



## Managing Infants, Children and Adults with Asthma

### **Key Points: Education for a Partnership in Asthma Care**

- Asthma self-management education is essential to provide patients with the skills necessary to control asthma and improve outcomes (**Evidence A**).
- Asthma self-management education should be integrated into all aspects of asthma care, and it requires repetition and reinforcement. It should:
  - Begin at the time of diagnosis and continue through followup care (**Evidence B**).
  - Involve all members of the health care team (**Evidence B**).
  - Introduce the key educational messages by the principal clinician, and negotiate agreements about the goals of treatment, specific medications, and the actions patients will take to reach the agreed-upon goals to control asthma (**Evidence B**).
  - Reinforce and expand key messages (e.g., the patient's level of asthma control, inhaler techniques, self-monitoring, and use of a written asthma action plan) by all members of the health care team (**Evidence B**).
  - Occur at all points of care where health professionals interact with patients who have asthma, including clinics, medical offices, emergency departments (EDs) and hospitals, pharmacies, homes, and community sites (e.g., schools, community centers) (**Evidence A or B**, depending on point of care).

### **Periodic Assessment and Monitoring of Asthma Control Essential for Asthma Management**

#### **Key Differences from 1997 and 2002 Expert Panel**

- Periodic assessment of asthma *control* is emphasized.
- This update (EPR—3: Full Report 2007) makes a stronger distinction than previous guidelines between classifying asthma severity and assessing asthma control. Interpretation of previous asthma guidelines raised questions about applying the severity classifications once treatment is established and also resulted in placing more emphasis on severity than on ongoing monitoring of whether therapeutic goals were met. This update (EPR—3: Full Report 2007) clarifies the issue:
  - For initiating treatment, asthma severity should be classified, and the initial treatment should correspond to the appropriate severity category.
  - Once treatment is established, the emphasis is on assessing asthma control to determine if the goals for therapy have been met and if adjustments in therapy (step up or step down) would be appropriate.
- Assessment of asthma control includes the two domains of impairment and risk.
- Peak flow monitoring: The recommendation to assess diurnal variation was deleted. New text was added regarding the patients most likely to benefit from routine peak flow monitoring. Emphasis was added that evidence suggests equal benefits to either peak flow or symptom-based monitoring; the important issue continues to be having a monitoring plan in place.
- Parameters for lung function, specifically FEV<sub>1</sub>/FVC, were added as measures of asthma control for children.
- Minimally invasive markers and pharmacogenetic approaches for monitoring asthma. New text was added. These approaches have gained increasing attention in clinical research, and some applications may be useful in the near future for the clinical management of asthma. The concepts are introduced here, although most require further evaluation before they can be recommended as tools for routine asthma management.

#### **Recommendations**

*Goals of Therapy: Asthma Control*

**The Expert Panel recommends that asthma control be defined as follows (Evidence A):**

#### **Asthma Control**

##### **Reduce impairment**

- Prevent chronic and troublesome symptoms (e.g., coughing or breathlessness in the daytime, in the night, or after exertion)
- Require infrequent use (<2 days a week) of SABA for quick relief of symptoms
- Maintain (near) “normal” pulmonary function

National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Bethesda (MD): U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Heart, Lung and Blood Institute; 2007 Aug. 362 p. Quality and Peer Review Advisory Committee (QPRAC) Adopted: 2002 QPRAC Revision/Approval Date: 12/03 Clinical Quality Improvement Committee (CQIC) Revision/Approval Date: 6/05, 4/06, 10/07, 11/08. Quality Improvement Committee (QIC) Review Approval 4/09

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- Maintain normal activity levels (including exercise and other physical activity and attendance at work or school)
- Meet patients' and families' expectations of and satisfaction with asthma care
- **Reduce risk**
- Prevent recurrent exacerbations of asthma and minimize the need for ED visits or hospitalizations
- Prevent progressive loss of lung function; for children, prevent reduced lung growth
- Provide optimal pharmacotherapy with minimal or no adverse effects

### **GOALS OF THERAPY: ASTHMA CONTROL**

The purpose of periodic assessment and ongoing monitoring is to determine whether the goals of asthma therapy are being achieved and asthma is controlled. When asthma is not controlled, it is associated with significant asthma burden (Fuhlbrigge et al. 2002), decreased quality of life (Schatz et al. 2005b), and increased health care utilization (Schatz et al. 2005a; Vollmer et al. 2002). The level of asthma control (well controlled, not well controlled, or poorly controlled) is the degree to which both dimensions of the manifestations of asthma—impairment and risk—are minimized by therapeutic intervention. The level of control at the time of follow up assessment will determine clinical actions—that is, whether to maintain or adjust therapy. In previous guidelines (EPR-2 1997; GINA 2002), parameters for control were selected on the basis of research that used individual outcomes for evaluating the effectiveness of asthma treatments. The composite list of goals reflected the Panel's opinions of a complete list of relevant outcomes that could define asthma control. A recent large international trial demonstrated that significant reductions in the rate of severe exacerbations and improvements in quality of life were achieved by aiming at achieving guideline defined asthma control and by adjusting therapy to achieve it. At the end of 1 year, 30 percent of the patients achieved total control (i.e., the absence of any sign or symptom of asthma), and 60 percent had achieved well controlled asthma (Bateman et al. 2004).

