Trauma Administrative Guideline

History	Signs and Symptoms	Differential
• Time/mechanism/speed • Damage/intrusion • Restraints or protective equipment	• Pain • Deformity • Bleeding • ALOC • Shock	• Chest injuries • Intraabdominal injuries • Pelvic fractures/bleeding • Head injury • Extremity trauma

Traumatic injury

Dead on Scene AG if indicated	
B	Hemorrhage control Airway maintenence Breathing and ventilation Circulation Time critical procedures as part of primary survey *****Minimize scene times*****
P	18 g IV/IO placement Cardiac monitor

Shock Index
=
HR/SBP

For peds - use age appropriate BP goals

Blunt trauma at risk for hemorrhage	
B	Apply SMR
P	Adults≥14 years: Administer **TXA 1 gram** IV/IO in 50-100ml NS IVPB over 10 minutes if shock index >1 Peds <14 years: Administer **TXA 15 mg/kg** in 50-100ml NS IVPB over 10 minutes for patients with shock Administer **NS/LR fluid bolus** to keep SBP >110 mmHg

Penetrating or isolated extremity trauma at risk of hemorrhage	
B	**<u>If isolated penetrating trauma to head, follow EPIC TBI for fluid resuscitation BP goals</u>**
P	Adults≥14 years: Administer **TXA 1 gram** IV/IO in 50-100ml NS IVPB over 10 minutes if shock index >1 Peds <14 years: Administer **TXA 15 mg/kg** in 50-100ml NS IVPB over 10 minutes for patients with shock Administer **NS/LR fluid bolus** to keep SBP >70 mmHg

EPIC TBI GCS <15 or loss of consciousness	
B	O_2 to target saturation of 100% **20 mL/kg NS/LR fluid bolus** to keep SBP >110 mmHg [70+(agex2) for peds] $EtCO_2$ target for all mechanically or manually ventilated patients 40 (range 35-45)
P	Advanced airway management <u>only</u> if unable to oxygenate/ventilate wtih BLS airway interventions

Trauma Procedures
Needle decompression for tension pneumothorax
Pelvic binder
Splint obvious fractures

Education/Pearls

The treatment of traumatic injury focuses on ABCs and prevention of further or secondary injury. Interventions are aimed at preventing overt hypoxemia, hypotension, and hyperventilation.

- Transport patients based on **SAEMS Regional Trauma Triage Guidelines.**
- Airway/Breathing: Prepare for a difficult airway, as traumatic airways are made difficult by trauma conditions, including spinal motion restriction, patient mentation, and bloodied airways.
  - For advanced airway, anticipate the need for suction and video laryngoscopy, if available.
  - Use care during intubation to maintain in-line stabilization, as cervical spine fractures may be present.
- Circulation: The most common cause of shock following trauma is hemorrhage. Scalp wounds, abdominal organ injury, and long-bone fractures can cause rapid blood loss.
  - Bleeding - apply anticoagulant gauze wound packing until resistance is met and/or apply tourniquet until bleeding is stopped.
  - Pulseless - may consider bilateral needle thoracostomy; may terminate as per **Dead on Scene AG** if penetrating trauma, and blunt trauma if transport will take > 15 min to Level 1 Trauma Center.
- Immobilization:
  - Long spine board use in trauma patients should be restricted to extrication procedures only and should be avoided in patients with penetrating trauma.
  - Spinal motion restriction procedure should be followed for all trauma patients with neck or back pain, neurologic deficit, or other risk factor for spine trauma. The elderly are at high risk for spinal injury with lower mechanism injury.
  - Patients with isolated blunt injuries may not warrant SMR or pelvic binder placement.
- Temperature: Prevent hypothermia, as this contributes to a harmful acid/base status and bleeding abnormalities.
  - Expose the patient for rapid trauma assessment/treatment only.
  - Cover patient and rewarm as soon as possible.

Moderate or severe TBI: defined as anyone with physical trauma and a mechanism consistent with the potential to have induced a brain injury, and:

i. Any injured patient with loss of consciousness, especially those with GCS <15 or confusion OR
ii. Multisystem trauma requiring intubation whether the primary need for intubation was from TBI or from other potential injuries OR
iii. Post-traumatic seizures, whether ongoing or not
iv. *(Pediatric)* Infants (where GCS may be difficult to obtain or interpret): any evidence of decreased level of consciousness, decreased responsiveness, or deterioration of mental status

See next page (**EPIC TBI**) for TBI management guidelines.

- Emergency Surgical Airway
  - In the event oxygenation and ventilation of the patient cannot be achieved either by BLS maneuvers, placement of a SGA or Endotracheal Intubation, perform surgical cricothyrotomy.
    - *Surgical Cricothyrotomy*: 12 years of age and above
    - *Needle Cricothyrotomy*: Under 12 years of age

Prevent hypoxia, hypotension and hyperventilation

B	All patients - Supplemental oxygen therapy to maintain O2 saturation 100% - Monitor HR, BP and O2 every 3-5 minutes
P	- IV access with 18g IV (document exceptions)

B	Monitor vital signs closely and escalate therapy before the patient becomes hypoxic or hypotensive.
	Administer **NS fluid bolus 20 ml/kg** Repeat until hypotension resolves

B	Provide positive pressure ventilation with BVM with 100% O2 at age approprite respiratory rate AVIOD HYPERVENTILATION
P	If patient is failing BVM and remains hypoxic, consider endotracheal intubation or supraglottic airway placement (if age >8 years old) If O2 saturation <90 despite intubation, or other advanced airway management, consider tension pneumothorax. AVIOD HYPERVENTILATION CAREFULLY MAINTAIN AGE APPROPRIATE RR TARGET EtCO2 40 mmHg (range 35-45)

Ventilation Rates:
- Infants (0-24 mos) **25 bpm**
- Children (2-14 yrs) **20 bpm**

>14 yrs **10 bpm (same as adults)**

	Age > 14 yr	Age 6-13 yr	Age 1 w-5 yr	Age < 1 w
Heart Rate	**60-130**	**60-150**	**60-160**	**100-180**
SBP	**> 90**	**> 80**	**> 70 + (Age x2)**	**> 70**