



## Complete Summary

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### GUIDELINE TITLE

Management of asthma in children 0 to 4 years.

### BIBLIOGRAPHIC SOURCE(S)

Michigan Quality Improvement Consortium. Management of asthma in children 0 to 4 years. 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 infants and children 5 years of age and younger. Southfield (MI): Michigan Quality Improvement Consortium; 2006 Aug. 1 p.

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## SCOPE

### DISEASE/CONDITION(S)

Asthma

### GUIDELINE CATEGORY

Counseling  
Evaluation  
Management

Risk Assessment  
Treatment

### **CLINICAL SPECIALTY**

Allergy and Immunology  
Family Practice  
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**

Children 0 to 4 years of age 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, 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 or montelukast
4. Step 3: medium-dose inhaled corticosteroid
5. Step 4: medium-dose inhaled corticosteroid plus either a long-acting beta<sub>2</sub>-agonist or montelukast
6. Step 5: high-dose inhaled corticosteroid plus either a long-acting beta<sub>2</sub>-agonist or montelukast

7. Step 6: high-dose inhaled corticosteroid plus oral systemic corticosteroid plus either a long-acting beta<sub>2</sub>-agonist or montelukast
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 Recommendations**

- 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**

Components of Severity		Intermittent	Persistent (Mild)	Persistent (Moderate)	Persistent (Severe)
<b>Impairment</b>	Symptoms	≤ 2 days/week	> 2 days/week, not daily	Daily	Throughout day
	Nighttime awakenings	0	1-2x/month	3-4x/month	> 1x/week
	Short-acting beta <sub>2</sub> -agonist use for symptoms	≤ 2 days/week	> 2 days/week, not daily	Daily	Several times daily
	Interference with normal activity	None	Minor limitations	Some limitations	Extremely limited
<b>Risk</b>	Exacerbations requiring oral steroids	0-1/year	≥ 2 in 6 months requiring oral steroids, <b>or</b> ≥ 4 in 1 year lasting > 1 day <b>and</b> have risk factors for persistent asthma		
		Consider severity & interval since last exacerbation. Frequency & severity may fluctuate over time for patient of any severity class.			
<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**

Components of Control		Well-Controlled	Not Well-Controlled	Very Poorly Controlled
<b>Impairment</b>	Symptoms	≤ 2 days/week,	>2	Throughout day

Components of Control		Well-Controlled	Not Well-Controlled	Very Poorly Controlled
		but not >1/day	days/week or many times on ≤2 days/week	
	Nighttime awakenings	≤ 1x/month	> 1x/month	> 1x/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
<b>Risk</b>	Exacerbations requiring oral steroids	0-1x/year	2-3x/year	> 3x/year
	Treatment-related adverse effects	Intensity of medication-related side effects does not correlate to specific levels of control, but should be considered in overall assessment of risk.		
<b>Recommended treatment and follow-up</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 ≥3 months</li> </ul>	Step up 1 step	<ul style="list-style-type: none"> <li>Consider oral steroids</li> <li>Step up 1-2 steps</li> </ul>
			<ul style="list-style-type: none"> <li>Re-evaluate in 2-6 weeks</li> <li>If no clear benefit in 4-6 weeks, consider alternative diagnosis or adjust therapy <b>[D]</b></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. 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 step 4 or higher **[D]**; 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 Montelukast **[B]**

### *Moderate Persistent Asthma*

#### Step 3

Preferred: Medium-dose inhaled corticosteroid **[D]**

#### Step 4

Preferred: Medium-dose inhaled corticosteroid + either a long-acting beta<sub>2</sub>-agonist or montelukast **[D]**

### *Severe Persistent Asthma*

#### Step 5

Preferred: High-dose inhaled corticosteroid + either a long-acting beta<sub>2</sub>-agonist or montelukast **[D]**

#### Step 6

Preferred: High-dose inhaled corticosteroid + oral systemic corticosteroid + either a long-acting beta<sub>2</sub>-agonist or montelukast **[D]**

### **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 children 0 to 4 years, 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 children 0 to 4 years. 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**

2006 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 infants and children 5 years of age and younger. 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 October 16, 2006. The information was verified by the guideline developer on November 3, 2006. This NGC summary was updated by ECRI Institute on November 24, 2008. The updated information was verified by the guideline developer on December 4, 2008.

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