Complete Summary

GUIDELINE TITLE

Adult asthma clinical practice guidelines.

BIBLIOGRAPHIC SOURCE(S)

Kaiser Permanente Care Management Institute. Adult asthma clinical practice guidelines. Oakland (CA): Kaiser Permanente Care Management Institute; 2007 Apr. 197 p. [209 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Asthma

GUIDELINE CATEGORY

Evaluation
Management
Prevention
Risk Assessment
Treatment

CLINICAL SPECIALTY

Allergy and Immunology
Emergency Medicine
Family Practice
Nursing
Pulmonary Medicine

INTENDED USERS

Advanced Practice Nurses
Managed Care Organizations
Nurses
Pharmacists
Physician Assistants
Physicians
Respiratory Care Practitioners

GUIDELINE OBJECTIVE(S)

To provide recommendations (evidence-based and consensus-based) on the diagnosis, treatment, and management of asthma in adult patients

TARGET POPULATION

Adults with asthma, including pregnant women

Note: These guidelines are intended for adult patients with asthma. For patients aged 18 and younger, please refer to the Kaiser Permanente National Pediatric Asthma Guidelines.

INTERVENTIONS AND PRACTICES CONSIDERED

1. Stepwise Medical Management of Persistent Asthma
    - Low-to-medium dose inhaled corticosteroid (ICS)
    - ICS combined with inhaled long-acting beta-agonist (LABA)
    - Leukotriene antagonists
    - Addition of recombinant humanized monoclonal anti-IgE immunoglobulin in select patients
    - Referral to specialty care

    Note: Theophylline, cromolyn sodium nedocromil, adrenergic beta-agonist, cyclosporine, anti-tumor necrosis factor, ipratropium bromide, and IV immunoglobulin were considered but not recommended for stepwise medical management of persistent asthma

2. Assessment of Asthma Control
    - Use of Asthma Control Test (ACT), Asthma Therapeutic and Assessment Questionnaire (ATAQ), and Asthma Control Questionnaire (ACQ)
    - Assessment of previous history
    - Evaluation of forced expiratory volume in 1 second (FEV_1)
3. Treatment of Acute Exacerbations
    - Racemic albuterol for mild to moderate exacerbations
    - Addition of ipratropium bromide corticosteroids (oral or parenteral) in severe exacerbations

- Inhaled heliox (optional)
- Intravenous magnesium sulfate (optional)
- Treatment after discharge for acute exacerbation
    - Oral corticosteroid (e.g., prednisone)
    - Intramuscular depot methylprednisolone
    - High-dose inhaled corticosteroid

4. Adult Asthma Self-Management Program
5. Immunotherapy for Persistent Asthma
6. Drug Therapy for Exercise-Induced Asthma
    - Inhaled short-acting beta-agonist (e.g., albuterol) prior to exercise
    - Checking inhaler technique
    - Ensuring adequate inhaled corticosteroid treatment
    - Montelukast, cromolyn sodium, nedocromil, ipratropium bromide, intermittent inhaled beta-agonist (optional)
7. Drug Therapy for Pregnant Women with Asthma
    - Maintenance therapy as for non-pregnant asthmatics
        - Inhaled budesonide
        - Inhaled albuterol
        - Leukotriene modifiers (not recommended routinely)
    - Treatment of acute exacerbations
        - Inhaled corticosteroid
        - Inhaled short-acting beta-agonist
        - Oral corticosteroid

MAJOR OUTCOMES CONSIDERED

- Quality of life
- Missed work and school days
- Unscheduled visits
- Hospitalization
- Day/night asthma symptoms (coughing, wheezing, shortness of breath)
- Short-acting beta-agonist use
- Relapse of acute exacerbation
- Mortality
- Time to recovery or time to discharge from emergency department (ED) or hospital
- Referral to ED
- Length of stay in hospital or ED
- Forced expiratory volume in one second (FEV_1)
- Peak expiratory flow rate (PEFR)
- Oxygen saturation and respiratory rate
- Cesarean delivery rate
- Preterm or perinatal mortality
- Still birth or anomalies, preterm or low birth weight

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Guidelines are developed using an "evidence-based methodology" that involves a systematic literature search, critical appraisal of the research design and statistical results of relevant studies, and grading of the sufficiency (quantity, quality, consistency, and relevancy) of the evidence for drawing conclusions.

