



Reasons for poor asthma control

1: Have we made the wrong diagnosis?

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If treatment results are not as expected, the best approach, before increasing or adding medications, is to first review the diagnosis of asthma (Table). The validated asthma questionnaires contained in the IPCRG guidelines¹ can aid the diagnosis.

A diagnosis of asthma should ideally be based on objective evidence of reversible airflow obstruction.² Guidelines vary in their criteria for this (see IPCRG guidelines at http://www.theipcrq.org/resources/resources_diagnostics.php).

Making a diagnosis of asthma

Compatible clinical history

- Episodic or persistent dyspnoea, wheeze, tightness, cough
- Triggers (allergic, irritant)
- Risk factors for asthma development
- Consider occupational asthma for adults with recent onset

Objective evidence of reversible airflow obstruction

- Spirometry or peak expiratory flow rate
- Bronchoprovocation test (methacholine challenge)

Ancillary tests

- Chest x-ray
- Eosinophils, IgE level
- Allergy testing
- Exhaled nitric oxide
- Induced sputum

Drawn from an international panel discussion held in Aberdeen in September 2007 and published in Respiratory Medicine: Haughney J, Price D, Kaplan A, Chrystyn H, Horne R, May N, Moffat M, Versnel J, Shanahan ER, Hillyer EV, Tunsäter A, Bjermer L. Achieving asthma control in practice: understanding the reasons for poor control. *Respir Med.* 2008;102:1681-93

Diagnosing asthma in children

For patients younger than 5 or 6 years, the diagnosis of asthma is made on the basis of history, physical exam, and ancillary testing because spirometry is usually impractical for this age group. Remember, young children commonly wheeze with colds.

Differential diagnoses for wheezing include both respiratory (upper and lower) and non-respiratory causes,³ including:

- Upper airway—allergic diseases;
- Obstruction of large airway—foreign body, vocal cord dysfunction, vascular rings, laryngeal webs, tracheomalacia, or stenosis;
- Obstruction of small airways—viral bronchiolitis, cystic fibrosis, bronchopulmonary dysplasia, heart disease; and
- Other—aspiration (gastro-oesophageal reflux disease)

It is useful to attempt to decide which phenotype of childhood asthma is present to predict therapy needs and duration. The Modified Asthma Predictive Index has been developed to identify children ≥ 2 years of age with recurrent wheeze who are more likely to develop persistent asthma.⁴

For a child ≥ 2 years old with a history of ≥ 4 wheezing episodes (≥ 1 confirmed by a physician), the likelihood of asthma increases if the child has:

One of three major risk factors

1. Parental history of asthma
2. Physician-diagnosed atopic dermatitis
3. Allergic sensitization to ≥ 1 aeroallergen

OR Two of three minor risk factors

1. Allergic sensitization to milk, egg, or peanuts
2. Wheezing unrelated to colds
3. Blood eosinophils $\geq 4\%$

Adapted with permission from Guilbert TW et al. *J Allergy Clin Immunol.* 2004;114:1282-7.⁴

Diagnosing asthma in adults

Many adults will not readily admit to smoking, pet exposure, or exposure to other triggers. Therefore, a thorough medical history is essential. Patients should be guided on how to reduce trigger exposure, and smokers should be encouraged to quit.

Both respiratory and non-respiratory conditions can be mistaken for asthma in adults. The differential diagnosis includes:

- COPD
- cardiac disease
- laryngeal, tracheal, or lung tumour
- bronchiectasis
- foreign body
- interstitial lung disease
- pulmonary emboli
- aspiration
- vocal cord dysfunction
- hyperventilation

The presence of comorbidities can worsen asthma symptoms, and these should be treated to successfully control asthma. Common comorbidities include allergic rhinitis, chronic obstructive pulmonary disease (COPD), gastro-oesophageal reflux disease (GERD), respiratory infection, cardiac disorders, anaemia, and vocal cord dysfunction.

References

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2. Stanbrook MB, Kaplan A. The error of not measuring asthma. *CMAJ.* 2008;179:1099–102.
3. Bush A. Diagnosis of asthma in children under five. *Prim Care Respir J.* 2007;16:7–15.
4. Guilbert TW, Morgan WJ, Zeiger RS, et al. Atopic characteristics of children with recurrent wheezing at high risk for the development of childhood asthma. *J Allergy Clin Immunol.* 2004;114:1282–7.