Interpretation of previous asthma guidelines, in which severity classifications before treatment corresponded to recommended steps of treatment, has raised questions about applying severity classifications once treatment is established and what elements of asthma should be used to monitor asthma during clinical follow up (Graham 2006; Wolfenden et al. 2003). This update (EPR—3: Full Report 2007) clarifies the issue. For initiating treatment, asthma severity should be classified, and the initial treatment should correspond to the appropriate category of severity. Once treatment is established, the emphasis is on assessing asthma control to determine if the goals for therapy have been met and if adjustments in therapy (step up or step down) would be appropriate.

### **Tools for Asthma Self-Management**

#### **Role of the Written Asthma Action Plans for Patients who Have Asthma**

The Expert Panel recommends that clinicians provide to all patients who have asthma a written asthma action plan that includes instructions for (1) daily management and (2) recognizing and handling worsening asthma, including adjustment of dose of medications. Written action plans are particularly recommended for patients who have moderate or severe persistent asthma, a history of severe exacerbations, or poorly controlled asthma (**Evidence B**). Written asthma action plans may be based on PEF measurements or symptoms or both, depending on the preference of the patient and clinician (**Evidence B**). A peak-flow-based plan may be particularly useful for patients who have difficulty perceiving signs of worsening asthma (**Evidence D**).

#### **Role of Peak Flow Monitoring**

The Expert Panel recommends that:

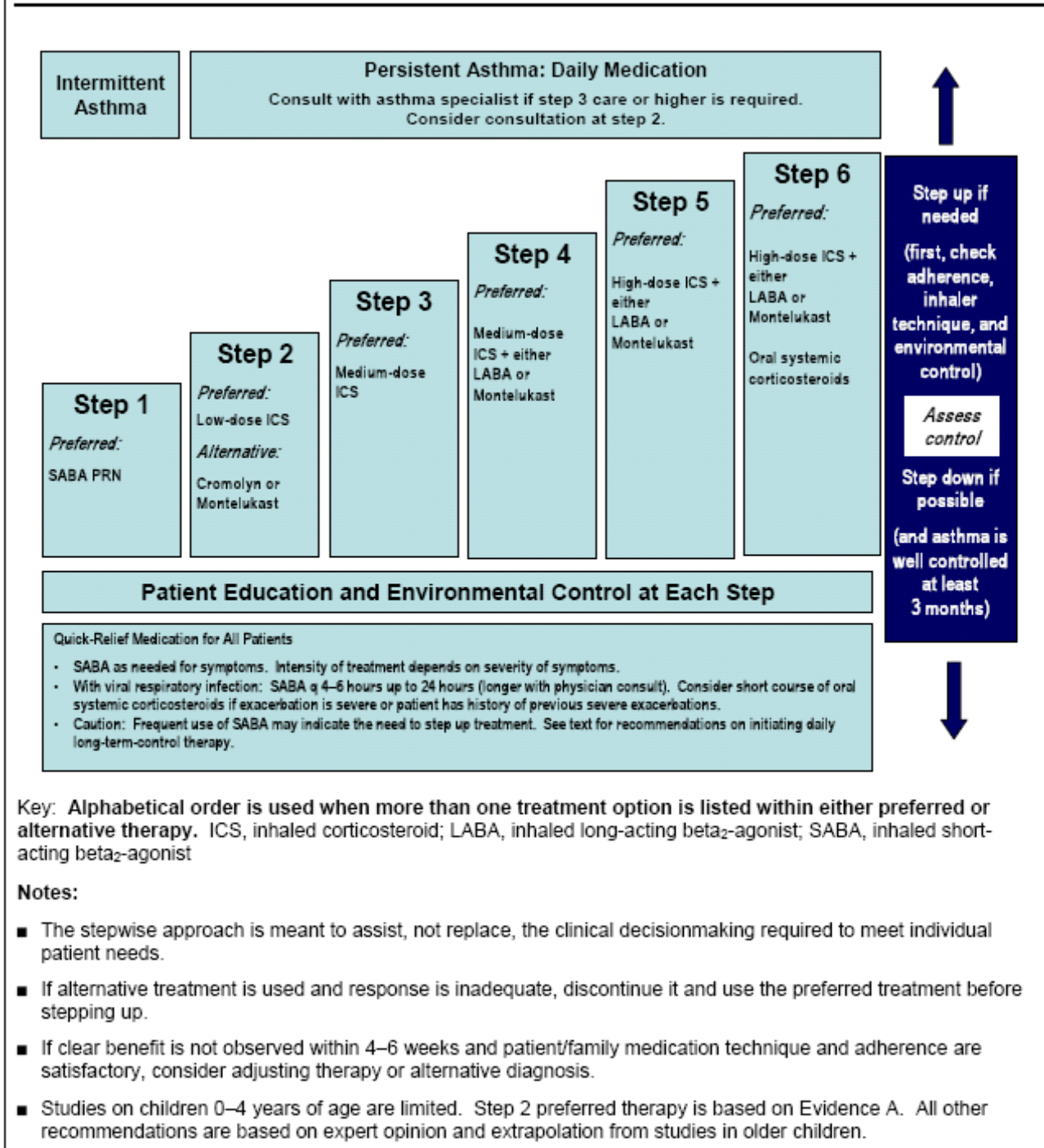
- Written asthma action plans can be based on either symptoms or peak flow measurements (**Evidence B**).
- Long-term daily peak flow monitoring be considered for patients who have moderate or severe persistent asthma (**Evidence B**), poor perception of airflow obstruction or worsening asthma, unexplained response to environmental or occupational exposures, and others at the discretion of the clinician and the patient (**EPR—2 1997**).