During the guideline development process, the Guideline Development Team reviews evidence published in peer-reviewed scientific journals, existing evidence-based guidelines, and consensus statements from external professional societies and government health organizations, and clinical expert opinion of Kaiser Permanente regional specialty groups.

For details of the literature search, including databases searched and search terms for each clinical question, see the original guideline document.

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

Refer to Table 2 in the Appendix of the original guideline document for the system for grading the strength of a body of evidence.

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

The Guidelines Project Management Team performed systematic reviews of the medical literature on each of the clinical questions identified by the workgroup.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

To develop a guideline, the Kaiser Permanente Care Management Institute (CMI) consultants work with a multidisciplinary team of physicians and other health care professionals. This Guideline Development Team consists of a core

multidisciplinary group of physicians representing the medical specialties most affected by the guideline topic, and other content experts from disciplines such as pharmacy, nursing, and social work, as appropriate. The members of the Guideline Development Team are endorsed by the National Guideline Directors from their region.

During the guideline development process, the Guideline Development Team reviews evidence published in peer-reviewed scientific journals, existing evidence-based guidelines, consensus-based statements from external professional societies and government health organizations, and clinical expert opinion of Kaiser Permanente regional specialty groups. The members of the Guideline Development Team develop the guideline and facilitate the information exchange in both directions on behalf of the region that they represent. This process should include obtaining the buy-in of the local champions regarding the guideline so that it will be implemented once published.

To keep current with changing medical practices, all guidelines are reviewed, and, if appropriate, revised at least every two years. To develop the Adult Asthma Guideline, released in April 2007, a multidisciplinary, interregional Guideline Development Team first met in October 2006 to define the scope of the guideline. The Project Management Team then performed systematic reviews of the medical literature on each of the clinical questions identified by the Guideline Development Team, assembled the evidence, and developed draft recommendations for review by the Guideline Development Team. All of the recommendations and supporting evidence were reviewed in depth by the Guideline Development Team in a series of conference calls from October 2006 through April 2007.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Recommendations are classified as either "evidence-based (A-D, I)" or "consensus-based."

- *Evidence-based*: Sufficient number of high-quality studies from which to draw a conclusion, and the recommended practice is consistent with the findings of the evidence. A recommendation can also be considered "evidence-based" if there is insufficient evidence and no practice is recommended.
- *Consensus-based*: Insufficient evidence and a practice is recommended based on the consensus or expert opinion of the Guideline Development Team (GDT).

Label and Language of Recommendations*

Label	Evidence-Based Recommendations
Evidence-Based (A)	**Language**: [a] The intervention is strongly recommended for eligible patients. **Evidence**: The intervention improves important health outcomes, based on good evidence, and the Guideline Development Team concludes that the benefits substantially outweigh the harms and costs.

