



## Complete Summary

---

### GUIDELINE TITLE

Management of asthma in youth 12 years and older and adults.

### BIBLIOGRAPHIC SOURCE(S)

Michigan Quality Improvement Consortium. Management of asthma in youth 12 years and older and adults. Southfield (MI): Michigan Quality Improvement Consortium; 2008 Jul. 1 p.

### GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Michigan Quality Improvement Consortium. Management of persistent asthma in adults and children older than 5 years of age. Southfield (MI): Michigan Quality Improvement Consortium; 2006 Aug. 1 p.

## COMPLETE SUMMARY CONTENT

SCOPE  
METHODOLOGY - including Rating Scheme and Cost Analysis  
RECOMMENDATIONS  
EVIDENCE SUPPORTING THE RECOMMENDATIONS  
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS  
QUALIFYING STATEMENTS  
IMPLEMENTATION OF THE GUIDELINE  
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES  
IDENTIFYING INFORMATION AND AVAILABILITY  
DISCLAIMER

## SCOPE

### DISEASE/CONDITION(S)

Asthma

### GUIDELINE CATEGORY

Counseling  
Evaluation  
Management

Risk Assessment  
Treatment

### **CLINICAL SPECIALTY**

Allergy and Immunology  
Family Practice  
Internal Medicine  
Pediatrics  
Pulmonary Medicine

### **INTENDED USERS**

Advanced Practice Nurses  
Health Plans  
Physician Assistants  
Physicians

### **GUIDELINE OBJECTIVE(S)**

- To achieve significant, measurable improvements in the management of asthma through the development and implementation of common evidence-based clinical practice guidelines
- To design concise guidelines that are focused on key management components of asthma to improve outcomes

### **TARGET POPULATION**

Youth 12 years and older and adults with asthma

### **INTERVENTIONS AND PRACTICES CONSIDERED**

#### **Evaluation/Risk Assessment**

1. Assessment of asthma severity including symptoms, interference with normal activity, night awakenings, short-acting beta<sub>2</sub>-agonist use, lung function, and exacerbations requiring oral steroids
2. Assessment of asthma control

#### **Management/Treatment**

Step approach for asthma management

1. Patient education and environmental control
2. Step 1: short-acting beta<sub>2</sub>-agonist as required
3. Step 2: low-dose inhaled corticosteroid; alternative: cromolyn, leukotriene receptor antagonist, nedocromil, or theophylline
4. Step 3: low-dose inhaled corticosteroid plus long-acting beta<sub>2</sub>-agonist or medium-dose inhaled corticosteroid; alternative: low-dose inhaled corticosteroid plus either a leukotriene receptor antagonist, theophylline, or zileuton

5. Step 4: medium-dose inhaled corticosteroid plus long-acting beta<sub>2</sub>-agonist; alternative: medium-dose inhaled corticosteroid plus either a leukotriene receptor antagonist, theophylline, or zileuton
6. Step 5: high-dose inhaled corticosteroid plus long-acting beta<sub>2</sub>-agonist; considering omalizumab for patients with immunoglobulin E (IgE)-mediated allergies
7. Step 6: high-dose inhaled corticosteroid plus long-acting beta<sub>2</sub>-agonist plus oral systemic corticosteroid; considering omalizumab for patients with IgE-mediated allergies
8. Considering consultation with asthma specialist at step 3

## **MAJOR OUTCOMES CONSIDERED**

Not stated

## **METHODOLOGY**

### **METHODS USED TO COLLECT/SELECT EVIDENCE**

Searches of Electronic Databases

### **DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE**

The Michigan Quality Improvement Consortium (MQIC) project leader conducts a search of current literature in support of the guideline topic. Computer database searches are used to identify published studies, existing protocols and/or national guidelines on the selected topic developed by organizations such as the American Diabetes Association, American Heart Association, American Academy of Pediatrics, etc. If available, clinical practice guidelines from participating MQIC health plans and Michigan health systems are also used to develop a framework for the new guideline.

