

Multiple Trauma



- 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 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**

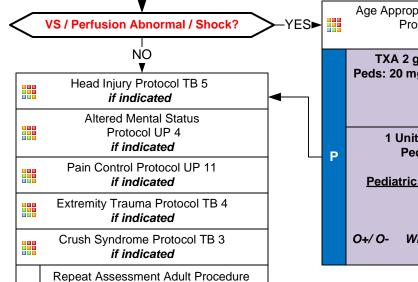
TXA/ Blood Product Indicators: V/S parameters for blunt or penetrating trauma:

Adult:

- SBP ≤ 90 mmHg
- Age ≥ 65 SBP < 100 mmHg + HR > 100

Peds:

 $SBP < \{70 + 2(Age)\}$



Age Appropriate Hypotension/ Shock Protocol AM 5/ PM 3 if indicated

TXA 2 g over 10 minutes IV / IO Peds: 20 mg/kg IV / IO over 10 minutes Maximum 2 gm

if indicated

1 Unit Blood Product IV / IO Peds: 20 mL/kg IV / IO

Pediatric Age and Weight Criteria: ≥ 3 years of age

> Or ≥ 15 kg

Whole Blood or Packed RBCs if indicated

IV / IO Fluid Resuscitation Volumes:

Adult:

Blunt trauma or Penetrating Trauma:

250 mL boluses to maintain SBP of ≥ 80 mmHg.

HEAD INJURY with Blunt or Penetrating trauma:

250 mL boluses to maintain SBP of ≥ 100 mmHg.

20 mL/kg boluses to maintain SBP < {70 + 2(Age)} See Page 2

Notify Destination or Contact Medical Control

Rapid Transport to appropriate destination using **Trauma and Burn:**

EMS Triage and Destination Plan

Limit Scene Time ≤ 15 minutes **Provide Early Notification**

Monitor and Reassess





Multiple Trauma



TXA Guidelines for administration:

- Give with uncontrolled, non-compressible hemorrhage or hemorrhage that cannot be stopped with a tourniquet.
- Adults with non-compressible hemorrhage and BP < 90 mmHg
- Adult geriatric patients (≥ 65 years of age) with SBP < 100 mmHg and HR > 100 with uncontrolled, non-compressible hemorrhage.

Blood Products:

- Preferentially will have O- Whole Blood.
- During times of blood shortages:

We may have O+ Whole Blood.

We may have Packed Red Blood Cells (PRBC).

O- or O+ may be given to men and women, as well as children who are ≥ 3 years of age and/ or ≥ 15 kg in weight.

IV / IO Resuscitation Volumes

- If blood products available and indicated, give 1 entire unit in adults or 20 mL/kg bolus in pediatrics.
- Do not titrate blood products to blood pressure, blood pressure parameters only indicated when giving NS or LR.

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 ≥ 70 + 2(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 $10 - 20^{\circ}$ 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.