Asthma Guidelines

WHAT’S NEW IN THE BTS/SIGN ASTHMA GUIDELINE ON DIAGNOSIS?

In the last issue, we highlighted some of the key changes in the new British Thoracic Society and the Scottish Intercollegiate Guidelines Network (BTS/SIGN) asthma guideline. Although this is a ‘live guideline’ and is updated annually on the two organisations’ websites, this is the first comprehensive rewrite since it was published in hard copy in 2003. Here, we fill out some of the detail on asthma diagnosis and discuss the changes that impact primary care.

DIAGNOSIS OF ASTHMA

There have been significant changes to the diagnosis section of the guideline for both adults and children. It is important that the diagnosis of asthma is both accurate and timely to prevent disease going undiagnosed or mistreated. In older children and adults, in most cases, if you know what you are looking for, it is relatively straightforward. However, as asthma is a highly variable disease and there is no standardised definition or single diagnostic test, it is not easy to produce evidence-based recommendations on how to make the diagnosis, even in adults.

The guideline therefore suggests that the diagnosis for most patients will be based on clinical judgement, following an accurate history and the clinical presentation. The practitioner has to be able to recognise a pattern of signs and symptoms in the absence of alternative explanations.

In younger children and infants it is far more difficult to make a diagnosis, and an accurate history is vital, in particular the family history. Undertaking lung function tests in this age group is virtually impossible, so will add very little to the diagnosis. However, with appropriate coaching and patience, the majority of children aged over 5 years can perform good-quality lung function tests.

PROBABILITY OF ASTHMA - A NEW CONCEPT

The guideline suggests that it is possible to determine the probability of asthma based on the clinical presentation, a physical examination, a thorough history, plus or minus some objective measurements of lung function. This probability is classified into high, intermediate or low and depending on this, will guide the next actions for managing the patient.

The classic symptoms of asthma are:
- Cough
- Wheeze
- Breathlessness
- Chest tightness

These occur due to airway inflammation or bronchial hyper-responsiveness or a combination of both.

DIAGNOSIS IN CHILDREN

Certain clinical features increase or decrease the probability of asthma in children (Boxes 1 and 2).

<table>
<thead>
<tr>
<th>Box 1: Increasing the probability of asthma in children</th>
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<td>- More than one of the following symptoms: wheeze, cough, difficulty breathing, chest tightness, particularly if these symptoms:</td>
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<td>- Are frequent and recurrent</td>
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<td>- Worse at night and in the early morning</td>
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<td>- Occur in response to, or are worse after, exercise or other triggers</td>
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<td>- Personal history and/or family history of atopic disorder</td>
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<td>- Widespread wheeze heard on auscultation</td>
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<td>- History of improvement in symptoms in response to treatment</td>
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“This latest asthma guideline emphasises the importance of recognising the key features and clinical pattern that make asthma a likely diagnosis.”
**Asthma Guidelines**

**Box 2: Lowering the probability of asthma in children**
- Symptoms only with colds, no interval symptoms
- Isolated cough in the absence of wheeze or difficulty breathing
- History of a moist cough
- Prominent dizziness, light-headedness, peripheral tingling
- Repeatedly normal physical examination of chest when symptomatic
- Normal peak flow or spirometry when symptomatic
- No response to a trial of treatment
- Clinical features indicative of an alternative diagnosis

Other factors important in making the diagnosis in children are:
- Age at presentation (in general the earlier the onset of wheezing, the better the prognosis)
- The severity and frequency of previous episodes of wheezing (the more frequent and more severe increases the likelihood of persisting into adolescence).

**DIAGNOSIS IN ADULTS**
The clinical features that increase the probability of asthma in adults are the same as those in children, but include otherwise unexplained low FEV₁ or peak flow (historical or serial) (Figure 1). Clinical features that lower the probability of asthma in adults are seen in Box 3.

