Multi-System Trauma

For any traumatic injuries that involve multiple systems or isolated chest or abdominal injuries. For injuries involving the head, use Head Trauma protocol.

**History**
- Time of injury
- Mechanism (blunt vs. penetrating)
- Damage to structure or vehicle
- Location of patient in structure or vehicle
- Restraints or protective equipment use
- Past medical history
- Medications

**Signs and Symptoms**
- Evidence of trauma
- Pain, swelling, deformity, lesions, or bleeding
- AMS
- Unconscious
- Respiratory distress or failure
- Hypotension or shock
- Arrest

**Differential**
- Chest:
  - Tension pneumothorax
  - Flail chest
  - Pericardial tamponade
  - Open chest wound
  - Hemothorax
- Intra-abdominal bleeding
- Pelvis or femur fracture
- Spinal injury
- Head injury
- Hypothermia

**Early transport**
Limit scene time to 10 minutes

- Control hemorrhaging
  - Apply tourniquet for uncontrolled hemorrhage
  - If wound is in a critical vascular area not accessible for a tourniquet,
    - Wound packing with hemostatic gauze
  - Secure airway and support respiratory rate
  - Spinal Motion Restriction
    - if indicated
  - Place splints and cold packs to stabilize fractures as necessary

**P**
- Needle decompression
  - For open wounds to chest/abdomen, apply occlusive dressing

**E**
- Establish IV/IO
- Cardiac monitor
- EtCO₂ monitoring

If SBP < 80 in adults
- Normal Saline bolus 500ml IV/IO
  - May repeat as long as criteria above exists.
  - Maximum 1L
  - If poor perfusion or shock in peds
    - Normal Saline bolus IV/IO
    - Use pediatric tape and refer to dosing guide
  - Repeat to age dependent goal SBP
  - May repeat as long as criteria above exists

**P**
- For Adults, consider Ondansetron
- For peds patients ≥ 4 years, consider Ondansetron
  - Use pediatric tape and refer to dosing guide

In the absence of head trauma, age-specific hypotension, poor perfusion or AMS
- Consider, Acetaminophen or Fentanyl for pain control

**Notify receiving facility.**
Contact Base Hospital for medical direction

**Tourniquet use should not be delayed until a patient is in shock or is clearly exsanguinating. It should be applied early and can be used safely without risk of patient injury. Do not wait; apply often and tighten if needed.**

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**Spinal Motion Restriction if indicated**
- Secure airway and support respiratory rate
- Place splints and cold packs to stabilize fractures as necessary

**Spinal Arrest/Failure**
- Cardiac monitor
- EtCO₂ monitoring
- Establish IV/IO

If SBP < 80 in adults
- Normal Saline bolus 500ml IV/IO
  - May repeat as long as criteria above exists.
  - Maximum 1L
  - If poor perfusion or shock in peds
    - Normal Saline bolus IV/IO
    - Use pediatric tape and refer to dosing guide
  - Repeat to age dependent goal SBP
    - May repeat as long as criteria above exists

**For Adults,** consider Ondansetron
**For peds patients ≥ 4 years,** consider Ondansetron
  - Use pediatric tape and refer to dosing guide

In the absence of head trauma, age-specific hypotension, poor perfusion or AMS
- Consider, Acetaminophen or Fentanyl for pain control

**Notify receiving facility.**
Contact Base Hospital for medical direction

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**Suspected head injury?**
- Yes
  - Trauma – Head Trauma

**Tourniquet use should not be delayed until a patient is in shock or is clearly exsanguinating. It should be applied early and can be used safely without risk of patient injury. Do not wait; apply often and tighten if needed.**
Prevention and reversal of hypothermia associated with shock from severe traumatic injury is critical. Apply blankets early and consider activation of heater in the patient compartment of the ambulance.

ALS procedures in the field do not significantly improve patient outcome in critical trauma patients.

Basic airway management is preferred unless unable to effectively manage with BLS maneuvers. Utilize modified jaw thrust technique to open the airway.

Intubation of head injury patients is best addressed at the hospital.

Hypotension is age dependent and is not always a reliable sign. It should be interpreted in context with the patient’s typical BP, if known. Shock may be present with a seemingly normal blood pressure initially.

- Neonate: < 60mmHg or weak pulses
- Infant: < 70mmHg or weak pulses
- 1-10 years: < 70mmHg + (age in years x2)
- Over 10 years: <80mmHg
- Over 65 years: <110mmHg

Stabilize flail segments with bulky dressing.

Cover eviscerated bowel with dry sterile dressing.

Stabilize impaled object(s) with bulky dressing. Do not remove.

Avoid hyperventilation. Maintain an EtCO₂ of 35 or greater, which may be unreliable if the patient was subject to multisystem trauma or poor perfusion.

An important item to monitor and document is a change in the level of consciousness by repeat examination.

Do not overlook the possibility of associated domestic violence or abuse.