

## Bronchiolitis

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### Key Amendments

Date	Amendment	Approved by
February 2019	Apnoea to list of symptoms Admission section added. Amendments to HDU section and Hospital discharge. References updated	Paediatric QIM
19 <sup>th</sup> Nov 2020	Document extended for 1 year	Dr J West/ Paediatric QIM
26 <sup>th</sup> March 2021	Document reviewed and approved for 3 years with no changes	Clare Onyon/ Paediatric Guideline Review Meeting
9 <sup>th</sup> February 24	Changes made to hospital discharge criteria and oxygen saturation levels	Paediatric Guideline Review Meeting

### Introduction

Bronchiolitis is the most common respiratory illness in infants. It has seasonal variation with the majority of cases presenting in the winter and spring months. Most children will have a minor, self-limiting illness, but approximately 10% will require hospital admission. This guideline aims to distinguish those infants who will be able discharged home safely with advice, those who need in-patient treatment and those who require high dependency or intensive care.

Bronchiolitis is diagnosed clinically, based on the history and typical features of the illness. Common signs and symptoms include:

- Cough
- Tachypnoea
- Wheezing
- Grunting
- Recession, nasal flaring
- Poor-feeding, post-coughing vomiting
- Mild fever
- Apnoea
- 

The history often includes a preceding coryzal illness. On examination, audible wheeze and fine respiratory crepitations are typical. Young infants, especially those under 6 weeks of age) may present with apnoea without other clinical signs.

Consider a diagnosis of pneumonia if the baby or child has:

- high fever (over 39°C) and/or
- persistently focal crackles.

Consider a diagnosis of viral-induced wheeze or early-onset asthma rather than bronchiolitis in older infants and young children (although this is unusual under the age of 1 year) if they have:

- persistent wheeze without crackles or
- recurrent episodic wheeze or
- a personal or family history of atopy.

## Admission

Admit a child with bronchiolitis to hospital if they have any of the following:

- apnoea (observed or reported)
- persistent oxygen saturation of less than 90% when breathing air
- inadequate oral fluid intake (under 50–75% of usual volume and using clinical judgement)
- persisting severe respiratory distress, for example grunting, marked chest recession, or a respiratory rate of over 70 breaths/minute.
- Take account of the following risk factors for more severe bronchiolitis:
  - 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.
- Take into account factors that might affect a care's ability to look after a child with bronchiolitis
  - 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.

## Investigation

The diagnosis is usually a clinical one and investigations are not generally needed to confirm it.

A nasal swab respiratory viral panel and extended viral panel can be useful to enable cohort nursing for RSV, COVID-19 or influenza status.

Consider the following if a child is requiring in-patient stay and is deteriorating or is a red High Risk patient (see later in guideline for definition).

### Capillary blood gas

In acute bronchiolitis there is no evidence to support the routine measurement of capillary gases. However, it may be useful in aiding assessment of children who are tiring and may require more intensive support such as those children in the red high risk category.

## **Bloods**

Bloods do not contribute to the diagnosis. However, should be considered in the clinical context; for example U&Es in clinically significant dehydration where intravenous fluids are planned; or blood culture if there are features of sepsis (a diagnosis other than bronchiolitis is suspected).

## **Chest X-Ray**

This is not routinely performed. It should only be considered if the illness has atypical features, complications are suspected or the diagnosis is uncertain. The chest x-ray in bronchiolitis will show signs of hyperinflation, peribronchial thickening and often patchy collapse and consolidation.

## **Treatment**

There are many suggested treatments for bronchiolitis most of which have a poor evidence base. There are several supportive measures that may help improve symptoms.

### **Position:**

- ✓ Nurse with the child in an elevated position to reduce diaphragm splinting.

### **Oxygen:**

- ✓ This is indicated for children with saturations of 90% or less. Humidified oxygen can be administered in various ways. Please refer to the Prescribing, Monitoring and Administration of Oxygen in Paediatrics guideline.

### **Nasal Suction:**

- ✓ Do not routinely perform upper airway suctioning in children with bronchiolitis
- ✓ Consider upper airway suctioning in children who have respiratory distress or feeding difficulties because of upper airway secretions
- ✓ Perform upper airway suctioning in children with bronchiolitis presenting with apnoea even if there are no obvious upper airway secretions.

### **Feeding Support:**

- ✓ Monitor fluid balance
- ✓ Small frequent feeds orally / nasogastrically or orogastically
- ✓ Consider continuous NG feeds if bolus feeds are not tolerated or there is increasing respiratory disease.

### **Intravenous Fluids:**

- ✓ IV fluids should be considered for children who cannot tolerate NG /OG feeds or are receiving high dependency care
- ✓ Restrict IV fluid to 2/3 maintenance
- ✓ Monitor U&Es

There is no evidence base for the following treatments and therefore is NOT recommended:

- ✗ Nebulised or inhaled bronchodilators
- ✗ Nebulised ipratropium bromide
- ✗ Nebulised adrenaline
- ✗ Inhaled or oral corticosteroids
- ✗ Chest physiotherapy (for those not admitted to intensive care)
- ✗ Nebulised anti-viral treatment
- ✗ Anti-biotic therapy
- ✗ A combination of systemic corticosteroids and nebulised adrenaline
- ✗ Hypertonic saline nebulisers
- ✗ Montelukast

- Consider requesting a chest physiotherapy assessment in children who have relevant comorbidities (for example spinal muscular atrophy, severe tracheomalacia) when there may be additional difficulty clearing secretions.

