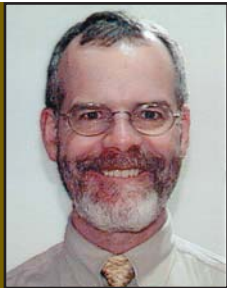


# A coughing child: could it be asthma?



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**BACKGROUND** A child presenting with cough is common in general practice. Usually the cough is due to an upper respiratory tract infection, however, parents are often concerned that the cough may be asthma.

**OBJECTIVE** This article focusses on identifying various causes of persistent cough, especially asthma.

**DISCUSSION** Significant causes of an acute cough need to be considered such as inhaled foreign bodies, aspiration, infections such as pertussis and pneumonia, and asthma. Clinical history, followed by physical examination and consideration of special investigations will guide the diagnosis. Cough as the sole symptom of asthma is unusual. There is usually associated wheeze and shortness of breath. A family or personal history of atopic symptoms lend weight to the possibility of asthma.

In children with asthma, physical examination and even spirometry may be normal between episodes. In some cases where asthma is suspected, a trial of bronchodilation with formal assessment of response may be appropriate.

A child with a cough – how common is that in general practice? 'Very', is the simple answer. Fortunately, the diagnosis is usually straightforward.

Usually a cough is due to the current upper respiratory tract infection (URTI) 'doing the rounds'; sometimes, it is not so clear. The parent may be concerned that the cough is 'funny'; it seems to be different to other children's URTI coughs, or is lasting longer than the parent expects.

Significant causes of an acute cough need to be considered: inhaled foreign bodies, aspiration, and infections such as pertussis and pneumonia, as does the long list of possible causes of chronic cough in children (*Table 1*).

## The cough

Clarifying the nature and duration of the cough through focussed history taking can assist enormously in diagnosis. Is it wet or dry, nocturnal or daytime, exercise induced or after feeding? Are there obvious triggers of the cough?

Children often present with a 'persistent cough' that appears to be a simple URTI. Very specific questioning sometimes reveals that the child with a 'persistent cough' has had periods of a day or so where the cough and other URTI symptoms have lessened or passed completely, leaving the child quite well. This is immediately followed by another 'flare up' of symptoms. This story is not uncommon in households where there are a number of children; it may reflect a series of recurrent URTIs rather than the one persistent cough.

## Asthma

Asthma is a common disease of childhood and also a disease commonly seen in general practice.<sup>1</sup> For a number of years the prevalence of asthma has seemed to be increasing in our community, so how is a general practitioner to handle a child presenting with a cough? Is it asthma or is it not?

The tried and true approach of clinical history, followed by physical examination and consideration of special investigations will guide you through this difficult situation. A facet of general practice that we sometimes fail to consider is the local epidemiological survey that we are constantly doing: ie. where we find ourselves saying, 'There's a lot of it about...' This may not be sound methodologically, but the wise GP knows what is common in their community at that particular time.

### Diagnosis

Asthma is usually diagnosed clinically on the pattern of symptoms and other associated features. Cough as the sole symptom of asthma is unusual. It is not really very difficult to sort out a child who has a runny nose, low grade fever, is generally miserable, and has a wet sounding cough which persists for 3–4 days and follows on from other members of the household having similar symptoms. This is clearly a viral URTI.

The clinical history of asthma is:

- cough – usually associated with an audible wheeze and breathlessness.

Other features of history are:

- family history of asthma, and
- family or personal history of atopy, eczema or allergic rhinitis.

In younger children, where history is difficult to obtain, a trial of bronchodilator therapy may be reasonable with some formal assessment of response.

