

Head Trauma

History

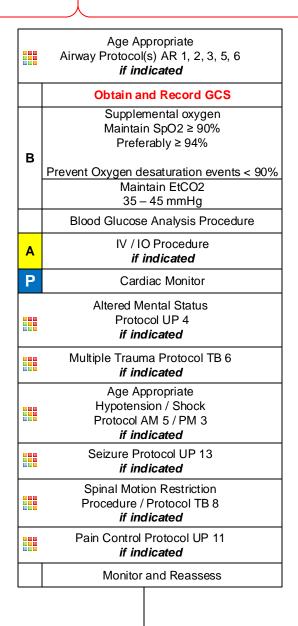
- Time of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical history
- Medications
- Evidence for multi-trauma

Signs and Symptoms

- Pain, swelling, bleeding
- Altered mental status
- Unconscious
- Respiratory distress / failure
- Vomiting
- Major traumatic mechanism of injury
- Seizure

Differential

- Skull fracture
- Brain injury (Concussion, Contusion, Hemorrhage or Laceration)
- Epidural hematoma
- Subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Abuse



Rapid Transport to appropriate destination using
Trauma and Burn:

EMS Triage and Destination Plan



Notify Destination or Contact Medical Control



DO NOT ROUTINELY HYPERVENTILATE

Evidence of Brain Herniation:

Unilateral or Bilateral Dilation of Pupils / Posturing

Hyperventilate to maintain EtCO2 30 – 35 mmHg See Pearls

Eye Opening Response	Verbal Response	Motor Response
4 = Spontaneous 3 = To verbal stimuli 2 = To pain 1 = None	5 = Oriented 4 = Confused 3 = Inappropriate words 2 = Incoherent 1 = None	6 = Obeys commands 5 = Localizes pain 4 = Withdraws from pain 3 = Flexion to pain or decorticate 2 = Extension to pain or decerebrate 1 = None

Pearls

- Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro
- . GCS is a key performance measure used in the EMS Acute Trauma Care Toolkit.
- A single episode of hypoxia and / or hypotension can significantly increase morbidity and mortality with head injury.
- Hyperventilation in head injury:

Hyperventilation lowers CO2 and causes vasoconstriction leading to increased intracranial pressure (ICP) and should not be done routinely.

Use in patient with evidence of herniation (blown pupil, decorticate / decerebrate posturing, bradycardia, decreasing GCS).

If hyperventilation is needed, ventilate at 14 - 18 / minute to maintain EtCO2 between 30 - 35 mmHg. Short term option only used for severe head in jury typically GCS ≤ 8 or unresponsive.

- Do not place in Trendelenburg position as this may increase ICP and worsen blood pressure.
- Poorly fitted cervical collars may also increase ICP when applied too tightly.
- In areas with short transport times, Drug Assisted Airway protocol is not recommended for patients who are spontaneously breathing and who have oxygen saturations of ≥ 90% with supplemental oxygen including BIAD / BVM.
- Hypotension:

Limit IV fluids unless patient is hypotensive.

Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).

Usually indicates injury or shock unrelated to the head injury and should be aggressively treated.

Fluid resuscitation should be titrated to maintain at least a systolic BP of > 70 + 2 x the age in years.

Lowest blood pressure by age: < 31 days: > 60 mmHg. 31 days to 1 year: > 70 mmHg. Greater than 1 year: 70 + 2 x age in years.

- An important item to monitor and document is a change in the level of consciousness by serial examination.
- Consider Restraints if necessary for patient's and/or personnel's protection per the Restraint Procedure.
- Concussions:

Traumatic brain injuries involving any of a number of symptoms including confusion, LOC, vomiting, or headache.

Any prolonged confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be evaluated by a physician ASAP.

EMS Providers should not make return-to-play decisions when evaluating an athlete with suspected concussion. This is outside the scope of practice.