

TO: Children First Medical Group Physicians

FROM: Steven Yedlin, MD,
Chief Medical Officer
Medical Director

DATE: January 3, 2008

RE: Asthma Clinical Practice Guideline Revision

Children First Medical Group is pleased to provide you with this update to the office-based Asthma Clinical Practice Guideline for children. The purpose of this guideline is to assist you in developing a treatment and action plan for managing your patients with asthma. This guideline follows the new National Heart, Lung and Blood Disease Institute protocol. This protocol is available in full on the NHLBI web site.

A multidisciplinary team representing allergists, pulmonologists, primary care physicians, and nurse educators reviewed this guideline. Key components include clinical practice recommendations for diagnosis, classification, treatment, and monitoring of care as well as quality of life. Also included is a concise form listing the doses of bronchodilators and anti-inflammatory medicines, a community resource listing and educational materials that may be copied and passed out to patients. The included CD has copies of all the documents as well as NHLBI Expert Panel Report.

Should you have any questions, please contact our Provider Relations Department at (510) 428-3154.

Acknowledgments

Children First Medical Group would like to thank the following individuals for their contribution in developing the Asthma Clinical Practice Guidelines.

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This guideline is based on the NIH/NHLBI sponsored Expert Panel Report 3 (EPR-3): Guidelines for the Diagnosis and Management of Asthma. The entire report, with supplementary references and highlighted changes from the previous guideline, is available on the NHLBI website; <http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf>. Illustrations and figures were taken from the site and document for this CPG.

Table of Contents

Acknowledgments.....	i
Table of Contents.....	ii
Introduction.....	1
Goals of Therapy.....	1
Assessment/Classification of Asthma Severity.....	2
Monitoring Care.....	3
Education.....	4
Control Environmental Factors and Co-morbid Conditions.....	4
Treatment and Medications	5
Referral to a Specialist.....	7
Quality of Life Issues	7
Resources	8

Introduction

The purpose of the Asthma Clinical Practice Guideline is to assist the clinician in developing a treatment and action plan for all patients with asthma regardless of severity.

The Stepwise Approach for Managing Asthma tools include the guides to classify severity, the stepwise approach to medication use and the chart for assessing asthma control. Dr. Hardy has provided the compact three-page color chart that includes all three age groups in one form. We have also provided individual two page black and white guides that are separated into the individual age groups. The guides contain identical classifications for severity and recommended treatments and may be used interchangeably. These charts should be reviewed as you read through this guideline.

There are significant changes recommended in the management of asthma. The changes are divided into the areas of care as outlined here:

The four components of care:

- 1. Assessment and Monitoring**
- 2. Education**
- 3. Control Environmental Factors and Co-morbid Conditions**
- 4. Medications**

- New focus on monitoring asthma control as the goal for asthma therapy as distinct from classifying asthma severity.
- New focus on impairment (the frequency and intensity of symptoms and functional limitations) and risk (the chance of exacerbations, progressive decline in lung function or adverse effects of medications) as separate issues that may respond differently to treatment.
- Modification of the stepwise management of asthma.
 - Division into three age groups; 0-4 years, 5-11 years, and 12 years and up.
 - Division into six distinct steps of treatment
 - Medications repositioned in treatment steps
- New emphasis on patient education in multiple encounter settings and efforts to control environmental factors and co-morbid conditions.
- Modification of the management of asthma exacerbations with simplified classification of severity.

It is strongly recommended that providers with any significant number of asthma patients review the entire summary of the Expert Panel Report-3 at: <http://www.nhlbi.nih.gov/guidelines/asthma/asthsumm.htm>.

Goals of Therapy

The goals of therapy should be clear to the physician and efforts made to ensure that the patient and family are clear on these as well. This should allow better compliance and higher satisfaction with care.

First, reduce impairment. Treatment should prevent chronic and troublesome symptoms such as coughing and feeling short of breath as well as allow normal activity levels. Controller medications should be adjusted to minimize the need for frequent use of quick-relief medications.

Second, reduce risk. Try to prevent recurrent exacerbations that lead to ED visits and hospitalization. Optimize treatment to avoid progressive deterioration of pulmonary function and adverse or side effects from medications.

Patients must be closely followed with regular office visits to ensure compliance and control of the disease process.

Assessment Classification of Asthma Severity

BEFORE THERAPY IS STARTED, classify severity according to the clinical features of the child's asthma. **AFTER OPTIMAL THERAPY IS ATTAINED**, the child's asthma severity can be classified according to the level of treatment needed to maintain control. It is not unusual for the clinical features of asthma to overlap. Assign classification by the most severe step in which any feature occurs.

Included in the documents are charts for each age group, giving classification of asthma severity based on the components of severity. Impairment is measured based on four items.

- Frequency of symptoms.
- Number of nighttime awakenings.
- Frequency of use of short acting beta-agonists.
- Symptoms interfering with normal activity.

The risk component of severity is assessed by exacerbations requiring oral systemic steroids. The charts include recommendations for the initial step to start therapy based on the severity.

