

Paediatric Accident & Emergency Research Group

Evidence-based Guidelines for the Management of Children Presenting with Acute Breathing Difficulty



These recommendations have been derived from an original guideline document produced by the Paediatric Accident & Emergency Research Group **NB:** The original guideline is **NOT** the work of the Royal College of Paediatrics and Child Health. This document represents the College's appraisal of the authors' completed guidelines. The College's appraisal should not be considered valid beyond September 2004, and new evidence at any time could invalidate these recommendations. The full guideline may be obtained at the following website: www.pier.shef.ac.uk

KEY POINTS

- The guideline covers a broad scope including guidance on initial management of bronchiolitis, acute asthma, croup and pneumonia.
- A formal (Delphi) consensus process was used in areas lacking strong evidence.
- It is not a substitute for clinical acumen: eg those using it must be able to distinguish wheeze and stridor.
- A parent representative was involved. The guideline includes an information sheet for parents.

SUMMARY OF 'AGREE' FINDINGS

The methods used to identify the evidence

The Cochrane Library, Medline, Embase, CINAHL, and Best Evidence were searched. Further articles were obtained from colleagues and by hand searching the bibliography of articles. A hand search for the last 5 years of the most relevant journals was performed. Journals not listed on Medline were only searched if thought to be relevant to the subject area. The Internet was searched for existing guidelines and links to other evidence based sites.

Which professionals were involved

The guideline development process included consultants in general paediatrics, paediatric accident and emergency, ENT, respiratory paediatrics, anaesthetics and public health, paediatric specialist registrars, a research nurse, a nurse from the paediatric accident and emergency department, a general practitioner, and a health economist

Involvement of parents &/or children

A patient representative was included in the guideline development process.

Consensus method

The Delphi consensus method was used.

OTHER PUBLICATIONS ON RELATED TOPICS

- British Thoracic Society. Guidelines for the management of community acquired pneumonia in childhood
- A guideline on asthma is being published by SIGN and the British Thoracic Society <http://www.brit-thoracic.org.uk/pdf/paediatriccap.pdf>
- Keeley D. Asthma in children. Clinical Evidence. 2002;7:244-261 www.clinicalevidence.org
- There are many Cochrane Systematic Reviews available on the Cochrane Library relating to respiratory disorders in children. A list may be found at http://www.cochranechildhealth.org/frame_review.htm

LEVELS OF EVIDENCE/DERIVATION OF GRADES OF RECOMMENDATIONS

The levels of evidence used throughout are those derived from SIGN guideline 50 (see below). **Please note that those recommendations ORIGINALLY ascribed a Grade C or D have not been appraised by the College.**

Grade A: Requires level 1++ evidence from high quality meta analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias, and directly applicable to the target population, and demonstrating overall consistency of results.

Grade B: Requires level 2++ evidence from high quality systematic reviews of case-control or cohort studies or high quality case-control or cohort studies with a very low risk of confounding, bias, or change and a moderate probability that the relationship is causal, directly applicable to the target population, and demonstrating overall consistency of results; or
Extrapolated evidence from level 1++ studies or from well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias.

Grade C: Requires level 2+ evidence from well conducted case control or cohort studies with a low risk of confounding, bias, or chance and a moderate probability that the relationship is causal, directly applicable to the target population and demonstrating overall consistency of results; or

Extrapolated evidence from studies rated as 2++

Grade D: Evidence from non-analytic studies, eg case reports or case series, or from expert opinion; or

Extrapolated evidence from studies rated as 2+

Recommendations	Grade	Appraised by the College
Initial management		
• The respiratory rate should ideally be measured for 60 seconds	B	✓
• In children under 6 months of age respiratory rate is not an accurate measurement of respiratory illness	B	✓
Child presenting with stridor/stiror		
• Nebulised budesonide or dexamethasone is effective in treating croup	A	✓

Recommendations	Grade	Appraised by the College
<ul style="list-style-type: none"> L-epinephrine (adrenaline) can also be used in children with severe croup (Original Statement: L-epinephrine (adrenaline) can be used in children with severe croup in addition to oral or nebulised steroids) 	B	✓

