

Putting NICE guidance into practice

# **Costing statement: Bronchiolitis in children**

**Implementing the NICE guideline on  
bronchiolitis in children (NG9)**

Published: June 2015

## Summary

NHS organisations are advised to assess the resource implications of implementing this guidance locally.

Potential areas for additional costs locally are:

- measuring oxygen saturation in every child presenting with suspected bronchiolitis in primary care
- admitting children with bronchiolitis to hospital if they have inadequate oral fluid intake (50–75% of usual volume)
- using continuous positive airway pressure (CPAP) in children with bronchiolitis who have impending respiratory failure.

Potential areas for savings locally are:

- not routinely performing blood tests and not performing chest X-rays in children with bronchiolitis
- reducing paediatric hospital admissions
- CPAP reducing the need for invasive respiratory support such as mechanical ventilation.

Overall, implementing this guideline is likely to lead to effective clinical management of bronchiolitis in children and ensure effective use of NHS resources.

# 1 Introduction

- 1.1 This costing statement considers the cost implications of implementing the recommendations made in [Bronchiolitis in children](#) (NICE guideline 9).
- 1.2 The guideline might have additional costs but also additional savings at a local level as a result of variation in clinical practice across the country. Therefore, we encourage organisations to evaluate their own practices against the recommendations in the NICE guideline and assess costs and savings locally. Some of the resource effects to be considered locally are discussed in this statement.
- 1.3 Bronchiolitis services are commissioned by Clinical Commissioning Groups (CCGs) and NHS England. Both primary and secondary care providers, such as NHS hospital trusts and GP practices, deliver bronchiolitis services.

# 2 Background

- 2.1 Approximately 1 in 5 infants will develop clinical bronchiolitis in their first year of life. Based on about 647,000 births a year ([NHS Maternity Statistics - England, 2013–14](#)) this equates to about 129,000 infants.
- 2.2 In 2013–14 there were approximately 37,200 secondary-care admissions for the management of bronchiolitis in children in England ([Hospital Episode Statistics, Admitted Patient Care, England – 2013–14](#)). Of these about 93% (34,600) were infants of less than one year old.
- 2.3 Bronchiolitis is the most common disease of the lower respiratory tract during the first year of life. It usually presents with a cough with increased work of breathing, and it often affects a child's ability to feed. Symptoms are usually mild and might only last for a few days, but in some cases the illness is more severe.
- 2.4 Most children with bronchiolitis present in primary care. The diagnosis is based on a clinical assessment that finds symptoms and signs of the disease.

2.5 For most children, bronchiolitis can be managed at home by parents or carers. In the majority of cases bronchiolitis is managed entirely within primary care, and primary care professionals play a vital role in identifying the more severe episodes that need hospital treatment.

### **3 Recommendations with potential resource impact**

3.1 ***Measure oxygen saturation in every child presenting with suspected bronchiolitis, including those presenting to primary care if pulse oximetry is available (recommendation 1.1.8).***

#### **Resource impact**

3.1.1 Based on expert clinical opinion, pulse oximeters and staff training may not always be available in primary care.

3.1.2 There may be a need to purchase additional pulse oximeters. Estimated costs to implement this recommendation are<sup>1</sup>:

- A reusable paediatric finger probe, £65.
- A digital pulse oximeter suitable for primary care, £349 (for a basic hand held device) to more than £1,000 (for a device with memories, alarms and that also monitors temperature or blood pressure).

3.1.3 Based on expert clinical opinion reusable paediatric finger probes are very difficult to enable an accurate reading to be made, and often read lower than individual use probes. Single use disposable probes provide an accurate reading, but are more expensive with some costing £183.54 (including VAT) for a pack of 10. However, the additional cost might be offset by a reduction in unnecessary onward referral to secondary care from falsely low oxygen saturations (see section 3.1.5 for details on potential saving).

3.1.4 Staff training costs are estimated to be negligible as information on how to use an oximeter is readily available. However, organisations need to seek

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<sup>1</sup> The prices for pulse oximeters were obtained from the economic evaluation data for the guideline – [Appendices A-I and K](#).

assurance that equipment is used in line with the manufacturer's recommendations and that there are appropriate governance procedures in place for the use of such equipment.

3.1.5 The use of pulse oximetry in primary care may help to avoid unnecessary referrals to hospital of patients with bronchiolitis. For example, each non-elective paediatric admission for acute bronchiolitis avoided could save commissioners £839 to £1,769 ([2015–16 NHS National Tariff](#)) depending on complexity. However, based on the activity of acute bronchiolitis recorded in 2013-14 (Reference costs for 2013–14) the weighted average tariff payable by commissioners and likely to be saved would be £970.