### **Clinician Assessment**

The Expert Panel recommends that patients who have intermittent or mild or moderate persistent asthma (i.e., requiring steps 1, 2, 3, or 4 treatment) that has been under control for at least 3 months should be seen by a clinician about every 6 months. Patients who have uncontrolled and/or severe persistent asthma (i.e., requiring steps 5 or 6 treatment) and those who need additional supervision to help them follow their treatment plan should be seen more often (EPR-2 1997). 1

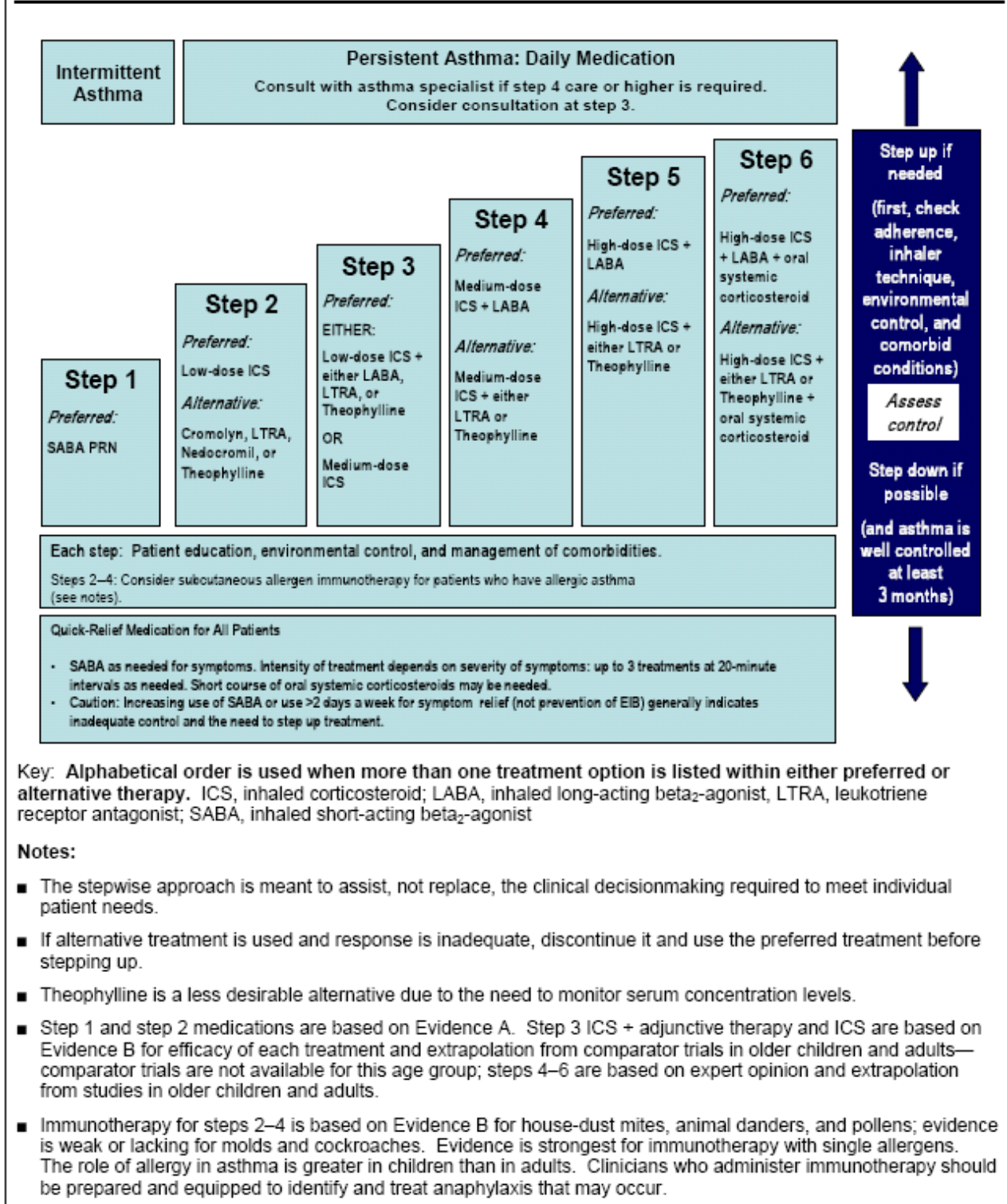
**Stepwise Approach for Managing Infants and Young Children  
(0-4 years of age) With Acute or Chronic Asthma**