NOTES:

- Patients should be assigned to the most severe step in which any feature occurs. Clinical features for individual patients may overlap across steps.
- Patients at any level of severity of chronic asthma can have mild, moderate, or severe exacerbations of asthma. Some patients with intermittent asthma experience severe and life-threatening exacerbations separated by long periods of normal lung function and no symptoms.
- Patient with two or more asthma exacerbations per week (i.e., progressively worsening symptoms that may last hours or days) tend to have moderate-to-severe persistent asthma.
- Spirometry is a better test than PEF if available.

Monitoring Care

Periodic Assessments

Regular repeated office visits are needed to monitor asthma control and to determine if goals of therapy are being met. Measurement of the following is recommended.

1. Signs and symptoms of asthma
2. Pulmonary function by spirometry or PEF
3. Ability to participate in all desired activities
4. History of asthma exacerbations
5. Pharmacotherapy
6. Patient-provider communication and patient satisfaction
7. Medication usage: monitor quick relief and controller refills

Many studies suggest that monitoring Albuterol usage and refill patterns may be one of the most important ways to accurately assess how much trouble a patient is having with asthma.

The recommended aid for assessment of asthma symptoms is the **Asthma Control Test**, included in this packet. It is one of the easiest to use and has versions for both the 5-11 age group as well as the over 12 group. We recommend you incorporate this into your office registration process. Patients and parents can complete it in just a few minutes and bring it into the exam room for your review. Educate them to understand that if a score of less than 20 is obtained, it means **out of control** and that an assessment of therapy is needed. Review the current plan to check for compliance, environmental changes or comorbidities. A step up in therapy may be needed. Use the included Stepwise Approach to guide any changes.

The Asthma Control Test may also be used at home to help patients and parents know how to use their Asthma Action Plan. A score of 20 or higher means Green Zone, continue on current plan. A score of 16-19 means Yellow Zone Caution and a score of less than 15 means Red Zone, seek help immediately.

Visit Frequency

1. **Routine – Recommended every 2-3 months, minimum every 6 months**
2. **Follow-up is recommended within one week after acute exacerbations and one month after any medication changes.**
3. **Clinician assessment and patient self-assessment are the primary methods of monitoring care.**

Peak Expiratory Flow Measurement

1. **At the time of initial assessment**
2. **After treatment is initiated and symptoms have stabilized**
3. **At least every 6 months to one year**

When available, Spirometry tests are recommended as more specific than the peak expiratory flow measurement.

Education

The understanding of asthma by the patient and family is essential for long-term control and good outcome. Education about the disease and re-enforcement is needed at every patient encounter. Recommend Asthma Education classes for parents and child. Patients should be trained to recognize symptom patterns indicating inadequate asthma control and need for additional therapy. Peak flow monitoring at home is recommended for patients with moderate to severe persistent asthma.

Basic facts about asthma

Inflammation is the underlying problem. It leads to the airway hyper-responsiveness and obstruction that give rise to the clinical symptoms.

Role of medications

Long-term control medications are used to reduce inflammation and prevent symptoms. They must be taken daily and should be taken even when the patient is feeling well.

Quick-relief medications provide fast relief of symptoms by relaxing airway muscles. They do not provide long-term relief. The use of quick-relief medications more than two days per week indicates the need to start or increase long-term control medications.

Patient Skills

Review the use of inhalers and other devices to deliver medications. Handouts for patients are included in this packet.

Discuss possible environmental agents that may cause worsening of symptoms and work out a plan to remove or avoid them as much as possible.

Be sure they have their current asthma action plan. Review the plan with them to be sure they understand how to assess their symptoms and level of control. They should know how to adjust the medications when their asthma is worsening and when to get help. The action plans are included in four languages.

Additional resources for asthma education are listed in the appendix.

Control Environmental Factors and Co-morbid Conditions

Reducing exposure to irritants and allergens and better control of co-morbid conditions can significantly reduce inflammation, symptoms and medication needs. Evaluate the role of allergens in each patient and determine the value of skin testing. Consider immunotherapy for patients with a clear relationship between symptoms and a specific allergen. Help parents develop a multifaceted program to control allergens in the home. Consider influenza vaccination to help decrease the risk of complications from influenza in the asthmatic patient.

Effective therapy for gastro-esophageal reflux, rhinitis and sinusitis will improve control. Management of obesity with weight loss may also improve control. A handout is included that may help identify issues for individual patients and families. Review it with them as part of the educational process and again at follow-up visits, especially if there are problems with control.

Treatment and Medications

Stepwise Approach to Managing Asthma in Children

Included in the packet, are two versions of the recommended step-wise approach. The first is a three page summary developed by Dr. Hardy and her pulmonary group that includes plans for all three age groups in a single document. It is color coded by age for ease of use. The second version contains the same recommendations but in individual two page summaries, divided by age group. You may use whichever version is comfortable for you. The information is the same.

Each includes the guide to asthma severity, enabling classification either prior to treatment or after stabilizing therapy. The second part is the guide to assessing asthma control. Remember to assess control based on the worst classification of control. The guide then gives a recommendation for treatment action based on the step-wise method. The third part is the step-wise guide. This is based on the patient's current level of care and the need to step-up or step-down treatment based on the patient's current status. If the asthma is classified as not well or very poorly controlled, a step-up as recommended in the assessment guide will be needed. If the asthma is assessed as well controlled, a step-down could be considered.