## High Dependency / Intensive Care

Children who are not being successfully managed with the above treatment may need escalation of care. They may be identified from the following:

- Unable to maintain saturations above 90% in oxygen
- Increasing respiratory distress with or without signs of exhaustion
- Recurrent apnoeas / bradycardias
- Exhaustion e.g. listlessness or reduced respiratory effort

### **Red – high risk patients may require escalation of care immediately.**

The senior doctors should commence high flow oxygen or CPAP and discuss with the consultant paediatrician. Please refer to the Guideline for the use of Nasal Continuous Positive Airway Pressure (CPAP) in the Management of Bronchiolitis in Infants up to age 6 months [WAHT-PAE-033](#) or the Guideline for the use of high Flow Nasal Cannula Oxygen Therapy (Optiflow or Airvo) in Children with Bronchiolitis or an acute respiratory illness WAHT-TP-046

**Discussion with the regional paediatric intensive care unit (PICU) should always occur early in children who are showing signs of deterioration.**

## Limiting disease transmission

Please refer to the Trust Infection Control guidelines.

Healthcare professional should be aware that RSV is highly infectious. Yellow barrier nurse signs should be put on all room doors.

- Staff should decontaminate their hands (with soap and water or alcohol gel) before and after caring for patients with respiratory symptoms.
- Gloves and aprons should be used for any direct contact with the patient or their immediate environment.
- Infected patients should be placed in single rooms. If adequate isolation facilities are unavailable the allocation of patients into cohorts will be based on laboratory confirmation.
- Once the patient is discharged a bleach clean is needed before the room is used again.

## Hospital discharge criteria

Children with oxygen saturations above 90% in room air may be considered for discharge. When oxygen therapy has been discontinued; a child's oxygen saturation levels should be monitored:

- Continuously for 4 hours.
- Then hourly spot saturations for 2 – 4 hours.
- Then frequency of observations needs to be assessed by the nurse.

Following discontinuation of oxygen therapy most children will require their saturation levels recorded in air to include a period of time when they are asleep as per the Prescribing, Monitoring and Administration of Oxygen in Paediatrics guideline.

When deciding whether to discharge a child, 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
- age < 3 months

Parents or carers should be provided with the **bronchiolitis discharge leaflet (see appendix 2)** In order to facilitate early discharge involvement of the community children's nursing team is suggested. Children should not be discharged home until they can maintain a daily oral intake of 75% of their usual feeds unless the community children's nursing team are involved. .

A referral to the community children nursing team should be made for children who are:

- Less than 8 weeks olds
- Earlier than day 3 of illness
- Pre –existing medical condition
- Taking less than 75% of their usual feeds
- High level of parental anxiety

After discussion with the consultant paediatrician and the community nurses a child who is still receiving low flow oxygen (<1litre) but is otherwise clinically stable may be considered for home oxygen and support from the community nursing team.

## REFERENCES

- Bronchiolitis in children: diagnosis and management NICE guideline [NG9] Published date: June 2015 Updated Aug 21
- Cunningham, Steve, et al. "Oxygen saturation targets in infants with bronchiolitis (BIDS): a double-blind, randomised, equivalence trial." *The Lancet* 386.9998 (2015): 1041-1048.
- Advanced Life Support Group, APLs – the practical approach 5<sup>th</sup> edition

## CONTRIBUTION LIST

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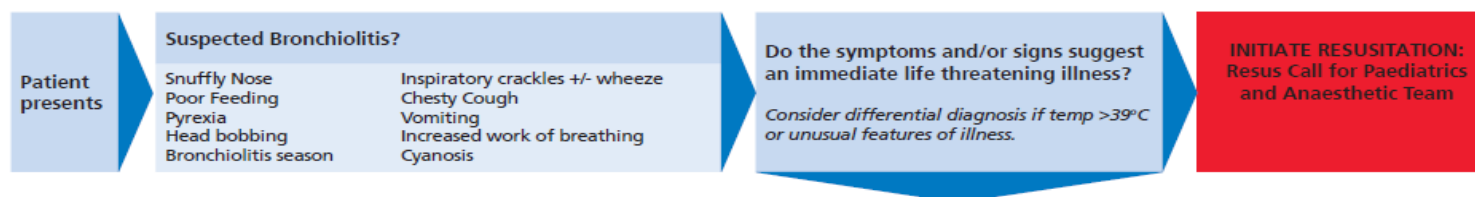
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## Appendix 1