### **NUMBER OF SOURCE DOCUMENTS**

Not stated

### **METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE**

Weighting According to a Rating Scheme (Scheme Given)

### **RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE**

#### **Levels of Evidence for the Most Significant Recommendation**

- A. Randomized controlled trials
- B. Controlled trials, no randomization
- C. Observational studies
- D. Opinion of expert panel

## **METHODS USED TO ANALYZE THE EVIDENCE**

Review

## **DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE**

Not stated

## **METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Expert Consensus

## **DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Using information obtained from literature searches and available health plan guidelines on the designated topic, the Michigan Quality Improvement Consortium (MQIC) project leader prepares a draft guideline to be reviewed by the medical directors' committee at one of their scheduled meetings. Priority is given to recommendations with [A] and [B] levels of evidence (see "Rating Scheme for the Strength of the Evidence" field).

The initial draft guideline is reviewed, evaluated, and revised by the committee resulting in draft two of the guideline. Additionally, the Michigan Academy of Family Physicians participates in guideline development at the onset of the process and throughout the guideline development procedure. The MQIC guideline feedback form and draft two of the guideline are distributed to the medical directors, as well as the MQIC measurement and implementation group members, for review and comments. Feedback from members is collected by the MQIC project leader and prepared for review by the medical directors' committee at their next scheduled meeting. The review, evaluation, and revision process with several iterations of the guideline may be repeated over several meetings before consensus is reached on a final draft guideline.

## **RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS**

Not applicable

## **COST ANALYSIS**

A formal cost analysis was not performed and published cost analyses were not reviewed.

## **METHOD OF GUIDELINE VALIDATION**

External Peer Review  
Internal Peer Review

## **DESCRIPTION OF METHOD OF GUIDELINE VALIDATION**

When consensus is reached on the final draft guideline, the medical directors approve the guideline for external distribution to practitioners with review and comments requested via the Michigan Quality Improvement Consortium (MQIC) health plans (project leader distributes final draft to medical directors' committee, measurement and implementation groups to solicit feedback).

The MQIC project leader also forwards the approved guideline draft to appropriate state medical specialty societies for their input. After all feedback is received from external reviews, it is presented for discussion at the next scheduled committee meeting. Based on feedback, subsequent guideline review, evaluation, and revision may be required prior to final guideline approval.

The MQIC Medical Directors approved this updated guideline in July 2008.

**RECOMMENDATIONS**

**MAJOR RECOMMENDATIONS**

The level of evidence grades (A-D) are provided for the most significant recommendations and are defined at the end of the "Major Recommendations" field.

**Assess Asthma Severity to Decide Initial Therapy**

<b>Classification of Asthma Severity</b>					
<b>Components of Severity</b>		<b>Intermittent</b>	<b>Persistent (Mild)</b>	<b>Persistent (Moderate)</b>	<b>Persistent (Severe)</b>
<b>Impairment</b>  Normal forced expiratory volume in one second (FEV <sub>1</sub> )/forced vital capacity (FVC): 8-19 years: 85% 20-39 years: 80% 40-59 years: 75% 60-80 years: 70%	Symptoms	≤ 2 days/week	> 2 days/week, not daily	Daily	Throughout day
	Nighttime awakenings	≤ 2x/month	3-4x/month	> 1x/week, not nightly	Often, 7x/week
	Short-acting beta <sub>2</sub> -agonist use for symptoms	≤ 2 days/week	> 2 days/week, not daily and not > 1/day	Daily	Several times daily
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function:	Normal forced expiratory volume in one second (FEV <sub>1</sub> ) between			