Label	Evidence-Based Recommendations
	Evidence Grade: Good.
Evidence-Based (B)	**Language**: [a] The intervention is recommended for eligible patients. **Evidence**: The intervention improves important health outcomes, based on 1) good evidence that benefits outweigh harms and costs; or 2) fair evidence that benefits substantially outweigh harms and costs. **Evidence Grade**: Good or Fair.
Evidence-Based (C)	**Language**: [a] No recommendation for or against routine provision of the intervention. (At the discretion of the Guideline Development Team, the recommendation may use the language "option," but must list all the equivalent options.) **Evidence**: Evidence is sufficient to determine the benefits, harms, and costs of an intervention, and there is at least fair evidence that the intervention improves important health outcomes. But the Guideline Development Team concludes that the balance of the benefits, harms, and costs is too close to justify a general recommendation. **Evidence Grade:** Good or Fair.
Evidence-Based (D)	**Language**: [a] Recommendation against routinely providing the intervention to eligible patients. **Evidence**: The Guideline Development Team found at least fair evidence that the intervention is ineffective, or that harms or costs outweigh benefits. **Evidence Grade**: Good or Fair.
Evidence-Based (I)	**Language**: [a] The evidence is insufficient to recommend for or against routinely providing the intervention. (At the discretion of the Guideline Development Team, the recommendation may use the language "option," but must list all the equivalent options.) **Evidence**: Evidence that the intervention is effective is lacking, of poor quality, or conflicting and the balance of benefits, harms, and costs cannot be determined. **Evidence Grade**: Insufficient.
Consensus-Based	**Language**: [a] The language of the recommendation is at the discretion of the Guideline Development Team, subject to approval by the National Guideline Directors. **Evidence**: The level of evidence is assumed to be "Insufficient" unless otherwise stated. However, do not use the A, B, C, D, or I labels, which are intended only to be used for evidence-based recommendations. **Evidence Grade**: Insufficient, unless otherwise stated.
For the rare consensus-based recommendations that have "Good" or "Fair" evidence, the evidence must support a different recommendation, because if the evidence were	

Label	Evidence-Based Recommendations
good or fair, the recommendation would usually be evidence-based. In this kind of consensus-based recommendation, the evidence grade should point this out (e.g., "Evidence Grade: Good, supporting a different recommendation.")	

[a]All statements specify the population for which the recommendation is intended.

*Recommendations should be labeled and given an evidence grade. The evidence grade should appear in the rationale. Evidence is graded with respect to the degree it supports the specific clinical recommendation. For example, there may be good evidence that Drugs 1 and 2 are effective for Condition A, but no evidence that Drug 1 is more effective than Drug 2. If the recommendation is to use either Drug 1 or 2, the evidence is good. If the recommendation is to use Drug 1 in preference to Drug 2, the evidence is insufficient.

COST ANALYSIS

Published cost analyses were reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The National Guideline Directors' Guideline Quality Committee reviewed and approved the guidelines in April 2007.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions of the levels of evidence (evidence-based A-D, I and consensus-based) are provided at the end of the "Major Recommendations" field.

I. **Stepwise Medical Management of Persistent Asthma**

A. **First-Line Drug Therapy For Patients With Persistent Asthma**

1. It is strongly recommended that patients with persistent asthma be started on a low to medium dose of inhaled corticosteroid (ICS) as a first-line treatment. **(Evidence-Based: A)**
2. Inhaled long-acting beta-agonists (LABA), leukotriene antagonists, cromolyn sodium, or nedocromil are NOT recommended as first-line drug therapy. **(Evidence-Based: D)**

B. **Second-Line Drug Therapy for Patients with Persistent Asthma**

1. An inhaled long-acting beta-agonist (LABA) combined with an inhaled corticosteroid (ICS) is strongly recommended for patients whose persistent asthma is chronically uncontrolled on ICS alone (Refer to the section "Assessing Asthma Control in Patients with Asthma" below). **(Evidence-Based: A)**

2. Leukotriene antagonists are an option for those who cannot tolerate or do not respond to long-acting beta-agonists. **(Consensus-Based)**

C. **Third-Line Drug Therapy for Patients with Persistent Asthma**

1. The addition of recombinant humanized monoclonal anti-IgE immunoglobulin is recommended for patients who:
   - Meet the criteria of the Kaiser Permanente guidelines for the use of omalizumab (Xolair)

     and

   - Have had a least one exacerbation resulting in a hospitalization or emergency department visit, or
   - Have had two or more exacerbations requiring systemic corticosteroids in the past 12 months, despite being on high-dose ICS and LABA. **(Evidence-Based: A)**
2. There is at present insufficient evidence to support the addition of theophylline, cromolyn sodium, nedocromil, adrenergic beta-agonists, cyclosporine, anti-tumor necrosis factor, ipratropium, or IV immunoglobulin (IVIG) for patients whose persistent asthma is chronically uncontrolled on combination therapy plus rescue medication (Refer to" Assessing Asthma Control in Patients with Asthma" below). **(Evidence-Based: I)**
3. It is recommended that patients requiring third-line medication therapy be referred for specialty care. **(Consensus-Based)**

