Management of Patients with Severe Traumatic Brain Injury (GCS < 9)

**ADULT Practice Management Guideline**  Effective: 03/2014

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### Treatment of Elevated Intracranial Pressure

**Goals**
- ICP < 22 mmHg
- Systolic BP > 100
- CPP > 60-70 mmHg
- Avoid aggressive attempt to maintain CPP > 70 mmHg with fluid and vasopressor

**ACUTE CLINICAL DETERIORATION**
- Verify oxygenation and ventilation
- Temporary hyperventilation to pCO₂ 30-35 mmHg
- Re-dose osmotic agent (3% saline, mannitol)

**Is ICP > 22 or CPP<60?**

- **NO**
  - Continue to Monitor

- **YES**
  - **Ensure euvolemia**
    - Consider CT Head to exclude mass lesion
  - **Ensure HOB elevated at least 30°**
  - **Ensure adequate analgesia and sedation**
    - Fentanyl, 50 mcg IV, intermittent bolus, consider IV infusion titrated to effect
    - Propofol, if needed for sedation, 5-80 mcg/kg/min
  - **Initiate hyperosmolar therapy: 3% Saline**
    - 250 ml bolus over 10-15 minutes, then
    - Infusion at 50 ml/hour
    - Monitor serum Na level
      - If Na < 150, re-bolus 150 ml over 1 hour
      - If Na 150-154, increase infusion by 10 ml/hour
      - If Na 155-160, maintain infusion at current rate
      - If Na > 160, hold infusion for one hour, re-check and resume infusion reduced by 10 ml/hour
  - **Alternative is Mannitol, avoid use in hypovolemic patients**
    - 0.25 – 1.0 gm/kg bolus over 20 minutes, then
    - 0.25 gm/kg IV every 4 hours
    - Hold mannitol for serum osmolality is >320