Careful clinical judgment and consideration is needed in decisions on where to start therapy and when a step-down in treatment is acceptable.

The medication guide from the Expert Panel Report is attached as a separate document. Please refer to it as needed for recommended medications and dosages.

Gaining Control of Asthma

The physician's judgment of an individual patient's needs and circumstances will determine at what step to initiate therapy. In the opinion of the Expert Panel, **the preferred approach is to give therapy at a higher level to achieve rapid control and then step down to the minimum therapy needed to maintain control.** Start with more intensive therapy in order to more rapidly suppress airway inflammation and thus gain prompt control. If control is not achieved with initial therapy (e.g., within 1 month), the step selected, the therapy in the step, and possibly the diagnosis, should be reevaluated.

MAINTAINING CONTROL

Increases or decreases in medications may be needed as asthma severity and control vary over time.

Step Down Therapy

Gradually reduce or "step down" long-term-control medications after three months of well controlled persistent asthma. Any change in therapy requires close monitoring at frequent intervals.

Inhaled steroids may be reduced about 25 percent every 2 to 3 months until the lowest dose required to maintain control is reached. For patients with persistent asthma, anti-inflammatory medications should be continued.

Step Up Therapy

The presence of one or more indicators of poor asthma control may suggest a need to increase or “step up” to the next level of therapy. Before increasing therapy, alternative reasons for poorly controlled asthma, such as poor compliance or any change in environment, should be considered. Referral to a specialist for co-management or consultation may be appropriate. **Any change in therapy requires close monitoring at frequent intervals.**

When to Start Systemic Steroids

In addition, a three to ten day course of oral steroids may be needed to reestablish control during a period of gradual deterioration or a moderate-to-severe exacerbation. If symptoms do not recur after the course of steroids (and peak flow remains normal), the patient should continue in the same step. However, if the steroid course controls symptoms for less than 1-2 weeks, or if courses of steroids are repeated frequently, the patient should move to the next higher step in therapy.

Systemic steroids should be used anytime you feel the patient has signs and symptoms of active or impending status asthmaticus. Steroids can be added to established treatment programs that include both rescue and controller medication or as primary therapy along with other medications depending on the patient’s clinical condition. Some suggestions when using steroids:

- Use enough. Dose your patient at higher doses rather than lower doses. A recommendation: Prednisone or its equivalent steroid preparation – 1mg/kg/day up to 60 mg
- Always accompany steroid use with both rescue and controller medication.
- Talk with parents realistically about risk and benefits. A one to two week course of Prednisone has no significant adrenal suppressive potential.
- Develop an action plan with the patient and family such that should such a problem recur, they can start the steroids if necessary should they not be able to contact you in a timely manner.

For patients who are taking oral steroids daily on a long-term basis, referral for consultation or care by an asthma specialist should be considered and is recommended. Patients should be closely monitored for adverse side effects. Continuous attempts should be made to reduce daily use of oral steroids when asthma is controlled:

- Maintain patients on the lowest possible dose of oral steroids (daily dose or on alternate days).
- Use high doses of inhaled steroids to eliminate or reduce the need for oral steroids.

Asthma Action Plan

The Asthma Action Plan is an integral part of patient care that helps the patient and family have better control of their lives and an ability to deal with changes in symptoms without having to rely on medical assistance. The plan should be reviewed at every patient visit and changed as needed to reflect the current management. The asthma control test may be used to help the family assess the need for changes in therapy on the Asthma Action Plan. A score of 20 or higher means Green Zone, continue on current plan. A score of 16-19 means Yellow Zone Caution and a score of less than 15 means Red Zone, seek help immediately.

The basic form is included in the packet, in each of four languages and at two age levels. A new Asthma Action Plan is in development. We will forward that to you when it becomes available. The instructions normally included with the forms have been deleted as these have not been updated.

Referral to a Specialist

In many instances, referrals to a pulmonary or allergy specialist can assist you in the care of your patient. Here are some suggestions of clinical situations in which a referral may be helpful.

- Patient has a life threatening exacerbation
- Patient not meeting goals of therapy after 3-6 months of treatment
- Patient requires hospitalization
- Systemic steroid use more than twice in one year
- Poor compliance to established asthma action plans.
- Additional diagnostic tests are indicated (allergy skin testing, complete PFTs, bronchoscopy)
- Co-morbidities complicate treatment

1. Consider referral to a Pulmonologist:

For moderate disease to severe disease that is difficult to control.

Many times these patients have associated pulmonary conditions that might warrant a different type of intervention.

2. Consider referral to an Allergist:

For patients with persistent asthma.

Children, much more than adults, often have allergens that trigger acute and chronic asthma symptoms. If these are identified, then reduced or eliminated, often the asthmatic condition is easier to control. Use skin testing or in vitro testing to assess sensitivity to indoor allergens.

3. Consider referral to an asthma case manager or an asthma educator:

For patients whose parents want or need more information or reinforcement on how to manage problems associated with persistent asthma. Environmental assessments, abatement and control strategies as well as reinforcement of asthma education are available through asthma home based asthma case management programs. Consider referral to one of these voluntary and free programs for children with persistent asthma whose families are interested in additional education and home based trigger reduction assistance (see attached resource list).