### The pattern of asthma

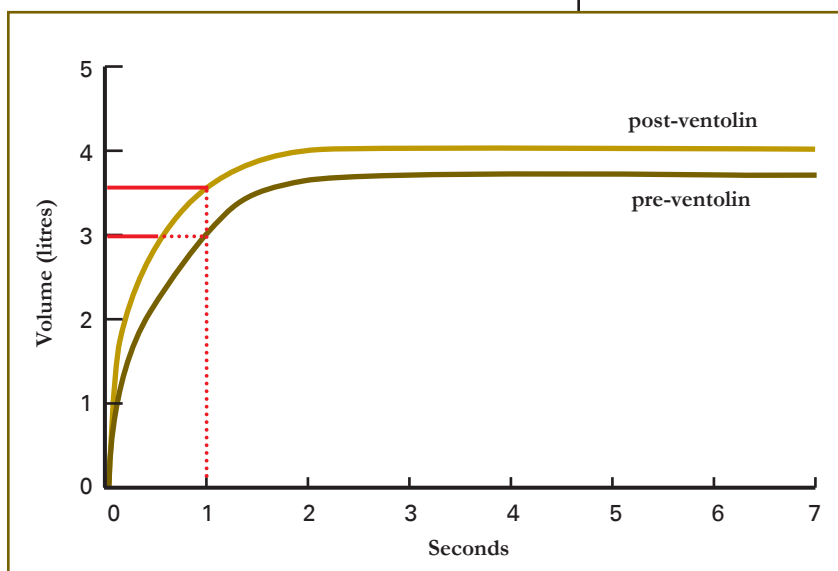
Another important feature of asthma is its pattern. One classification of childhood asthma is:

- infrequent episodic
- frequent episodic, and
- persistent asthma.

This classification focusses on how often the asthma symptoms occur, not the severity or cause of each occurrence of the asthma. The difference between 'infrequent episodic' and 'frequent episodic' is that there are intervals of more than 6 weeks between episodes and during that time the child is free of symptoms.

**Table 1. Causes of chronic cough in children**

Infections (including viral, bacterial and tuberculosis)
Aspiration (including reflux and foreign bodies)
Asthma
Environmental irritants (including tobacco smoke and allergens)
Chronic sinusitis
Cystic fibrosis
Congenital heart disease



**Figure 1. Spirometry recording**

### Physical examination

A thorough clinical examination is essential. Although wheeze is often heard, it is not unusual for a child to have few, if any, clinical signs of asthma on examination at the surgery when they are not having an acute episode. On occasion, clinical signs are found that will re-direct one's attention. These may be the stigmata of a congenital problem, evidence of a chronic disease such as cystic fibrosis, or clinical signs of allergy such as the clear nasal discharge of allergic rhinitis or flexural eczema. Signs of airways obstruction from an inhaled foreign body or mediastinal mass should be considered.

### Special investigations

Depending on the age of the child, office based spirometry can be attempted. Some 7 year old children can do the manoeuvres required for reliable spirometry; some 10 year olds cannot. Asthma shows an obstructive pattern on spirometry with reversibility after bronchodilator (*Figure 1*). Normal spirometry does not exclude the

### Case history – Saul

Saul, 11 years of age, has been seen in the practice for a number of years. He is known to have asthma and allergies. He usually presents with an acute problem rather than for a planned review. As a result of the reactive nature of his visits (apart from the last one) the patient sees whichever GP is most readily available (a different GP for each of the eight listed visits).

#### What follows is a precis of the clinical record from April 2002:

Presents with a recent history of persistent cough, wheeze, and runny nose over the past few days. Home PEFR recording shows decreased PEFR. On clinical examination he is wheezing audibly. This is treated symptomatically with salbutamol MDI and beclamethasone (microfine) is started. He is reviewed the following week. By this time, Saul's cough has settled, he has some postnasal drip, his PEFR has improved substantially but he still has clear rhinorrhoea with postnasal drip. He is given a trial of Demazin

**May 2003:** 2 week history of postnasal drip, fever, cough with no reported increase in bronchodilator use. His URTI was treated and a discussion was had with his parents about a trial of monteleukast

**July 2003:** 10 day history of sore ears and sinusitis, amoxicillin and budesonide (nasal spray)

**9 August 2003:** temperature and dry barking cough; tender (L) maxillary sinus, PEFR slightly decreased, temp 38°C, start fluticasone/salmeterol 100/50 BD, cefaclor 375 mg BD and prednisone 20 mg daily tapering

**13 August 2003:** settling well, continue cefaclor

**26 August 2003:** still troubled by cough and sputum, PEFR back to normal? chronic sinusitis

**3 September 2003:** for asthma review – has asthma and nasal symptoms, very active but asthma does not interfere with sporting activity, been on antibiotics for 6 weeks for sinusitis,

**Current medications:** fluticasone/salmeterol, monteleukast, nasal budesonide spray, prednisone, cephalixin

Clinical examination and spirometry normal

**Impression:** problem is chronic allergic rhinitis: referred to paediatric allergist

On skin prick testing Saul was found to be allergic to dust mite, cat, cockroach and rye grass. He was investigated for chronic sinusitis and a CT of the sinuses found a polyp in his (R) maxillary sinus that is probably contributing to his problems. His cough improved considerably following treatment of his allergies and removal of the polyp.

