

## Bronchiolitis (children < 2 years)

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### Background:

- Viral infection. 75% due to Respiratory syncytial virus (RSV).
- Affects children < 2 years but more common (1 in 3 infants) in < 12 months. 2-3% of all infants require hospitalization with bronchiolitis.
- Common for history of contact with older sibling or adult with cough and cold.
- Results in small airway oedema and increased mucous and debris in airways, leading to plugging and atelectasis.
- Admission is for
  - Oxygen therapy and/or supplementary feeding via NG tube and/or respiratory support

### Risk of more severe disease / requirement for respiratory support

- ✿ Infants < 3 months, particularly neonates (< 4 weeks)
- ✿ Prematurely born infants
- ✿ Infants with significant co-morbidities
  - Chronic lung disease
  - Congenital cardiac disease
  - Neuromuscular disorders
  - Immunodeficiency
  - Social deprivation

### Assessment:

#### Bronchiolitis is a clinical diagnosis

- Typical history of coryzal prodrome lasting 1 – 3 days, followed by:
  - Persistent cough, **and**
  - Either tachypnoea or chest recession, or both, **and**
  - Wheeze or crackles on chest auscultation, or both
- Young infants may present with **apnoea** without other clinical signs.
- May cause a fever (usually < 39°C).
- Consider alternative diagnoses
  - Fever > 39°C and/or persistent focal crackles – ?pneumonia
  - Persistent wheeze without crackles or recurrent episodic wheeze or personal or family history of atopy, especially in > 1 years - ?VIW
- Symptoms often deteriorate over the first 72 hours, peak between 3 – 5 days. The cough resolves in most infants by 3 – 4 weeks.

**Assessment of severity - 1 or more of the following:**

Mild	Moderate	Severe	Life threatening
Sats: >95% in air	Sats: 92-95% in Air	Sats in air: <90% in >6 weeks old < 92% in < 6 weeks old or with co-morbidities	
Normal RR Subtle or no accessory muscle use. No apnoeas observed or reported	Increased RR(>60/min) Minor accessory muscle use. No apnoeas observed or reported	Markedly increased RR (>70/min) Nasal Flaring, Grunting. Moderate / marked accessory muscle use. Apnoea (observed or reported)	Maximal accessory muscle use. Poor respiratory effort. Apnoea. Unable to maintain oxygen saturations despite oxygen supplementation.
Normal HR	Increased HR	Increased HR	
Able to Feed	Minimal limitation to feeding (> 50-75% normal), no signs of dehydration.	Inadequate feeding (< 50 – 75% normal) or dehydrated	
		Sweaty, tired.	Listless, Exhausted, cyanosis.
<b>CED / Ward Management (see page 3 for further details)</b>			
<ul style="list-style-type: none"> <li>➤ Can go home with advice leaflet</li> <li>➤ Verbal highlighting of red flags in leaflet and key safety information</li> <li>➤ Advise parents / carers: <ul style="list-style-type: none"> <li>✓ Medications are not required as bronchiolitis is 1. Viral, and 2. Self-limiting</li> </ul> </li> <li>➤ Consider ACORNS referral from CED, particularly if the child is at risk of severe disease</li> </ul>	<ul style="list-style-type: none"> <li>➤ Observe for at least one feed.</li> <li>➤ Monitor saturations for 4 hours</li> <li>➤ Pre-feed saline nasal drops</li> </ul> <p>If O<sub>2</sub> sats persistently &gt; 90% in &gt; 6 week old, or 92% &lt; 6 weeks old, feeds &gt; 50% normal, work of breathing improves, and no risk of severe disease, may go home. See CED / ward management in 'Mild' column.</p> <p>If persistent features of moderate severity:</p> <ul style="list-style-type: none"> <li>➤ admit for NGT feeds + O<sub>2</sub> support as needed.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Admit</li> <li>➤ Humidified O<sub>2</sub> via Head box or heated humidified high flow nasal cannula oxygen (HFNC or "Optiflow") to keep saturations &gt;94 - 97%.</li> <li>➤ Consider CPAP or BLPAP if O<sub>2</sub> requirement &gt;40%</li> <li>➤ Nasal suction</li> <li>➤ Stop feeds, IV fluids.</li> <li>➤ Apnoea monitor if &lt;8 weeks of age</li> </ul>	<ul style="list-style-type: none"> <li>! Urgent senior review</li> <li>! May require intubation and ventilation</li> </ul>

## General Management

### Do not routinely perform chest x-ray in children with bronchiolitis

- Changes on x-ray may mimic a pneumonia and should not be used to determine the need for antibiotics
- Chest x-ray is appropriate when considering critical care e.g. CPAP or intubation

**As there is no evidence to support their use, DO NOT USE any of the following to treat bronchiolitis in children EXCEPT in critical care where management may differ:**

- |                        |                                     |
|------------------------|-------------------------------------|
| - <b>Antibiotics</b>   | - Hypertonic saline nebulisers      |
| - Nebulised adrenaline | - Salbutamol or ipratropium bromide |
| - Montelukast          | - Systemic or inhaled steroids      |

NB Secondary bacterial infection is very uncommon in bronchiolitis unless child is severely unwell requiring critical care – do not do CXR or give antibiotics routinely. This is a NICE quality standard.

