – Pediatric

Patients less than or equal to 14 years of age meeting full trauma team activation criteria. For pediatric designated facilities include all full trauma team personnel with the addition of one of the following:

- Pediatric Surgeon
- Pediatric Emergency Medicine Physician
- Pediatric Intensivist
- Pediatrician

Full Trauma Team Activation – Pregnancy

Any pregnant patient (gestational age greater than 20 weeks) who meets full trauma team activation criteria.

OB full trauma team – include all full trauma team personnel with the addition of one of the following when available:

- Obstetrician
- Pediatrician

Modified Trauma Team Activation

The modified trauma team is the second level of activation for patients at **moderate risk for serious injury**.

Modified Trauma Team Activation Criteria

- High-risk auto crash
 - Partial or complete ejection.
 - Significant intrusion (including roof)
 - greater than 12 inches occupant site OR
 - greater than 18 inches any site OR
 - Need for extrication for entrapped patient.
 - Death in passenger compartment.
 - Child (age 0-9 years) unrestrained or in an unsecured child safety seat.
 - Vehicle telemetry data consistent with severe injury.
- Rider separated from transport vehicle with significant impact (e.g., Motorcycle, ATV, horse, etc.).

- Pedestrian or bicycle rider thrown, run over, or with significant impact.
- Fall from height greater than 10 feet (all ages).
- Burns associated with trauma.

Consider activation related to risk factors associated with:

- Low-level falls in older adults (age greater than or equal to 65 years) with significant head impact.
- Anticoagulant/Antiplatelet use.
- Nonaccidental trauma.
- Geriatric trauma (age greater than or equal to 65 years).
- Special, high-resource healthcare needs.
- Pregnancy greater than 20 weeks.

Modified Trauma Team Includes

- ED Physician
- ED Registered Nurse
- Respiratory Therapist (as needed)
- Radiology Technician

Modified Trauma Team Activation - Pediatric

Any patient less than 14 years meeting MTTA criteria consider pediatrician presence or consult.

Modified Trauma Team Activation - OB

Pregnancy greater than 20 weeks gestation (fundus at umbilicus if gestational age unknown).

Upgrading

A process must be in place to upgrade a nonactivated or modified activated trauma patient if new information is obtained or if the patient's condition deteriorates.

Table 1. Glasgow Coma Scale	
<p>Adult</p> <p>Best eye response (4)</p> <ol style="list-style-type: none"> 1. No eye opening 2. Eye opening to pain 3. Eye opening to sound 4. Eyes open spontaneously <p>Best verbal response (5)</p> <ol style="list-style-type: none"> 1. No verbal response 2. Incomprehensible sounds 3. Inappropriate words 4. Confused 5. Orientated <p>Best motor response (6)</p> <ol style="list-style-type: none"> 1. No motor response. 2. Abnormal extension to pain 3. Abnormal flexion to pain 4. Withdrawal from pain 5. Localizing pain 6. Obeys commands 	<p>Children less than 2 years old (pre-verbal)</p> <p>Best eye response</p> <ol style="list-style-type: none"> 1. No eye opening 2. Eye opening to pain 3. Eye opening to sound 4. Eyes open spontaneously <p>Best verbal response</p> <ol style="list-style-type: none"> 1. None 2. Moans in response to pain 3. Cries in response to pain 4. Irritable/cries 5. Coos and babbles <p>Best motor response</p> <ol style="list-style-type: none"> 1. No motor response 2. Abnormal extension to pain 3. Abnormal flexion to pain 4. Withdrawal to pain 5. Withdraws to touch 6. Moves spontaneously and purposefully <p>Children greater than 2 years old (verbal)</p> <p>Best eye response</p> <ol style="list-style-type: none"> 1. No eye opening 2. Eye opening to pain 3. Eye opening to sound 4. Eyes open spontaneously <p>Best verbal response</p> <ol style="list-style-type: none"> 1. None 2. Incomprehensible sounds 3. Incomprehensible words 4. Confused 5. Orientated - appropriate <p>Best motor response</p> <ol style="list-style-type: none"> 1. No motor response. 2. Abnormal extension to pain 3. Abnormal flexion to pain 4. Withdrawal to pain 5. Localizes to pain 6. Obeys commands

Table 2. Pediatric Vital Sign Trauma Activation Considerations			
Age	Heart Rate (beats/min)	SBP (mmHg)	Resp Rate (breaths/min)
Infant 0-12 months	> 160	< 60	> 60
Toddler 1-2 years	> 150	< 70	> 40
Preschool 3-5 years	> 140	< 75	> 35
School Age 6-12 years	> 120	< 80	> 30
Adolescent ≥ 13 years	> 100	< 90	> 30

Quality Improvement

Activating the trauma team appropriately is one of the founding principles of any trauma program. To ensure the activations are occurring correctly, the process must be measured. At a minimum, trauma program leaders must measure the over and under triage rates along with the response times of the general surgeon, emergency physician and specialty physicians. The process should be documented as a performance measure where the values are recorded monthly throughout the year with an established benchmark for each. The benchmark for under triage should be no more than 5% and over triage no more than 30%. The physician response times are based on the Trauma Service Standards in [WAC 246-976-700](#), by designation level. An example performance measures document can be found in the [Quality Improvement Toolkit](#).



