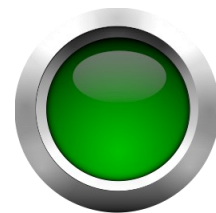


# Traumatic brain injury SOP

QPI

Further reading

Brain Trauma Guidelines 4th edition  
NICE NG39 2016  
<https://theresusroom.co.uk/head-injury/>  
CRASH3



## Related SOPs

Prehospital Emergency Anaesthesia SOP

Spinal injury SOP

Hypertonic saline SOP

The overarching principle of neurocritical care after significant traumatic brain injury is to limit secondary brain insult by **maintaining optimal cerebral perfusion**

### Limit intracranial hypertension

Tight control of PaCO<sub>2</sub>

Avoid hypoxia

Early administration of tranexamic acid if GCS ≤13 due to TBI

Promote good venous drainage

Appropriate sedation and muscle relaxation if intubated

Prevent and treat seizures

Transfer to MTC for neurosurgery/neuro-intensive care

### Avoid systemic hypotension

Where possible, maintain systolic BP >100mmHg *as a minimum*

(Higher BP levels may be appropriate in isolated TBI)

The initial management of isolated TBI patients, or those with associated polytrauma, is the early identification and aggressive treatment of <C>ABC issues

# Traumatic brain injury SOP

Where there are sufficient resources on scene, immediately assign one or more people to perform COMA whilst you assess cABC

**C** Clothes off  
**O** Oxygen on  
**M** Monitoring on  
**A** Access (IV)

To be completed as required:

**<C>**

Haemorrhage control with direct pressure  
Pelvic binder  
Traction on long bone fractures

**A**

Airway opening manoeuvres  
Early use of adjuncts such as nasopharyngeal (insert carefully)  
Assess requirement for PHEA

**B**

Assess and manage depending on associated injuries  
Titrated oxygen aiming SpO<sub>2</sub> 94%-99%. Avoid hyperoxia  
Routine use of capnography **pre** and **post** PHEA  
Aim EtCO<sub>2</sub> 4.0-4.5 KPa once ventilated

**C**

Full assessment and resuscitation  
Aim to avoid hypotension at all times  
Optimise CVS status **prior** to performing PHEA

**D**

Early TXA for all patients where GCS ≤13 due to TBI  
-1g in adults, 15mg/kg in children (max 1g)  
Check BM  
Formal GCS and document limb movements prior to PHEA  
Pupillary reactions  
Agitated patients often require initial control with titrated ketamine

# Traumatic brain injury SOP

## Approach to PHEA in traumatic brain injury

Hypovolaemia should be addressed prior to performing PHEA

Severe agitation should be treated to permit proper preoxygenation prior to performing PHEA

- IV ketamine 0.5mg/kg
- IN ketamine 1mg/kg
- IM ketamine 4mg/kg

Fentanyl will help attenuate the rise in heart rate and ICP associated with laryngoscopy. Remember it is vital to avoid hypotension in TBI patients, so where there is any suspicion of hypovolaemia, it is prudent to omit the fentanyl.

Gentle laryngoscopy and first pass intubation success will help prevent surges in ICP

Tape rather than tie for endotracheal tubes

Adequate post-intubation sedation and muscle relaxation will help prevent surges in ICP

Avoid hard collars—use blocks and tape for spinal motion restriction

Where oxygenation is not a problem, limit PEEP to maximum of 5cmH<sub>2</sub>O

Where practical aim for some head-up tilt, but not at the expense of systemic hypotension

2.7% Hypertonic saline (3mls/kg) is indicated where there are signs of raised ICP such as a blown pupil or Cushing's triad



# Traumatic brain injury SOP

## Asphyxial brain injury

Patients who have sustained a severe asphyxial hypoxic brain injury (for example strangulations/non-judicial hangings/choking) should be managed in the same way as patients with a traumatic brain injury.

In the absence of other significant traumatic injuries, these patients can be triaged to a **Trauma Unit** and do not usually need bypassing to an MTC. Paediatric patients (under 16 years) requiring critical care should still ideally be triaged to either RVI/Leeds/Alder Hey/Manchester.