II. Assessing Asthma Control in Patients with Asthma

A. Asthma Control

1. The Asthma Control Test (ACT), Asthma Control Questionnaire (ACQ), and Asthma Therapy Assessment Questionnaire (ATAQ) are all options for validated questionnaires for the assessment of asthma control. **(Evidence-Based: B)**
2. It is recommended that the ACT be used to assess the control of asthma. **(Consensus-Based)**

B. Risk of Future Exacerbations

1. History of previous asthma exacerbations is a risk factor for future asthma exacerbations and should be elicited. **(Evidence-Based: B)**
2. Evaluation of forced expiratory volume in one second (FEV_1) is recommended to assess risk for future asthma exacerbations. **(Evidence-Based: B)**

C. Risk of Decline in Lung Function

Evaluation of asthma history (duration and severity of asthma), low FEV_1 or FEV_1/forced vital capacity (FEV_1/FVC) in childhood, smoking, lack of using ICS, atopy, and airway hyperresponsiveness may be used to assess risk for future decline in lung function. **(Evidence-Based: B)**

D. **Complicating Factors and Concomitant Disease in the Assessment of Asthma**

Clinicians should evaluate a patient for comorbid conditions or alternative diagnosis when asthma is not well controlled. Such conditions include but are not limited to:

- Gastroesophageal reflux disease
- Vocal cord dysfunction
- Allergic bronchopulmonary aspergillosis
- Obesity
- Obstructive sleep disorder
- Rhinitis/sinusitis
- Alpha-1 antitrypsin deficiency
- Chronic obstructive pulmonary disease (COPD)
- Smoking
- Panic
- Anxiety
- Depression

(Consensus-Based)

III. **Treatment of Acute Exacerbations to First-Line for Mild to Moderate Exacerbations**

A. **Initial Treatment for Acute Exacerbation in an Acute Care Setting**

1. Racemic albuterol is recommended for people who present with a mild to moderate (peak expiratory flow rate [PEF] and/or FEV_1 ≥50% predicted and/or oxygen saturation ≥92% on room air) acute asthma exacerbation. The recommended dose is 2.5 to 5 mg by nebulizer every 20 minutes, repeated up to three times in one hour, or by metered dose inhaler (MDI) with spacer at four puffs every 20 minutes up to three times. **(Evidence-Based: B)**
2. Levalbuterol offers no advantage in terms of improved efficacy or safety over albuterol in the treatment of acute exacerbations. **(Evidence-Based: B)**

B. **Treatment of Severe Exacerbations (PEF or FEV_1 <50% Predicted on Entry) or Refractory to First-Line Therapy**

1. For the treatment of severe asthma exacerbations refractory to albuterol alone, or in patients presenting with a FEV_1 or PEFR <50% predicted, ipratropium bromide added to inhaled short-acting beta-agonist therapy is recommended. **(Evidence-Based: B)**

2. Early intervention with corticosteroids is recommended in this population. **(Evidence-Based: B)**

3. Oral or parenteral corticosteroids have been shown to be equally effective options. **(Evidence-Based: C)**

4a. Inhaled heliox is not recommended as second-line therapy in the treatment of acute exacerbations of asthma. **(Evidence-Based: D)**

4b. Inhaled heliox is an option in patients who are not responding to any of the above therapy and in an effort to avoid intubation. **(Consensus-Based)**

5a. Intravenous magnesium sulfate is not recommended as second-line therapy in the treatment of acute asthma exacerbations. **(Evidence-Based: D)**

5b. Intravenous magnesium sulfate is an option in patients who are not responding to any of the above therapy and in an effort to avoid intubation. **(Consensus-Based)**

