

# The “Ten Commandments” of treating preschool children who wheeze

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Keywords: recurrent wheezing, preschool, asthma

## Abstract

Wheezing in young children is problematic for most practitioners. Difficulties arise in both the diagnosis and management of this clinical phenotype. Not all preschool children who wheeze have asthma. Therefore, we suggest that the “Ten Commandments” of managing preschool wheezing include thinking that in very young infants (< 1 year) wheezing is likely to be viral in origin; realising that allergy testing is mandatory to diagnose the cause of early wheezing; taking a history of asthma and allergy in family members; noting that chronic coughing is a pointer to asthma; using the term “asthma” if that is the diagnosis; ensuring that the environmental avoidance of triggers is addressed; using a short course of montelukast for virus-induced wheezing episodes; avoiding steroids to treat virus-induced wheezing; treating associated nasal symptoms; and making sure that the follow-up of children addresses the issue of stopping therapy if it is not working.

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S Afr Fam Pract 2012;54(4):316-318

## Introduction

Recurrent wheezing is very common in preschool children. There have been many attempts to classify wheezing in preschool children,<sup>1,2</sup> but the most useful classification seems to be that published by the European Respiratory Society, in which wheeze phenotypes are described as “episodic viral-induced” or “multi-trigger”.<sup>3</sup> In the former group, children wheeze predominantly in response to viral infections of the airway, while in the latter group, they also wheeze due to exposure to factors associated with airway hyper-responsiveness, such as cold air, emotions, exercise, pollutants, strong odours, and allergens. This latter group closely resembles the classic description of asthma.

It is often difficult to diagnose the cause of wheezing in preschool children, and to manage it correctly. Asthma is a common problem that should be controlled, but often, it is not well managed. However, not all wheezing preschool children have asthma. It should be determined whether or not the wheezing is due to asthma, or another cause. In essence, we are taught that asthma should be controlled to the point that symptoms and impairment of quality of life disappear, but that virus-induced wheezing should not be treated in the same way as asthma. Generally, most preschool children who wheeze have ongoing and frequent symptoms that might not be improved by controller medication. We propose using these “Ten Commandments” when treating preschool children who wheeze. This will make the condition less difficult to manage, and will help

to avoid the unnecessary side-effects from drugs. These “commandments” promote the idea of identifying various phenotypes in order to label the condition, and treat it correctly.

## The “Ten Commandments” of treating preschool children who wheeze

1. Wheezing that has a very early age of onset (< 1 year) is likely to be viral in origin.
2. All preschool children who wheeze must undergo an allergy test, preferably a skin-prick test (SPT).
3. A family history of asthma suggests that the child has asthma.
4. The presence of a cough is important in the diagnosis of asthma.
5. Use the term “asthma” if it fits.
6. Environmental control, and patient and parent education are necessary for all asthmatics, and controller medication may be required [inhaled corticosteroids (ICS) or montelukast].
7. Treat virus-induced wheezing with montelukast for 14 days.
8. Avoid the use of oral corticosteroids when treating virus-induced wheezing exacerbations.
9. It is important to treat nasal symptoms.
10. Follow-up is important. Stop treatment that does not work.

### 1. Wheeze that has a very early age of onset (< 1 year) is likely to be viral in origin

Very young children experience multiple viral respiratory tract infections that may result in lower airway involvement and wheezing. Although asthmatics experience exacerbations that are also largely triggered by viruses, asthma is not common before the age of one year.

### 2. All preschool children who wheeze must undergo an allergy test, preferably an SPT

Recent guidelines for the diagnosis and management of asthma in preschool children attest to the importance of proving allergy. The recent Global Initiative for Asthma (GINA) guideline<sup>4</sup> for the diagnosis and management of asthma in children who are five years old and younger, contains clear pointers for the diagnosis of asthma in preschoolers (Table I). The use of the Asthma Prediction Index (API), as a measure of atopy, is recommended. In addition, a set of symptoms that indicate that asthma is likely should be identified in the child.

A clear message is that asthma is diagnosis-based, on the finding of atopy or allergy. In this regard, an SPT is best.

