The Asthma Guidelines: Diagnosis and Assessment of Asthma

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Objectives

• Know how the diagnosis of asthma is made;
• Assess the severity of asthma;
• Determine whether asthma is well-controlled.
Case Example

A 7 year-old boy newly develops persistent coughing and noisy, whistling breathing every time that he goes out to play in the cold air – and has similar symptoms after sitting with the pet cat.

Diagnostic Features

- Age of onset
- Characteristic symptoms
- Intermittent symptoms
- Typical triggering stimuli
Supportive Features

- Other allergic diseases: hay fever, eczema, hives
- Family history of atopic diseases
- Musical wheezes on examination

Non-Diagnostic Tests

- Chest X-ray
- Blood tests (eosinophils, IgE level)
- Allergy tests (skin tests, RAST)

Experimental tests:
- Exhaled nitric oxide (NO)
Therapeutic Trial with Quick-Acting Bronchodilator

Pitfalls:

• All better with inhaler: Is it because of the medication or just rest after exercise?

• No better with inhaler: Is it the wrong diagnosis or improper use of inhaler?

• Partial improvement after inhaler: Is it the wrong diagnosis or inadequate treatment?

Pulmonary Function Testing

• Expiratory airflow obstruction

• Reverses to normal with bronchodilator
Diagnosing Asthma
When the PFTs Are Normal

- Follow-up visit to the doctor
- Peak flow monitoring plus therapeutic trial
- Bronchoprovocation testing

Bronchial Hyperresponsiveness

Increasing Dose of Stimulus
### Staging Asthma Severity

- Mild Asthma
- Moderate Asthma
- Severe Asthma

- Mild Intermittent Asthma
- Mild Persistent Asthma
- Moderate Persistent Asthma
- Severe Persistent Asthma

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Staging Asthma Severity

Criteria (in the absence of regular preventive medication):

• Frequency of symptoms/use of quick-acting bronchodilator
• Frequency of nighttime awakenings due to asthma
• Lung function (peak flow)

Intermittent Asthma

• Symptoms of asthma ≤2 times per week
• Nocturnal awakenings ≤2 times per month
• Peak flow ≥80% of normal at baseline
Mild Persistent Asthma

- Symptoms of asthma >2 times per week but fewer than once a day
- More than two nocturnal awakenings per month
- Peak flow ≥80% of normal at baseline

Moderate Persistent Asthma

- Symptoms of asthma daily
- Nocturnal awakenings ≥ once weekly
- Peak flow 60-80% of normal at baseline
Severe Persistent Asthma

- Continual symptoms
- Nearly nightly awakenings
- Peak flow $\leq 60\%$ of normal at baseline

Staging Asthma Severity

Applying the Staging Criteria:

- If you have any one of the features listed in a category, you are considered to belong in that, the most severe category.
- The severity of asthma changes over time, and so may your classification into one of these categories.
- Even patients with intermittent asthma may suffer severe exacerbations.
Case Examples

- A 12 year-old girl with asthma uses her albuterol inhaler 2-3 times a week when she gets a sense of tightness in her chest. She does not awaken with asthmatic symptoms. Her peak flow after bronchodilator is two thirds (66%) of normal.
Case Examples

• A 30 year-old man with asthma uses a pirbuterol (Maxair) inhaler before exercise and whenever he experiences chest symptoms (cough and wheeze). He has never had a severe asthma attack. He typically uses his inhaler 4-5 times a week and only infrequently (<once/week) overnight. His chest is free of wheezes and his peak flow is 102% of predicted.

Assessing Asthma Control

Two “Domains”:

• Current impairment
  • Symptoms (daytime, nighttime, and frequency of use of rescue bronchodilator)
  • Exercise limitation
  • Lung function
• Future risk
  • More than 1 oral steroid course in last year
## Tools to Assess Asthma Control

- **Asthma Control Test (ACT)**
- **Asthma Therapy Assessment Questionnaire (ATAQ)**
- **Asthma Control Questionnaire (ACQ)**

### Asthma Control Test

1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home?  
   - All of the time ①  
   - Most of the time ②  
   - Some of the time ③  
   - A FRACTION of the time ④  
   - Never at all ⑤  

2. During the past 4 weeks, how often have you had shortness of breath?  
   - More than once a day ①  
   - Once a day ②  
   - 2 to 3 nights a week ③  
   - Once a week or less ④  
   - Not at all ⑤  

3. During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?  
   - 4 or more nights a week ①  
   - 2 or 3 nights a week ②  
   - Once a week ③  
   - Once or twice a week ④  
   - Not at all ⑤  

4. During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?  
   - 3 or more times per day ①  
   - 1 or 2 times per day ②  
   - 2 or 3 times per week ③  
   - Once a week or less ④  
   - Not at all ⑤  

5. How would you rate your asthma control during the past 4 weeks?  
   - Not controlled at all ①  
   - Poorly controlled ②  
   - Somewhat controlled ③  
   - Well controlled ④  
   - Completely controlled ⑤  

**SCORE**  

**TOTAL**
Concept of Asthma Control

In patients on regular controller medication:

- Is asthma poorly controlled? If yes, **step up** therapy.
- Is asthma well controlled? If yes, continue current treatment or **step down** therapy.

**FIGURE 3-4C. CLASSIFYING ASTHMA SEVERITY IN YOUTHS ≥12 YEARS OF AGE AND ADULTS**

Classifying severity for patients who are not currently taking long-term control medications.

<table>
<thead>
<tr>
<th>Components of Severity</th>
<th>Classification of Asthma Severity (Youths ≥12 years of age and adults)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Persistent</td>
</tr>
<tr>
<td></td>
<td>Intermittent Mild Moderate Severe</td>
</tr>
<tr>
<td>Symptoms</td>
<td>≤2 days/week 2 days/week but not daily Daily Throughout the day</td>
</tr>
<tr>
<td>Nighttime awakenings</td>
<td>≥2/night 3-4/night &gt;4/night but not nightly Often &gt;4/night</td>
</tr>
<tr>
<td>Short-acting beta-agonist use for symptom control (not prevention of EIB)</td>
<td>≤2/day/week ≥2/day/week but not &gt;3/day Daily Several times per day</td>
</tr>
<tr>
<td>Interference with normal activity</td>
<td>None Minor limitation Some limitation Extremely limited</td>
</tr>
<tr>
<td>Lung Function</td>
<td>Normal FEV₁ between extensions  <strong>FEV₁ &lt;50% predicted</strong> <strong>FEV₁/VC normal</strong> <strong>FEV₁/VC reduced %</strong></td>
</tr>
<tr>
<td>Risk</td>
<td>Exacerbations requiring oral steroids or other acute treatments ≤2/year ≤2/year (per note)</td>
</tr>
</tbody>
</table>
Conclusions:

- The diagnosis of asthma is suspected by history and physical examination and confirmed by pulmonary function testing;
- Asthma severity is based on daytime symptoms, nighttime symptoms, functional capacity, and lung function;
Conclusions:

- Asthma control can be assessed in all patients, regardless of their medical regimen, and is used to guide therapy.