KIDS Severe Asthma Guideline

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Principles

- Assessment of severity as per BTS guidelines
- Identify risk factors for poor outcome (e.g. previous ICU admission)
- Involve consultant if acute, severe asthma
- Provide adequate oxygen
- Use bronchodilators, but avoid toxicity
- Consider differentials (e.g. foreign body)
- Apply full monitoring to severe cases (ECG, NIBP, SpO2)
- Intubate and ventilate if necessary (see indications + precautions)
- Call KIDS if concerned **(0300 200 1100)**

Intubation and ventilation HIGH RISK ! DISCUSS WITH KIDS

Indications

- Exhaustion
- Worsening hypoxemia, despite 1st + 2nd line treatment
- Poor respiratory effort, or respiratory arrest

Precautions

- High risk intubation, as ventilation may be difficult
- Most experienced operator should intubate and manage ventilation
- Preoxygenate with 100% oxygen for 3mins
- Prepare fluid bolus and adrenaline
- Rapid Sequence Induction – use ketamine and rocuronium / suxamethonium (see drug calculator).
- Use cuffed ETT (do not cut the ET tube shorter)

Emergency treatment

1st line

- Give high flow oxygen (aim for SpO_2 94-98%)
- Nebulised bronchodilators "back-to-back":
- **Salbutamol** – 2.5 mg (1months -4yrs) ; 5 mg (>5yrs)
- **Ipratropium**- 250 microg (1months -11yrs); 500 microg (>11yrs)
- Early steroids
- Oral **Prednisolone** 2mg/kg (1months -11yrs); 50 mg (>11yrs) OR IV **Hydrocortisone** 4mg/kg depending on the severity.
- CXR- If suspicion of pneumothorax, consolidation, unsatisfactory response to bronchodilators

2nd line

- **High-flow nasal cannula** oxygen (start at 2 L/kg/min) / NIV
- **IV Salbutamol** (see drug calculator)
  Bolus followed by infusion, with continuous ECG monitoring
  Usual maximum Dose 20 mcg/min (beware of side effects if using higher dose)
  Note: May cause tachyarrhythmias, hypotension, lactic acidosis
  Can be used with nebulised salbutamol
- **IV Magnesium Sulphate** (see drug calculator)
  Dose: 40mg/kg (Max 2g/dose) (Note: May cause hypotension)
- **IV Aminophylline** (see drug calculator)
  Bolus followed by infusion with ECG monitoring
  Note: May cause tachycardia. Do not load if on oral theophylline.
  Dose: 1mg/kg/h (1mth-11yr) 700mcg/Kg/hr (>11years)
- Salbutamol and aminophylline may cause hypokalaemia
- Consider increased potassium in maintenance fluid

Post intubation: Ventilator Settings

- Mode: Pressure Control
- Limit PiP < 40 cm H2O
- Aim for tidal volumes 5-10 ml/kg
- Rate 10 - 20 bpm
- I: E ratio of at least 1:2
- PEEP of 5-8 cmH2O (avoid zero PEEP!)
- Alter settings depending on patient response
- Sedate with ketamine and midazolam
- Muscle relax with rocuronium infusion
- Maintain normovolaemia
- If no improvement, consider low dose sevoflurane (F_i 0.5-2.0%)
- If hypotension occurs, change iv salbutamol to adrenaline
- Aim for: pH >7.2 , SpO_2 > 90%
- Watch for: Worsening bronchospasm, Overinflation (consider manual decompression), Mucous plugging, Pneumothorax, acute RV failure