C. **Discharge After Treatment of Acute Exacerbation**

1. After discharge for an acute exacerbation of asthma, options for treatment are:
   - Oral corticosteroid (if an oral corticosteroid is used for less than 14 days, a taper is not needed)
   - Intramuscular depot methylprednisolone, 160 mg
   - High-dose inhaled corticosteroid; or
   - High-dose inhaled corticosteroid and oral corticosteroid (inhaled corticosteroid for three weeks at 1600 mcg per day budesonide or equivalent, and 50 mg per day oral prednisone for seven days). **(Evidence-Based: C)**
2. Oral prednisone at the dose range 40 to 60 mg/day (or equivalent) is recommended. **(Consensus-Based)**
3. Intramuscular corticosteroid is an option for patients with a history of non-adherence. **(Consensus-Based)**
4. High-dose inhaled corticosteroid (dose range 1600 mcg to 3200 mcg per day budesonide or equivalent) is option for patients with a history of severe reactions to oral or intramuscular corticosteroid. **(Consensus-Based)**
5. Maintenance dosing of inhaled corticosteroid should be continued or initiated after treatment of acute exacerbation. **(Consensus-Based)**

IV. Adult Asthma Self-Management Program

A. Elements and Content of an Adult Asthma Self-Management Program

1. Self-management patient education, appropriate to severity and individual understanding, should be provided to all patients with asthma.

   Individualized self-management patient education should be interactive and include at a minimum:

   - Self-monitoring of either symptoms or peak flow (including journals, workbooks, etc.)
   - Regular medical practitioner review

- A written action plan based on monitoring results (either peak flow or symptom-based)
- Action plan should provide for self-adjustment of medications based on monitoring results

(Evidence-Based: B)

2. A shared decision-making approach should be used to decide whether the patient should monitor using either a peak flow meter or by symptoms. For patients who may be poor perceivers of symptoms, peak flow-based self-management is recommended. For patients with a history of non-adherence, a symptom-based plan is recommended. **(Consensus-Based)**
3. For patients at home whose asthma control starts to deteriorate (based on symptoms and/or peak flow, i.e., dropping to yellow zone), doubling the ICS dose is not recommended. **(Evidence-Based: D)**
4. For patients at home whose asthma control starts to deteriorate (based on symptoms and/or peak flow, i.e., dropping to yellow zone), quadrupling the ICS dose or taking oral corticosteroids is an option. **(Consensus-Based)**

B. **Best Methods for Achieving Adherence in Patients with Persistent Asthma**

1. Interactive training and education (see guideline on Adult Asthma Self-Management Program), including telephonic case management, that teaches basic skills, simplifies the regimen, and provides reinforcement is recommended for achieving adherence in patients with asthma. **(Evidence-Based: B)**
2. Diagnosis and asthma treatment should be approached with the awareness that asthma severity, ethnicity, culture, English language proficiency, age, and socioeconomic considerations may affect patients' self-efficacy and perception of the condition, which in turn may be directly correlated with adherence to a specific course of treatment. **(Consensus-Based)**
3. Approaching adherence to asthma drug therapy should include:
    - Assessment of patient's understanding of the condition
    - Screening assessment for depression
    - Identification of self-efficacy (confidence)
    - Assessment of cultural health beliefs and health behaviors regarding asthma or disease management in general
    - Oral and written communication in patient's primary language of preference
    - Explanation of the rationale behind maintenance therapy
    - Assessment and acknowledgment of patient preference to one type of delivery device (or one versus two devices) over another, especially with regard to controller therapy
    - Shared decision-making between the patient and provider is recommended to achieve patient adherence.

