## **Head Trauma/ Traumatic Brain Injury**

Designation of Condition: Any injury to the skull with/without loss of consciousness. Consider skull fracture, intra-cranial hemorrhage, c- spine injury, facial fractures, epidural/subdural hematoma, traumatic brain injury which can include hemorrhage, swelling, concussion. Give special consideration to a/w as patients can often vomit and elevated risk for seizure. Pay close attention to mental status and reassess frequently.

> ABC's with focus on ability to keep airway patent GCS— serial reassessments to trend neurologic status Vital signs Pulse Oximetry procedure

> > Capnography procedure

Oxygen supplementation with goal to prevent any desaturation < 90% Assist ventilations as necessary with BVM—in Adults DO NOT HYPERVENTILATE keep to 10 breaths/min with goal ETCO2 of 40-45mmHg Maintain C- spine precautions

Control bleeding with direct pressure if no evidence/suspect open skull fx Check blood glucose—maintain > 60mg/dl

Perform neurological exam (pupil exam, extremity strength/sensation) Decrease ICP by elevating head 30 degrees if possible. Use reverse Trendelenburg if spinal precautions needed

IV/IO NS (two large bore preferred) DO NOT DELAY TRANSPORT TO INITIATE IV **ACCESS** 

Avoid hypotension:

initiate fluid resuscitation with goal SBP > 110mmHg in adults

Pediatric hypotension formula:

0-9 yrs: SBP < [70+(age in years x 2)]

> 10 yrs: SBP < 90mmHg 20 ml/kg bolus repeat as needed to goal SBP

Consider need for advanced airway including cricothyrotomy as indicated If concern for facial fractures, avoid nasal intubation

Consider cardiac monitor

\*\*\*KEY POINT\*\*\*

hypothermia, hypotension, hypoxia, hypocapnia and hypoglycemia all increase mortality in traumatic brain injuries and should managed aggressively

Significant blood loss can occur with scalp lacerations

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

Use in patients ONLY with evidence of herniation: (blown pupil, decorticate / decerberate posturing, bradycardia, decreasing GCS) If hyperventilation is needed, ventilate at 14–18 / minute to maintain EtCO2 between 30-35 mmHq.

Short term option only used for severe head injury typically GCS ≤ 8 or unresponsive.

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