

### Airway & Ventilation Management

- Ventilation circuit must be humidified. In children <15Kg – small (15mm) circuit must be used. ETCO<sub>2</sub> monitoring as standard
- Oral intubation in 1<sup>st</sup> instance. Cuffed ETT if high airway pressures/Head injury/Aspiration risk. See size chart.
- IPATS/PICU 'Trousers' taping as per policy available. Suction catheter sizing = 2x size of ETT (Size 4.0 ETT = size 8F catheter)

#### Normal Respiratory Compliance

- Mode is ventilator dependent. Pressure control/PS or PRVC standard modes in paediatric ventilation
- PEEP 5cmH<sub>2</sub>O
- PIP to move chest, aim Tv 6-8ml/kg/min
- Ti 0.6-0.8s (typical I:E ratio 1:2)
- RR: Neonate 30-35, infant/Child 20-30, Adolescent 15-20
- FiO<sub>2</sub>: To achieve SaO<sub>2</sub> >94%
- pCO<sub>2</sub> 4.5-6KPa
- Contact PICU if questions/difficulties arise

#### Paediatric Respiratory Distress Syndrome (Difficult oxygenation/ventilation/Poor compliance)

- Increase PEEP (7-10cmH<sub>2</sub>O)
- Aim for Tv of 5-7ml/kg/min
- Keep PIP <30cmH<sub>2</sub>O where possible
- Accept SaO<sub>2</sub> >88%
- Permissive hypercapnoea –accept pH >7.25
- Consider neuromuscular blockade / prone position
- Consider physiotherapy (if available)
- Contact PICU if questions/difficulties arise

### Cardiovascular Support

- See APLS guidelines for age appropriate HR/BP normograms
- Signs of adequate cardiac output include: Stable haemodynamics/Normal lactate/CRT<3s and U.O>1ml/kg/hr
- Fluid boluses – 20ml/kg aliquots of 0.9% NS/Hartmanns (10ml/kg in trauma/head injury or cardiac illness)
- Once ≥60ml/kg fluid given, central access (IO/CVC) and inotropic support will likely be required to complement resuscitation
- Follow paediatric sepsis guidelines if shock related cardiovascular instability present & discuss with PICU
- In general: First line inotrope in cold shock = Adrenaline. First line inotrope in warm shock = Noradrenaline
- For sedation related hypotension, consider reducing sedation or changing to more cardio-stable medications before inotropic support or aggressive fluid resuscitation

### Sedation & Analgesia

- Standard sedation (titrate up): **Infants < 3/12:** Morphine infusion 10-30mcg/kg/hr (+/- 20mg/kg chloral hydrate q6hr PRN)  
**All others:** Morphine infusion 10-30mcg/kg/hr + Midazolam infusion 1-5mcg/kg/min
- Loading doses of each infusion (50mcg/kg) recommended before starting (if patient haemodynamically stable). This achieves a more rapid steady state. Propofol is **not** used routinely in children outside of the ambulance/theatre environment
- Muscle relaxation is **not** routine in PICU. May be beneficial in ARDS. Is frequently used during transfer to reduce risk of ETT dislodgment.

### Fluids & Nutrition

- All children require a NG tube (orogastric in head injury)
- Continuous enteral feeding preferred unless transport imminent (patients should ideally be fasted 4hr before & during transport)
- Fluid restrict all critically ill children (whether IV/Enteral) to **80%** of maintenance. 100% maintenance calculation is as follows:
  - <10Kg = 4ml/kg/hr
  - 10-20Kg = 40ml + 2ml/kg/hr for every Kg >10
  - >20Kg = 60ml + 1ml/kg/hr for every Kg >20 (max 2.5L)
- Standard IV Fluids: Infants <3/12: 0.9% NaCl + Dex 10%. >3/12: 0.9% NaCl + 5% Dex.
- Monitor blood glucose regularly and aim for a blood glucose of 4-10mmol/L. If hyperglycaemic reduce dextrose intake. Do not start insulin for hyperglycaemia in a non-diabetic child without discussion with PICU – high risk of hypoglycemia
- Keep Hb >8g/dl. If critically unwell keep >10g/dl. Minimal sampling volumes should be used to reduce iatrogenic anaemia risk

### Lines and Catheters

- Avoid urinary catheters unless muscle relaxed, shocked or in urinary retention. Please weigh nappies for accurate balances
- Arterial access is not a requirement. Can be challenging in paediatrics. USS guided approach carries high success rate. Required only if concerns for shock or respiratory distress i.e. on inotropes / FiO<sub>2</sub> >60% or difficult ventilation. Avoid brachial artery cannulation
- Indication for CVC: Inotrope infusions / multiple infusions / inadequate peripheral access. IO acceptable x24hr