## COVID-19 specific advice

Aerosol Generating Procedures (AGPs) related to bronchiolitis include:

- respiratory tract suctioning
- induction of sputum using nebulised saline
- high flow nasal oxygen i.e. Optiflow
- non-invasive ventilation: BiPAP) and CPAP
- tracheal intubation and extubation, and manual ventilation

**If an infant with bronchiolitis is felt to need any of the above there must be a discussion and review with a senior decision-maker.**

Appropriate PPE must be worn if AGPs are required (see latest guidance on Brighton Microguide)

## Cohorting in CED and ward

Patients with bronchiolitis should be moved and nursed in a cubicle as soon as possible.

If cubicle space is limited, a risk assessment should be performed.

- Ensure clinically extremely vulnerable children can be accommodated in cubicles
- Infants with bronchiolitis can be cohorted in to a bay area providing **no** AGPs are being performed, and 2m spacing and other covid precautions can be maintained.

## Testing and subsequent management

All admitted patients should have both a SARS-CoV-2 swab and a full respiratory viral panel throat swab in CED.

### Subsequent management:

	COVID Negative	COVID positive
Respiratory viral panel negative	Consider re-swab for COVID before moving to a bronchiolitis bay	Treat in a cubicle
Respiratory viral panel positive	Treat in a bronchiolitis bay	Treat in a cubicle

### Other management points:

1. Consider capillary blood gases in those with impending respiratory failure or severe worsening respiratory distress e.g. persistent oxygen requirement > 50%.
2. If giving oxygen, give HUMIDIFIED oxygen
  - Head box oxygen should be considered early if oxygen requirement increases.
3. Clear Nasal passages:
  - Saline nose drops, especially before feeding.
  - Suction can be used if signs of respiratory distress from nasal blockage or presenting with apnoea but note **it is an AGP**.
4. Feeding / IV fluids:
  - Mild disease can continue oral feeds if able, unless it increases their respiratory distress.
  - Nasogastric feeds should be considered in infants with moderate disease, those who cannot maintain oral intake due to increase RR up to 70/min, vomiting or increased work of breathing.
  - In infants with severe disease, RR > 70/min, or persistent vomiting, IV fluids are required
    - use **0.9% sodium chloride + 5% glucose at 2/3rds maintenance**.
5. Consider a chest physiotherapy assessment in children who have relevant co-morbidities (e.g. spinal muscular atrophy, severe tracheomalacia) when there may be additional difficulty clearing secretions.
6. See 'Bronchiolitis management on the Paediatric Critical Care Unit' guideline on Brighton Microguide for further management of patients on PCCU.

## Discharge and follow up

### Discharge criteria for children recovering from bronchiolitis:

- Maintaining saturations in air AND minimal recession **for > 4 hours** (including during sleep)
  - > 90% for children aged 6 weeks and over
  - > 92% for babies under 6 weeks or for any age child with underlying health conditions
- Feeding orally >70% of their daily fluid requirements
- Parent / carer advice leaflet, with verbal highlighting of red flags / key safety information, including advice on when to return.

If discharging from CED or short stay unit (SSU) consider ACORNS referral to facilitate ongoing observation, particularly if at risk of more severe disease.

When discharging, especially from CED, consider the carer's:

- Social factors
- Distance from hospital in case of deterioration
- Ability to recognise red flags

### Key safety information for carers:

1. Recognising red flags
  - Worsening work of breathing (grunting, chest recession, nasal flare etc.)
  - Fluid intake < 50 – 75% of normal or no wet nappies for 12 hours
  - Apnoea or cyanosis
  - Exhaustion
2. Advice regarding smoking – increases the risk of more severe symptoms
3. How to get help
4. Follow up arrangements

### Further information:

[National guidance for the management of children with bronchiolitis and lower respiratory tract infections during COVID-19 | RCPCH](#)

[Overview | Bronchiolitis in children: diagnosis and management | Guidance | NICE](#)