(Consensus-Based)

V. **Immunotherapy for Persistent Asthma**

Specific immunotherapy is an option in patients with a significant allergic component (clear evidence of the relationship between symptoms and exposure to an allergen) to their asthma. **(Consensus-Based)**

VI. **Drug Therapy for Adult Patients with Exercise-Induced Asthma**

1. For exercise-induced asthma, start therapy with a short-acting beta-agonist (such as albuterol) prior to exercise. **(Evidence-Based: A)**
2. An inhaled short-acting beta-agonist is recommended 5 to 15 minutes prior to exercise. **(Consensus-Based)**
3. For those patients where pretreatment with an inhaled short-acting beta-agonist (5 to 15 minutes prior to exercise) does not adequately prevent symptoms, check inhaler technique, assess to ensure that any persistent asthma is being treated adequately with inhaled corticosteroids, and verify the initial diagnosis. **(Consensus-Based)**
4. Treatment with montelukast, cromolyn sodium, or nedocromil, ipratropium bromide, or intermittent use of inhaled long-acting beta-agonists are options for patients who do not tolerate short-acting beta-agonist or for whom short-acting beta-agonist is ineffective. **(Consensus-Based)**

VII. **Drug Therapy for Pregnant Women with Asthma**

A. **Maintenance Therapy for Pregnant Women with Asthma**

1. Pregnant women with asthma should be treated the same as non-pregnant asthmatics except for the following specifications:
    - Budesonide is the preferred inhaled corticosteroid (the only category B corticosteroid)

      (Note: Drugs assigned a category B rating are not likely to pose a threat to the fetus from the evidence in animal studies, but no well-controlled studies have been performed in pregnant women. However, a drug may also receive a category B rating if animal studies have shown evidence of fetus damage but the same drug tested on pregnant women showed no increased risk, which was the case for budesonide.)

    - If there is concern about losing asthma control by switching inhaled corticosteroids and a patient's asthma is already well controlled on a different inhaled corticosteroid, there is no need to change to budesonide.
    - Albuterol is the preferred short-acting beta-agonist.

2. There is little experience with leukotriene modifiers in pregnancy. Of these, zileuton is not recommended for use in pregnancy; and zafirlukast and montelukast should only be used for otherwise recalcitrant asthma that has responded to these medications prior to pregnancy. **(Consensus-Based)**

B. **Therapy for Pregnant Women with Asthma After an Acute Exacerbation**

For pregnant women discharged after hospitalization for an acute exacerbation of their asthma, an inhaled corticosteroid, as needed inhaled short-acting beta-agonist, and an oral corticosteroid are recommended. **(Consensus-Based)**

(Note: For management of an acute asthma exacerbation, see guideline on acute exacerbations in adults.)

Definitions:

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Label and Language of Recommendations*

Label	Evidence-Based Recommendations
Evidence-Based (A)	**Language**: [a] The intervention is strongly recommended for eligible patients. **Evidence**: The intervention improves important health outcomes, based on good evidence, and the Guideline Development Team concludes that the benefits substantially outweigh the harms and costs. **Evidence Grade**: Good.
Evidence-Based (B)	**Language**: [a] The intervention is recommended for eligible patients. **Evidence**: The intervention improves important health outcomes, based on 1) good evidence that benefits outweigh harms and costs; or 2) fair evidence that benefits substantially outweigh harms and costs. **Evidence Grade**: Good or Fair.
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Label	Evidence-Based Recommendations
	Evidence Grade: Good or Fair.
Evidence-Based (D)	**Language**: [a] Recommendation against routinely providing the intervention to eligible patients. **Evidence**: The Guideline Development Team found at least fair evidence that the intervention is ineffective, or that harms or costs outweigh benefits. **Evidence Grade**: Good or Fair.
Evidence-Based (I)	**Language**: [a] The evidence is insufficient to recommend for or against routinely providing the intervention. (At the discretion of the Guideline Development Team, the recommendation may use the language "option," but must list all the equivalent options.) **Evidence**: Evidence that the intervention is effective is lacking, of poor quality, or conflicting and the balance of benefits, harms, and costs cannot be determined. **Evidence Grade**: Insufficient.
Consensus-Based	**Language**: [a] The language of the recommendation is at the discretion of the Guideline Development Team, subject to approval by the National Guideline Directors. **Evidence**: The level of evidence is assumed to be "Insufficient" unless otherwise stated. However, do not use the A, B, C, D, or I labels, which are intended only to be used for evidence-based recommendations. **Evidence Grade**: Insufficient, unless otherwise stated.
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[a]All statements specify the population for which the recommendation is intended.