**Box 3: Lowering the probability of asthma in adults**
- Prominent dizziness, light-headedness, peripheral tingling
- Repeatedly normal physical examination of chest when symptomatic
- Chronic productive cough in the absence of wheeze or breathlessness
- Voice disturbance
- Symptoms with colds only
- Smoking history
- Normal peak flow or spirometry when symptomatic

Following examination and taking a clinical history it is possible to classify children and adults as having a high probability of asthma where diagnosis of asthma is likely, a low probability where diagnosis is unlikely and an intermediate probability where the diagnosis is unclear. The management actions for each of these levels are very similar in both adults and children, depending on the ability to undertake lung function tests. If there is a high probability of the diagnosis being asthma then a trial of treatment should be started.

**LUNG FUNCTION ASSESSMENT**
Because of the potential need for patients with asthma to take medications for many years, it is important to obtain some objective measurement to support the diagnosis. This may not happen at the time of starting treatment if the clinical symptoms are strongly indicative of the diagnosis. The confirmation for most patients will hinge on a demonstration of airflow obstruction, which is reversible and varies over short periods of time.

A normal peak flow or spirometry at a time when the patient is asymptomatic, however, does not necessarily exclude the diagnosis of asthma.

**PEAK FLOW METERS**
Peak expiratory flow (PEF) is the cheapest, quickest and most simple test in primary care to diagnose asthma. However, in children under 6-7 years it is unreliable. The test measures the maximum amount of air which a patient can forcibly exhale in ten milliseconds, starting from a full inspiration. When the airway narrows (leading to an obstruction) the peak expiratory flow rate falls.

For some patients it may be necessary to undertake a test to ascertain if their airflow obstruction is due to reversible airways disease. This can be undertaken simply in general practice and requires the administration of inhaled bronchodilator therapy (commonly salbutamol) and the recording of a PEF before and after administration. When carrying out reversibility tests using a peak flow reading an increase of 20% and at least 60 l/min 15 minutes after taking bronchodilators would suggest asthma.

Serial PEF readings over a two-week period can help to identify variable air flow obstruction in some patients with a normal peak flow recording in the surgery but with a history suggestive of asthma at home.
SPIROMETRY TESTING
The guideline has shifted to recommending that spirometry should be undertaken in preference to PEF measures with a peak flow meter. Now that spirometry is widely available in primary care this has become a reality. However, it is important that health professionals involved in undertaking spirometry have been appropriately trained and assessed to do so.

Two measures important in making a diagnosis of airways obstruction are:
- The forced vital capacity (FVC), which is the total volume of air that can be exhaled after full inspiration.
- The forced expiratory volume in one second (FEV1), which is the volume of air exhaled in the first second of blowing.

These are expressed as a ratio FEV1/FVC and when this ratio is <70% it is indicative of airways obstruction. When airways obstruction is present it will take longer for the airways to empty in exhalation.

The PEF rate is a less sensitive measure of obstruction in asthma, as increased resistance in small airways is better reflected by FEV1 than PEF which reflects airflow in the large airways. The other advantage of spirometry over PEF is that it is less dependent on effort. It is also a more useful tool when there may be some uncertainty about the diagnosis. FEV1 can also be used as an alternative to PEF in performing reversibility testing. An improvement in the FEV1 readings of >15% together with a 400 ml change is diagnostic of reversibility and therefore indicates a diagnosis of asthma.

SUMMARY
This latest asthma guideline emphasises the importance of recognising the key features and clinical pattern that make asthma a likely diagnosis. This is achieved by thorough history-taking supported by appropriate diagnostic tests. It recommends that spirometry should be the first-choice test for lung function testing in the diagnosis of asthma but reinforces the need for staff to be trained and assessed in the ability to carry out and interpret spirometry correctly. In people where asthma diagnosis is considered a high probability, starting treatment early in the absence of objective tests and monitoring the response to treatment is considered an appropriate strategy, reserving further testing for those in whom the likelihood of asthma is less certain. Overall this new approach to diagnosis offers the clinician a structured and pragmatic way of dealing with those who present with a possible diagnosis of asthma.

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The BTS/SIGN guideline is available on the BTS and SIGN websites at www.sign.ac.uk and www.brit-thoracic.org.uk

Asthma training available from Education for Health www.educationforhealth.org.uk