Quality of Life Issues

Often the clinical condition of the pediatric patient is measured in terms of objective pulmonary function assessment. However, quality of life issues may be more accurate indicators of disease control. Quality of life issues include:

- Sleep disruption
- Missed days from school or work
- Limitation of sports and work
- Unscheduled visits to the emergency room

Quality of life issues in asthma must be considered of great importance if we are to improve the lives of our patients. The emphasis on monitoring the level of current impairment and patient education at every opportunity, directly addresses the quality of life issue. Empowering the patient and family to effectively control the disease with a written Asthma Action Plan and thorough education leads to the best results.

Asthma Resources for Families

Alameda Alliance for Health

1240 South Loop Road
Alameda, CA 94502
Cindy Brazil, Health Programs Coordinator
(510) 747-4577
Free education materials in English, Spanish,
Chinese and Vietnamese

American Lung Association of California

1900 Powell Street, Suite 800
Emeryville, CA 94608
(800) LUNG-USA
www.californialung.org (for providers / patients)
Education materials, videos, teen groups, asthma
camps smoking cessation programs, Spanish-
speaking groups

Blue Cross of California

433 14th Street
Oakland, CA 94612
Janet Yuen, Sr. Health Promotion Consultant
(510) 986-2400
Free health education materials for members.
Asthma education classes: 1-866-829-4547

Contra Costa Health Plan

595 Center Avenue, Suite 100
Martinez, CA 94553
Asthma Program Coordinator
(925) 313-6651
Education materials; home trigger assessment and
asthma supplies for Contra Costa County residents

Hill Physicians Medical Group

PO Box 5080
San Ramon, CA 94583
(800) 445-5747
www.hillphysicians.com
Education classes and support groups
(877) 493-5563

Kaiser Permanente

Health Education Center
Kaiser Permanente Medical Center
3772 Howe Street
Oakland, CA 94611
(510) 752-6204
Education materials / asthma classes
www.kp.org

West Oakland Asthma Coalition

Prescott Joseph Center
920 Peralta Street
Oakland, CA 94605
(510) 763-1880
Provides asthma education in the home and
schools

NATIONAL:

American Lung Association

1740 Broadway, 14th Floor
New York, NY 10019
(800) LUNG-USA
www.lungusa.org
Education materials for patients

American Academy of Allergy, Asthma and Immunology

(800) 822-2762
www.aaaai.org
Education resources for patients

Allergy and Asthma Network / Mothers of Asthmatics, Inc.

2751 Prosperity Avenue, Suite 150
Fairfax, VA 22031
(800) 878-4403
www.aanma.org
Education resources, local chapter meetings

Asthma and Allergy Foundation of America

1233 20th Street NW, Suite 402
Washington, D.C. 20036
(800) 7-ASTHMA
www.aafa.org
Education materials, support groups, local chapter
meetings

National Asthma Education and Prevention Program

National Heart, Lung and Blood Institute
PO Box 30105
Bethesda, MD 20824-0105
(301) 592-8573
www.nhlbi.nih.gov
Education materials

Asthma Resources for Providers

Alameda Alliance for Health

1240 South Loop Road
Alameda, CA 94502
Cindy Brazil, Health Programs Coordinator
(510) 747-4577
Free education materials in English, Spanish,
Chinese and Vietnamese
*CD ROM of patient education materials available for
providers*

American Lung Association of California

1900 Powell Street, Suite 800
Emeryville, CA 94608
(800) LUNG-USA
www.californialung.org (for providers / patients)
Education materials, videos, teen groups, asthma
camps smoking cessation programs, Spanish-
speaking groups

Asthma Start Program

CHRCO Primary Care Center
5220 Claremont Avenue
Oakland, CA 94618
Mindy Benson and Sara Triest, Asthma Coordinators
(510) 428-3885 x 5663
*Asthma education for hospitalized patients at
CHRCO
Asthma education for Primary Care Clinic members*

Alameda County Public Health Department Asthma Start Program

Alameda County: (510) 383-5181
Provides MSW services for in home Asthma case
management for Alameda County residents.
Provides patient education, home assessments, and
asthma supplies, e.g. dust mite covers (children 0-
18)
Provider referral required.

Alameda County Healthy Homes Project

2000 Embarcadero, Suite 300
Oakland, CA 94606
Dennis Jordan, Project Manager
510-567-6852
Home Trigger Assessment and Intervention
English/Spanish patients
Alameda County Residents only (children 0-18)
MD referral required.

Child Health and Disability Program (CHDP)

1000 San Leandro Blvd., 2nd Floor
San Leandro, CA 94577
(510) 618-2070
Free asthma assessment guideline 0-5 yrs
www.dhcs.ca.gov/services/chdp (publications -
Sec.507)

Blue Cross of California

433 14th Street
Oakland, CA 94612
Janet Yuen, Sr. Health Promotion Consultant
(510) 986-2400
Medi-Cal / Healthy Families members with asthma
are enrolled in the "Healthy Habits Count with
Asthma". Free health education materials for
members. Asthma education classes: 1-866-829-
4547
*Case management services available through
provider referral*

Contra Costa Health Plan

595 Center Avenue, Suite 100
Martinez, CA 94553
Asthma Program Coordinator
(925) 313-6651
Education materials; home trigger assessment and
asthma supplies for Contra Costa County residents