### Bronchiolitis Assessment in Acute Setting for Children 0-2 years



	GREEN Low Risk	AMBER Intermediate Risk	RED High Risk
Behaviour	Alert Normal	Irritable Decreased activity Reduced response to social cues No smile	Unable to rouse No response to social cues Wakes only with prolonged stimulation Weak, high pitched, or continuous cry Appears ill to a health care professional
Skin	CRT <2 secs Moist mucous membranes Normal colour skin, lips and tongue.	CRT 2-3 seconds Pallor reported by parents / carer Pale / mottled Cool peripheries	CRT > 3 secs Cyanotic lips and tongue Pale / mottled / blue
Respiratory	Under 12 months < 50 breaths per minute, over 12 months < 40 breaths per minutes No respiratory distress	Under 12 months 50 - 60 breaths per minute, over 12 months 40 - 60 breaths per minutes	All ages greater than 60 breaths per minute Respiratory distress
Saturations in air	94% or above	92-94%	<92%
Chest recession	None	Moderate	Severe
Nasal flaring	Absent	Maybe present	Present
Grunting	Absent	Absent	Present
Feeding/Hydration	Usual feeds or tolerating 75% or more Occasional cough induced vomiting	50 -75% of normal fluid intake over 3-4 feeds Reduced urine output	Less than 50 of fluid over 2-3 feeds or 12 hours Significantly reduced urine output
Apnoeas	Absent	Absent	Present for 10-15 seconds or shorter if accompanied by a sudden decrease in saturations / central cyanosis/ bradycardia
Other	Social circumstances	Pre existing lung condition Congenital Heart Disease Immunocompromised Neuromuscular weakness Prematurity (<6 weeks corrected) Re-attendance	
ACTION	Discharged home with discharge advice. The discharge advice sheet should be discussed fully with the parents/ carers. Ensure that the parents/ carers are comfortable with the decisions and the advice given. Consider open access to the inpatient wards/referral to the community nursing service.	Discuss finding with paediatric middle grade / paediatric consultant and admit to the ward.	Seek assistance via a paediatric emergency call. Commence emergency treatment.

**Remember: If the signs/symptoms have been present for less than 3 days the condition is likely to get worse**



## Appendix 2

### Patient Information

# Bronchiolitis discharge and follow-up advice sheet for children 0-2 years

## What is Bronchiolitis?

Bronchiolitis is an infectious disease when the tiniest airways in your baby/child's lungs become swollen. This can make it more difficult for your baby/child to breathe. Usually, bronchiolitis is caused by a virus. It is common in winter months and usually only cause's mild cold like symptoms. Most babies/children get better on their own. Some babies/children, especially very young ones, can have difficulty with breathing or feeding and may need to go to hospital.

## What are the symptoms?

- Your baby/child may have a runny nose and sometimes a temperature and a cough.
- After a few days your baby/child's cough may become worse.
- Your baby/child's breathing may be faster than normal and it may become noisy.
- He or she may need to make more effort to breathe.
- Sometimes, in the very young babies, Bronchiolitis may cause them to have brief pauses in their breathing. If you are connected see the amber box overleaf.
- As breathing comes more difficult, your baby may not be able to take the usual amount of milk by breast or bottle.
- You may notice fewer wet nappies than usual.
- Your baby/child may vomit after feeding and become irritable.

## How can I help my baby?

- If your baby/child is not feeding as normal offer feeds little and often.
- If your baby/child has a fever, you can give him or her Paracetamol in the recommended doses. If your child is older than 6 months old you may also give Ibuprofen.
- If your baby/child is already taking medicines or inhalers, you should carry on using these.
- If you find it difficult to get your baby/child to take them, ask your doctor for advice.
- Bronchiolitis is caused by a virus so antibiotics won't help.
- Make sure your baby/child is not exposed to tobacco smoke. Passive smoking can seriously damage your baby/child's health. It makes breathing problems like Bronchiolitis worse.
- Remember smoke remains on your clothes even if you smoke outside.

## How long does Bronchiolitis last?

- Most babies/children with Bronchiolitis get better within about two weeks.
- Your baby/child can go back to nursery or day care as soon as he or she is well enough (that is feeding normally and with no difficulty in breathing).
- There is usually no need to see your doctor if your baby/child is recovering well. But if you are worried about your baby/child's progress, contact NHS Direct or discuss this with your doctor.

**People should not smoke in the child's home because it increases the risk of more severe symptoms in bronchiolitis**



Name: .....

Date and time of Advice: .....

Further advice given: .....

.....

Name of Professional: .....

- If your baby/child has blue lips
- If your baby/child is unresponsive and very irritable
- If your baby/child is finding it difficult to breathe
- If your baby/child pauses in breathing
- If your baby/child has an irregular breathing pattern

#### **You need urgent help**

Please phone 999 or go straight to the nearest Accident and Emergency Department.

- If your baby/child's health gets worse or you are worried
- If your baby/child has decreased feeding
- If your baby/child is passing less urine than normal
- If your baby/child is vomiting
- Your babies temperature is above 39°C

#### **See or speak to a doctor or nurse today**

Please ring your GP surgery, Out of Hours GP or call NHS Direct.

- If none of the above factors are present

#### **Self Care**

Using this advice leaflet you can provide the care your baby needs at home.

#### **Some Useful numbers:**

Riverbank, Worcester Royal Hospital: 01905 760588

NHS Direct: 0845 46 47