4302	Traumatic Injuries/Traumatic Arrest
Treatment Protocol	

Last Reviewed: **October 4, 2022**	Last Revised: **July 1, 2025**

BLS Patient Management

- **Establish, maintain, and ensure cervical spine stabilization, as clinically indicated, when NSAID criteria is met**
  - **N**euro deficits
  - **S**pinal Tenderness
  - **A**ltered Mental Status
  - **I**ntoxication
  - **D**istracting Injury

  ****The long backboard (LBB) is an extrication tool and should only be used to facilitate patient transfer to the stretcher. It is not intended, or appropriate, to use a LBB to achieve or maintain spinal stabilization. Judicious application of the LBB for purposes other than extrication require that the benefits outweigh the risks of application. If the LBB is used, patients should be removed as soon as it is safe and practical****

- **Establish, maintain, and ensure**
  A. A patent and easily managed airway. Use manual maneuvers (head-tilt/chin-lift or jaw thrust), oropharyngeal suction and/or airway adjuncts (OPA/NPAs) as clinically indicated
  B. Adequate respirations and tidal volume. Use a mouth-to-mask device or bag valve mask (BVM), when clinically indicated. Rescue ventilations via a BVM require the use of a manometer. Waveform/ digital capnography is required when paramedics are present
  C. Controlled bleeding. Use direct pressure and/or pressure dressing(s) and/or tourniquet(s) and/or hemostatic dressing(s), as clinically indicated

- **Oxygen**
  As clinically indicated. Titrate to maintain, or increase, SpO_2 to a minimum of 94%. A range of 88-92% is acceptable for patients with a history of COPD

- Position the patient supine to meet physiologic requirements: Avoid Trendelenburg or elevating legs for shock. If the patient is pregnant, transport her in left lateral position

ALS Patient Management

- Interpret and continuously monitor ECG, vital signs, waveform, digital capnography, and SpO_2

- Establish, maintain, and ensure bilateral, large bore IV and/or IO access for emergency stabilization and/or as clinically indicated

  Establish IV/IO access during transport of the non-entrapped, transport ready critical trauma patient

  Consider the need for additional sites as clinically indicated

- **If the patient presents with**
  Signs and symptoms of tension pneumothorax:
  - Air hunger
  - Chest pain
  - Compromised cardiac output (hypotension, hypoxemia, tachycardia, etc.)
  - Elevated hemithorax without respiratory movement
  - Neck vein distension
  - Respiratory distress
  - Unilateral absence of breath sounds
  - Cyanosis (late sign)
  - Tracheal deviation away from the side of the injury (late sign)

  AND

  rapidly progressing respiratory distress unrelieved by less invasive means

  THEN

  Perform unilateral chest decompression

- **If the patient is in traumatic cardiac arrest with known/suspected torso trauma**

  THEN

  Perform bilateral chest decompression

- Preserve the patient's body heat by covering them with warm blankets

- Attach ECG leads to the patient when a paramedic is present

- **For suspected traumatic brain injury**
  Increase ventilatory rate for unequal/fixed and dilated pupils and extensor posturing/no motor response:
  Adult: 20 breaths per minute
  Child: 25 breaths per minute
  Infant: 30 breaths per minute

- **For impaled object(s)**
  Support and stabilize object(s) in place. Remove only if the object interferes with airway patency or with chest compressions

- **For flail chest**
  Assist ventilations as clinically indicated. Do not stabilize the flail segment by sandbagging, splinting, and/or swathing

- **For eye injury/injuries**
  Irrigate with saline as clinically indicated. Apply protective rigid shields bilaterally. Position the patient as clinically indicated to meet physiologic requirements

- **For avulsed tooth/teeth**
  Handle the tooth/teeth by the crown. Do not touch any part of the tooth that normally exists below the gum line. In the alert and cooperative patient, attempt to replace the tooth in its socket. If unable, wrap in a milk or normal saline soaked gauze sponge and transport with the patient

- **For wound care**
  Control bleeding using direct pressure and/or pressure dressing(s) and/or tourniquet(s) and/or hemostatic dressing(s), as clinically indicated

  Dress and bandage abrasions, lacerations, avulsions, punctures and/or penetrations as clinically indicated

  Dress an open pneumothorax with an occlusive dressing. Briefly remove ("burp") to release pressure when signs of a tension pneumothorax appear

- **For pain associated with acute traumatic injury or injuries**
  Adults: Fentanyl 50 mcg slow IVP/IOP or IM/IN. Patient's systolic BP must be greater than or equal to 90 mmHg at the time of administration. **MAY REPEAT ONCE, IN 5-10 MINUTES, DEPENDENT ON PAIN SEVERITY, TO A MAX OF 100 MCG**.

