

CURRENT TOPIC

How do we treat wheezing infants? Evidence or anecdote

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Consultant paediatricians were questioned about their management of wheezing disorders in infants. Salbutamol was the preferred bronchodilator for recurrent wheeze, whereas ipratropium was preferred in viral bronchiolitis. Doses of both medications varied widely. Both inhaled and oral corticosteroids were considered by most respondents. Practice does not clearly follow guidelines or evidence and presumably continues to be based on anecdote.

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bronchiolitis, acute recurrent wheeze admitted to hospital; or recurrent wheezers seen in clinic. Use of oral (exacerbation) and inhaled (prophylaxis) corticosteroids was also requested.

Analysis

Responses for each condition were grouped as: “no bronchodilator”, “salbutamol”, “ipratropium”, “adrenaline”, or “no preference”. Preferences were compared within and between groups by Peto odds ratio. Differences in management were also compared between general and respiratory paediatricians.

RESULTS

A total of 124 completed questionnaires were returned (response rate, 83.7%) of which 89 (72%) were included in the analysis (71 general, 18 respiratory). Thirty five (28%) were excluded as the consultant did not participate in acute paediatrics and one because it was not completed by a consultant.

Table 1 shows the preferences of bronchodilator for recurrent wheeze and viral bronchiolitis. The “no preference” group included responses that indicated two drugs without further qualification. There was no difference in choice of bronchodilator for recurrent wheeze in either setting.

Salbutamol was preferred to ipratropium as the bronchodilator for use with recurrent wheeze (odds ratio (OR) 2.57, 95% confidence interval (CI) 1.41 to 4.69); however, 40% used ipratropium as first line therapy, with or without salbutamol. For bronchiolitis, this preference was reversed, with salbutamol favoured less than ipratropium (OR 0.22, 95% CI 0.11 to 0.41). No consultant used adrenaline. Recurrent wheezers were more likely to receive a bronchodilator than those with bronchiolitis (OR 8.48, 95% CI 3.94 to 18.2). General and respiratory paediatricians did not differ in the management of recurrent wheeze. However, general paediatricians were much more likely to use ipratropium for bronchiolitis compared to respiratory paediatricians (OR 6.19, 95% CI 1.53 to 25.11) who showed no preference between salbutamol and ipratropium. The median (range) nebulised dose of salbutamol was 2.5 mg (1–2.5 mg); for ipratropium the dose was 125 µg (62.5–250 µg). Only seven consultants

The management of wheeze in infancy is largely ignored in the asthma guidelines (Global Initiative for Asthma, GINA¹; British Thoracic Society, BTS²), despite evidence of a differing aetiology and response to treatment compared to older children. There are no national guidelines for the management of acute bronchiolitis. Despite over one hundred therapeutic studies of bronchodilators and corticosteroids in infants and 40 studies using corticosteroids, clear consensus on best practice is lacking. Methodological deficiencies, inappropriate outcome measures, and conflicting results have contributed to the uncertainty. This study aimed to ascertain whether the current management of wheezing in infancy, by UK consultant paediatricians, reflected evidence, guidelines, or anecdote.

METHODS

A simple, anonymous questionnaire was sent to 148 consultant paediatricians within the South Thames NHS Region. Although all consultant paediatricians were mailed, only responses from consultants participating in acute general or respiratory paediatrics were analysed. They were asked to indicate their *first* preference bronchodilator, including dose and mode of delivery, for patients *under 1 year of age* presenting with acute

Table 1 Preferences of bronchodilator

Bronchodilator	Total group (number of respiratory paediatricians)	
	Bronchiolitis	Recurrent wheeze
Nil	30 (6)	2 (0)
Salbutamol	12 (5)	47 (12)
Ipratropium	40 (5)	27 (5)
Adrenaline	0	0
No preference	4 (2)	10 (1)
No response	3 (0)	3 (0)

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Abbreviations: BTS, British Thoracic Society; CI, confidence interval; GINA, Global Initiative for Asthma; ICS, inhaled corticosteroid; OR, odds ratio

preferred an inhaler and spacer for inpatient management. No consultants reported using oral bronchodilators.

Eighty four per cent used oral corticosteroids for acute exacerbations and 95% inhaled corticosteroids (ICS) for prophylaxis. The median starting daily dose of ICS was 200 µg (range 100–2000 µg).

DISCUSSION

Wheezing disorders are the commonest cause for hospital admission in infancy, yet there is little consistency in management practice. In this representative sample of consultant paediatricians, both the choice of bronchodilator and dose varied widely.

The GINA and BTS guidelines both state a preference for β_2 agonists for acute wheeze in children under 5. Ipratropium is not included in the stepped management schedule, but is suggested as an alternative in a subsidiary box, quoting only anecdotal evidence of efficacy.² A Cochrane review found no benefit for ipratropium in infancy.³ Nevertheless, 40% of consultants prescribe this medication as first line therapy. Does this practice reflect one, uncontrolled trial, indicating marginal benefit of ipratropium over salbutamol?⁴

The management of viral bronchiolitis differed to that of recurrent wheeze, and there was less consensus between general and respiratory paediatricians. This may be a result of the lack of national guidelines. There is no consistent published evidence that ipratropium is more efficacious than salbutamol in bronchiolitis. More consistent evidence exists supporting the use of adrenaline which was not used, unlike many European centres.⁵ A Cochrane review has questioned the use of any bronchodilator in bronchiolitis.⁶

The doses of bronchodilators prescribed do not reflect those used in therapeutic trials. In the majority of studies nebulised doses of at least 2.5 mg salbutamol or 250 µg ipratropium were utilised. There is no evidence or reason to assume lower doses will have any efficacy. There is increasing evidence that inhalers with spacers are the most effective delivery system,⁷ but this has yet to make an impact in clinical practice.

The majority of consultants entertained the use of both oral and inhaled corticosteroids in this age group. We did not request information on steroid use in specific situations. There was an alarming range of starting doses unsupported by the

literature. Although oral corticosteroids are supported in the guidelines, unlike inhaled corticosteroids,⁸ there is little evidence to suggest benefit.⁹

Paediatricians do not adhere to the current guidelines for asthma when treating infants and thus the implementation of the guidelines is unsatisfactory. As practice does not consistently follow published evidence either, it must be assumed to be based on anecdote. Gaps in the evidence remain, including which (if any) bronchodilator is most efficacious for different disease phenotypes, and what dose is optimal. Nevertheless, consideration should be given to developing separate guidelines for the management of wheeze in infants. These could emphasise the problems associated with the developing lung and the heterogeneity of this patient group. Furthermore, they could incorporate the management of bronchiolitis being a distinct entity.

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