**FIGURE 4-1a. STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 0-4 YEARS OF AGE**



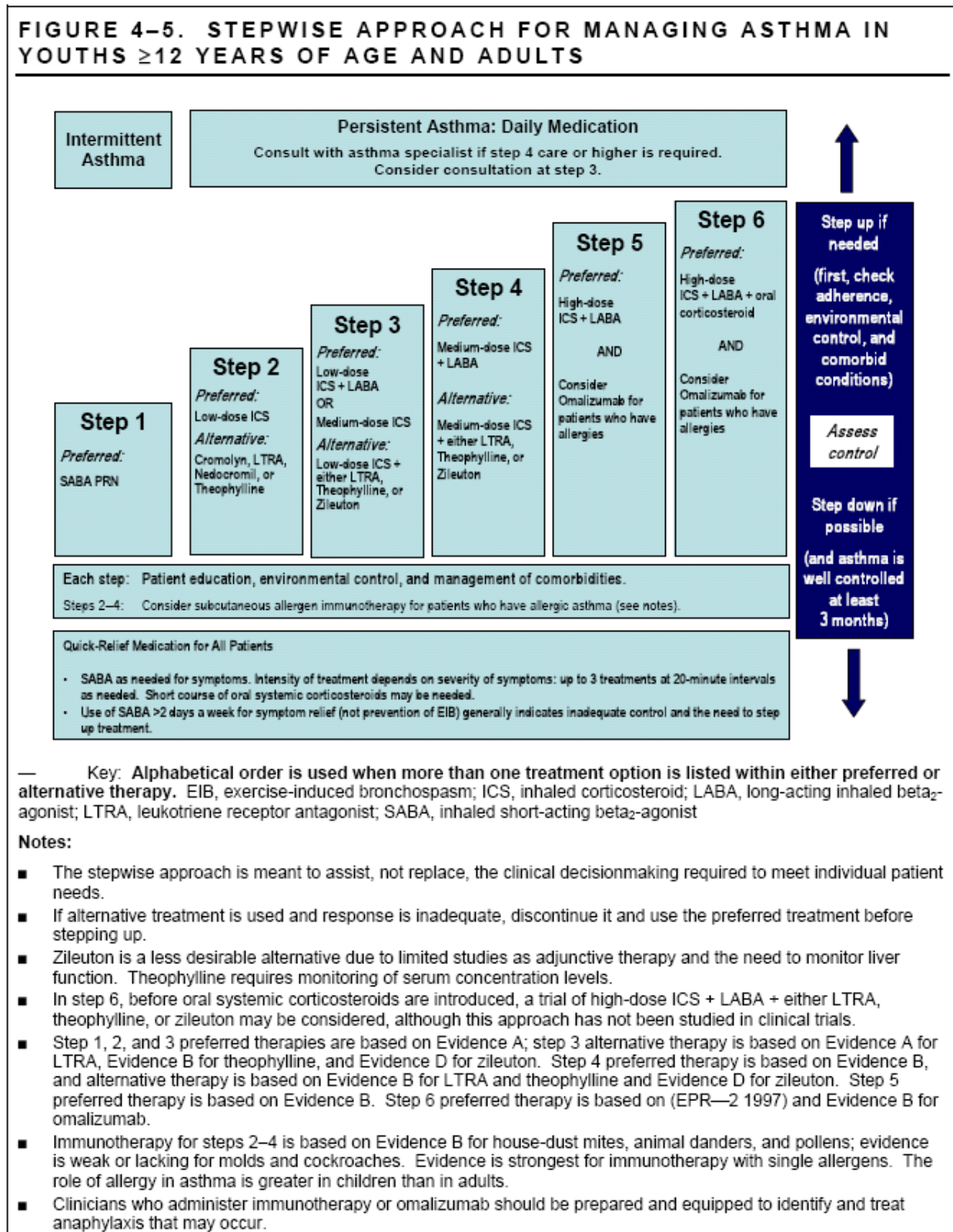
## Stepwise Approach for Managing Youths (5-11 years of age) With Acute or Chronic Asthma 1