**Table I:** GINA guideline for the diagnosis of asthma in preschool children

Strong support for diagnosis
<ul style="list-style-type: none"> <li>• <i>Wheezing</i>: Most common asthma symptom</li> <li>• <i>Coughing</i>: Recurrent or persistent</li> <li>• Coughing accompanied by wheezing</li> <li>• Nocturnal coughing (occurring when the child is asleep)</li> <li>• Exercise-induced coughing</li> <li>• In the absence of respiratory infection.</li> </ul>
Supportive evidence
<p><i>Therapeutic trial</i></p> <ul style="list-style-type: none"> <li>• Strong-acting bronchodilators and inhaled glucocorticosteroids (eight to 12 weeks) (Evidence D)</li> <li>• Tests for atopy (Asthma Prediction Index)</li> <li>• Chest X-ray.</li> </ul>

### 3. A family history of asthma suggests that the child has asthma

An important feature of the atopic label is a family history of asthma, or another allergic condition. This is built into the API (Table II).

### 4. The presence of a cough is important in the diagnosis of asthma

Bisgaard et al recently commented on the importance of the presence of a cough in diagnosing asthma: “The term ‘wheezing’ is often misclassified. Control of asthma symptoms correlates best with composite scores of symptoms, rather than wheezing. Audible wheezing occurs late in airway obstruction. There is no data on sensitivity or

**Table II:** The Asthma Prediction Index<sup>5</sup>

Major criteria	Minor criteria
Family history of asthma	Eosinophilia > 4%
Positive history of atopic eczema	Positive history of allergic rhinitis
Positive skin-prick test	Wheeze without viral infections
The diagnosis of asthma can be made if one major or two minor criteria are satisfied.	

specificity of the term ‘wheezing’, and coughing correlates with lung function and atopy in preschoolers, similar to, and independent of, wheezing”.<sup>6</sup>

### 5. Use the term “asthma” if it fits

Despite a recent pronouncement by the European Task Force on wheezing<sup>3</sup> in preschool children, that “the majority of the task force agreed not to use the term ‘asthma’ to describe preschool wheezing illness, since there is insufficient evidence showing that the pathophysiology of preschool wheezing illness is similar to that of asthma in older children and adults”, this is unhelpful. It also threatens to undermine the goals of managing asthma. The term “asthma” should be used when it is applicable. A child who has multiple wheezing triggers, including, but not limited to, viral infections, can be considered to have asthma, rather than multi-trigger wheezing. Such triggers include allergens, environmental pollutants (especially cigarette smoke), exercise, cold air, night-time, and laughter.

### 6. Environmental control and patient and parent education, are necessary for all asthmatics, and controller medication may be required

Essentially, two therapies may control symptoms in a young child with asthma. If used, inhaled corticosteroids (ICS) should be administered at the lowest dose to control symptoms. Increasing the dose usually makes no difference to symptom control, but increases the possibility of side-effects. Montelukast has a weaker anti-inflammatory effect, but has the advantage of being given orally, thereby enhancing adherence to therapy. Although the best form of treatment is still under debate, there is no doubt that environmental triggers, especially cigarette smoke, should be avoided, and that parents should be educated about the disease. Education should encompass a description of the disease, the need for regular controller therapy, device co-ordination, and avoidance of triggers.

### 7. Treat virus-induced wheezing with montelukast for 14 days

There is evidence from three well-controlled studies that, during an exacerbation, giving young children montelukast for 14 days is useful in treating viral-induced wheezing.<sup>7-9</sup>

### 8. Avoid the use of oral corticosteroids when treating virus-induced wheezing exacerbations

The treatment of wheezing in preschool children presents many challenges. Oral corticosteroids are often used. However, there is no clear evidence that they are effective in these children. Oral corticosteroids have been subjected to a clinical study, and have been shown to have no effect on symptom scores, duration of hospitalisation, and numbers of readmissions, in children with episodic viral wheezing.<sup>10</sup> In preschool children, who have wheezing exacerbations due to asthma, there is no evidence to support the use of oral corticosteroids, but a trial of such therapy may be beneficial regarding more severe exacerbations.

### 9. It is important to treat nasal symptoms

Both asthma and allergic rhinitis are defined as inflammatory conditions. The epidemiological relationship between upper and lower airway disease (rhinitis and asthma) demonstrates that 58-78% of asthmatics also have allergic rhinitis. There is now clear evidence that uncontrolled allergic rhinitis worsens asthma, and makes it more difficult and expensive to treat. The opposite is true of treating rhinitis in asthmatics, in which case, their asthma is also better controlled, while costs are lower. Therefore, allergic rhinitis therapy is truly cost-effective in asthmatics.

### 10. Follow-up is important: stop treatment that does not work

Since asthma is often difficult to define and treat in preschool children, regular review, especially of the success

of medication and treatment, is required. Medication should not be prescribed regularly to any child with asthma if it does not control the child's symptoms.<sup>11</sup>

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