

## 2007 KCQIC Guidelines for Management of Asthma in Individuals $\geq$ 12 years of Age

The following guidelines apply to management of patients in the ambulatory setting.

Population	Physician / Patient	Recommendations	Frequency	
Individuals age of $\geq$ 12 years of age (including lactating and pregnant women)	Confirm diagnosis / exclude treatable causes	<ul style="list-style-type: none"> <li>▪ Confirm DX: Obstruction of airways (wheeze, cough) - Episodic and recurring - Variable and at least partially reversible</li> <li>▪ Consider spirometry initially when clarifying DX (may also consider methacholine challenge) and repeat at least annually</li> <li>▪ Consider other disorders, especially if refractory to TX: GE reflux, recurrent sinusitis, CHF, COPD, foreign body aspiration, tumor, allergies, Vocal Cord Dysfunction (VCD)</li> </ul>	At initial visit / diagnosis, unexplained exacerbations	
	Initial physician steps	<ul style="list-style-type: none"> <li>▪ Start severity appropriate medication (especially inhaled steroids, <b>as indicated</b>)</li> <li>▪ Provide initial education on disease and self management</li> <li>▪ Create and reinforce asthma action plan. Should include rescue inhaler use and rescue medications, use of peak flow, etc.</li> <li>▪ Provide Influenza and Pneumococcal vaccinations as needed</li> </ul>	Early visits and Ongoing	
	Ongoing Physician adjustments (See back for additional information regarding asthma during pregnancy) <i>Stepwise Approach to Treatment Is Recommended</i>	<b>Stepwise Approach for Persistent Uncontrolled Asthma:</b> Each step should include patient education, environmental control and management of co-morbidities.		Initial, ongoing and worsening symptoms
		▪ <b>Step 1: Intermittent</b> does not require daily medication. Short acting beta <sub>2</sub> agonist as needed to treat symptoms		↑ Step up if needed
		▪ <b>Step 2: Persistent Asthma:</b> Preferred low dose inhaled corticosteroid (Daily/ BID) [A] Alternative (alphabetically) cromolyn <b>or</b> leukotriene modifier [A], nedocromil [A] <b>or</b> sustained released theophylline <sup>1</sup> to serum concentration of 5-15 mcg/ml [B]		
		▪ <b>Step 3:</b> Persistent Asthma: Daily low medium dose inhaled corticosteroid and long acting inhaled beta <sub>2</sub> agonist or increase inhaled corticosteroid within medium dose range [A] (Consider asthma specialist consultation) ▪ Alternative treatment: low dose inhaled corticosteroids and either leukotriene modifier [A], theophylline [B], or Zileuton[D]		Assess Control
		▪ <b>Step 4:</b> Persistent Asthma: Daily medium dose inhaled corticosteroid AND long acting inhaled beta <sub>2</sub> agonist [A] ▪ Alternative treatment: Medium dose inhaled corticosteroid AND either leukotriene modifier [B], theophylline [D], or Zileuton [D] (Consult with asthma specialist if Step 4 or higher is required).		↓ Step down if possible (and asthma is well controlled at least 3 months)
▪ <b>Step 5:</b> Persistent Asthma: Daily High dose inhaled corticosteroid AND long acting inhaled beta <sub>2</sub> agonist [A] ▪ Consider Omalizumab [D] for patients who have allergies				
▪ <b>Step 6:</b> Persistent Asthma: High dose inhaled corticosteroid long acting inhaled beta <sub>2</sub> agonist AND oral corticosteroid [A] ▪ Consider Omalizumab for patients who have allergies				
Physician Management of acute exacerbations	Physician Management of acute exacerbations	<ul style="list-style-type: none"> <li>▪ Refer to nurse educator (patient not understanding disease or no trained office staff to teach)</li> <li>▪ Provide and reinforce written asthma action plan (should include rescue inhaler use and rescue medications, use of peak flow, etc). Use of Peak Flow meter [B] to determine personal best</li> <li>▪ Provide education on self-management and controlling environmental factors that make asthma worse (e.g., allergens, irritants)</li> </ul>	<b>During</b> acute episode	
	Patient and Family education	<ul style="list-style-type: none"> <li>▪ Recognition and treatment of symptoms and when to seek medical attention</li> <li>▪ Appropriate use of peak flow meters, inhalers, and medication [B]</li> <li>▪ Avoid triggers of exacerbation such as cold air, smokes, mold, etc</li> <li>▪ Emphasize patient role in health status maintenance (e.g., smoking cessation, environmental control measures, and exercise pre-treatment)<sup>4</sup> [C]</li> </ul>	Initial and ongoing	
	Patient and Family self monitoring	<ul style="list-style-type: none"> <li>▪ <b>Diary and asthma action plan</b></li> <li>▪ Peak Flow meter [A]</li> <li>▪ Prevent triggers of exacerbation</li> </ul>	Initial & with increasing symptoms	

<sup>1</sup>Theophylline is a fourth tier steroid sparing agent.

<sup>2</sup>Make repeated attempts to reduce systemic steroids and maintain control with high-dose inhaled corticosteroid.

<sup>3</sup>Specialist referral: Difficulty maintaining control, frequent office visits, loss time from work or school (>4 days/yr), life-threatening asthma attack or exacerbation that requires ER or inpatient care, and /or required chronic use of oral steroids.

