San Mateo County Emergency Medical Services

### Head Trauma

For any traumatic injury that involves the head; includes multi-system trauma that involves the head

Early transport Limit scene time to 10 minutes

#### History

- Time of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical historyMedications (anticoagulants)

#### Signs and Symptoms

- Evidence of traumaPain, swelling, or bleeding
- AMS
- Unconscious
- Respiratory distress or failure
- Vomiting
- Seizure

- Differential
- Skull fracture
- Spinal injury
- Abuse

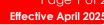
Control hemorrhaging Apply tourniquet for uncontrolled hemorrhage If wound is in a critical vascular area not accessible for a tourniquet, Wound packing with Ε hemostatic gauze Spinal Motion Restriction if indicated Secure airway and support respiratory rate Elevate head 30 degrees unless contraindicated. Position patient on left side if needed for vomiting Establish IV/IO Cardiac monitor EtCO<sub>2</sub> monitoring If SBP < 110 in adults Normal Saline bolus 500ml IV/IO May repeat as long as criteria above exists. Maximum 2L If poor perfusion or shock in peds Normal Saline bolus IV/IO Use pediatric tape and refer to dosing guide Repeat to age dependent goal SBP May repeat as long as criteria above exists For pain consider, Acetaminophen For nausea in adults, consider Ondansetron For peds patients  $\geq$  4 years, consider Ondansetron Use pediatric tape and refer to dosing guide Notify receiving facility. **Contact Base Hospital for** medical direction

Respiratory Arrest/Failure

Tourniquet use should not be delayed until a patient is in shock or is clearly exsanguinating. It should be applied early and can be used safely without risk of patient injury. Do not wait; apply often and tighten if needed.



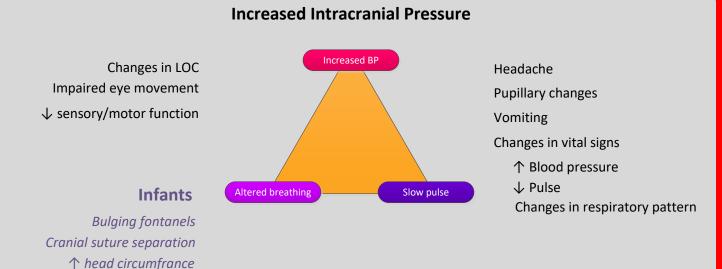
## Treatment Protocol T03



San Mateo County Emergency Medical Services

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#### Pearls

- ALS procedures in the field do not significantly improve patient outcome in critical trauma patients.
- Basic airway management is preferred unless unable to effectively manage with BLS maneuvers. Utilize modified jaw thrust technique to open the airway.
- Intubation of head injury patients is best addressed at the hospital.
- Hypotension is age dependent and is not always a reliable sign. It should be interpreted in context with the patient's typical BP, if known. Shock may be present with a seemingly normal blood pressure initially.
  - Neonate: < 60mmHg or weak pulses</p>
  - Infant: < 70mmHg or weak pulses</p>

*High-pitched cry* 

- I-10 years: < 70mmHg + (age in years x2)</p>
- Over 10 years: <90mmHg</p>
- Over 65 years: <110mmHg</p>
- Avoid hyperventilation. Maintain an EtCO<sub>2</sub> of 35 or greater, which may be unreliable if the patient was subject to multisystem trauma or poor perfusion.
- In patients with a dilated pupil on one side or posturing, which indicates brainstem herniation, modest hyperventilation is appropriate. Keep EtCO<sub>2</sub> of 30 or greater.
- Scalp hemorrhage can be life threatening. Treat with direct pressure and pressure dressing.
- Increased intracranial pressure may cause hypertension and bradycardia.
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively.
- An important item to monitor and document is a change in the level of consciousness by repeat examination.
- Limit IV fluids unless the patient is hypotensive.
- Concussions are traumatic brain injuries involving any number of symptoms including confusion, LOC, vomiting, or headache. Any prolonged confusion or mental status abnormality which does not return to the patient's baseline within 15 minutes of injury or any documented LOC should be evaluated by a physician.
- Do not overlook the possibility of associated domestic violence or abuse.

### SAN MATEO COUNTY HEALTH EMERGENCY MEDICAL SERVICES

# Treatment Protocol TO3

Effective April 20