**FIGURE 4-1b. STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 5-11 YEARS OF AGE**



## Stepwise Approach for Managing Youths and Adults (≥12 years of age) With Acute or Chronic Asthma <sup>1</sup>

**FIGURE 4–5. STEPWISE APPROACH FOR MANAGING ASTHMA IN YOUTHS ≥12 YEARS OF AGE AND ADULTS**



## Long Term Control Medications for Asthma 1

**FIGURE 3–22. LONG-TERM CONTROL MEDICATIONS**

Name/Products (Listed Alphabetically)	Indications/Mechanisms	Potential Adverse Effects	Therapeutic Issues (Not All Inclusive)
<p><b>Corticosteroids (Glucocorticoids)</b></p> <p><i>Inhaled (ICS):</i> Beclomethasone dipropionate</p> <p>Budesonide</p> <p>Flunisolide</p> <p>Fluticasone propionate</p> <p>Mometasone furoate</p> <p>Triamcinolone acetonide</p>	<p><i>Indications</i></p> <ul style="list-style-type: none"> <li>■ Long-term prevention of symptoms; suppression, control, and reversal of inflammation.</li> <li>■ Reduce need for oral corticosteroid.</li> </ul> <p><i>Mechanisms</i></p> <ul style="list-style-type: none"> <li>■ <b>Anti-inflammatory.</b> Block late reaction to allergen and reduce airway hyperresponsiveness. Inhibit cytokine production, adhesion protein activation, and inflammatory cell migration and activation.</li> <li>■ Reverse beta<sub>2</sub>-receptor downregulation. Inhibit microvascular leakage.</li> </ul>	<ul style="list-style-type: none"> <li>■ Cough, dysphonia, oral thrush (candidiasis).</li> <li>■ In high doses (see figures 4-4b and 4–8b), systemic effects may occur, although studies are not conclusive, and clinical significance of these effects has not been established (e.g., adrenal suppression, osteoporosis, skin thinning, and easy bruising) (Barnes and Pedersen 1993; Kamada et al. 1996). In low-to-medium doses, suppression of growth velocity has been observed in children, but this effect may be transient, and the clinical significance has not been established (CAMP 2000; Guilbert et al. 2006).</li> </ul>	<ul style="list-style-type: none"> <li>■ Spacer/holding chamber devices with nonbreath-activated MDIs and mouth washing after inhalation decrease local side effects.</li> <li>■ Preparations are not absolutely interchangeable on a mcg or per puff basis (see figures 4–4b and 4–8b for estimated clinical comparability). New delivery devices may provide greater delivery to airways; this change may affect dose.</li> <li>■ The risks of uncontrolled asthma should be weighed against the limited risks of ICS therapy. The potential but small risk of adverse events is well balanced by their efficacy. (See text.)</li> <li>■ “Adjustable dose” approach to treatment may enable reduction in cumulative dose of ICS treatment over time without sacrificing maintenance of asthma control.</li> <li>■ Dexamethasone is not included as an ICS for long-term control because it is highly absorbed and has long-term suppressive side effects.</li> </ul>
<p><i>Systemic:</i> Methylprednisolone Prednisolone Prednisone</p>	<p><i>Indications</i></p> <ul style="list-style-type: none"> <li>■ For short-term (3–10 days) “burst”: to gain prompt control of inadequately controlled persistent asthma.</li> <li>■ For long-term prevention of symptoms in severe persistent asthma: suppression, control, and reversal of inflammation.</li> </ul> <p><i>Mechanisms</i></p> <ul style="list-style-type: none"> <li>■ Same as inhaled.</li> </ul>	<ul style="list-style-type: none"> <li>■ Short-term use: reversible abnormalities in glucose metabolism, increased appetite, fluid retention, weight gain, mood alteration, hypertension, peptic ulcer, and rarely aseptic necrosis.</li> <li>■ Long-term use: adrenal axis suppression, growth suppression, dermal thinning, hypertension, diabetes, Cushing’s syndrome, cataracts, muscle weakness, and—in rare instances—impaired immune function.</li> <li>■ Consideration should be given to coexisting conditions that could be worsened by systemic corticosteroids, such as herpes virus infections, varicella, tuberculosis, hypertension, peptic ulcer, diabetes mellitus, osteoporosis, and <i>Strongyloides</i>.</li> </ul>	<ul style="list-style-type: none"> <li>■ Use at lowest effective dose. For long-term use, alternate-day a.m. dosing produces the least toxicity. If daily doses are required, one study shows improved efficacy with no increase in adrenal suppression when administered at 3 p.m. rather than in the morning (Beam et al. 1992).</li> </ul>