Classification of Asthma Severity						
Components of Severity		Intermittent	Persistent (Mild)	Persistent (Moderate)	Persistent (Severe)	
		exacerbations				
	FEV <sub>1</sub>	> 80%	> 80%	60% - 80%	< 60%	
	FEV <sub>1</sub> /FVC	Normal	Normal	Reduced 5%	Reduced > 5%	
<b>Risk</b>	Exacerbations requiring oral steroids	0-1/year	≥ 2/year			
		<ul style="list-style-type: none"> <li>Consider severity &amp; interval since last exacerbation. Frequency &amp; severity may fluctuate over time for patient of any severity class.</li> <li>Relative annual risk of exacerbations maybe related to FEV<sub>1</sub>.</li> </ul>				
<b>Recommended step for initiating treatment</b>		<b>Step 1</b>	<b>Step 2</b>	<b>Step 3</b>		
		Re-evaluate control in 2 to 6 weeks and adjust therapy accordingly.				

**On Follow-Up, Assess Asthma Control and Step Therapy Up or Down**

Classification of Asthma Control					
Components of Control		Well-Controlled	Not Well-Controlled	Very Poorly Controlled	
<b>Impairment</b>	Symptoms	≤ 2 days/week	>2 days/week	Throughout day	
	Nighttime awakenings	≤ 2x/month	1-3x/week	≥ 4x/week	
	Short-acting beta <sub>2</sub> -agonist use for symptoms	≤ 2 days/week	>2 days/week	Several times/day	
	Interference with normal activity	None	Some limitation	Extremely limited	
	FEV <sub>1</sub> or peak flow	>80%	60% - 80%	<60%	
<b>Risk</b>	Exacerbations requiring oral steroids	0-1x/year	≥ 2x/year		
	Treatment-related adverse	Intensity of medication-related side effects does not correlate to specific levels of control, but should be considered in overall assessment of risk.			

Classification of Asthma Control			
Components of Control	Well-Controlled	Not Well-Controlled	Very Poorly Controlled
	effects		
<b>Recommended action for treatment</b>	<ul style="list-style-type: none"> <li>• Maintain current step</li> <li>• Regular follow-up every 1-6 months</li> <li>• Consider step down if well-controlled <math>\geq 3</math> months</li> </ul>	<ul style="list-style-type: none"> <li>• Step up 1 step</li> <li>• Re-evaluate in 2-6 weeks</li> </ul>	<ul style="list-style-type: none"> <li>• Consider oral steroids</li> <li>• Step up 1-2 steps</li> <li>• Re-evaluate in 2 weeks</li> </ul>

**Step Approach for Asthma Management (use lowest treatment level required to maintain control)**

- Quick relief medication for all patients: Inhaled short-acting beta<sub>2</sub>-agonist (SABA) as needed for symptoms **[A]**. Intensity of treatment depends on severity of symptoms; up to 3 treatments at 20-minute intervals as needed. Short course of systemic oral corticosteroids may be needed. Use of SABA >2 days a week for symptom control (not prevention of exercise-induced bronchospasm) indicates inadequate control and the need to step up treatment.
- Patient education and environmental control at each step
- Persistent asthma: Daily long-term control therapy **[A]**; consult with asthma specialist if step 4 or higher **[D]**, or progressive decreased lung function. Consider consultation at step 3 **[D]**.

*Intermittent Asthma*

Step 1

Preferred: Short-acting beta<sub>2</sub>-agonist as required

*Mild Persistent Asthma*

Step 2

Preferred: Low-dose inhaled corticosteroid **[A]**

Alternative: Cromolyn or leukotriene receptor antagonist; or nedocromil; or theophylline **[B]**

*Moderate Persistent Asthma*

### Step 3

Preferred: Low-dose inhaled corticosteroid + long-acting beta<sub>2</sub>-agonist **[A]** or medium-dose inhaled corticosteroid **[A]**

Alternative: Low-dose inhaled corticosteroid + either a leukotriene receptor antagonist **[A]** theophylline **[B]**, or zileuton **[D]**

### Step 4

Preferred: Medium-dose inhaled corticosteroid + long-acting beta<sub>2</sub>-agonist **[B]**