Hill Physicians Medical Group

PO Box 5080
San Ramon, CA 94583
(800) 445-5747
www.hillphysicians.com
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(877) 493-5563

Kaiser Permanente

Health Education Center
Kaiser Permanente Medical Center
3772 Howe Street
Oakland, CA 94611
(510) 752-6204
Education materials / asthma classes
www.kp.org

Regional Asthma Management & Prevention Initiative (RAMP)

180 Grand Ave. Suite 750
Oakland, CA 94612
(510) 302-3365 phone
(510) 451-8606 fax
www.rampasthma.org
Comprehensive website
Asthma action plans available to providers

West Oakland Asthma Coalition

Prescott Joseph Center
920 Peralta Street
Oakland, CA 94605
(510) 763-1880
Provide asthma education in the home and schools

Asthma Resources for Providers

NATIONAL:

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1740 Broadway, 14th Floor

New York, NY 10019

(800) LUNG-USA

www.lungusa.org

Education materials for providers and patients

American Academy of Allergy, Asthma and Immunology

(800) 822-2762

www.aaaai.org

Education resources for providers and patients

Allergy and Asthma Network / Mothers of Asthmatics, Inc.

2751 Prosperity Avenue, Suite 150

Fairfax, VA 22031

(800) 878-4403 phone

(703) 573-7794 fax

www.aanma.org

Education resources, local chapter meetings

Asthma and Allergy Foundation of America

1233 20th Street NW, Suite 402

Washington, D.C. 20036

(800) 7-ASTHMA

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Education materials, support groups, local chapter meetings

National Asthma Education and Prevention Program

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PO Box 30105

Bethesda, MD 20824-0105

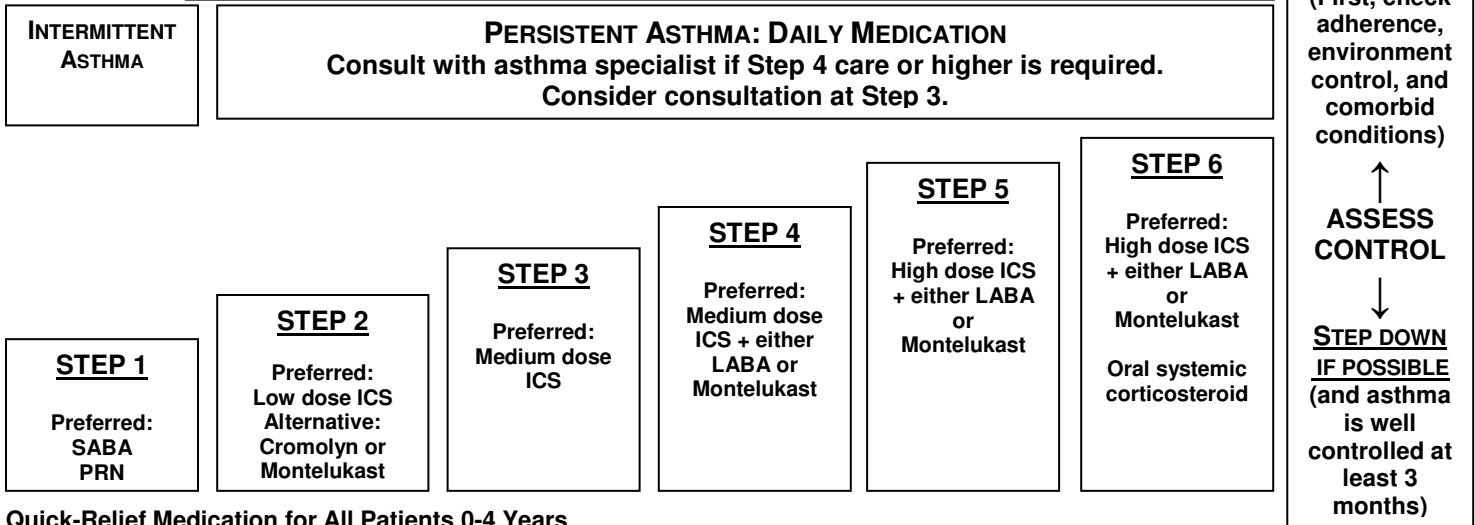
(301) 592-8573 phone

(301) 592-8563 fax

www.nhlbi.nih.gov

Education materials, clinical trials, treatment guidelines

STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN AGES 0-4 YEARS



Quick-Relief Medication for All Patients 0-4 Years

- SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms.
- With viral respiratory infection: SABA q 4-6 hours up to 24 hours (longer with physician consult). Consider short course of oral systemic corticosteroids if exacerbation is severe or patient has history of previous severe exacerbations.
- Caution: Frequent use of SABA may indicate the need to step up treatment. See text for recommendations on initiating daily long-term control therapy