## Long Term Control Medications for Asthma 1

**FIGURE 3–22. LONG-TERM CONTROL MEDICATIONS (CONTINUED)**

Name/Products (Listed Alphabetically)	Indications/Mechanisms	Potential Adverse Effects	Therapeutic Issues (Not All Inclusive)
<p><b>Cromolyn Sodium and Nedocromil</b></p>	<p><i>Indications</i></p> <ul style="list-style-type: none"> <li>■ Long-term prevention of symptoms in mild persistent asthma; may modify inflammation.</li> <li>■ Preventive treatment prior to exposure to exercise or known allergen.</li> </ul> <p><i>Mechanisms</i></p> <ul style="list-style-type: none"> <li>■ <b>Anti-inflammatory.</b> Blocks early and late reaction to allergen. Interferes with chloride channel function. Stabilizes mast cell membranes and inhibits activation and release of mediators from eosinophils and epithelial cells.</li> <li>■ Inhibits acute response to exercise, cold dry air, and SO<sub>2</sub>.</li> </ul>	<ul style="list-style-type: none"> <li>■ Cough and irritation.</li> <li>■ 15–20 percent of patients complain of an unpleasant taste from nedocromil.</li> </ul>	<ul style="list-style-type: none"> <li>■ Therapeutic response to cromolyn and nedocromil often occurs within 2 weeks, but a 4- to 6-week trial may be needed to determine maximum benefit.</li> <li>■ Dose of cromolyn by MDI (1 mg/puff) may be inadequate to affect airway hyperresponsiveness. Nebulizer delivery (20 mg/ampule) may be preferred for some patients.</li> <li>■ Safety is the primary advantage of these agents.</li> </ul>
<p><b>Immunomodulators</b></p> <p>Omalizumab (Anti-IgE)</p> <p>For subcutaneous use</p>	<p><i>Indications</i></p> <ul style="list-style-type: none"> <li>■ Long-term control and prevention of symptoms in adults (≥12 years old) who have moderate or severe persistent allergic asthma inadequately controlled with ICS.</li> </ul> <p><i>Mechanisms</i></p> <ul style="list-style-type: none"> <li>■ Binds to circulating IgE, preventing it from binding to the high-affinity (FcεRI) receptors on basophils and mast cells.</li> <li>■ Decreases mast cell mediator release from allergen exposure.</li> <li>■ Decreases the number of FcεR1s in basophils and submucosal cells.</li> </ul>	<ul style="list-style-type: none"> <li>■ Pain and bruising of injection sites has been reported in 5–20 percent of patients.</li> <li>■ Anaphylaxis has been reported in 0.2 percent of treated patients.</li> <li>■ Malignant neoplasms were reported in 0.5 percent of patients compared to 0.2 percent receiving placebo; relationship to drug is unclear.</li> </ul>	<ul style="list-style-type: none"> <li>■ Monitor patients following injection. Be prepared and equipped to identify and treat anaphylaxis that may occur.</li> <li>■ The dose is administered either every 2 or 4 weeks and is dependent on the patient's body weight and IgE level before therapy.</li> <li>■ A maximum of 150 mg can be administered in one injection.</li> <li>■ Needs to be stored under refrigeration at 2–8 °C.</li> <li>■ Whether patients will develop significant antibody titers to the drug with long-term administration is unknown.</li> </ul>

