Childhood asthma treatment guildeline 2005

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Childhood asthma: diagnosis

Asthma is usually diagnosed on the basis of the history of symptoms along with physical examination. In selected cases, measurement of lung function, reversibility of airway obstruction may enhance diagnostic accuracy.

The following are important diagnostic hints of asthma:

History

1. Coughing is the commonest symptom of asthma especially in young children.
2. Wheezing: a common symptom of asthma but the absence of wheezing attacks does not exclude the diagnosis.
3. Breathing difficulty.
4. The chance of asthma increases if the above symptoms occur:
   - recurrently or persistently
   - during or after a cold
   - on exercise
   - when in contact with animals
   - when in contact with pollen or some plants
   - interrupting sleep at night
   - when the weather changes
   - when in contact with some known allergens
   - when in contact with smoke or other irritants
5. A family history of atopy and allergic diseases.
6. Past history of atopic diseases.

Physical examination

1. Signs of airway obstruction:
   - chest hyperinflation
   - obstructed expiration: spontaneous wheeze or forced expiratory wheeze
   - diminished air movement in the chest
   - physical examination may be normal in children with mild asthma
2. Signs of other allergies or complication:
   - eczema, allergic rhinitis, growth failure, sinusitis, chest deformity

Investigations

1. In older children (6 or above) who are able to perform simple lung function testing (peak flow rate or spirometry), demonstrate variable airflow obstruction with diary cards and peak flow monitoring, or use bronchodilator inhalation to demonstrate improvement in spirometry.
2. In younger children, demonstrate immediate improvement of signs with bronchodilator inhalation, or a therapeutic trial of asthma medications to look for improvement over time.
3. Other supportive diagnostic modalities: Exhaled Nitric oxide measurement, skin-prick test, infant lung function measurement if available.

Special note

1. Often a period of observation is required to ascertain the diagnosis.
2. Asthma is a chronic disease and patients have to be reassessed on a regular basis to adjust the prescribed treatment.

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Treatment Guideline for Managing Asthma in Children Older Than 5 years of Age: Treatment

Classify Severity: Clinical Features Before Treatment or Adequate Control			Recommended Medications Required To Maintain Long-Term Asthma Control
	Symptoms/Day Symptoms/Nights	PEF or FEV1 PEF Variability	Daily Medications
Step 4 **Severe Persistent**	Continual Frequent	≤60% >30%	• Preferred treatment: - High-dose inhaled corticosteroids (>800 mcg of budesonide or equivalent) AND - Long-acting inhaled beta$_2$-agonists AND if needed, - Corticosteroid tablets: a short course of steroid may be needed to suppress airway inflammation. • Alternative treatment: - High dose inhaled corticosteroids AND either leukotriene modifier or theophylline.
Step 3 **Moderate Persistent**	Daily >1 night/week	>60% - <80% >30%	• Preferred treatment: - Low to medium dose inhaled corticosteroids (200-800 mcg of budesonide or equivalent) and long- acting inhaled beta$_2$-agnoists. • Alternative treatment: - Increase inhaled corticosteroids within medium-dose range OR - Low-to-medium dose inhaled corticosteroids and either leukotriene modifier or theophylline.
Step 2 **Mild Persistent**	>2/week but <1x/day >2 nights/month	≥80% 20-30%	• Preferred treatment: - Low-dose inhaled corticosteroids (<400 mcg of budesonide or equivalent). • Alternative treatment options: cromolyn, leukotriene modifier, nedocromil, OR sustained-release theophylline to keep serum concentration of 5-15 mcg/mL.
Step 1 **Mild Intermittent**	≤2 days/week ≤2 nights/month	≥80% <20%	• No daily medication needed. • Inhaled (preferred) or oral bronchodilators may be prescribed and use as needed.

Quick Relief **All Patients**	• Short-acting bronchodilator: 2-4 puffs short-acting inhaled beta$_2$-agonists as needed for symptoms. • Intensity of treatment will depend on severity of exacerbation; up to 3 treatments at 20-minute intervals treatment as needed. Course of systemic corticosteroids may be needed. MDI with spacer is just as effective as the nebulizer in most situations of mild to moderate attacks. • **Use of short-acting beta$_2$-agonists >2 times a week in intermittent asthma (daily, or increasing use in persistent asthma) may indicate the need to start long-term-control therapy.**

↓	**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.

