

NICE clinical guideline: bronchiolitis in children

Emma Caffrey Osvald,¹ Jane R Clarke²

¹Astrid Lindgren Children's Hospital, Karolinska University Hospital, Stockholm, Sweden
²Respiratory Department, Birmingham Children's Hospital, Birmingham, UK

Correspondence to

Dr Jane R Clarke, Respiratory Department, Birmingham Children's Hospital, Steelhouse Lane, Birmingham, B4 6NH, UK; jane.clarke@bch.nhs.uk

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INFORMATION ABOUT CURRENT GUIDELINE

Bronchiolitis is a lower respiratory tract infection commonly seen in children less than 1 year of age.^{1 2} Predominantly occurring in winter months, bronchiolitis is in the majority managed in the primary care setting, but it contributes to a significant proportion of the admissions to paediatric wards with a small number requiring intensive care. The National Institute for Health and Care Excellence (NICE) guideline 'Bronchiolitis in Children' was published in June 2015.¹ It aims to direct management of bronchiolitis in both primary and secondary care. The guideline was developed by the National Collaborating Centre for Women's and Children's Health.

PREVIOUS GUIDELINE

This is the first NICE guideline that covers bronchiolitis. The Scottish Intercollegiate College Network published a guideline in 2006 detailing diagnosis, management and prevention of bronchiolitis.³ The American Association of Paediatrics published a guideline with a similar scope in October 2014.² Traditionally, there is discrepancy in terminology between the UK and the USA, with clinical conditions described in the UK as virus-induced wheeze or infantile asthma termed bronchiolitis in USA. This makes it difficult to compare studies and guidelines (see [table 1](#) and [box 1](#)).

KEY ISSUES OF THE GUIDELINE RECOMMENDS

For diagnosis and referral

- ▶ Measure percutaneous oxygen saturation (SpO₂) by a health professional with appropriate training for SpO₂ measurement in infants and children.
- ▶ Urgently refer children with signs of severe illness: apnoea, severe respiratory distress, central cyanosis, persisting SpO₂ <92%, inadequate fluid intake.

- ▶ Consider referring children with increased respiratory rate >60 breaths/min, decreased oral fluid intake or clinical dehydration.
- ▶ Be mindful of differential diagnoses of bronchiolitis, which include virus-induced wheeze and pneumonia.

For admission and management

- ▶ Admit children with symptoms suggesting severe illness.
- ▶ Consider admission in those particularly at risk of severe illness (see [box 2](#)).
- ▶ Consider physiotherapy in children with bronchiolitis and other comorbidities who might have difficulty clearing secretions.
- ▶ Give supplemental oxygen to children with persistent SpO₂ <92%.
- ▶ Give continuous positive airway pressure (CPAP) to children with impending respiratory failure.
- ▶ Do not use pharmacological interventions in the treatment of bronchiolitis: adrenaline, hypertonic saline (HS), salbutamol, montelukast, ipratropium bromide, systemic or inhaled corticosteroids.
- ▶ Consider supportive fluid management as orogastric (OG) or nasogastric (NG) feed for those with inadequate oral intake. Intravenous fluids are indicated for children who cannot tolerate OG/NG feed or in those with respiratory failure.

For discharge

- ▶ Consider discharge when the infant is clinically stable, is tolerating feeds and has had SpO₂ >92% in room air for >4 h including during a period of sleep.
- ▶ Provide information on the importance of avoiding environmental smoke exposure because of its deleterious effects on a child with bronchiolitis.

UNDERLYING EVIDENCE BASE/METHODOLOGY

This, like all NICE recommendations, is based on systematic reviews of research evidence. Where no substantive clinical research evidence is found, the recommendation will be based on other



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Table 1 Management of bronchiolitis: a comparison between guidelines

	NICE	SIGN	AAP
Bronchiolitis definition	Respiratory illness occurring in children <2 years, but commonly <1 year and peaking in ages 3–6 months Cough and tachypnoea±recession, and wheeze±crackles Differential diagnosis: pneumonia, VIW and early-onset asthma	Respiratory illness occurring in children <1 year, but commonly aged 3–6 months Crackles are the hallmark Absence of crackles and only wheeze is VIW Differential diagnosis: asthma, pneumonia among others	Respiratory illness occurring in children <2 years Viral upper respiratory tract infection followed by increased respiratory effort and wheezing. Using this diagnosis will include virus-induced wheeze Specific differential diagnoses not discussed
Supplemental oxygen	SpO ₂ <92%	SpO ₂ <92%	SpO ₂ <90%
Chest physiotherapy	Recommended for patients with comorbidity	Not recommended for children not admitted to intensive care	Not recommended
Nutrition/hydration (when oral intake inadequate)	Initially OG/NG feed unless in respiratory failure	Consider OG/NG feeds or intravenous fluids if unable to maintain oral intake or hydration	NG feed or intravenous fluids OG feed not discussed
Pharmacological intervention	No role for steroids, bronchodilators, adrenaline or montelukast	No role for antivirals, steroids, bronchodilators, adrenaline or montelukast	No role for steroids, bronchodilators, adrenaline or montelukast
	No role for HS	HS not discussed	HS recommended if admitted (not in emergency department)
Airway suctioning	Recommended in children with apnoea, respiratory distress or difficulty feeding because of secretions	Nasal suctioning in infants with respiratory distress due to nasal blockage	Not recommended
Prevention strategies	Not discussed	Strategies to limit disease transmission, including hand washing Targeted palivizumab immunisation	Hand washing Targeted palivizumab immunisation