References

- American College of Surgeons Committee on Trauma, (2013). Advanced trauma life support (ATLS®): the ninth edition.
- American College of Surgeons. Resources for the Optimal care of the Injured Patient: (2022). Chicago, IL.
- Brown, J. B., Gestring, M. L., Forsythe, R. M., Stassen, N. A., Billiar, T. R., Peitzman, A. B., & Sperry, J. L. (2015). Systolic blood pressure criteria in the National Trauma Triage Protocol for geriatric trauma: 110 is the new 90. *The journal of trauma and acute care surgery*, 78(2), 352–359. <https://doi.org/10.1097/TA.0000000000000523>
- Falcone et al. (2012). A Multicenter Prospective Analysis Of Pediatric Trauma Activation Criteria Routinely Used In Addition To The Six Criteria Of The American College Of Surgeons. *The Journal of Trauma and Acute Surgery*, 73(2), 377-384.
- Greene, W., Robinson, L., Rizzo, A., Sakran, J., Hendershot, K., Moore, A., ... Fakhry, S. (2007). Pregnancy is Not a Sufficient Indicator for Trauma Team Activation. *The Journal of Trauma: Injury, Infection, and Critical Care*, 63(3), 550-555.
- National Guideline for the Field Triage of Injured Patients: Recommendations of the National Expert Panel on Field Triage. *Journal of Trauma and Acute Care Surgery*.
- Newgard, C. D., Fischer, P. E., Gestring, M., Michaels, H. N., Jurkovich, G. J., Lerner, E. B., Fallat, M. E., Delbridge, T. R., Brown, J. B., Bulger, E. M., & Writing Group for the 2021 National Expert Panel on Field Triage (2022). National guideline for the field triage of injured patients: Recommendations of the National Expert Panel on Field Triage, 2021. *The journal of trauma and acute care surgery*, 93(2), e49–e60. <https://doi.org/10.1097/TA.00000000000003627>
- Schellenberg, M., Benjamin, E., Bardes, J. M., Inaba, K., & Demetriades, D. (2019). Undertriaged trauma patients: Who are we missing?. *The journal of trauma and acute care surgery*, 87(4), 865–869. <https://doi.org/10.1097/TA.00000000000002393>
- Tignanelli, C. J., Vander Kolk, W. E., Mikhail, J. N., Delano, M. J., & Hemmila, M. R. (2018). Noncompliance with American College of Surgeons Committee on Trauma recommended criteria for full trauma team activation is associated with undertriage deaths. *The journal of trauma and acute care surgery*, 84(2), 287–294. <https://doi.org/10.1097/TA.00000000000001745>
- Washington State Department of Health [Prehospital Trauma Triage Destination Procedure](#) (2023).

Figure 1. Trauma Team Activation Criteria

Full Trauma Team Activation (High Risk For Serious Injury)		
Assessment	Activation Criteria: Injury Patterns/Mental Status & Vital Signs	Comments
Primary Survey: Physiologic	Airway Breathing	<p>Team Members General Surgeon Emergency Physician ED/Trauma Nurse Respiratory Therapy Anesthesia/CRNA (upon request) Radiology Technician Laboratory Staff</p> <p>Special Considerations: Geri Trauma Age ≥ 65 with MOI and SBP <110, consider for full activation, modified activation if minimal concern.</p> <p>Special Considerations: Ped Trauma Age ≤14 meeting ANY of the Full Trauma Team Activation criteria include all FTTA personnel with the addition of one of the following: • Pediatric Surgeon • Pediatric EM Physician • Pediatric Intensivist • Pediatrician</p> <p>Special Considerations: OB Trauma Pregnant patient (GA ≥= 20 weeks) that meets ANY of the Full Trauma Team Activation criteria include FTTA personnel with the addition of: • Obstetrician and/or • Pediatrician</p> <p>* The full trauma team must be activated if the patient meets any of the facility criteria in the prehospital or hospital setting.</p>
	Circulation	
	Deficit	
Secondary Survey: Anatomic		

Modified Trauma Team Activation (Moderate Risk For Serious Injury)

Assessment	Activation Criteria: Injury Patterns		Comments
Secondary Survey: History	MOI	<ul style="list-style-type: none"> • High-risk auto crash - Partial or complete ejection - Significant intrusion (including roof) <ul style="list-style-type: none"> ▪ >12 inches occupant site OR ▪ >18 inches any site OR ▪ Need for extrication for entrapped patient - Death in passenger compartment - Child (age 0-9 years) unrestrained or in unsecured child safety seat - Vehicle telemetry data consistent with severe injury • Rider separated from transport vehicle with significant impact (e.g., Motorcycle, ATV, horse, etc.) • Pedestrian/bicycle rider thrown, run over, or with significant impact • Fall from height > 10 feet (all ages) • Burns associated with trauma • Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact 	<p>Team Members</p> <p>Emergency Physician ED/Trauma Nurse Respiratory Therapy (as needed) Radiology Laboratory</p> <p>Special Considerations: Pediatric Trauma Age ≤14. Consider the need to consult to:</p> <ul style="list-style-type: none"> • Pediatric Surgeon • Pediatric Intensivist • Pediatrician <p>Special Considerations: OB Trauma</p> <p>Pregnant patient, consider the need to consult to:</p> <ul style="list-style-type: none"> • Obstetrician and/or • Pediatrician
Secondary Survey: History	Considerations	<p>Consider activation for risk factors:</p> <ul style="list-style-type: none"> • Anticoagulant use • Nonaccidental trauma • Geriatric trauma (age ≥ 65 years) • Special, high-resource healthcare needs • Pregnancy > 20 weeks gestation (fundus at umbilicus if gestational age unknown) • ED physician or nurse discretion 	<ul style="list-style-type: none"> * The modified trauma team must be activated if the patient meets any of the facility criteria in the prehospital or hospital setting.



DOH 689-154

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email doh.information@doh.wa.gov.