Diagnosis of asthma

Symptoms and history suggesting asthma
Pages 2-6

Objective tests of lung function
- Bronchodilator reversibility test
- Spirometry test
- Oral steroid test
- PEF diary
Pages 5-11

20% variability PEF or 400ml improvement

No → Consider other diagnoses
Pages 13-14

Yes → Asthma

Consider other diagnoses
Pages 13-14
Clinical features that increase the probability of asthma in children

More than one of the following:
- Wheeze
- Cough
- Difficulty breathing
- Chest tightness

Particularly if these symptoms:
- are frequent and recurrent
- are worse at night and early morning
- Occur in response to/are worse after exercise or other triggers such as viral infections, pollen, pets, dust, cold air, emotions or laughter
- Personal or family History of asthma or atopy (e.g. eczema or allergic rhinitis)
- Include widespread wheeze heard on auscultation
- Include history of improvement in symptoms or lung function in response to asthma treatment

With a thorough history and examination the probability of asthma can usually be classed into 1 of 3 groups

1. **High probability of asthma** – a diagnosis of asthma is likely and they should move straight to a diagnostic trial of treatment; the choice of treatment will be based on an assessment of the degree of asthma severity and clinical response. Review in 2-4 weeks and again at 6-8 weeks. Reserve further testing for those with a poor response

2. **Low probability of asthma** – a diagnosis other than asthma is a probability; consider further investigations and or specialist referral

3. **Intermediate probability of asthma** – the diagnosis is uncertain and the following approaches are suggested:
   - Watchful waiting with review – no specific treatment is given
   - Trial of treatment with review – if treatment is beneficial treat as asthma – if treatment is not beneficial stop asthma treatment and consider tests for alternative conditions and specialist referral
   - Spirometry or reversibility testing (**see objective tests of lung function page 7**) – If there is insignificant reversibility consider alternative diagnoses. (**see page 12 for alternative diagnoses and indications for referral**)

2 Diagnosis of asthma
Focus the initial assessment of children suspected of having asthma on: the presence of key features in the history and clinical examination and careful consideration of an alternative diagnosis.

Several factors are associated with a high or a low risk of developing asthma – the presence of these factors will increase the probability that a child presenting with respiratory symptoms will have asthma.

These factors include: age at presentation - wheeze presenting after the age of 2 years is more likely to be asthma; co-existent atopy is a risk factor for persistence of wheeze independent of age of presentation, family history of atopy is the most clearly defined risk factor particularly maternal atopy, male sex in pre-pubertal children and female sex is a risk factor for the persistence of asthma from childhood to adulthood, frequent or severe episodes of wheezing in childhood are associated with recurrent wheeze that persists into adolescence.

Record the basis on which a diagnosis is suspected – record the presence of wheeze in the health records.

Normal chest examination and lung function when asymptomatic does not exclude a diagnosis of asthma.

### Diagnosis in children algorithm

**CLINICAL ASSESSMENT**

- **HIGH PROBABILITY:** diagnosis of asthma likely
  - Trial of asthma treatment
  - +VE: Continue treatment and find minimum effective dose
  - -VE: Consider tests of lung function* and atopy
  - Response?
    - Yes: Assess compliance and inhaler technique. Consider further investigation and/or referral
    - No: Investigate/treat other condition

- **INTERMEDIATE PROBABILITY:** diagnosis uncertain or poor response to asthma treatment
  - Consider tests of lung function* and atopy
  - -VE: Investigate/treat other condition
  - Response?
    - Yes: Further investigation. Consider referral
    - No: Continue treatment

- **LOW PROBABILITY:** other diagnosis likely
  - Consider referral
  - Investigate/treat other condition

*Lung function tests include spirometry or peak flow readings before and after bronchodilator (test of airway reversibility) and possible exercise or methacholine challenge (test of airway responsiveness). Most children over the age of 5 years can perform lung function tests.

### NOTES

- Focus the initial assessment of children suspected of having asthma on: the presence of key features in the history and clinical examination and careful consideration of an alternative diagnosis.
- Several factors are associated with a high or a low risk of developing asthma – the presence of these factors will increase the probability that a child presenting with respiratory symptoms will have asthma.
- These factors include: age at presentation - wheeze presenting after the age of 2 years is more likely to be asthma; co-existent atopy is a risk factor for persistence of wheeze independent of age of presentation, family history of atopy is the most clearly defined risk factor particularly maternal atopy, male sex in pre-pubertal children and female sex is a risk factor for the persistence of asthma from childhood to adulthood, frequent or severe episodes of wheezing in childhood are associated with recurrent wheeze that persists into adolescence.
- Record the basis on which a diagnosis is suspected – record the presence of wheeze in the health records.
- Normal chest examination and lung function when asymptomatic does not exclude a diagnosis of asthma.

### 3 Diagnosis of asthma
Diagnosis in Adults

Features that increase the probability in Adults
- More than one of the following symptoms: wheeze, breathlessness, chest tightness and cough particularly if:
- Symptoms occur are worse at night and in the early am
- Symptoms occur in response to exercise, allergen exposure and/or cold air
- Symptoms after taking aspirin, betablockers or NSAIDs
- There is a history of Atopic disorder
- There is a history of family history of asthma or atopy
- Widespread wheeze heard on auscultation of the chest
- There is otherwise unexplained low FEV1 or PEF (historical or serial readings)
- There is otherwise unexplained blood eosinophilia. In adults with a **high probability of asthma** move straight to a trial of treatment – reserve further testing for those whose response to treatment is poor. In those with a **low probability**, whose symptoms are thought to be due to an alternative diagnosis, investigate and manage accordingly (see page 12 for possible alternative diagnoses)

In patients with an **intermediate probability** of having asthma carry out further investigations, including an explicit trial of treatment for a specified period before confirming a diagnosis and establishing maintenance treatment

**Diagnosis in Adults Algorithm**

Presentation with suspected asthma

Clinical assessment including spirometry (or PEF if spirometry not available)

- **HIGH PROBABILITY: diagnosis of asthma likely**
  - FEV1/FVC < 0.7
  - Trial of asthma treatment
  - FEV1/FVC > 0.7
  - Investigate/ treat other condition

- **INTERMEDIATE PROBABILITY: diagnosis uncertain**
  - Further investigation. Consider referral

- **LOW PROBABILITY: other diagnosis likely**
  - Investigate/treat other condition

Response?
- Yes: Continue treatment
- No: Assess compliance and inhaler technique. Consider further investigation and/or referral

Base the diagnosis on the recognition of a characteristic pattern of symptoms and signs and a measure of airflow obstruction and reversibility

**4 Diagnosis of asthma**