Alternative: Medium-dose inhaled corticosteroid + either a leukotriene receptor antagonist, theophylline **[B]**, or zileuton **[D]**

### *Severe Persistent Asthma*

### Step 5

Preferred: High-dose inhaled corticosteroid + long-acting beta<sub>2</sub>-agonist **[B]** and consider omalizumab for patients who have immunoglobulin E (IgE)-mediated allergies **[B]**

### Step 6

Preferred: High-dose inhaled corticosteroid + long-acting beta<sub>2</sub>-agonist + oral systemic corticosteroid **[D]** and consider omalizumab for patients who have IgE-mediated allergies **[B]**

### **Definitions:**

### **Levels of Evidence for the Most Significant Recommendations**

- A. Randomized controlled trials
- B. Controlled trials, no randomization
- C. Observational studies
- D. Opinion of expert panel

### **CLINICAL ALGORITHM(S)**

None provided

## **EVIDENCE SUPPORTING THE RECOMMENDATIONS**

### **TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS**

The type of evidence is provided for the most significant recommendations (See "Major Recommendations" field).

This guideline is based on the 2007 *National Asthma Education and Prevention Program Expert Panel Report 3, Guidelines for the Diagnosis and Management of Asthma*, National Heart, Lung and Blood Institute ([www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)).

## **BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS**

### **POTENTIAL BENEFITS**

Through a collaborative approach to developing and implementing common clinical practice guidelines and performance measures for asthma in youth 12 years and older and adults, Michigan health plans will achieve consistent delivery of evidence-based services and better health outcomes. This approach also will augment the practice environment for physicians by reducing the administrative burdens imposed by compliance with diverse health plan guidelines and associated requirements.

### **POTENTIAL HARMS**

Treatment-related adverse effects

## **QUALIFYING STATEMENTS**

### **QUALIFYING STATEMENTS**

This guideline lists core management steps. Individual patient considerations and advances in medical science may supersede or modify these recommendations.

## **IMPLEMENTATION OF THE GUIDELINE**

### **DESCRIPTION OF IMPLEMENTATION STRATEGY**

Approved Michigan Quality Improvement Consortium (MQIC) guidelines are disseminated through email, U.S. mail, and websites.

The MQIC project leader prepares approved guidelines for distribution. Portable Document Format (PDF) versions of the guidelines are used for distribution.

The MQIC project leader distributes approved guidelines to MQIC membership via email.

The MQIC project leader submits request to website vendor to post approved guidelines to MQIC website ([www.mqic.org](http://www.mqic.org)).

The MQIC project leader completes a statewide mailing of the comprehensive set of approved guidelines and educational tools annually. The guidelines and tools are distributed in February of each year to physicians in the following medical specialties:

- Family Practice

- General Practice
- Internal Medicine
- Other Specialists for which the guideline is applicable (e.g., endocrinologists, allergists, pediatricians, cardiologists, etc.)

The statewide mailing list is derived from the Blue Cross Blue Shield of Michigan (BCBSM) provider database. Approximately 95% of the state's M.D.'s and 96% of the state's D.O.'s are included in the database.

The MQIC project leader submits request to the National Guideline Clearinghouse (NGC) to post approved guidelines to NGC website ([www.guideline.gov](http://www.guideline.gov)).

## **IMPLEMENTATION TOOLS**

Chart Documentation/Checklists/Forms  
Tool Kits

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

## **INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES**

### **IOM CARE NEED**

Living with Illness

### **IOM DOMAIN**

Effectiveness  
Patient-centeredness

## **IDENTIFYING INFORMATION AND AVAILABILITY**

### **BIBLIOGRAPHIC SOURCE(S)**

Michigan Quality Improvement Consortium. Management of asthma in youth 12 years and older and adults. Southfield (MI): Michigan Quality Improvement Consortium; 2008 Jul. 1 p.

### **ADAPTATION**

This guideline is based on the 2007 National Asthma Education and Prevention Program Expert Panel Report 3, Guidelines for the Diagnosis and Management of Asthma, National Heart, Lung and Blood Institute ([www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)).

