

## TRAUMA-RELATED SIGNS & SYMPTOMS

### SIGNS & SYMPTOMS:

1. Contusion, abrasion, laceration, hematoma
2. Pain, tenderness, guarding, numbness/tingling
3. Bruising, swelling, deformity, false/limited motion
4. Muscle weakness/paralysis, loss of sensation
5. Altered mental status
6. Irregular/unstable vital signs
7.  $\neq$  pupils, JVD, incontinence, SQ air
8. Pale, cool, clammy skin; delayed capillary refill

### OBTAIN HISTORY OF:

1. PMH/Meds/Allergies
2. Mechanism of injury/weapon description
3. Use of protective devices: helmets, seatbelts, airbags, padding
4. Substance abuse
5. Estimated blood loss at scene
6. Time of injury
7. Loss of consciousness

### PRECAUTIONS:

1. Pulse oximetry readings may be difficult to obtain in states of low perfusion.
2. Substance abuse masks the signs of injury and illness. Any patient who is unconscious, has an altered mental status, or has a head injury has the potential for a spinal injury.

### BASIC LIFE SUPPORT CARE:

1. Notify medical control immediately of any patient that meets trauma team alert criteria.
2. If signs and symptoms of shock, keep patient warm and consider Trendelenburg Position.
3. Take spinal precautions while assessing and supporting ABCs. Assist ventilations on any patient with decreased LOC and respirations  $< 10$  or  $> 30$ .
4. Control bleeding with direct pressure, elevation, and pressure points. Apply hemorrhage control agent as appropriate and available.
5. Administer high concentration oxygen.
6. Backboard patient with C-collar if patient complains of head, neck, or back pain, or if suggested by mechanism of injury, or if history is unreliable due to unconsciousness or altered mental status.
7. In extremity trauma with loss of distal pulse, prior to splinting, make one gentle attempt with traction to realign long bones to restore distal circulation. If unsuccessful, splint as indicated and notify receiving personnel immediately about circulatory status. Do not attempt to reduce/realign injured joints.
8. Immediately begin transport to a Level I Trauma Center, any patient with significant airway, breathing, circulatory, or neurological compromise. **Attempt to keep scene time to 5 minutes in severe trauma, but remember that time spent at the scene, assessing and managing the patient's ABCs is time well spent.** Focused surveys, if patient is critical, should be performed enroute.
9. EMT with IV training - initiate large bore IV(s) in any patient exhibiting signs and symptoms of shock or who has the potential to become shocky due to known injuries or mechanism of injury. IV/IO(s) in unstable patients should be established enroute unless extrication is delayed. Do not delay rescue or extrication for IV/IO.
10. Consider fluid challenges in any adult patient with systolic BP  $< 90$ . Attempt to maintain systolic BP @ 90 – 100 mmHg. Fluid challenges are typically 20 cc/kg.

### ADVANCED LIFE SUPPORT CARE: In addition to above and as appropriate:

1. Consider ET intubation in any patient with a GCS  $< 9$ .
2. Perform chest decompression if evidence of tension pneumothorax.
3. Perform pericardiocentesis if evidence of cardiac tamponade.
4. Perform surgical airway if needed to obtain airway.
5. Initiate cardiac monitoring enroute.
6. Consider pain medications as appropriate for isolated extremity trauma.

7. Do not delay transport for RSI! Medications should be prepared enroute and the ambulance stopped to perform the RSI/intubation.

**PEDIATRIC CONSIDERATIONS:**

1. In children with signs & symptoms of shock, consider fluid challenges of 20 cc/kg. IO may be the preferred route in pediatric patients < 8 with significant injuries.

**HELMET CONSIDERATIONS:** The decision about whether to remove a helmet should be based on three factors: 1) the ability of EMS personnel to access the patient's ABC for an evaluation and provide treatment if indicated, 2) the status of the patient's level of consciousness and ABCs, and 3) the existence of shoulder pads.

1. The relative position of the head and thorax must be considered when immobilizing a patient wearing helmet and shoulder pads. Patients with football shoulder pads and helmets are generally held in a neutral alignment when wearing both pieces of equipment. Patients wearing hockey or lacrosse shoulder pads are generally not neutrally aligned. Removal of the shoulder pads should be considered if the helmet is removed.
  - A. In the stable patient without ABC or neurological compromise, both the helmet and shoulder pads should be left in place. Padding, as necessary, should be placed to maintain neutral alignment. Stabilization may be accomplished using the horseshoe blanket technique and 2" tape.
  - B. The facemask and chinstrap should be removed, regardless of ABC compromise or altered LOC. The easiest way to accomplish this is to snip the clips holding the facemask in place, or remove the screws holding the plastic clips in place.
  - C. The entire helmet should be removed if:
    1. The helmet and chinstrap do not hold the head securely (i.e. immobilization of the helmet does not also immobilize the head)
    2. The design of the helmet and chinstrap is such that even after removal of the facemask, the airway can not be assessed or managed properly
    3. The facemask cannot be removed after a reasonable period of time
    4. The helmet prevents immobilization for transportation in an appropriate position
2. Patients without shoulder pads (e.g. bicycle, motorcycle, ski)
  - A. Patients with helmets only: in the absence of shoulder pads, EMS personnel should remove helmets so that the spine may be properly aligned.
3. Technique for removing helmet: Person A stabilizes the head and neck while Person B removes the chin strap and helmet pads and, if present, deflates the helmet's air cells. Person B then stabilizes the neck and head by placing one hand on the occiput and one hand under the lower jaw. Person A spreads the helmet opening and gently slides the helmet off the head. Person B carefully supports the head to prevent it from dropping, and maintaining it at the same level as the torso. Padding should be placed to maintain neutral alignment. Stabilization may be accomplished using the horseshoe blanket technique and 2" tape.

**SPINAL IMMOBILIZATION:** Spinal immobilization is indicated in patients who have sustained an injury with a mechanism of injury having the potential for causing spinal injury (or when the mechanism of injury is unclear) and who have at least one of the following criteria:

1. Altered mental status (requires that providers have the ability to communicate with the patient. If there are communication difficulties (e.g. children, language barriers, hearing impairment, etc.) that make assessment of mental status difficult, err on the side of immobilizing the patient)
2. Evidence of intoxication or other mind-altering substance ingestion
3. Distracting painful injury
4. Neurologic deficit
5. Spinal pain or tenderness
6. Situations which may impact the patient's perception and communication of pain (e.g. extremes of age < 12 or > 65) or non-English speaking or non-verbal patients

**SPECIAL NOTES:**

1. Contact Medical Control Physician if surgical field amputation may be needed.
2. Do not hyperventilate patients with head injuries unless they are actively herniating!
3. When possible, monitor head injury patients with CO<sub>2</sub> monitor. The goal is a value of 35.
4. All amputated parts should be retrieved, if possible, for possible reimplantation. Wrap the part in a moist sterile dressing (DO NOT SOAK, IMMERSE OR ALLOW TO FREEZE). Place the part in a sealed plastic bag and place the bag on regular ice or cold pack. Avoid tourniquets and never clamp bleeding vessels. Collect teeth and place in container of sterile normal saline.
5. Potential femur fractures in all ages should be stabilized using a splint capable of applying traction. Patients from minor vehicle accidents and those with wounds, lacerations, sprains or contusions who are not transported must be given the appropriate written Non-Transportation Information sheets.