Child presenting with wheeze

<ul style="list-style-type: none"> During the acute management of a child with wheeze it is not possible to differentiate between those who will have transient symptoms and those who will later develop asthma. After consideration of the diagnosis of a foreign body the acute management should focus on the relief of symptoms rather than the ultimate diagnosis. (Original statement: Grade B). <i>Comment: only the first of these two statements is supported by the evidence.</i> 	C	✓
<ul style="list-style-type: none"> In children over the age of two with moderate to severe asthma, the addition of 4-6 hrly anticholinergics to the beta 2-agonists inhalation regimen is indicated if there has been a poor response to beta 2 agonist alone 	A	✓
<ul style="list-style-type: none"> In children over the age of 2, without life-threatening asthma and not requiring oxygen, holding chambers (spacers) could be used instead of nebulisers in most situations 	A	✓
<ul style="list-style-type: none"> Aminophylline should be added for the treatment of acute severe life threatening asthma which persists despite other treatments including nebulised salbutamol with or without anticholinergics, and systemic corticosteroids being used. (Original Statement: Aminophylline should continue to be used for the treatment of acute severe life threatening asthma when other treatments including salbutamol and corticosteroids have been unsuccessful) 	A	✓

Child under 2 years presenting with wheeze

<ul style="list-style-type: none"> In a child clinically diagnosed with bronchiolitis, bronchodilators should not be routine practice. A trial may be considered but stopped if found to be of no help 	A	✓
<ul style="list-style-type: none"> During a trial of bronchodilator therapy the child should be closely monitored for clinical deterioration and hypoxaemia and treatment stopped if there is no clinical improvement. (Original statement: Grade A) 	B	✓
<ul style="list-style-type: none"> In children under the age of 2, the limited evidence does not support the widespread indiscriminate use of anticholinergic agent i.e. anticholinergic agents should only be used on a trial basis on children under the age of 2 until further research is available 	A	✓
<ul style="list-style-type: none"> Budesonide is not recommended in the management of a child with bronchiolitis 	A	✓
<ul style="list-style-type: none"> Oral or intramuscular steroids are not recommended in the routine treatment of a child with bronchiolitis. 	A	✓
<ul style="list-style-type: none"> In a child with bronchiolitis and severe respiratory distress, a trial therapy of nebulised adrenaline (1-epinephrine) may be considered after discussion with a senior clinician 	B	✓

Child presenting with a cough

<ul style="list-style-type: none"> Children over the age of 2 months with signs suggesting pneumonia but who do not require admission to hospital do not routinely require a chest x-ray. An x-ray may be indicated if there has been no response to oral antibiotics or the patient is not presenting with the first episode of pneumonia. <i>Comment: only the first statement is supported by the evidence. The second is grade C.</i> 	A	✓
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Clinical audit

The original published guideline document contains key points for clinical audit.

Overview

This publication presents evidence-based information for the assessment and management of children presenting with acute breathing difficulty. Guidelines are 'systematically developed statements to assist decisions about appropriate care for specific clinical circumstances' based on systematic reviews of the research literature. Guidelines are not intended to restrict clinical freedom, but practitioners are expected to use the recommendations as a basis for their practice. Local resources and the circumstances and preferences of individual patients will need to be taken into account. Where possible, recommendations are based on, and explicitly linked to, the evidence that supports them. Areas lacking evidence are highlighted and may form a basis for future research.

The Role of the Royal College of Paediatrics and Child Health

In order to raise awareness about the existence of the original guideline and to ensure its relevance for children's health, the College (through its Quality of Practice Committee) appraised the original guideline against the 'AGREE' checklist laid out in its 'standards' document. Having established the quality of the guideline's methodology in this way, the College recruited independent reviewers to examine the recommendations presented in the guideline document in the context of the original research papers from which they were derived. These reviewers were chosen as being expert in both the clinical area under examination and in critically appraising research literature. The findings of the reviewers are presented here. Where discrepancies between their findings and the originals exist, both recommendations have been included. The shaded boxes indicate these areas of discrepancy. In addition, where papers have been identified that post-date the publication of the guideline or further support the validity of the recommendations, these have been included.

Acknowledgements

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