### **DATE RELEASED**

2002 Aug (revised 2008 Jul)

**GUIDELINE DEVELOPER(S)**

Michigan Quality Improvement Consortium - Professional Association

**SOURCE(S) OF FUNDING**

Michigan Quality Improvement Consortium

**GUIDELINE COMMITTEE**

Michigan Quality Improvement Consortium Medical Director's Committee

**COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE**

Physician representatives from participating Michigan Quality Improvement Consortium health plans, Michigan State Medical Society, Michigan Osteopathic Association, Michigan Association of Health Plans, Michigan Department of Community Health and Michigan Peer Review Organization

**FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST**

Standard disclosure is requested from all individuals participating in the Michigan Quality Improvement Consortium (MQIC) guideline development process, including those parties who are solicited for guideline feedback (e.g., health plans, medical specialty societies). Additionally, members of the MQIC Medical Directors' Committee are asked to disclose all commercial relationships as well.

**GUIDELINE STATUS**

This is the current release of the guideline.

This guideline updates a previous version: Michigan Quality Improvement Consortium. Management of persistent asthma in adults and children older than 5 years of age. Southfield (MI): Michigan Quality Improvement Consortium; 2006 Aug. 1 p.

**GUIDELINE AVAILABILITY**

Electronic copies: Available in Portable Document Format (PDF) from the [Michigan Quality Improvement Consortium Web site](#).

**AVAILABILITY OF COMPANION DOCUMENTS**

The following are available:

- Asthma action plan. Electronic copies available in Portable Document Format (PDF) from the [Michigan Quality Improvement Consortium Web site](#).
- Asthma control plan for children. Electronic copies available in Portable Document Format (PDF) from the [Michigan Quality Improvement Consortium](#)

[Web site](#). See the related QualityTool summary on the [Health Care Innovations Exchange Web site](#).

- Michigan asthma resource kit (MARK). Electronic copies available in Portable Document Format (PDF) from the [Asthma Initiative of Michigan Web site](#).

## **PATIENT RESOURCES**

None available

## **NGC STATUS**

This NGC summary was completed by ECRI on April 14, 2004. The information was verified by the guideline developer on July 27, 2004. This NGC summary was updated by ECRI on December 10, 2004. This NGC summary was updated by ECRI on December 10, 2004. The updated information was verified by the guideline developer on January 21, 2005. This summary was updated by ECRI on December 5, 2005 following the U.S. Food and Drug Administration (FDA) advisory on long-acting beta2-adrenergic agonists (LABA). This NGC summary was updated by ECRI on October 13, 2006. The updated information was verified by the guideline developer on November 3, 2006. This NGC summary was updated by ECRI Institute on November 25, 2008. The updated information was verified by the guideline developer on December 4, 2008.

## **COPYRIGHT STATEMENT**

This NGC summary is based on the original guideline, which may be reproduced with the citation developed by the Michigan Quality Improvement Consortium.

## **DISCLAIMER**

### **NGC DISCLAIMER**

The National Guideline Clearinghouse™ (NGC) does not develop, produce, approve, or endorse the guidelines represented on this site.

All guidelines summarized by NGC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public or private organizations, other government agencies, health care organizations or plans, and similar entities.

Guidelines represented on the NGC Web site are submitted by guideline developers, and are screened solely to determine that they meet the NGC Inclusion Criteria which may be found at <http://www.guideline.gov/about/inclusion.aspx>.

NGC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or clinical efficacy or effectiveness of the clinical practice guidelines and related materials represented on this site. Moreover, the views and opinions of developers or authors of guidelines represented on this site do not necessarily state or reflect those of NGC, AHRQ, or its contractor ECRI Institute, and inclusion

or hosting of guidelines in NGC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding guideline content are directed to contact the guideline developer.

© 1998-2008 National Guideline Clearinghouse

Date Modified: 12/22/2008