## Long Term Control Medications for Asthma

**FIGURE 3–22. LONG-TERM CONTROL MEDICATIONS (CONTINUED)**

Name/Products (Listed Alphabetically)	Indications/Mechanisms	Potential Adverse Effects	Therapeutic Issues (Not All Inclusive)
<b>Leukotriene Receptor Antagonists (LTRAs)</b>	<p><i>Mechanisms</i></p> <ul style="list-style-type: none"> <li>■ Leukotriene receptor antagonist; selective competitive inhibitor of CysLT<sub>1</sub> receptor.</li> </ul>		<ul style="list-style-type: none"> <li>■ May attenuate EIB in some patients, but less effective than ICS therapy (Vidal et al. 2001).</li> <li>■ Do not use LTRA + LABA as a substitute for ICS + LABA.</li> </ul>
Montelukast tablets and granules	<p><i>Indications</i></p> <ul style="list-style-type: none"> <li>■ Long-term control and prevention of symptoms in mild persistent asthma for patients ≥1 year of age. May also be used with ICS as combination therapy in moderate persistent asthma.</li> </ul>	<ul style="list-style-type: none"> <li>■ No specific adverse effects have been identified.</li> <li>■ Rare cases of Churg-Strauss have occurred, but the association is unclear.</li> </ul>	<ul style="list-style-type: none"> <li>■ A flat dose-response curve, without further benefit, if dose is increased above those recommended.</li> </ul>
Zafirlukast tablets	<ul style="list-style-type: none"> <li>■ Long-term control and prevention of symptoms in mild persistent asthma for patients ≥7 years of age. May also be used with ICS as combination therapy in moderate persistent asthma.</li> </ul>	<ul style="list-style-type: none"> <li>■ Postmarketing surveillance has reported cases of reversible hepatitis and, rarely, irreversible hepatic failure resulting in death and liver transplantation.</li> </ul>	<ul style="list-style-type: none"> <li>■ Administration with meals decreases bioavailability; take at least 1 hour before or 2 hours after meals.</li> <li>■ Zafirlukast is a microsomal P450 enzyme inhibitor that can inhibit the metabolism of warfarin. INRs should be monitored during coadministration.</li> <li>■ Patients should be warned to discontinue use if they experience signs and symptoms of liver dysfunction (right upper quadrant pain, pruritis, lethargy, jaundice, nausea), and patients' ALTs should be monitored.</li> </ul>
<b>5-Lipoxygenase Inhibitor</b>	<p><i>Mechanisms</i></p> <ul style="list-style-type: none"> <li>■ Inhibits the production of leukotrienes from arachidonic acid, both LTB<sub>4</sub> and the cysteinyl leukotrienes.</li> </ul>		
Zileuton tablets	<p><i>Indications</i></p> <ul style="list-style-type: none"> <li>■ Long-term control and prevention of symptoms in mild persistent asthma for patients ≥12 years of age.</li> <li>■ May be used with ICS as combination therapy in moderate persistent asthma in patients ≥12 years of age.</li> </ul>	<ul style="list-style-type: none"> <li>■ Elevation of liver enzymes has been reported. Limited case reports of reversible hepatitis and hyperbilirubinemia.</li> </ul>	<ul style="list-style-type: none"> <li>■ Zileuton is microsomal P450 enzyme inhibitor that can inhibit the metabolism of warfarin and theophylline. Doses of these drugs should be monitored accordingly.</li> <li>■ Monitor hepatic enzymes (ALT).</li> </ul>

## Short Term Control Medications for Asthma 1

**FIGURE 3–23. QUICK-RELIEF MEDICATIONS**

Name/Products	Indications/Mechanisms	Potential Adverse Effects	Therapeutic Issues
<p><b>Short-Acting Beta<sub>2</sub>-Agonists (SABA)</b></p> <p><i>Inhaled SABA:</i>                      Albuterol                      Levalbuterol                      Pirbuterol</p>	<p><i>Indications</i></p> <ul style="list-style-type: none"> <li>■ Relief of acute symptoms; quick-relief medication.</li> <li>■ Preventive treatment for EIB prior to exercise.</li> </ul> <p><i>Mechanisms</i></p> <ul style="list-style-type: none"> <li>■ <b>Bronchodilation.</b> Binds to the beta<sub>2</sub>-adrenergic receptor, producing smooth muscle relaxation following adenylate cyclase activation and increase in cyclic AMP producing functional antagonism of bronchoconstriction.</li> </ul>	<ul style="list-style-type: none"> <li>■ Tachycardia, skeletal muscle tremor, hypokalemia, increased lactic acid, headache, hyperglycemia. Inhaled route, in general, causes few systemic adverse effects. Patients with preexisting cardiovascular disease, especially the elderly, may have adverse cardiovascular reactions with inhaled therapy.</li> </ul>	<ul style="list-style-type: none"> <li>■ Drugs of choice for acute bronchospasm. Inhaled route has faster onset, fewer adverse effects, and is more effective than systemic routes. The less beta<sub>2</sub>-selective agents (isoproterenol, metaproterenol, isoetharine, and epinephrine) are not recommended due to their potential for excessive cardiac stimulation, especially in high doses. Oral systemic beta<sub>2</sub>-agonists are not recommended.</li> <li>■ For patients who have intermittent asthma, regularly scheduled daily use neither harms nor benefits asthma control (Drazen et al. 1996). Regularly scheduled daily use is not recommended.</li> <li>■ Regular use &gt;2 days/week for symptom control (not prevention of EIB), increasing use, or lack of expected effect indicates inadequate asthma control.</li> <li>■ For patients frequently using SABA, anti-inflammatory medication should be initiated or intensified.</li> <li>■ Levalbuterol at one-half the mcg dose produces clinically comparable bronchodilation and systemic side effects as racemic albuterol.</li> </ul>