  Pediatrics: Fentanyl 1 mcg/kg slow IVP/IOP or IM/IN. Patients systolic BP must be greater than or equal to [70 + (AGE X2)] mmHg at the time of administration. **MAY REPEAT ONCE**. **ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO).**

  Adults: Ketamine 0.3 mg/kg IV, infused in 50-100 mL Normal Saline, administer over 5 minutes. **MAY REPEAT ONCE**. **ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO)**.

  ****OR****

  Ketamine 0.5 mg/kg IN. **MAY REPEAT ONCE**. **ADDITIONAL ADMINISTRATIONS REQUIRE A BASE HOSPITAL ORDER (BHO)**.

  THE MAX SINGLE DOSE FOR EITHER ROUTE IS 30 MG.

  ADMINISTRATION OF KETAMINE TO PEDIATRIC PATIENTS IS NOT PERMITTED.

- **For suspected hyperkalemia associated with crush injuries**
  Adults: Normal Saline 250 mL IV/IO bolus. **MAY REPEAT AS CLINICALLY INDICATED TO A MAX ADMINISTRATION OF 2 L**.

  Pediatrics: Normal Saline 20 mL/kg IV/IO bolus. Use a volume control administration set for accurate dosing. **MAY REPEAT AS CLINICALLY INDICATED.**

- **ADULTS AND PEDIATRICS: INITIAL AND REPEAT ADMINISTRATIONS OF ALBUTEROL, CALCIUM CHLORIDE, AND SODIUM BICARBONATE FOR SUSPECTED HYPERKALEMIA ASSOCIATED WITH CRUSH INJURIES REQUIRES A BASE HOSPITAL ORDER (BHO)**

  Adults and pediatrics: Albuterol 2.5 mg/3 mL (one pouch), nebulized.

  Adults: Calcium Chloride 1 gm IV, infused in 50-100 ml normal saline, administered over 10 minutes.

Dress evisceration(s) with saline soaked dressing(s). Do not intentionally replace evisceration

Dress injured genitalia with saline soaked dressing(s), applying direct pressure to control bleeding

- **For fracture(s) or dislocation(s)**
  Assess distal neurovascular functions using PMS (pulse, motor, sensation) before and after manipulation, manual stabilization and/or splinting.

  Manually stabilize and/or splint fractures and dislocations as found and as clinically indicated. Rinse exposed bone with saline and dress with saline soaked gauze sponge(s) or non-adherent dressing(s). Do not intentionally allow exposed bone to retract and do not intentionally reduce dislocation

  Using gentle traction, return grossly angulated extremity fractures to the anatomic position as clinically indicated

  Stabilize and/or splint mid-shaft femur fractures using a traction splint as clinically indicated

  CONTACT A SINGLE LEVEL I OR LEVEL II TRAUMA BASE HOSPITAL FOR ANY FRACTURE OR DISLOCATION WITH NEUROLOGICAL AND/OR VASCULAR COMPROMISE

- **For amputation(s)**
  Rinse amputated body part(s) with normal saline then wrap with saline soaked dressing(s). Place in a bag. Keep part(s) cool but don't place directly on ice

- **For pain management**
  Apply disposable cold pack(s) as clinically indicated for pain associated with a traumatic injury or injuries

Pediatrics: Calcium Chloride 20 mg/kg IV, infused in 50-100 ml normal saline, administered over 10 minutes.

Adults: Sodium bicarbonate 50 mEq IVP/IOP.

Pediatrics: Sodium bicarbonate 1 mEq/kg IVP/IOP.

- **For traumatic injuries within three (3) hours with signs and symptoms of hemorrhagic shock with systolic BP less than 90 mmHg**

  ****OR****

  Significant hemorrhage with heart rate ≥ 120

  ****OR****

  Uncontrolled bleeding despite tourniquet application
  Adults: Tranexamic Acid (TXA) 1 gm IV/IO, infused in 50- 100 mL normal saline, administer over 10 minutes.

