Raised Intra-Cranial Pressure Management

Stepwise approach should be used

ICP should be treated if it is:

- **>18** mmHg **(<6yrs) or >20** mmHg **(≥6yrs) > 5 minutes**
- Intervention will be required sooner if CPP is severely compromised

Goal CPP 45-55 (< 6 yrs) or >50-60 (≥ 6 yrs)

First Tier Treatments

1. **Adequate sedation, analgesia & paralyse** (if not already paralysed) Ensure basic principles of TBI management are in place.
2. **Ensure normocarbia** ($PaCO_2$ 4.7- 5.3 kPa)
3. **Intermittent drainage of CSF** for 5 minutes.
4. **Osmotic therapy**
   a. Hypertonic saline - dose is 3 ml/kg of 3%NaCl via central venous access (can be administered over less than 1 hour as tolerated, i.e. avoid hypotension).
   b. If the serum sodium is <150 mmol/L an infusion of 0.1-1 ml/kg/hr of 3%NaCl via central access may be used.
   c. The minimum dose necessary to maintain ICP<20mmHg should be used.
   d. Hypertonic saline boluses may continue to be used if serum sodium is <160mmol/L.
5. **Mannitol** if intracranial hypertension persists despite hypertonic saline & if serum osmolality is <320mOsm/L
   a. Dose is 0.25-0.5 g/kg
   b. Euvolaemia must be maintained
   c. Mannitol should not be given if the osmolality is >320mOsm/L and no more than 3 doses of mannitol should be given.
6. **Continuous CSF drainage**. The ICP catheter must be turned off to drainage in order to check the ICP every 30 minutes.
7. **Hypothermia**. Cool to a temperature that controls ICP. Generally this will not need to be below 35ºC and is never to be below 32ºC.

Second Tier Treatments

There is no evidence to support an order preference for these and the order in which they are used may vary.

1. **Bifrontal Decompressive craniectomy**
2. **Barbituates:** Thiopentone, 1-5 mg/kg slow bolus followed by an infusion of 1-5mg/kg/hr.
3. **Mild hypocarbia:** Increase minute ventilation to achieve a $PaCO_2$ 4.0-4.6 kPa. Consider measuring arteriovenous oxygen difference using a jugular venous bulb catheter.