

RAPID GUIDANCE - BRONCHIOLITIS

Bronchiolitis is a common viral respiratory tract infection in children, associated with lower airway obstruction, air trapping and atelectasis. This PCCS guideline applies to patients managed in a Level 1/Level 2 paediatric critical care (PCC) setting as defined in the 2015 PCCS standards [here](#). This PCCS guidance is based on recommended best practice from regional PIC retrieval services. Please read this guidance in conjunction with the latest NICE guidance and RCPCH guidance.

Clinical presentation:

- Fever, rhinitis, cough
- Tachypnoea, wheeze, ↑ WOB
- Apnoea (esp. <2 months old)
- Cyanosis
- Poor Feeding
- Low grade fever <39°C

Differential diagnosis:

- Asthma
- Aspiration
- Bacterial/ atypical pneumonia
- Cardiac disease
- Sepsis
- Foreign body
- Vascular ring

When deciding whether to admit to critical care, also consider known risk factors for severe bronchiolitis:

- Chronic lung disease
- Haemodynamically significant congenital heart disease
- Age <3 months (corrected gestational age)
- Prematurity (especially <32 weeks)
- Neuro-muscular conditions
- Immune deficiency
- Trisomy 21

Investigations for children admitted to a PCC area:

- NPA for respiratory viruses
- Capillary blood gas
- Electrolytes to check Na⁺ and if on IV fluids
- Other investigations such as CXR, FBC, CRP, blood cultures, 'septic screen' only if:
 - diagnostic concern (e.g. pyrexia >39°C) and/or
 - worsening respiratory failure (such as FiO₂ > 0.5 to maintain sats ≥92%)

L1/ L2 PCC management:

General

- Minimal handling and frequent reassessment by senior clinician
- Monitoring: O₂ saturation, ECG, apnoea monitoring if required
- Suctioning nasal secretions if obstructed

Respiratory

- High flow nasal cannula therapy (2 L/kg/min or equivalent weight-banded flow rate; max 50 l/min) or CPAP 5-7 cmH₂O to maintain SpO₂ ≥92%
- Prone positioning in infants if ↑ WOB

Nutrition

- If intubation unlikely, commence trial NG/OG milk feeds as per local policy
- If intubation likely, and/or gastric feeding not tolerated, begin suitable intravenous isotonic fluids (with/without glucose) at 70% maintenance requirements

Antibiotics are not generally indicated in uncomplicated bronchiolitis

- Consider if diagnostic uncertainty, suspected bacterial infection (compatible CXR / blood findings), or critically ill

Unproven therapies: hypertonic saline, nebulised adrenalin, salbutamol, montelukast, ipratropium bromide, systemic or inhaled corticosteroids

De-escalation care

- Reduce HFNC/ CPAP/oxygen support as per local policy
- Consider step down from L1/L2 PCCU once off HFNC/CPAP support and no apnoeas for 12 hours
- If antibiotics commenced, review at 48 hrs depending on NPA and blood culture results, inflammatory markers, and clinical course

BRONCHIOLITIS RESPIRATORY MANAGEMENT FLOW DIAGRAM

When to admit to L1/L2 PCC area:

- Sats <92% despite supplemental FiO₂ 0.4*
- Moderate/severe ↑ WOB
- Apnoea (observed or reported)
- As per hospital paediatric early warning system

* Equates roughly to standard humidified nasal cannula O₂ delivered at 4-5 l/min or O₂ delivered via a face mask without a rebreather bag at 6-10 L/min. High flow nasal cannula oxygen therapy at flows <2 L/kg/min may be delivered in a non L1/L2 setting with appropriate safeguards.



- High flow nasal cannula therapy (2 L/kg/min) or CPAP 5-7 cmH₂O to maintain SpO₂ ≥92%
- Consider changing between supports if not tolerated or continues with WOB
- Consider prone positioning in infants if ↑ WOB
- Monitor capillary blood gases on starting support and then at regular intervals

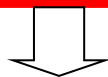


Relative indications for discussion with local anaesthetic team, intubation and ventilation, and referral to regional PCC retrieval service:

- FiO₂ requirement > 50% to maintain SpO₂ >92% despite HFNC /CPAP support
- Persistent apnoeas
- Impending respiratory failure/ exhaustion
- Reduced level of consciousness
- Worsening hypercarbia / respiratory acidosis

RED FLAGS:

- Apnoea associated with CVS instability
- Reduced level of consciousness
- Neuromuscular disease



Intubation and ventilation:

- Use an intubation checklist
- Pre-oxygenate
- Decompress stomach by gastric tube aspiration
- Ensure 2 points IV access
- Consider fluid bolus prior to anaesthesia
- Choose appropriate ETT to minimise leak
- Ensure end tidal CO₂ monitoring available
- Give appropriate CVS stable induction drugs (e.g. ketamine 1-2 mg/kg, rocuronium 1 mg/kg)
- Secure ETT and check CXR post intubation for ETT position
- Initial ventilation strategy: PIP to move chest, PEEP 5-7, i-time 0.8 secs, RR 20-30
- Initial gas exchange targets: Sats >92%, permissive hypercapnia (pH >7.25, pCO₂ 5-10)
- Arterial line usually not required unless CVS instability
- Saline suction via ETT and chest physiotherapy may be helpful if mucus plugging

Sedate and paralyse for ventilation and onward transfer to L3 PCCU

Troubleshooting (DOPES):

Displaced ETT - check ETCO₂ and exact length

Obstruction – suction ETT and check catheter passes to end

Pneumothorax – clinical examination; differential is air trapping due to hyperinflation

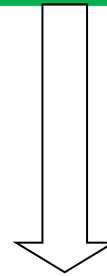
Equipment – check ventilator settings including oxygen

Stomach – ensure decompressed with gastric tube



Relative indications for de-escalating care:

- Ability to wean FiO₂ and maintain sats >92%
- No apnoeas
- Respiratory rate in normal range for age / ↓WOB
- Minimal hypercarbia / respiratory acidosis
- Decreased irritability
- Normocarbia/no respiratory acidosis



De-escalation care: *

- Wean FiO₂ ≤40% to maintain SpO₂ >92%
 - Reduce HFNC flows / CPAP pressures as per local policy
 - Consider step down from L1/L2 PCC area once off HFNC / CPAP support and no apnoeas for 12 hours
- * when de-escalating care ensure that indications / observations maintained as above; if not, revert to previous FiO₂ / support levels and reassess