

Chronic cough in children

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Abstract

All children cough. Despite the ubiquity of this common symptom, it remains a concern for many parents and results in a significant number of health consultations. Nearly every child in the UK will present to their family doctor with cough as the predominant symptom in early childhood. Some children will present recurrently and the presence of persistent moist cough is a common cause for referral onwards. This article describes the scale of the problem and offers a framework for assessment of cough and describes the principles of treatment.

Keywords cough; cystic fibrosis; diagnosis; management; pertussis; protracted bacterial bronchitis

Introduction

Cough is a common complaint of parents and a source of worry. Nearly all (92%) of children in the UK will have consulted a doctor with cough as the predominant symptom at least once by the time they are 5 years old. It is also a common source of referral to secondary and tertiary care clinics, particularly when the cough is persistent, intrusive or recurrent. Most children do not have a concerning underlying pathology but careful clinical assessment should be performed to establish those patients who require investigation and treatment.

Coughing is a normal defensive process which allows the clearance of excess mucus or aspirated material. A cough begins with the stimulation of cough receptors. This results in a reflex deep inspiration followed by a very brief closure of the glottis accompanied by contraction of the respiratory muscles. Opening of the glottis results in transient maximal flow of air followed by lower expiratory flows and progressive dynamic compression of the airway as each cough continues at lower volumes. Airway debris and secretions are moved along by a combination of these airflows and ciliary activity. The sound of each cough is determined by a number of factors including the contents of the airway lumen (principally mucus), the airway calibre and the stiffness of the airway.

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Epidemiology of cough

Children are particularly prone to cough because they have an increased frequency of respiratory infection and increased cough receptor sensitivity. It is 'normal' for children to cough for 14–21 days following a lower respiratory tract infection. Prospective studies of acute cough following a viral infection in children have found that half last for more than 1 week, a quarter will persist for more than 2 weeks and approximately 5% for more than 4 weeks. Viral infections are very common in childhood and some normal children will have 10–12 infections per year. In contrast, adults typically have 2–4 viral respiratory infections per year. It follows that many children with apparently persistent cough are, in fact, suffering from sequential viral infections (see [Box 1](#)).

Cough also occurs in the absence of recent infection or other obvious triggers. Otherwise healthy children who have been free from respiratory infections for a month will cough between 1 and 34 times per day (mean 11 times). A family or individual that is sensitized to cough may regard this normal, infrequent coughing as pathological. However, prolonged or nocturnal coughing are unusual and unresolved and persistent coughing can significantly impair quality of life. General population surveys have revealed that cough in the absence of apparent infection is common during childhood. Parents of children of 12–14 years of age reported cough in 28% of boys and 30% of girls. Cough for more than 3 weeks duration is also common and as an isolated symptom affects approximately 5% of 6–12 year old children.

Describing cough

As with most problems, a full history and complete examination are necessary embarking on investigation. In addition to usual questions about birth details, family history, growth and overall development there are four specific questions that help in reaching a diagnosis (See [Figure 2](#)).

Clinical case a baby with recurrent cough (Normal variant)

8 month old Alfie attends with his family due to concern regarding recurrent, irritating cough. The family describe him as "always coughing", with a variety of descriptions as to how the cough sounds (sometimes wet, sometimes dry). They have attended their GP several times. Alfie has two older siblings at school and is thriving. A precise history reveals that Alfie's symptoms are episodic, with exacerbations of cough accompanied by coryzal symptoms and episodic fever. The cough at the time of exacerbation is wet, with it steadily improving to a dry, occasional symptom. The cough slowly improves over time, eventually settling for a period, the pattern then starts again with the onset of another viral illness. (The family found it helpful to visualise the symptoms using a graph to represent the severity of the cough, [Figure 1](#)).

The symptoms here describe a fit thriving infant with recurrent, episodic, viral infections associated with cough. The symptoms can feel relentless to families who may find it difficult to recall the last time their child was well. A careful history is required to identify the pattern of symptoms and identify the key periods of being asymptomatic.

Box 1

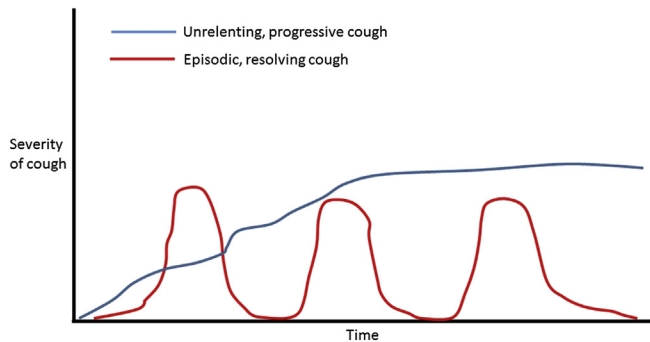


Figure 1 Difference in symptoms between viral cough and chronic cough.

When did it start?

