



Multiple Trauma

History

- Time and mechanism of injury
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints/ protective equipment
- Past medical history
- Medications

Signs and Symptoms

- Pain, swelling
- Deformity, lesions, bleeding
- Altered mental status or unconscious
- Hypotension or shock
- Arrest

Differential (Life threatening)

- Uncontrolled hemorrhage
- Airway obstruction/ deformity
- Chest:
 - Tension pneumothorax
 - Flail chest/ Open chest wound
 - Pericardial tamponade/ Hemothorax
- Head Trauma Protocol TB 5
- Intra-abdominal bleeding
- Pelvis/ Femur/ Extremity fracture
- Spine fracture/ Cord injury
- Hypothermia

	Age Appropriate Airway Protocol(s) AR 1 - 7 as indicated
P	Chest Decompression Procedure WTP 1 if indicated
	Control External Hemorrhage Procedure(s) WTP 4, 5, 7 Consider Pelvic Binding Splint Fractures Procedure WTP 3
	IV or IO Access Protocol UP 6
	Spinal Motion Restriction Procedure WTP 2 Spinal Motion Restriction Protocol TB 8 if indicated
	Obtain and Record GCS

<p>TXA/ Blood Product Indicators: V/S parameters for blunt or penetrating trauma:</p> <p>Adult:</p> <ul style="list-style-type: none"> • SBP \leq 70 mmHg or • SBP \leq 90 mmHg + HR \geq 110 • <u>Age \geq 65</u> SBP < 100 mmHg + HR > 100 <p>Peds:</p> <ul style="list-style-type: none"> • SBP < {70 + 2(Age)}
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VS / Perfusion Abnormal / Shock?

YES

NO

	Age Appropriate Hypotension/ Shock Protocol AM 5/ PM 3 if indicated
P	TXA 1 - 2 g over 10 minutes IV / IO
	Blood Products if indicated

	Head Injury Protocol TB 5 if indicated
	Altered Mental Status Protocol UP 4 if indicated
	Pain Control Protocol UP 11 if indicated
	Extremity Trauma Protocol TB 4 if indicated
	Crush Syndrome Protocol TB 3 if indicated
	Repeat Assessment Adult Procedure
	Monitor and Reassess

<p>Rapid Transport to appropriate destination using Trauma and Burn: EMS Triage and Destination Plan Limit Scene Time \leq 15 minutes Provide Early Notification</p>	
	<p>Notify Destination or Contact Medical Control</p>



Multiple Trauma

Pearls

- **Recommended Exam:** Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro
- **Items in Red Text** are key performance measures used in the EMS Acute Trauma Care Toolkit
- **Scene time** should not be delayed for procedures and all should be performed during rapid transport of unstable patients.
- **Ask all patients** if they are taking any anticoagulants and report during facility transition of care.
- **Airway:**
 - BVM and BIAD are acceptable for airway management to maintain SpO₂ of 92 – 98%.
 - Endotracheal intubation, if performed, should be completed during transport and should not delay scene time.
- **Breathing:**
 - Consider Chest Decompression with signs of shock and/ or injury to torso with evidence of tension pneumothorax.
- **Circulation:**
 - Control external hemorrhage and prevent hypothermia by keeping patient warm.
 - IV or IO access should be established during rapid transport of unstable patients.
- **Head Injury with multiple trauma (Refer to Head Trauma Protocol TB 5):**
 - Higher SBP targets are needed to maintain cerebral perfusion pressure.
 - Single episodes of Hypotension and/ or hypoxia are associated with worse outcomes in head injured patients.
 - Adult SBP target is ≥ 100 mmHg.
 - Pediatric SPB target is $\geq 70 + 2(\text{Age})$ mmHg.
- **Trauma Triad of Death:**
 - Metabolic acidosis/ Coagulopathy/ Hypothermia
 - Address by appropriate resuscitation measures and keeping patient warm, regardless of ambient temperature, which helps to treat metabolic acidosis, coagulopathy, and hypothermia.
- **Tranexamic Acid (TXA):**
 - Agencies utilizing TXA must submit letters from the their receiving trauma centers for approval by the OEMS Medical Director.
 - Receiving trauma centers must agree to continue TXA therapy with repeat dosing.
 - TXA is NOT indicated and should NOT be administered where trauma occurred > 3 hours prior to EMS arrival.
- **Trauma in Pregnancy:**
 - Providing optimal care for the mother = optimal care for the fetus.
 - After 20 weeks gestation (fundus at or above umbilicus) transport patient on left side with 10 – 20° of elevation.
- **Geriatric Trauma:**
 - Age ≥ 65 : SBP < 110 mmHg or HR > SBP may indicate shock.
 - Evaluate with a high index of suspicion, occult injuries difficult to recognize and with unexpected patient decompensation.
 - Risk of death with trauma increases after age 55.
 - Low impact mechanisms, such as ground level falls might result in severe injury especially in age over 65.
- See Regional Trauma Guidelines when declaring Trauma Activation.
- Maintain high-index of suspicion for domestic violence or abuse, pediatric non-accidental trauma, or geriatric abuse.
- **Refer to your Regional Trauma Guidelines when declaring Trauma Activation.**
- Severe bleeding from an extremity, not rapidly controlled with direct pressure, needs application of a tourniquet.
- Maintain high-index of suspicion for domestic violence or abuse, pediatric non-accidental trauma, or geriatric abuse.