<sup>4</sup>Patients with exercise-induced bronchospasm should take two to four puffs of an inhaled beta<sub>2</sub> agonist 5 to 60 minutes before exercise.

Reference: Expert Panel Report 3 (EPR 3): Guidelines for the Diagnosis and Management of Asthma (2007) National Heart Lung and Blood Institute at

<http://www.nhlbi.nih.gov/guidelines/asthma/index.htm>

Levels of Evidence for the most significant recommendation: A= randomized controlled trials; B = controlled trials, no randomizations; C= observational studies; D= opinion of expert panel

This guideline represents steps to be taken for the usual patient with persistent asthma. Individual patient considerations and advances in medical science may supercede or modify these recommendations. Kansas City Quality Improvement Consortium. Revised and approved 12/2007

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Components of Severity		Classification of Asthma Severity $\geq 12$ years of Age and older			
		Intermittent	Persistent		
			Mild	Moderate	Severe
<b>Impairment</b>  Normal FEV <sub>1</sub> /FVC 12-19 yrs 85% 20-39 yrs 80% 40-59 yrs 75% 60-80 yrs 70%	Symptoms	$\leq 2$ days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	$\leq 2$ x/month	3-4x/month	> 1x/week but not nightly	Often 7x/week
	Short acting beta <sub>2</sub> agonist use for symptom control (not prevention of exacerbations)	$\leq 2$ days/week	>2 days/week but not daily, and not more than 1x on any day	Daily	Several times per day
	Interference with normal activity	None	Minor limitations	Some Limitation	Extremely Limited
	Lung Function	<ul style="list-style-type: none"> <li>▪ Normal FEV<sub>1</sub> between exacerbations</li> <li>▪ FEV<sub>1</sub> &gt; 80% predicted</li> <li>▪ FEV<sub>1</sub>/FVC normal</li> </ul>	<ul style="list-style-type: none"> <li>▪ FEV<sub>1</sub> &gt; 80% predicted</li> <li>▪ FEV<sub>1</sub>/FVC normal</li> </ul>	<ul style="list-style-type: none"> <li>▪ FEV<sub>1</sub> or PEF <math>\geq 60\%</math> but &lt;80% predicted</li> <li>▪ FEV<sub>1</sub>/FVC reduced 5%</li> </ul>	<ul style="list-style-type: none"> <li>▪ FEV<sub>1</sub> &lt;60% predicted</li> <li>▪ FEV<sub>1</sub>/FVC reduced 5%</li> </ul>
<b>Risk</b>	Exacerbations requiring oral systemic corticosteroids	Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any severity category. Relative annual risk of exacerbations may be related to FEV <sub>1</sub>			
<b>Recommended Step for Initiating Treatment</b>		Step 1	Step 2	Step 3	Step 4 and 5
In 2-6 weeks, evaluate level of asthma control that is achieved and adjust therapy accordingly.					

- The stepwise approach is meant to assist, not replace, the clinical decision making required to meet individual patient needs.
- Level of severity is determined by assessment of both impairment and risk. Assess impairment domain by patient's/caregiver's recall of previous 2—4 weeks and spirometry. Assign severity to the most severe category in which any feature occurs.
- At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma severity. In general, more frequent and intense exacerbations (e.g., requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate greater underlying disease severity. For treatment purposes, patients who had  $\geq 2$  exacerbations requiring oral systemic corticosteroids in the past year may be considered the same as patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.

### Asthma in Pregnancy (Refer to specialist (Allergist or Pulmonologist))

*Maintaining adequate control of asthma during pregnancy is important for the health and well being of both the mother and baby. The largest and most recent studies suggest that maternal asthma increases the risk of perinatal mortality, preeclampsia, preterm birth, and low birth weight of infants.*

**Classify severity: assign patient to most severe step to which any feature occurs.**

**Gain control quickly as possible, consider a short course of systemic corticosteroid, then step down to the least medication necessary to maintain control.**

**Instruct patients to be attentive to fetal movement.** Serial ultrasound (US) starting at 32 weeks gestation may be considered for patients who have suboptimally controlled asthma and for women with moderate to severe asthma. Ultra Sound may be helpful after recovery from a severe exacerbation. (Fetal activity is monitored by observing whether fetal kick counts decrease over time).

Minimize use of short acting inhaled beta2 agonist (Albuterol is preferred SABA). Inhaled corticosteroids are preferred treatment for long term control medication

**In managing acute exacerbation: if response to treatment is:**

<b>Good</b> and appropriate fetal activity	▪ continue with short acting inhaled beta <sub>2</sub> agonist
<b>Incomplete and</b> decreased fetal activity	▪ continue short acting inhaled beta <sub>2</sub> agonist and add oral corticosteroid
<b>Poor</b>	▪ continue short acting inhaled beta <sub>2</sub> agonist and oral corticosteroid. If distress is severe consider hospitalization

Adapted from: Expert Panel Report 3 (EPR 3): Guidelines for the Diagnosis and Management of Asthma (2007) National Heart Lung and Blood Institute at <http://www.nhlbi.nih.gov/guidelines/asthma/index.htm>

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