*Recommendations should be labeled and given an evidence grade. The evidence grade should appear in the rationale. Evidence is graded with respect to the degree it supports the specific clinical recommendation. For example, there may be good evidence that Drugs 1 and 2 are effective for Condition A, but no evidence that Drug 1 is more effective than Drug 2. If the recommendation is to use either Drug 1 or 2, the evidence is good. If the recommendation is to use Drug 1 in preference to Drug 2, the evidence is insufficient.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is specifically stated for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate prevention, treatment, and management of asthma in adults to control symptoms and decrease the incidence of exacerbations

POTENTIAL HARMS

- Side effects of pharmacological agents
- *Leukotriene modifiers*. Zileuton is not recommended for use in pregnancy; and zafirlukast and montelukast should only be used for otherwise recalcitrant asthma that has responded to these medications prior to pregnancy.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These guidelines are informational only. They are not intended or designed as a substitute for the reasonable exercise of independent clinical judgment by practitioners, considering each patient's needs on an individual basis.
- Guideline recommendations apply to populations of patients. Clinical judgment is necessary to design treatment plans for individual patients.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Quick Reference Guides/Physician Guides

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

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Kaiser Permanente Care Management Institute. Adult asthma clinical practice guidelines. Oakland (CA): Kaiser Permanente Care Management Institute; 2007 Apr. 197 p. [209 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2007 Apr

GUIDELINE DEVELOPER(S)

Kaiser Permanente Care Management Institute - Managed Care Organization

SOURCE(S) OF FUNDING

Kaiser Permanente Care Management Institute

GUIDELINE COMMITTEE

Kaiser Permanente Adult Asthma Guidelines Development Team

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Team Members: Heather Burton, MD, Internal Medicine, KP- Colorado; Jonathan Gordon, MD, Family Medicine Physician, KP- Colorado; Cynthia Lamb, RN, Asthma Care Manager, KP- Colorado; Sam Moss, MD, Primary Care Physician, KP-Georgia; Al Krouse, MD, Allergist, KP-Group Health Cooperative; Michael Wanderer, MD, Family Practice Physician, KP-Group Health Cooperative; Matthew Lau, MD, Allergist, KP-Hawaii; Patricia Casey, Content Director, KP-Mid-Atlantic States; Betty Chang, MD, Allergist, KP-Mid-Atlantic States; Harriet Charney, Regional Health Education, KP-Northern California; Ken Green, MD, Primary Care, KP-Northern California; Kathleen Martin, Guideline Project Manager, KP-Northern California; Guillermo Mendoza, MD, Allergist, KP-Northern California; Andrea Wagner, MD, Emergency, KP-Northern California; Donna Erbs – Clinical Systems Implementation Specialist, KP-Northwest; Fredrick Gill, MD, Allergy/Immunology, KP-Northwest; Sherre Stephens, MD, Internal Medicine, KP-Northwest; Marta Vielhaber, MD, Allergist, KP-Ohio; Natalie Iwamiya, Pharm.D, Pharmacist, KP-Southern California; Richard Roth, MD, Allergist, KP-Southern California; Michael X Schatz, MD, Allergist, KP-Southern California; Joel Whittaker, Analyst, KP-Southern California

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: None available

Print copies: Available from the Kaiser Permanente Care Management Institute, One Kaiser Plaza, 16th Floor, Oakland, CA 94612

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Adult asthma clinical practice guidelines. Oakland (CA): Kaiser Permanente Care Management Institute; 2007 Apr. 9 p.

Electronic copies: Not available at this time.

Print copies: Available from the Kaiser Permanente Care Management Institute, One Kaiser Plaza, 16th Floor, Oakland, CA 94612

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI Institute on October 26, 2007. The information was verified by the guideline developer on December 17, 2007.

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