

# BRONCHIOLITIS

## Clinical Guideline

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## Purpose of Guidance

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This guideline has been created with the aim of standardising care throughout the South Yorkshire Integrated Care System footprint, with agreed management of bronchiolitis which a common presentation in paediatric units and to ensure equity for all of our children and young people.

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## Scope of Guidance

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This guideline is intended for primary use by staff working in the four acute hospital trusts in the South Yorkshire Integrated Care Board providing children's services:

- *Barnsley Hospitals NHS Foundation Trust*
- *Doncaster & Bassetlaw Hospitals NHS Foundation Trust*
- *Rotherham NHS Foundation Trust*
- *Sheffield Children's NHS Foundation Trust*

This includes but is not limited to Doctors, Nurses, and Allied Health Professionals.

Bronchiolitis is a common cause of hospital attendance and admission in the first year of life. This guideline is for children younger than two years old when presenting at the hospital with a considered diagnosis of bronchiolitis. The guideline covers babies and children with bronchiolitis but not those with other respiratory conditions, such as recurrent viral induced wheeze or asthma.

This guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

The document may be referred to by other Trusts at their discretion but does not replace or override any guidance intended to be used therein and is for information purposes only.

This document is not intended for use in Primary Care or other non-acute environments.

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# 1. Version Control

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This is a controlled document. Whilst this document may be printed, the electronic version posted on the **Healthier Together Staff Hub** is the controlled copy. Any printed copies of this document are not controlled.

Date	Version	Comments	Changes Made
TBC	1 [Original]	None	None

## 2. Key Definitions

### 2.1 Bronchiolitis

Is a viral chest infection that affects babies and children under two years old more severely than older children. It's most commonly caused by the respiratory syncytial virus (RSV).

Based on the clinical presentation, it can be categorised into mild, moderate and severe disease.

### 2.2 Table 1

Mild	Moderate	Severe
Feeding >50% of requirements	Feeding >50% of requirements	Poor feeding (<50% of usual fluid intake in preceding 24 hours)
No risk factors and >3/12 age*	Risk factors for severe disease*	Lethargy / History of apnoea
Respiratory rate within normal range for age	Respiratory rate 50-70/min	Respiratory rate >70/min
Minimal respiratory distress	Mild to moderate respiratory distress	Presence of nasal flaring and/or grunting and Severe chest wall recession
SaO <sub>2</sub> > 95%	SaO <sub>2</sub> 90-95% in air *  *(92-95% for babies under 6 weeks and underlying health conditions)	Persistent oxygen saturation (when breathing air) of: <ul style="list-style-type: none"> <li>○ Less than 90%, for children aged 6 weeks and over</li> <li>○ Less than 92%, for babies under 6 weeks or children of any age with underlying health conditions</li> </ul>
Parents happy for discharge and no significant social concerns	Parental anxiety/social concerns	Uncertain about diagnosis, Septic

\* Risk factors for severe disease  
 Chronic lung disease (including bronchopulmonary dysplasia)  
 Haemodynamically significant congenital heart disease  
 Age in young infants (under 3 months)  
 Premature birth, particularly under 32 weeks  
 Neuromuscular disorders  
 Immunodeficiency

### 3. Flow Chart

#### Mild Bronchiolitis

**Home**

Advice to parents  
Small volume, frequent feeds  
Return if deterioration in symptoms (e.g. reduced feeds or working harder with breathing)  
Explain increased RR, recession and grunting  
Advise not to smoke at home  
Follow up with GP if necessary or back to ED if unwell

#### Moderate Bronchiolitis

**Paediatric medical team review**

Will need a period of assessment including saturations, feeding and respiratory distress  
If improves & feeding OK, may be discharged with advice

#### Severe Bronchiolitis

**Admit**

Will need O2  
Support with feeding  
Naso Pharyngeal Airway (NPA)  
Consider involving Seniors

Give Leaflets: Bronchiolitis, Safe sleeping, smoking cessation  
Signpost towards healthier together website

Provide key safety information for parents and carers to take away for reference for babies and children who will be looked after at home. (see section on discharge advice below)

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## 4. Introduction & Background

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### 4.1 Definition:

Bronchiolitis is an acute viral infection of the lower respiratory tract. Although it can affect individuals of any age, the term is most often used to refer to infection in infancy.