**3.2 *When assessing a child in a secondary care setting, admit them to hospital if they have any of the following:***

- ***apnoea (observed or reported)***
- ***persistent oxygen saturation of less than 92% when breathing air***
- ***inadequate oral fluid intake (50–75% of usual volume, taking account of risk factors [see recommendation 1.3.3] and using clinical judgement)***
- ***persisting severe respiratory distress, for example grunting, marked chest recession, or a respiratory rate of over 70 breaths/minute (recommendation 1.3.2).***

### **Resource impact**

3.2.1 Based on expert clinical opinion there is variation in current practice. In some areas admission is based on other criteria, for example: only admitting a child whose oral fluid intake is less than 50% of usual fluid intake. Therefore the recommendation may lead to an increase in admission rates of children and young people with inadequate oral fluid intake of between 50–75% of usual volume. However, based on the costing statement consultation comments the recommendation to admit children and young people if they have inadequate oral fluid intake of

between 50–75% of usual volume is unlikely to substantially change current practice across the country.

3.2.2 Organisations are encouraged to assess their practice and ensure practice is in line with the guidance recommendations.

**3.3 *Do not routinely perform blood tests in the assessment of a child with bronchiolitis (recommendation 1.3.6).***

#### **Resource impact**

3.3.1 Based on clinical opinion, blood tests do not help to confirm a clinical diagnosis of bronchiolitis in a child and should therefore not be done.

3.3.2 Blood tests are relatively low-cost, so not using them is unlikely to result in significant savings. However, implementing these recommendations may result in the more effective use of NHS resources and reduce the number of unnecessary tests.

3.3.3 The estimated cost saving is £3 per test ([National Schedule of Reference Costs - Year 2013–14](#)).

**3.4 *Do not routinely perform a chest X-ray in children with bronchiolitis, because changes on X-ray may mimic pneumonia and should not be used to determine the need for antibiotics (recommendation 1.3.7).***

#### **Resource impact**

3.4.1 Available evidence does not support the routine use of chest X-rays in children presenting to secondary care with bronchiolitis.

3.4.2 Diagnostic chest X-rays are relatively low-cost, so not performing them is unlikely to result in significant savings. Because of the variation in practice organisations are encouraged to assess potential savings locally. However, implementing these recommendations may result in more effective use of NHS resources and reduce the number of unnecessary tests.

3.4.3 The estimated cost saving is £25 per chest x-ray ([2015–16 NHS National Tariff](#)).

**3.5 Consider continuous positive airway pressure (CPAP) in children with bronchiolitis who have impending respiratory failure (see recommendation 1.1.10) (recommendation 1.4.5).**

### Resource impact

3.5.1 The Guideline Committee considered that the use of high flow oxygen therapy in children might prevent the need for more invasive methods of respiratory support, such as mechanical ventilation.

3.5.2 The Guideline Committee believed that the cost of using continuous positive airway pressure (CPAP) is higher than high flow oxygen therapy. This is because the Guideline Committee identified a nursing ratio of 2 nurses per infant when using CPAP, but only 1 nurse is needed for high-flow oxygen. The costs are set out in table 1.

**Table 1: Costs of CPAP compared to high flow oxygen therapy<sup>a</sup>**

Details	Cost of equipment use (£)	Nurse time per day (£)	Total cost per use, per day (£)
High-flow oxygen	84	164	248
CPAP	28	328	356

a. Unit costs were based on the health economic evaluation data for the guideline ([Appendices A-I and K](#)).

3.5.3 The cost impact of CPAP and high flow oxygen therapy is likely to fall to the provider of the service.

3.5.4 Organisations are encouraged to assess their practice and ensure practice is in line with the guidance recommendations and estimate cost at a local level.

## **About this costing statement**

This costing statement accompanies [Bronchiolitis in children](#) (NICE guideline 9).

**Issue date:** June 2015

### **This statement is written in the following context**

This statement represents the view of NICE, which was arrived at after careful consideration of the available data and through consulting healthcare professionals. It should be read in conjunction with the NICE guideline. The statement is an implementation tool and focuses on those areas that were considered to have potential impact on resource utilisation.

The cost and activity assessments in the statement are estimates based on a number of assumptions. They provide an indication of the potential impact of the principal recommendations and are not absolute figures.

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