## Short Term Control Medications for Asthma 1

**FIGURE 3–23. QUICK-RELIEF MEDICATIONS (CONTINUED)**

Name/Products	Indications/Mechanisms	Potential Adverse Effects	Therapeutic Issues
<b>Anticholinergics</b>  Ipratropium bromide	<i>Indications</i> <ul style="list-style-type: none"> <li>■ Relief of acute bronchospasm (See Therapeutic Issues column.).</li> </ul> <i>Mechanisms</i> <ul style="list-style-type: none"> <li>■ <b>Bronchodilation.</b> Competitive inhibition of muscarinic cholinergic receptors.</li> <li>■ Reduces intrinsic vagal tone of the airways. May block reflex bronchoconstriction secondary to irritants or to reflux esophagitis.</li> <li>■ May decrease mucous gland secretion.</li> </ul>	<ul style="list-style-type: none"> <li>■ Drying of mouth and respiratory secretions, increased wheezing in some individuals, blurred vision if sprayed in eyes. If used in the ED, produces less cardiac stimulation than SABAs.</li> </ul>	<ul style="list-style-type: none"> <li>■ Reverses only cholinergically mediated bronchospasm; does not modify reaction to antigen. Does not block EIB.</li> <li>■ Multiple doses of ipratropium in the ED provide additive effects to SABA.</li> <li>■ May be alternative for patients who do not tolerate SABA.</li> <li>■ Treatment of choice for bronchospasm due to beta-blocker medication.</li> <li>■ Has not proven to be efficacious as long-term control therapy for asthma.</li> </ul>
<b>Corticosteroids</b>  <i>Systemic:</i>  Methylprednisolone Prednisolone Prednisone	<i>Indications</i> <ul style="list-style-type: none"> <li>■ For moderate or severe exacerbations to prevent progression of exacerbation, reverse inflammation, speed recovery, and reduce rate of relapse.</li> </ul> <i>Mechanisms</i> <ul style="list-style-type: none"> <li>■ <b>Anti-inflammatory.</b> See figure 3–22.</li> </ul>	<ul style="list-style-type: none"> <li>■ Short-term use: reversible abnormalities in glucose metabolism, increased appetite, fluid retention, weight gain, facial flushing, mood alteration, hypertension, peptic ulcer, and rarely aseptic necrosis.</li> <li>■ Consideration should be given to coexisting conditions that could be worsened by systemic corticosteroids, such as herpes virus infections, varicella, tuberculosis, hypertension, peptic ulcer, diabetes mellitus, osteoporosis, and <i>Strongyloides</i>.</li> </ul>	<ul style="list-style-type: none"> <li>■ Short-term therapy should continue until patient's symptoms resolve. This usually requires 3–10 days but may require longer.                             <ul style="list-style-type: none"> <li>— Action may begin within an hour.</li> </ul> </li> <li>■ There is no evidence that tapering the dose following improvement is useful in preventing a relapse in asthma exacerbations.</li> <li>■ Other systemic corticosteroids such as hydrocortisone and dexamethasone given in equipotent daily doses are likely to be as effective as prednisolone.</li> </ul>

Key: ED, emergency department; EIB, exercise-induced bronchospasm

## Measurement of Efficacy of the Clinical Practice Guideline

Three elements are measured by Molina Healthcare to gauge the efficacy of the practitioner's compliance with the Clinical Practice Guideline.

These three measures are:

### 1) Healthcare Effectiveness Data and Information Set (HEDIS®) Measure:

Clinical Practice Guideline (CPG)	HEDIS® Measure	Measure
Managing Infants, Children and Adults with Asthma	Use of Appropriate Medications for People with Asthma	Ages 5-9
		Ages 10-17
		Ages 18-56
		Combined Rate

### 2) Clinician Assessment

Molina Healthcare of New Mexico monitors routine outpatient office visits to the PCP for Members with asthma to ensure that they are seen at least two (2) times in a calendar year for ongoing evaluation and management of asthma.

The Expert Panel recommends that patients who have intermittent or mild or moderate persistent asthma (i.e., requiring steps 1, 2, 3, or 4 treatment) that has been under control for at least 3 months should be seen by a clinician about every 6 months. Patients who have uncontrolled and/or severe persistent asthma (i.e., requiring steps 5 or 6 treatment) and those who need additional supervision to help them follow their treatment plan should be seen more often (EPR-2 1997).<sup>1</sup>

### 3) Asthma Action Plan

The Expert Panel recommends that clinicians provide to all patients who have asthma a written asthma action plan that includes instructions for (1) daily management and (2) recognizing and handling worsening asthma, including adjustment of dose of medications. Written action plans are particularly recommended for patients who have moderate or severe persistent asthma, a history of severe exacerbations, or poorly controlled asthma (**Evidence B**). Written asthma action plans may be based on PEF measurements or symptoms or both, depending on the preference of the patient and clinician (**Evidence B**). A peak-flow-based plan may be particularly useful for patients who have difficulty perceiving signs of worsening asthma (**Evidence D**).<sup>1</sup>

## References

1. National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Bethesda (MD): U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Heart, Lung and Blood Institute; 2007 Aug. 362 p.
2. HEDIS® 2009 Technical Specifications

National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Bethesda (MD): U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Heart, Lung and Blood Institute; 2007 Aug. 362 p. Quality and Peer Review Advisory Committee (QPRAC) Adopted: 2002 QPRAC Revision/Approval Date: 12/03 Clinical Quality Improvement Committee (CQIC) Revision/Approval Date: 6/05, 4/06, 10/07, 11/08. Quality Improvement Committee (QIC) Review Approval 4/09

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