AAP, American Association of Pediatrics; HS, hypertonic saline; NG, nasogastric; NICE, The National Institute for Health and Care Excellence; OG, orogastric; SIGN, Scottish Intercollegiate College Network; SpO₂, percutaneous oxygen saturation; VIW, virus-induced wheeze.

evidence-based guidelines or the collective experience of the Guideline Development Group (see [box 1](#)).

WHAT DO I NEED TO KNOW

What should I stop doing?

- ▶ Undertaking routine blood testing or capillary gas testing.
- ▶ Routinely performing chest radiographs.
- ▶ Administering nebulised HS.

What should I start doing?

- ▶ Perform upper airway suctioning in babies with apnoea.

- ▶ Empower parents and caregivers looking after children with bronchiolitis at home to recognise signs, which should prompt a clinical review (see [box 3](#)).

What can I continue to do as before?

- ▶ Convey child's degree of respiratory distress and hydration status when referring to secondary care.
- ▶ Recognise signs of respiratory insufficiency.
- ▶ Provide supportive care to maintain hydration and oxygenation.

What should I do differently?

- ▶ Deciding to refer or discharge a patient should depend on carer's ability to manage bronchiolitis in the home.
- ▶ Using persistent SpO₂ <92% as a cut-off for commencing oxygen therapy.

Box 1 Resources

- ▶ <http://www.nice.org.uk/guidance/ng9> (*link to NICE guideline and full guideline*)
 - ▶ <http://www.nice.org.uk/guidance/ng9/ifp/chapter/About-this-information> (*link to public information on bronchiolitis in children in English*)
 - ▶ <http://www.nice.org.uk/guidance/ng9/resources> (*link to guideline tools and resources*)
- NICE, National Institute for Health and Care Excellence.

Box 2 Risk of severe disease

Chronic lung disease, congenital heart disease, infants <3 months, prematurity (<32/40), neuromuscular disease, immunodeficiency.

Box 3 Red flags

Worsening respiratory distress, decreased fluid intake less than 50%–75% of normal, no wet nappy for 12 h, exhaustion, apnoea/cyanosis.

UNRESOLVED CONTROVERSIES

Nebulised HS (usually 3%) became part of UK paediatric practice for the management of bronchiolitis, following the publication of several studies and a Cochrane review from 2013, which stated that ‘current evidence suggests nebulised 3% saline may significantly reduce the length of hospital stay among infants hospitalised with non-severe acute viral bronchiolitis and improve the clinical severity score in both outpatient and inpatient populations’.⁴ The AAP bronchiolitis guideline recommends its use in infants with bronchiolitis requiring hospital admission.² However, further studies have not shown such benefit. The UK SABRE study,⁵ a randomised open trial, did not show HS to be of any benefit over conventional secondary care management, and similar conclusions were drawn from a further meta-analysis.^{5–6} The current NICE guidelines do not advise use of HS. Four editorials address this controversy.^{7–10}

No evidence exists as to the optimal target SpO₂ for supplemental oxygen therapy for bronchiolitis. A recent double-blind randomised equivalence trial compared SpO₂ 90% versus SpO₂ 94% as thresholds for supplementary oxygen. The study concluded that a target SpO₂ of 90% is as safe and clinically effective as 94%.¹¹

Clinical bottom line

This National Institute for Health and Care Excellence guideline provides evidence-based best practice advice for the management of bronchiolitis in children, which is very common and can be serious. The take-home messages are:

- ▶ The diagnosis of bronchiolitis remains clinical; assessment of severity is based on clinical signs, together with measurement of oxygen saturation.
- ▶ Management of bronchiolitis for the small proportion of infants requiring admission to secondary care is supportive, and includes supplementary oxygen to maintain SpO₂ above 92% and feeding support (orogastric/nasogastric feeds) or intravenous fluids when oral feeding is inadequate.
- ▶ There is no evidence that hypertonic saline or any other pharmacological treatment (other than supplementary oxygen) is of any benefit in bronchiolitis.

While supplementary oxygen is currently recommended for infants whose SpO₂ is <92% in air, the type of administration is not specified. There is currently insufficient evidence to show any benefit for use of heated humidified high-flow nasal cannula oxygen.^{12–13} This is despite the widespread use in paediatric practice, including general paediatric wards. Studies are urgently needed to assess the potential benefits, for example, length of stay, prevention of HDU and paediatric intensive care unit admissions and prevention of need for CPAP respiratory support. Evidence-based weaning schedules are also needed to ensure that the additional equipment and consumables, together with potential staffing issues, are cost effective.

Competing interests None declared.

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