### 4.2 Causes:

- Respiratory syncytial virus (RSV) is the pathogen in 75% of cases but there are multiple other viral causes including parainfluenza, influenza and adenoviruses
- It is a seasonal condition peaking from November to February.
- 1/3 of all infants develop bronchiolitis in their first year and 3% of infants under a year are admitted to hospital with bronchiolitis.
- It affects children under the age of two years with a peak between three and six months of age.

### 4.3 Clinical Features:

- Acute lower respiratory tract symptoms generally develop two to three days after a coryzal illness.
- This can lead to feeding difficulties, increasing respiratory distress, hypoxia and respiratory failure and exhaustion.
- Young infants with this disease (in particular those under 6 weeks of age) may present with apnoea without other clinical signs.
- After the onset of Bronchiolitis symptoms, respiratory distress may worsen for the first 72 hours before showing signs of improvement, usually peaking between day three and five of the illness.

### 4.4 Risk Factors for severe disease:

- Chronic lung disease (including bronchopulmonary dysplasia)
- Haemodynamically significant congenital heart disease
- Age in young infants (under 3 months)
- Premature birth, particularly under 32 weeks
- Neuromuscular disorders
- Immunodeficiency
- Breastfeeding reduces the risk of hospitalisation and should be supported.
- Parental smoking increases the risk of hospitalisation. Parents should be informed and offered information on smoking cessation.

#### **4.5 Differential Diagnosis:**

Pulmonary causes of Bronchiolitis-like symptoms include: -

- Asthma/ viral induced wheeze
- Pneumonia
- Congenital lung disease
- Cystic fibrosis
- Inhaled foreign body

Non-pulmonary causes include: -

- Congenital heart disease
- Myocarditis
- Sepsis
- Severe metabolic acidosis

#### **4.6 Infection control**

- All admitted infants with a clinical diagnosis of bronchiolitis are admitted to a bay or cubicle as per local guidance.
- Bronchiolitis is spread by droplets, it is highly contagious and aprons should be worn whenever in a bronchiolitis area. Hands should be washed or cleaned with alcohol gel as per normal hand hygiene guidance. Stethoscopes should also be cleaned after patient usage.

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## **5. Assessment & Criteria for Admission**

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### **5.1 Initial Presentation/Symptoms**

Acute lower respiratory tract symptoms generally develop 2-3 days after a coryzal illness.

- This can lead to feeding difficulties, increasing respiratory distress, hypoxia and respiratory failure and exhaustion. Young infants with this disease (in particular those under 6 weeks of age) may present with apnoea without other clinical signs.

After the onset of bronchiolitic symptoms respiratory distress may worsen for the first 72 hours before showing signs of improvement, usually peaking between day 3 and 5 of the illness.

- Mild disease: fit for discharge with safety netting
- Moderate disease: will require a period of assessment
- Severe disease: will need admission

When deciding whether to send a child home with safety netting advice, take into account factors



that might affect a carer's ability to look after a child with Bronchiolitis, for example: -

- Social circumstances
- The skill and confidence of the carer in looking after a child with bronchiolitis at home
- Confidence in being able to spot red flag symptoms
- Distance to healthcare in case of deterioration

**Indications for high dependency/intensive care unit consultation include:**

- Failure to maintain oxygen saturations above 90% with increasing oxygen therapy
- Deteriorating respiratory status with signs of increasing respiratory distress and/or exhaustion
- Recurrent apnoea

**5.2 Examination**

- Fever- Children with bronchiolitis often have low grade fever.
- If  $>39^{\circ}\text{C}$  other causes should be considered. It is unusual for infants to appear "toxic" and other causes should be sought and treated.
- Rhinorrhoea and cough- Often the first symptoms to appear
- Increased respiratory rate (refer to PEWS chart to assess rate for age)
- Increased work of breathing –Intercostal, subcostal and rarely sternal recession. Head bobbing and grunting may be signs of more significant work of breathing.
- Crackles and wheeze – Fine inspiratory crackles in all lung fields are common. High pitched wheeze also commonly heard. Both can appear independently of each other.
- Focal crepitations with high grade temperature should be a prompt to do a CXR and consider alternate diagnosis
- Apnoea- More common in very young, low birth weight and preterm infants.
- Hypoxia and exhaustion- in more severe cases. Routine assessment of oxygen saturation is mandatory
- Consider cardiorespiratory disease in all children with severe presentation if signs of heart failure e.g palpable Liver, absence of coryzal symptoms.

