HEMORRHAGE CONTROL, EXTREMITY AND CRUSH INJURIES

ALL PROVIDERS / EMT

- ❑ Focused history and physical exam
- ❑ **Treatment Plan**
  - Maintain airway, administer oxygen to maintain SaO2 90-94%.
  - Assess for deformity, swelling, tenderness, crepitus, open or closed fractures, hemorrhaging, lacerations, ecchymosis, instability, decreased function or pulses, loss of sensation of distal extremities.
  - **Epistaxis**: bleeding from the nose should be controlled by first having the patient sit and lean forward (unless there is a need for spinal motion restriction). Apply direct pressure by pinching the fleshy portion of the nostrils.
  - Cover lacerations or puncture wounds on the neck near the great vessels or trachea with an occlusive dressing.
  - **Crush syndrome** should be considered for the following patients:
    - Entrapped/compressed patients or limbs under a load for more than 30 minutes
    - Patients with little or no movement for more than 4 hours (e.g. older patient falls, overdoses, etc.)
    - Patients with crush syndromes are prone to cardiac dysrhythmias and electrolyte abnormalities. They should be placed on a cardiac monitor and the rescuer should be ready for possible cardiac arrest.
  - Cover **abdominal eviscerations** with a moist sterile dressing.
    - Do not attempt to replace organs.
  - Cover **extruded eye** or **deflated globe** with a moist sterile dressing and protective eye shield.
    - Do not apply pressure or attempt to replace in socket.
    - Cover both eyes, if the patient will tolerate it. This minimizes eye movements.
  - In large, partially attached **skin avulsions**, the tissue should be returned to its' original position and stabilized whenever possible.
  - Elevate the limb such that the wound is above the heart.
  - **Impaled objects** should be stabilized in place and covered with dry sterile dressings. The exceptions would be:
    - Objects through the cheek where there is the possibility of airway compromise.
    - Objects that would interfere with chest compressions.
- ❑ **Extremity hemorrhage control**:
  - Apply direct pressure to the bleeding site, followed by a pressure dressing
  - If direct pressure/pressure dressing is ineffective or impractical:
    - If the bleeding site is amenable to tourniquet placement, apply a tourniquet to the extremity
      - Tourniquet should be placed 2-3 cm proximal to the wound, not over a joint, and tightened until the bleeding stops *and* the distal pulse is eliminated. If bleeding or distal pulse still present, place a second tourniquet proximal to the first.
      - For thigh wounds, consider placement of two tourniquets, side by side, and tighten sequentially.
      - When a tourniquet is initially placed to stop obvious severe hemorrhage, an attempt may be made to replace it with a pressure dressing after patient is stabilized and bleeding is controlled. The tourniquet should NOT be removed/replaced if:
        - Amputation or near-amputation
        - Unstable or complex multiple-trauma patients
        - Unstable clinical or tactical situation

- If the bleeding site is NOT amenable to tourniquet placement (for example groin or axillary wounds): tightly pack the wound with gauze followed by 3 minutes of direct pressure, then apply a tight pressure bandage.

❑ **Fractures/dislocations**:
- Stabilize suspected fractures/dislocations
  - If extremity is deformed and distal vascular status is compromised (poor distal pulse or capillary refill), gently attempt to restore normal anatomic position with gentle traction. Pain medication should be considered prior to any manipulation.
  - If extremity is deformed but vascular function is normal, splint in current position, to limit movement of suspected fracture.
  - If open fracture with exposed bone, place moist gauze over exposed bone
  - Elevate extremity above heart level, when possible, to minimize swelling.

❑ Treatment for pain and anxiety per the ***Pain and Anxiety Management Guideline***.

❑ **Key Considerations**
- Tourniquets are painful and the conscious patient will likely require pain medication.
- Commercial tourniquets are strongly preferred over improvised tourniquets.

ADULT	PEDIATRIC (<15 years of Age) NOTE: Pediatric weight based dosing should not exceed Adult dosing.
AEMT	**AEMT**
❑ Advanced airway, vascular access and fluid therapy ❑ For crush injury patients, when possible, initiate IV/IO access and consider administration of 1 liter NS bolus prior to release from entrapment	❑ Advanced airway, vascular access and fluid therapy ❑ For crush injury patients, when possible, initiate IV/IO access and consider administration of NS 20 mg/kg bolus prior to release from entrapment
PARAMEDIC	**PARAMEDIC**
For patients with severe hemorrhage and hypotension: ❑ Consider: Tranexamic Acid (TXA) 1g IV bolus, as per criteria noted in medication appendix ❑ Consider: A second TXA dose (1g IV infusion over 8 hours) as per criteria noted in medication appendix	