

## Asthma Management ~ Step Therapy Guidelines for Managing Infants and Children (5 Years and Younger) with Acute or Chronic Asthma

**The purpose of this guide to provide general care information regarding the management of asthma.**

**Source:** U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Heart, Lung and Blood Institute, 1997 July (reprinted 1998 April, updated June 2002, reprinted July 2007, updated August 2008) **Adopted without modification**

### Key Considerations for Diagnosis

Wheezing during exhalation (with or without a normal chest exam); History of any of the following: prolonged persistent cough, especially at night or early morning; Symptoms that occur or worsen in the presence of: exercise, allergens, smoke, temperature changes, viral infections, laughing, crying or cold liquids

### Classifications and Treatment

A stepwise approach is recommended to gain and maintain control of asthma. For all patients, environmental factors that contribute to asthma and other triggers must be identified and eliminated as much as possible. Medication selection and use is dictated by symptom severity and suppression of airway inflammation. Asthma drugs are classified as either "long term controller" or "quick-relief" medications. As patients change from step to step, either up or down, drug therapy should be adjusted accordingly.

| Classify Severity: Clinical Features Before Treatment or Adequate Control |   | Medications Required to Maintain Long Term Control   |  |
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|   | Symptoms/Day<br>Symptoms/Night                  | Daily Medications  | Education  |
| <b>Step 1</b><br><br>Mild<br>Intermittent                                 | $\leq 2$ days/week<br>$\leq 2$ nights/month     | <ul style="list-style-type: none"> <li>▪ No daily medication needed</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Teach basic facts about asthma</li> <li>▪ Teach inhaler/ spacer/holding chamber technique</li> <li>▪ Discuss role of medications</li> <li>▪ Develop self-management plan</li> <li>▪ Develop action plan for when and how to take rescue actions, especially for patients with a history of severe exacerbations</li> <li>▪ Discuss appropriate environmental control measures to avoid exposure to known allergens and irritants</li> </ul> |
| <b>Step 2</b><br><br>Mild<br>Persistent                                   | $>2/$ week but<br>$<1/day$<br>$>2$ nights/month | <ul style="list-style-type: none"> <li>▪ <i>Preferred Treatment:</i><br/>               - Low-dose inhaled corticosteroids (with nebulizer or MDI with holding chamber with or without face mask or DPI).</li> <li>▪ <i>Alternative treatment (listed alphabetically):</i><br/>               - Cromolyn (nebulizer is preferred or MDI with holding chamber)<br/>               OR<br/>               leukotriene receptor antagonist.</li> </ul> | Step 1 action plus: <ul style="list-style-type: none"> <li>▪ Teach self-monitoring</li> <li>▪ Refer to group education</li> <li>▪ Review and update self-management plan</li> </ul>  |
| <b>Step 3</b><br><br>Moderate<br>Persistent                               | $\frac{\text{Daily}}{>1}$ night/week            | <ul style="list-style-type: none"> <li>▪ <i>Preferred Treatment:</i><br/>               - Low-to-medium dose inhaled corticosteroids and long-acting inhaled beta<sub>2</sub>-agonists.<br/>               OR<br/>               - Medium-dose inhaled corticosteroids.</li> <li>▪ <i>Alternative treatment:</i><br/>               - Low-dose inhaled corticosteroids and either leukotriene receptor antagonist or theophylline</li> </ul>       | Step 1 action plus: <ul style="list-style-type: none"> <li>▪ Teach self-monitoring</li> <li>▪ Refer to group education</li> <li>▪ Review and update self-management plan</li> </ul>  |

