

NHS Children's Acute Transport Service



Clinical Guidelines

Bronchiolitis

Document Control Information

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| Applicable to | All CATS employees | | |



1. Diagnosis

- Inflammation of small airways characterised by respiratory distress, fever, paroxysmal cough, crepitations, wheeze and hyperinflation
- Often preceded by coryzal illness
- Age <24 months (peak 2-8 months)
- Aetiology:
 - Viral
 - RSV: the most frequent (November - March)
 - Others (10-20%): Metapneumovirus, Adenovirus, Parainfluenza, Influenza, Enterovirus, Rhinovirus, Bocavirus
 - Bacterial
 - Mycoplasma pneumoniae, Chlamydia (uncommon)
- Other non-respiratory ways of presentation:
 - Apnoea (central or obstructive), encephalitis, myocarditis, arrhythmias, SIADH
- Differential diagnoses:
 - Asthma
 - Aspiration
 - Bacterial pneumonia
 - Foreign body
 - Cystic fibrosis
 - Cardiac disease
 - Vascular ring
- Investigations: (see also NICE guidance 2015) children referred to CATS with bronchiolitis are at the severe end of the bronchiolitis spectrum, consider:
 - Blood gas
 - Nasopharyngeal aspirate (viral and bacterial)
 - Blood cultures
 - Chest x-ray
 - Urine culture (in case of persistent high fever)

- Assess severity:

MODERATE

- Tachycardia
- RR > 50
- Nasal flaring
- Accessory muscles
- Recession
- Head retraction
- Unable to feed

SEVERE

- Cyanosis
- Getting tired
- ↓ conscious level
- Saturation < 92% in spite of O₂ therapy
- Rising pCO₂

2. Initial management

2.1 Ensure airway patency

2.2 Suction secretions if required

2.3 Give oxygen to achieve SaO₂>91% (preferably humidified)

2.4 Monitor for apnoeas (especially age <6 weeks)

2.5 Consider the use of nebulisers but do not persist if no response.

- Adrenaline 1:1000 0.5ml/kg (min 1 ml max 5ml)
- Salbutamol 2.5mg
- Ipratropium bromide 125 mcg
- 2.7% Saline nebs have been used but are not supported by current evidence

2.6 Treat with antibiotics only if bacterial infection is suspected (compatible chest X-ray and blood findings)

2.7 Consider naso/orogastric tube to prevent abdominal distension. Leave on free drainage.

2.8 Intubation may be required in children referred to CATS for respiratory failure, therefore keep nil by mouth. Fluid boluses may be necessary (assess possible dehydration).

Restrict maintenance fluids to 80% normal requirements. Hyponatraemia secondary to SIADH is common

3. Respiratory support

3.1 Non-invasive ventilation: Consider HFNC (high flow nasal cannula oxygen) and/or CPAP for respiratory support in case of worsening respiratory distress

- Evidence suggests that CPAP of 7 cm H₂O is optimal
- If HFNC is used, use 2 L/kg/min as gas flow rate (for infants <10 kg). Maximum flow 50L/min

Consider early anaesthetic review

3.2 Indications for intubation:

- Exhausted, increased work of breathing
- Recurrent apnoeas
- Reduced conscious level
- Worsening hypoxaemia (SpO₂ <91% with FiO₂ >60%)
- Worsening hypercarbia and respiratory acidosis

3.3 Intubation

- Pre-oxygenate
- Fluid boluses and resuscitation drugs available
- Consider modified rapid sequence induction with ketamine 1-2 mg/kg (bronchodilator activity) and suxamethonium 2 mg/kg: see induction of anaesthesia guideline
- CXR post intubation

4. Management following intubation

4.1 Targets: SpO₂>91%, permissive hypercapnia (tolerate high pCO₂ if pH>7.25)

4.2 Sedate and paralyse for ventilation

4.3 Rate <30 bpm; high rates may lead to air-trapping

4.4 I:E ratio of at least 1:2

4.5 PEEP of 5-7 cm H₂O

4.6 Regular chest physiotherapy and suctioning for mucus plugging

4.7 Check CXR for ETT position and to exclude pneumothorax

5. Transport considerations

- EtCO₂ is mandatory during transport
- If having problems with clearing CO₂, minimise dead space
- If ventilation deteriorates - hand ventilate to assess compliance, auscultate (rule out pneumothorax or lobar collapse), perform suction, assess expiratory time and consider manual decompression, insert chest drain for pneumothoraces