**5.3 Investigations**

- Bronchiolitis is a clinical diagnosis
- Pulse oximetry (see above for criteria for considering admission)

- Blood gases are not indicated unless signs of increasing respiratory failure
- Chest Xray should not be performed in those with typical disease. Consider if persistent fever  $>39^{\circ}\text{C}$  or doubt about diagnosis
- Nasopharyngeal aspirate for RSV/viral testing
- FBC, CRP, Blood and urine culture- not routinely required but consider in febrile infants less than 3 months of age or if concerns about sepsis.
- U+E is not indicated in typical bronchiolitis but should be considered in severe disease and where IV fluids are utilised (note risk of SIADH)

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## 6. Clinical Management: Acute Care

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### 6.1 Supportive treatment

#### 6.1.1 Oxygen

Give oxygen supplementation to babies and children with bronchiolitis if their oxygen saturation is:

- Persistently less than 90%, for children aged 6 weeks and over
- Persistently less than 92%, for babies under 6 weeks or children of any age with underlying health conditions

#### 6.1.2 Fluid support

- NG feeding in those taking less than 50% of requirements
  - Or if significant respiratory disease
- Consider IV fluids in those with severe/worsening disease  
*Restriction of fluids to 2/3 maintenance (100ml/kg if oral/NG and 66ml/kg if IV) is mandatory as there is a risk of SIADH and hyponatraemia.*

### 6.2 Other considerations

- Nasal saline drops/suction may be helpful if infants desaturate during feeding
- Physiotherapy is not indicated routinely
- High flow oxygen therapy (please see local guidelines)
- CPAP to be considered if
  - Apnoeas
  - Severe respiratory distress
  - Rapidly worsening disease
  - Triggering PEWS
- Discuss with seniors/ HDU if clinical deterioration as above.

*Keep patient handling to a minimum and review patients regularly.*

There is **no** evidence for the use of the following drugs, and they should **not** be used for simple Bronchiolitis: -

- Oral/inhaled corticosteroids
- Bronchodilators ( $\beta$ 2 agonists and anticholinergics)
- Antibiotics
- Ribavirin
- Hypertonic saline
- Leukotriene receptor antagonists
- Nebulised adrenaline

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## 7. Further Management

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### 7.1 Symptom duration and discharge criteria

- The median duration of illness is 12 days
- 10% will still have a cough at 3 weeks
- Ciliary damage persists for 13-17 weeks

### 7.2 Discharge criteria

#### 7.2.1 Clinically Stable

Oxygen saturations: They have maintained an oxygen saturation in air at the following levels for 4 hours, including a period of sleep:

- Over 90%, for children aged 6 weeks and over
- Over 92%, for babies under 6 weeks or children of any age with underlying health condition
- Feeding- ideally taking 75% of recommended daily intake

#### 7.2.2 Information for parents at discharge

Provide key safety information for parents and carers to take away for reference for babies and children who will be looked after at home. This should cover:

- How to recognise developing 'red flag' symptoms:
  - worsening work of breathing (for example grunting, nasal flaring, marked chest recession)
  - fluid intake is 50% to 75% of normal or no wet nappy for 12 hours

- apnoea or cyanosis
- exhaustion (for example, not responding normally to social cues, wakes only with prolonged stimulation).
- That people should not smoke in the baby or child's home because it increases the risk of more severe symptoms in bronchiolitis
- How to get immediate help from an appropriate professional if any red flag symptoms develop
- Arrangements for follow up if necessary.
- Continuation of breastfeeding

Parents should be signposted towards the healthier Together website. Link below with QR code.

[Bronchiolitis and RSV :: Healthier Together \(what0-18.nhs.uk\)](https://www.healthier-together.org/what0-18.nhs.uk)



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## 8. Review Timeline

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This policy will be reviewed in its entirety on a three-yearly basis, as is standard practice, by the members of the Guideline Development Group within the Care of the Acutely Ill Child Network. If significant issues are found as a result of the audit process, a review will be conducted in advance of this to ensure patient safety. As part of the audit process, there is scope to make minor amendments to the policy built into the document, and these will be reflected in the version control table visible at the front of this document.

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## 9. Appendices

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Record of Regional Consultation		
Partner Trusts	Name	Role
Barnsley		
Doncaster & Bassetlaw		
Rotherham		
Sheffield Children's		
(May include other allied trusts as appropriate e.g. Chesterfield)		
Other Key Participants		
Pharmacists, Other Specialisms etc.		