

Protocol for managing paediatric severe traumatic brain injury

TARGETS

- SpO₂ >97%, PaO₂ >9kPa, PCO₂ 4.5-5 kPa
- Temp < 37°C, Glucose 4-7 mmol/l
- Serum Sodium > 140 mmol/l

ICP/ CPP

Age (yr)	ICP (mm Hg)	CPP (mm Hg)
<3	5-15	40
4-7	15-20	40-50
>8	< 20	50-60

Stage A

- Nurse 30° head up
- Ensure no venous obstruction to neck
- Sedation:
 - Midazolam: 50-300 µg/kg/hr
 - Fentanyl: 1-3 µg/kg/hr *or*
 - Morphine: 20-80 µg/kg/hr
- Paralysis:
 - Atracurium: 300-600 µg/kg/hr *or*
 - Vecuronium: 50-100 µg/kg/hr
- Anticonvulsants: Phenytoin 15 mg/kg
(depressed #, seizures)
- Antibiotics: none for CNS reasons unless discussed with neurosurgeons
- Ventilation: TV 6-8 ml/kg & rate to keep pCO₂ in target range, no hyperventilation



ICP/ CPP targets not met? *Stage B*

- 5% saline 2-4 ml/kg
(can be repeated but plasma osm < 320) *or*
Mannitol 20% 2 ml/kg
- Ventilation pCO₂ ~ 4.5 kPa
- Hypothermia: temperature 35°C
- External ventricular drain if feasible
- Consider anticonvulsants if not already given



ICP/ CPP targets not met? *Stage C*

- Discuss with PICU consultant/ neurosurgery team and decide either
- Thiopentone 2 mg/kg/hr to achieve burst suppression (cfm/ continuous EEG) *or*
- Consider decompressive craniectomy

Patients Details

SPINE

Consider unstable until cleared by the neurosurgeons
Use sandbags/tape/collar to immobilise

ICP Target:

.....mm Hg

Signature:

Date:.....

CPP Target:

.....mm Hg

Signature:

Date:.....

If targets not met:

- Consider repeat CT scan
- Consider recalibrating the probe

Neurosurgical bleep: 156-0358

PICU on-call bleep: 152-001