Goals of Therapy: Optimal Asthma Control	
• Minimal or no chronic symptoms day or night	• Maintain (near) normal pulmonary function
• Minimal or no exacerbations	• Minimal use of short-acting inhaled beta$_2$-agonist
• No limitations on activities; no school/work missed	• Minimal or no adverse effects from medications

Treatment Guideline for Managing Infants and Young Children (5 years of Age and Younger) with Asthma

Classify Severity: Clinical Features Before Treatment or Adequate Control		Medications Required To Maintain Long-Term Control
	Symptoms/Day **Symptoms/Nights**	**Daily Medications**
Step 4 **Severe Persistent**	Continual Frequent	• Preferred treatment: - High-dose inhaled corticosteroids (>800 mcg of budesonide or equivalent) AND - Long-acting inhaled beta$_2$-agonists AND if needed, - Corticosteroid tablets: a short course of steroid may be needed to suppress airway inflammation (2 mg/kg/day).
Step 3 **Moderate Persistent**	Daily >1 night/week	• Preferred treatment: - Low-dose inhaled corticosteroids (<400 mcg of budesonide or equivalent) and long-acting inhaled beta$_2$-agnoists OR - Medium-dose inhaled (400-800 mcg of budesonide or equivalent) corticosteroids. • Alternative treatment: - Low-dose inhaled corticosteroids and either leukotriene receptor antagonist or theophylline.
Step 2 **Mild Persistent**	>2/week but <1x/day >2 nights/month	• Preferred treatment: - Low-dose inhaled corticosteroids (with MDI with holding chamber with or without face mask or nebulizer). • Alternative treatment (listed alphabetically): - Cromolyn (MDI with holding chamber or nebulizer) OR oral leukotriene receptor antagonist.
Step 1 **Mild Intermittent**	≤2 days/week ≤2 nights/month	• No daily medication needed. • Inhaled (preferred) or oral bronchodilators may be prescribed and use as needed.

Quick Relief **All Patients**	• Bronchodilator as needed for symptoms. Intensity of treatment will depend upon severity of exacerbation. - Preferred treatment: Short-acting inhaled beta$_2$-agonists by face mask and space/holding chamber or nebulizer - Alternative treatment: Oral beta$_2$-agonist • With viral respiratory infection - Bronchodilator q 4-6 hours up to 24 hours - Consider systemic corticosteroid if exacerbation is severe or patient has history of previous severe exacerbations • **Use of short-acting beta$_2$-agonists >2 times a week in intermittent asthma (daily, or increasing use inpersistent asthma) may indicate the need to start long-term-control therapy.**

↓	**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.

Goals of Therapy: Optimal Asthma Control

- Minimal or no chronic symptoms day or night
- Minimal or no exacerbations
- No limitations on activities; no school/parent's work missed
- Minimal use of short-acting inhaled beta$_2$-agonist
- Minimal or no adverse effects from medications

Steroid equivalent table:

Estimated Comparative Daily Dosages for Inhaled Glucocorticosteroids						
Drug	**Low Daily Dose (μg)**		**Medium Daily Dose (μg)**		**High Daily Dose (μg)**	
	Adult	**Child**	**Adult**	**Child**	**Adult**	**Child**
Beclomethasone	200-500	100-250	500-1000	250-500	>1000	>500
Budesonide-DPI	200-600	100-200	600-1000	200-600	>1000	>600
Budesonide-Neb Inhalation suspension		250-500		500-1000		>1000
Fluticasone	100-250	100-200	250-500	200-400	>500	>400
Mometasone furoate	200-400		400-800		>800	

Notes:

The most important determinant of appropriate dosing is the clinician's judgment of the patient's response to therapy. The clinician must monitor the patient's response in terms of a combination of clinical parameters and adjust the dose accordingly. The stepwise approach to therapy emphasizes that once control of asthma is achieved, the dose of medication should be carefully titrated to the minimum dose required to maintain control, thus reducing the potential for adverse effects. Actual delivered dose may vary according to the device used for delivery of inhaled steroids.