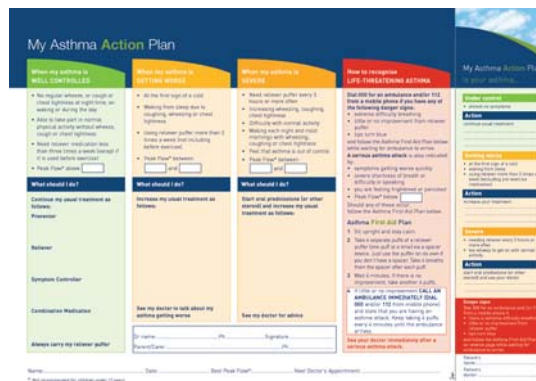


Figure 2. The Asthma Action Plan

diagnosis of asthma. The child may be well treated or may be in an interval between episodes of asthma.

Imaging by means of chest X-ray or even an echocardiogram may be considered when the history suggests a cardiac cause for the cough and breathlessness.

### How to proceed

Unless the diagnosis is clear and management is straightforward, an empirical trial of bronchodilator therapy may be appropriate. One of the greatest diagnostic instruments in general practice is time (see *Case history*). If a child has been given an adequate trial of bronchodilator with a delivery system that enables the medicine to get into the lungs – and the GP is confident that the child is being given the medication as prescribed – and yet the situation is still not clarified, referral may be required. Although asthma is common, uncommon things do occur.

### Management

The treatment regimen for any patient with asthma depends on the particular situation of that patient. Most benefit from:

- education and encouragement about self management
- provision of a written Asthma Action Plan (*Figure 2*), and
- regular review.

Other important nonpharmacological measures are:

- regular checking of device use (people lapse into bad habits), and
- constant encouragement about taking the medication as prescribed.

When introducing medications, the big question is when to start an inhaled corticosteroid (ICS). This is a complex and separate topic, but there is evidence that some children are on doses of inhaled corticosteroids that are unwise.<sup>2</sup> If a daily dose of inhaled corticosteroid

teroid for a child of 250 µg of fluticasone, 400 µg of budesonide or 250 µg of beclomethasone-HFA is not improving symptoms, it is worth reconsidering the diagnosis rather than just increasing the dose of ICS.

### Asthma and...

There is nothing to say that a child cannot have asthma along with another disease that may present as a cough or impact in some way on the child's asthma. Most GPs have a clear idea of how a disease should progress and it is always prudent to seek deviations from what is expected. This unexpected pattern may represent another diagnosis.

### Conclusion

The child with a cough is usually reasonably straightforward to diagnose and manage. Asthma is a common condition but it is not always the diagnosis. The old triad of careful clinical history, clinical examination and consideration of special investigations, in association with the use of time as a diagnostic tool, should clarify the diagnosis or lead to a referral.

#### Summary of important points

- Asthma is a common condition but it is not always the diagnosis in a coughing child.
- A careful clinical history is the key to diagnosis in asthma.
- Cough as the sole symptom of asthma is unusual.
- A family history of asthma, and family or personal history of atopy, eczema or allergic rhinitis, makes a diagnosis of asthma more likely.
- Physical examination may be normal in a child with asthma between episodes.
- The age at which children can perform spirometry is variable.
- In younger children, a trial of bronchodilator therapy with formal assessment of response may be appropriate if asthma is suspected.

### Resource

The Asthma Management Handbook from the National Asthma Council (Australia). Available at: [www.nationalasthma.org.au](http://www.nationalasthma.org.au) has an excellent chapter on the diagnosis and management of paediatric asthma.

Conflict of interest: none declared.

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