Time-critical Transport of the Critically Ill Neuro-Patient-
Standard Operating Procedure SOP

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Clinical management of the time-critical transfer/transport of the Critically Ill Neuro-Patient

Standard Operating Procedure SOP

Aim/Objective: Time-critical transfer / transport of the critically ill neuro-patient leads to improved survival and improved neuro-outcomes. Eligible critically ill neuro-patients for time-critical transfer / transport include:

- patients with traumatic brain injury requiring operative / non-operative intervention
- patients with intracranial haemorrhage requiring operative / non-operative intervention
- patients with CNS infection requiring operative / non-operative intervention

Airway: Maintain MILS (manual in-line stabilisation) if c-spine not cleared
Intubate patients with:
- GCS ≤ 8
- Deteriorating GCS
- Expanding Haematoma and secure airway
CXR to confirm ETT position prior to transport if possible and to ensure no pneumothorax if trauma

RESPIRATORY: Confirmation ABG on transport ventilator device if possible
PaO2: Ensure adequate oxygenation c. 10kPa. Avoid routine use of 100% O2 for transport
PaCO2: 4.5-5.5kPa (avoid hypercapnia and avoid hypocapnia)
PEEP: 5cm H20 can be used safely. If higher PEEP required will require manual assisted ventilation
Use EtCO2 if available

Cardiovascular: Arterial line and central line optimal but without undue transport delay
Maintain adequate BP with fluid boluses and vasopressors to maintain Cerebral Perfusion Pressure- many patients require vasopressors to maintain MAP 80-90mmHg
In SAH keep MAP <110mmHg and SBP <160 mmHg with labetalol if available
Maintain adequate Hb

CNS: Note GCS & pupil size prior to intubation; Monitor pupils throughout transfer

Clinical suspicion of impending brainstem herniation: Non-responsive pupil(s) and Cushing’s reflex (bradycardia and hypertension). Action: Tilt ambulance trolley 30 degrees up without moving spine. Increase pressors to increase SBP. Increase sedation. Consider use Mannitol, Thiopentone and Neuromuscular blockade

- Deep sedation reduces CMRO2 (cerebral metabolic rate for oxygen)
- Phenytoin 15mg/kg over 30min (filter required) as indicated (seizure, depressed skull fracture)

Renal: sNa+ target 140-150; Urinary catheter optimal if mannitol osmotic diuretic required

Microbiology: Avoid Hyperthermia maintain temp at or below 37 degrees. Prophylactic Abx: Penetrating head injury: Cefuroxime 1.5g, Metronidazole 500mg. Base of skull fracture and CSF leak routinely do not require antimicrobials

Anti-coagulation reversal: Consider NOACs. Discuss w/ Haematology Anti Xa inhibitors: PCC (25-50U/kg);
Dabigatran : Idarucuzumab (Praxbind) 2.5g x 2; Warfarin (INR & PT): Vit K +/- PCC (25-50U/kg); Antiplatelet agent or platelet count <100: Platelet transfusion.

Medication Quick Guide:
- Morphine (1mg/ml) @ 5-10mg/hr; Remifentanil (50mcg/ml) @ 0.1-0.4 mcg/kg
- Propofol (10mg/ml) @2-4mg/kg/hr; Midazolam (1mg/ml) @5-10mg/hr
- Thiompentone (25mg/ml 500mg vial diluted with 20mls H2O)- Bolus 250mg up to 3-5 mg/kg (will decrease CMRO2 and may drop MAP); Infusion 5-20 ml/hr
- Atracurium (10mg/ml) @0.5mg/kg/hr
- Labetalol: 5mg/ml undiluted; Bolus 10-20mg q 5mins infusion 0.25-3mg/kg/hr
- Mannitol: bolus up to 3 times or osmolality 320; Mannitol 10% is 10g in 100 cc; Mannitol 20% is 20g in 100cc; 0.5g/kg usual bolus in 70 kg person = 350 ml of 10% Mannitol or 175 ml of 20% Mannitol
- NaCl 3% 3-5ml/kg over 10-20 mins