**Asthma Management ~ Step Therapy Guidelines**  
**For Infants and Young Children (5 Years and Younger)**

**Classify Severity: Clinical Features Before Medications Required to Maintain Treatment or Adequate Control Long Term Control**

|   | Symptoms/Day<br>Symptoms/Night | Daily Medications  | Education   |
|---|--------------------------------|--|---|
| <b>Step 3</b><br><br><i>Moderate Persistent</i> |                                | <p>-----</p> <p>If needed (particularly in patients with recurring severe exacerbations):</p> <ul style="list-style-type: none"> <li>▪ <b>Preferred Treatment:</b> <ul style="list-style-type: none"> <li>- Medium- dose inhaled corticosteroids and long-acting inhaled beta<sub>2</sub>-agonists.</li> </ul> </li> <li>▪ <b>Alternative treatment (listed alphabetically):</b> <ul style="list-style-type: none"> <li>- Medium-dose inhaled corticosteroids and either leukotriene receptor antagonist or theophylline</li> </ul> </li> </ul>  |   |
| <b>Step 4</b><br><br><i>Severe Persistent</i>   | <u>Continual</u><br>Frequent   | <ul style="list-style-type: none"> <li>▪ <b>Preferred Treatment:</b> <ul style="list-style-type: none"> <li>- High dose inhaled corticosteroids</li> </ul> </li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>- Long-acting inhaled beta<sub>2</sub>-agonists.</li> </ul> <p>AND, if needed,</p> <ul style="list-style-type: none"> <li>- Corticosteroid tablets or syrup long term (2 mg/kg/day, generally do not exceed 60 mg per day). (Make repeat attempts to reduce systemic corticosteroids and maintain control with high-dose inhaled corticosteroids.)</li> </ul> | <p>Steps 2 and 3 action plus:</p> <ul style="list-style-type: none"> <li>▪ Refer to individual education/ counseling</li> </ul> |

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| <i>All Patients</i> | <ul style="list-style-type: none"> <li>▪ Bronchodilator as needed for symptoms ≤ 2 times a week. Intensity of treatment will depend upon severity of exacerbation. <ul style="list-style-type: none"> <li>- Preferred treatment: Inhaled short-acting beta<sub>2</sub>-agonist by nebulizer or face mask and space/holding chamber.</li> <li>- Alternative treatment: Oral beta<sub>2</sub>-agonist</li> </ul> </li> <li>▪ With viral respiratory infection <ul style="list-style-type: none"> <li>- Bronchodilator q 4 – 6 hours up to 24 hours (longer with physician consult); in general no more than once every 6 weeks</li> <li>- Consider systemic corticosteroid if exacerbation is severe or patient has history of previous severe exacerbations</li> </ul> </li> <li>▪ Use of short acting beta<sub>2</sub>-agonists daily indicates the need to initiate or increase long-term control therapy.</li> </ul> |
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**↓** *Step Down*  
Review treatment every 1 to 6 months; a gradual stepwise reduction in treatment may be possible

**↑** *Step Up*  
If control is not maintained, consider step up. First, review patient medication technique, adherence, and environmental control.

- The stepwise approach is meant to assist, not replace, the clinical decision-making required to meet individual patient needs.
- Classify severity: assign patient to most severe step in which any feature occurs (PEF is % of personal best; FEV1 is % predicted).
- Gain control as quickly as possible (consider a short course of systemic corticosteroids); then step down to the least medication necessary to maintain control.
- Provide education on self-management and controlling environmental factors that make asthma worse (e.g., allergens and irritants).
- Refer to an asthma specialist if there are difficulties controlling asthma or if step 4 care is required. Referral may be considered if step 3 care is required.

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| <ul style="list-style-type: none"> <li>▪ Minimal or no chronic symptoms day or night</li> <li>▪ Minimal or no exacerbations</li> <li>▪ No limitations on activities; no school/work missed</li> </ul> | <ul style="list-style-type: none"> <li>▪ PEF &gt; 80% of personal best</li> <li>▪ Minimal use of inhaled short-acting beta<sub>2</sub>-agonists (&lt; 1 x per day, &lt; 1 canister/month)</li> <li>▪ Minimal or no adverse effects from medications</li> </ul> |
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