This is a helpful opening question in the consultation. Symptoms which are described from very early childhood suggest a congenital problem. Often parents will attribute coughing to a single event and reassurance may be necessary. For instance, it is common for parents to remain concerned for years after diagnosis of ‘pneumonia’ at any stage of childhood. Our experience is that this word is very frightening for parents and if it is used requires a careful explanation at the time.

How long has it gone on for?

The definition of when a cough becomes “chronic” does not have a worldwide consensus. We follow the expert opinion offered in the British Thoracic Society recommendations for the assessment and management of cough in children to separate children into three groups (see further reading). Children with symptoms that last for less than 3 weeks are described as ‘acute cough’. This period allows time for a majority of coughs from simple infective causes to settle. Children who have an episode of coughing which lasts for 3–8 weeks are described as having ‘prolonged acute cough’. This interval covers the time that it takes from some coughs associated with acute respiratory tract infections to

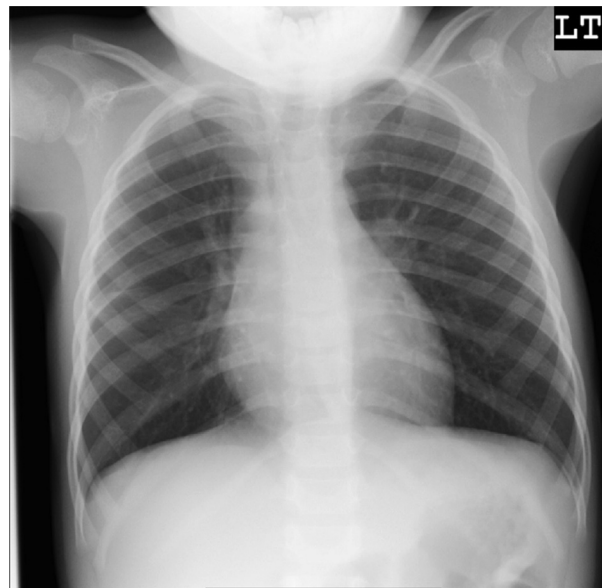


Figure 3 Inspiratory chest X-ray of a child with suspected foreign body. No particular change is evident.

settle, particularly those associated with *Bordetella pertussis* (see Box 2) or *Mycoplasma*. Over this time period, the cough should be gradually settling in intensity and drying. It is acceptable to “watch and wait” a cough that is continuing beyond 4 weeks as long as there are no other worrying indicators for an urgent condition (e.g. foreign body). Children with continuous symptoms for more than 8 weeks have ‘chronic cough’.

Is it wet or dry?

In assessing of cough it is helpful to obtain an accurate description of its nature and severity. Increasingly, we have found that parents often record coughing episodes using mobile devices and if the child will not or does not cough during a consultation, review of these can be helpful in determining the likely cause for

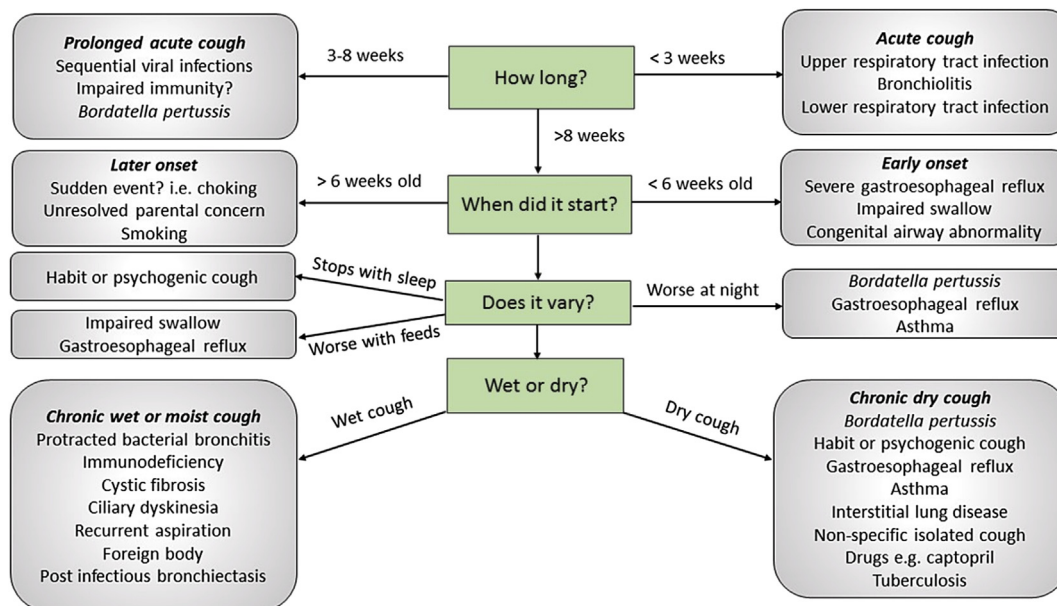


Figure 2 Assessment of cough in children.

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