  ADMINISTRATION OF TRANEXAMIC ACID (TXA) TO PEDIATRIC PATIENTS IS NOT PERMITTED.

- **For hemorrhagic shock due to severe traumatic injury with SBP < 70 mmHg or unable to obtain BP**

  ****OR****

  SBP <90 AND HR ≥ 110 (SI>1.2)

  ****OR****

  Traumatic arrest witnessed by EMS

  Adults: LTO+WB 1 Unit warmed and infused

  OR

  Adults: pRBCs 2 Units warmed and infused
  If blood administration criteria persist, administer an additional unit of LTO+WB or pRBCs

  ADMINISTRATION OF BLOOD PRODUCTS TO PEDIATRIC PATIENTS IS NOT PERMITTED

- **For persistent shock due to trauma when cardiac arrest is imminent AFTER Normal Saline, TXA, and chest decompression as indicated:**

  Adults: Epinephrine Push Dose 0.01 mg (0.01 mg/mL concentration) IVP/IOP. **MAY REPEAT AS CLINICALLY INDICATED EVERY 1-5 MIN TO MAINTAIN A SBP > 90**

Pediatrics: Epinephrine Push Dose 0.01 mg (0.01 mg/ml concentration) IVP/IOP. **MAY REPEAT AS CLINICALLY INDICATED TO MAINTAIN A SBP > [70 + (AGE X2)]**

- **INITIAL AND REPEAT ADMINISTRATIONS FOR ADULTS AND PEDIATRICS REQUIRE A BASE HOSPITAL ORDER (BHO)**.

Patients requiring chemical restraint when physical restraints are ineffective and who pose an immediate danger to themselves or others, due to a suspected traumatic brain injury

Adults: Midazolam 2.5 mg slow IVP/IOP.

****OR****

Midazolam 5 mg IM/IN

Pediatrics: Midazolam 0.1 mg/kg slow IVP/IOP

****OR****

Midazolam 0.2 mg/kg IM/IN.

Traumatic Arrest:

- **For Adult blunt traumatic arrest**
  - If the patient meets the criteria outlined in REMSA Policy 4108 *Do Not Attempt Resuscitation/Discontinue Resuscitation*: **DO NOT TRANSPORT.**
  - If the patient is pulseless and apneic with asystole/agonal rhythm/PEA at a rate less than 40: **DO NOT RESUSCITATE OR TRANSPORT.**
  - Otherwise, **IMMEDIATELY INITIATE** transport to the closest **Level I** or **Level II** trauma center.

- **Adult penetrating traumatic arrest:**
  - If the patient meets the criteria outlined in REMSA Policy 4108 *Do Not Attempt Resuscitation/Discontinue Resuscitation*: **DO NOT TRANSPORT.**
  - If the patient is pulseless and apneic with asystole/agonal rhythm/PEA at a rate less than 40: **DO NOT RESUSCITATE OR TRANSPORT.**

If the patient has signs of life and transport time is reasonable, **IMMEDIATELY INITIATE** transport to the closest **Level I** or **Level II** trauma center.

- **For Pediatrics traumatic arrest**
  - If the patient has signs of life and transport time is reasonable, **IMMEDIATELY INITIATE** transport to the closest **Level I** or **Level II** trauma center**. A Trauma Base Hospital Physician Order (BHPO) is required to discontinue resuscitation.**

	• **Note: CPR should not impede procedural interventions in patients with traumatic cardiac arrest** • **Epinephrine is not indicated in Traumatic Arrests. If suspected medical cause of arrest, go to REMSA Policy 4405 *Medical Cardiac Arrest***

Patient Disposition

- Attempt to limit scene time to ten (10) minutes or less when Trauma Triage Criteria has been met. Do not delay transport with nonessential treatment of non-entrapped, transport ready, critical trauma patients
- **CONTACT A SINGLE LEVEL I OR II TRAUMA BASE HOSPITAL FOR: ANY CTP AND/OR MASS CASUALTY/MASS PATIENT INCIDENT (MCI/MPI)**
- **CONTACT A SINGLE BASE HOSPITAL FOR: ANY PATIENT THAT HAS BEEN SEXUALLY ASSAULTED OR INCIDENTS WHEN LAW ENFORCEMENT REQUESTS AN "OK TO BOOK" EXAM**