EACH STEP: PARENT EDUCATION, ENVIRONMENTAL CONTROL AND MANAGEMENT OF COMORBIDITIES

ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY IN CHILDREN 0-4 YEARS OF AGE				
Components of Control		Classification of Asthma Control		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week	>2 days/week	Throughout the day
	Nighttime Awakenings	≤ 1x/month	≥ 1x/month	>1x/week
Risk	Exacerbations Requiring Oral Systemic Corticosteroids	0-1/year	2-3/year	>3/year
	Treatment Related Adverse Effects	Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.		
Recommended Action for Treatment		<ul style="list-style-type: none"> •Maintain current step/treatment •Regular followup every 1-6 months •Consider step down if well controlled for at least 3 months 	<ul style="list-style-type: none"> •Step up at least 1 step and •Re-evaluate in 2-6 weeks •For side effects, consider alternative treatment options 	<ul style="list-style-type: none"> •Consider short course of oral corticosteroids •Step up 1-2 steps, and •Re-evaluate in 1-2 weeks • For side effects, consider alternative treatment
Before step-up in therapy: Review adherence to medications, inhaler technique, environmental control and comorbid conditions. If alternative treatment option was used in a step, discontinue it and use preferred treatment for that step.		If no clear benefit in 4-6 weeks, consider alternative diagnosis or adjusting therapy.		

CLASSIFYING ASTHMA SEVERITY AND INITIATING TREATMENT IN CHILDREN 0-4YEARS OF AGE

Assessing severity and initiating therapy in children not currently taking long-term control medications

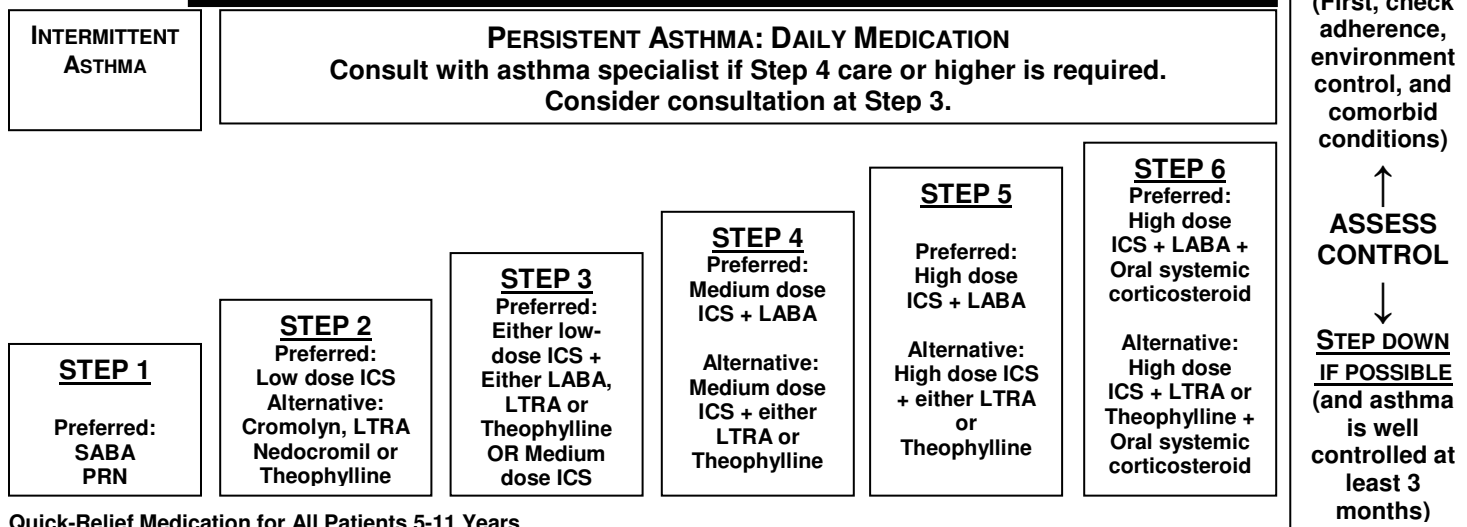
Components of Severity		Classification of Asthma Severity			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment	Symptoms	≤2 days/week	≥2 days/week but not daily	Daily	Through the day
	Nighttime Awakenings	0	1-2 x/month	3-4 x/month	>1x/week
	SABA use for symptomatic control (not EIB prevention)	≤2 days/week	≥2 days/week but not daily	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
Risk	Exacerbations requiring oral systemic corticosteroids	0-1/yr	≥ 2 exacerbations in 6 months requiring oral systemic corticosteroids, or ≥ 4 wheezing episodes/year lasting >1 day and risk factors for persistent asthma		
		Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time. Exacerbation of any severity may occur in patients in any severity category.			
Recommended Step for Initiating Treatment		STEP 1	STEP 2	STEP 3	
<div style="background-color: black; color: white; padding: 5px;"> In 2-6 weeks, depending on severity, evaluate level of control that is achieved. If no clear benefit observed in 4-6 weeks, consider adjusting therapy or alternative diagnosis. </div>				And consider short course of oral systemic corticosteroid	

Notes:

- 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.
- For treatment purposes, patients who had ≥ 2 exacerbations requiring oral systemic corticosteroids in the past 6 months, or ≥ 4 wheezing episodes in the past year and who have risk factors for persistent asthma, may be the same patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.

Key: Alphabetical order is used when more than one treatment option is listed with either preferred or alternative therapy. EIB, exercise-induced bronchospasm; ICS, inhaled corticosteroid; LABA, inhaled long-acting beta 2 agonist; LTRA, leukotriene receptor agonist; SABA, inhaled short-acting beta 2 agonist.

STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN AGES 5-11 YEARS



Quick-Relief Medication for All Patients 5-11 Years

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 oral systemic corticosteroids may be needed. Caution: Increasing use of SABA or use > 2 days per week for symptom relief (not prevention of EIB) generally indicates inadequate control and the need to step up treatment.

Each step: Patient education, environmental control and management of comorbidities.

Steps 2-4: Consider subcutaneous allergen immunotherapy for patients who have allergic asthma.

ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY IN CHILDREN 5-11 YEARS OF AGE

Components of Control		Classification of Asthma Control		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week but less than once each day	>2 days/week or multiple times on ≤2 days/week	Throughout the day
	Nighttime Awakenings	≤ 1x/month	≥ 2x/month	≥ 2x/week
	Lung Function • FEV ₁ or peak flow • FEV ₁ /FVC	>80% predicted or personal best	60-80% predicted / 75-80% personal best	<60% predicted or < 75% personal best
	Asthma Control Test	≥20	16-19	≤15
Risk	Exacerbations Requiring Oral Systemic Corticosteroids	0-1/year	≥2/year (see note)	
	Reduction in Lung Growth	Consider severity and interval since last exacerbation.		
	Treatment Related Adverse Effects	Evaluation requires long-term followup care		
Recommended Action for Treatment		Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.		
<div style="background-color: black; color: white; padding: 5px; margin-bottom: 10px;"> Before step-up in therapy: Review adherence to medications, inhaler technique, environmental control and comorbid conditions. If alternative treatment option used in a step, discontinue it and use preferred treatment for that step. </div>		<ul style="list-style-type: none"> •Maintain current step/treatment •Regular followup every 1-6 months •Consider step down if well controlled for at least 3 months 	<ul style="list-style-type: none"> •Step up at least 1 step and •Re-evaluate in 2-6 weeks •For side effects, consider alternative treatment options 	<ul style="list-style-type: none"> •Consider short course of oral corticosteroids •Step up 1-2 steps, and •Re-evaluate in 1-2 weeks • For side effects, consider alternative treatment

CLASSIFYING ASTHMA SEVERITY AND INITIATING TREATMENT IN CHILDREN 5-11 YEARS OF AGE
 Assessing severity and initiating therapy in children not currently taking long-term control medications

Components of Severity		Classification of Asthma Severity			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment Normal FEV ₁ /FVC: 8-19 yr 85%	Symptoms	≤2 days/week	≥2 days/week but not daily	Daily	Through the day
	Nighttime Awakenings	≤2 x/month	3-4 x/month	>1x/week but not nightly	Often 7x/week
	SABA use for symptomatic control (not EIB prevention)	≤2 days/week	≥2 days/week but not daily	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	<ul style="list-style-type: none"> • Normal FEV₁ between exacerbations • FEV₁ >80% predicted • FEV₁/FVC >85% 	<ul style="list-style-type: none"> • FEV₁ =>80% predicted • FEV₁/FVC >80% 	<ul style="list-style-type: none"> • FEV₁ =60-80% predicted • FEV₁/FVC = 75-80% 	<ul style="list-style-type: none"> • FEV₁ <60% predicted • FEV₁/FVC <75%
Risk	Exacerbations requiring oral systemic corticosteroids	0-1/yr (see note)	≥ 2/yr (see note)		
		Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any category.			
		Relative annual risk of exacerbations may be related to FEV ₁			
Recommended Step for Initiating Treatment		STEP 1	STEP 2	STEP 3, medium dose ICS option	STEP 3, medium dose ICS option or STEP 4
<div style="background-color: black; color: white; padding: 5px; text-align: center;"> In 2-6 weeks, evaluate level of control achieved and adjust as needed. </div>				And consider short course of oral systemic corticosteroid	

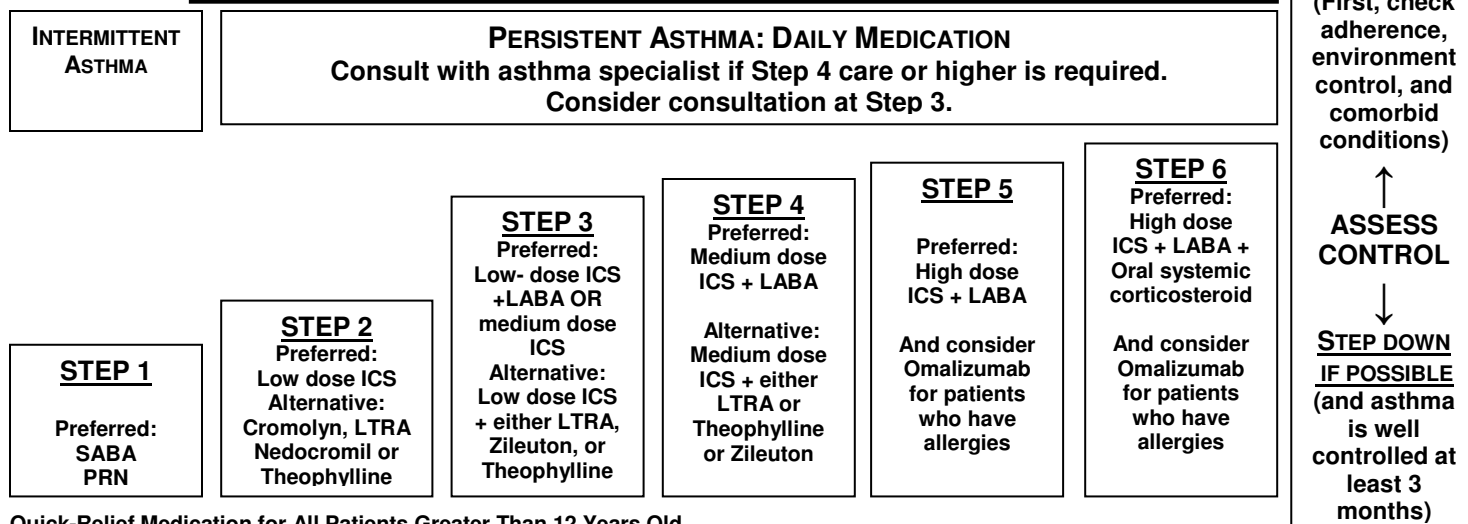
Notes:

- 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.

Key: EIB, exercise induced bronchospasm; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity

Key: Alphabetical order is used when more than one treatment option is listed with either preferred or alternative therapy. EIB, exercise-induced bronchospasm; ICS, inhaled corticosteroid; LABA, inhaled long-acting beta 2 agonist; LTRA, leukotriene receptor agonist; SABA, inhaled short-acting beta 2 agonist.

STEPWISE APPROACH FOR MANAGING ASTHMA IN YOUTHS OVER 12 YEARS OF AGE



Quick-Relief Medication for All Patients Greater Than 12 Years Old

- 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 oral systemic corticosteroids may be needed.
Caution: Use of SABA > 2 days a week for symptom relief (not prevention of EIB) generally indicates inadequate control and the need to step up treatment.

Each step: Patient education, environmental control and management of comorbidities.

Steps 2-4: Consider subcutaneous allergen immunotherapy for patients who have allergic asthma.

ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY IN YOUTHS OVER 12 YEARS OF AGE

Components of Control		Classification of Asthma Control		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week	>2 days/week	Throughout the day
	Nighttime Awakenings	≤ 2x/month	1-3x/week	≥ 4x/week
	Lung Function • FEV ₁ or peak flow • FEV ₁ /FVC	>80% predicted or personal best	60-80% predicted or personal best	<60% predicted or personal best
	Asthma Control Test	≥ 20	16-19	≤ 15
Risk	Exacerbations Requiring Oral Systemic Corticosteroids	0-1/year	≥2/year (see note)	
	Progressive loss of lung function	Consider severity and interval since last exacerbation.		
	Treatment Related Adverse Effects	Evaluation requires long-term followup care		
Recommended Action for Treatment		<ul style="list-style-type: none"> •Maintain current step/treatment •Regular followup every 1-6 months •Consider step down if well controlled for at least 3 months 	<ul style="list-style-type: none"> •Step up at least 1 step and •Re-evaluate in 2-6 weeks •For side effects, consider alternative treatment options 	<ul style="list-style-type: none"> •Consider short course of oral corticosteroids •Step up 1-2 steps, and •Re-evaluate in 1-2 weeks • For side effects, consider alternative treatment
<p>Before step-up in therapy: Review adherence to medications, inhaler technique, environmental control and comorbid conditions. If alternative treatment option used in a step, discontinue it and use preferred treatment for that step.</p>				

CLASSIFYING ASTHMA SEVERITY AND INITIATING TREATMENT IN YOUTHS OVER 12 YEARS OF AGE
 Assessing severity and initiating therapy in children not currently taking long-term control medications

Components of Severity		Classification of Asthma Severity			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment Normal FEV ₁ /FVC: 8-19 yr 85%	Symptoms	≤2 days/week	≥2 days/week but not daily	Daily	Through the day
	Nighttime Awakenings	≤2 x/month	3-4 x/month	>1x/week but not nightly	Often 7x/week
	SABA use for symptomatic control (not EIB prevention)	≤2 days/week	≥2 days/week but not daily and no more than 1x any day	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	<ul style="list-style-type: none"> • Normal FEV₁ between exacerbations • FEV₁ >80% predicted • FEV₁/FVC normal 	<ul style="list-style-type: none"> • FEV₁ =>80% predicted • FEV₁/FVC normal 	<ul style="list-style-type: none"> • FEV₁ >60% but <80% predicted • FEV₁/FVC reduced 5% 	<ul style="list-style-type: none"> • FEV₁ <60% predicted • FEV₁/FVC reduced >5%
Risk	Exacerbations requiring oral systemic corticosteroids	0-1/yr (see note)	≥ 2/yr (see note)		
		Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any category.			
		Relative annual risk of exacerbations may be related to FEV ₁			
Recommended Step for Initiating Treatment In 2-6 weeks, evaluate level of control achieved and adjust as needed.		STEP 1	STEP 2	STEP 3	STEP 4 or 5
		And consider short course of oral systemic corticosteroid			

Notes:

- 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.

Key: EIB, exercise induced bronchospasm; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity

Key: Alphabetical order is used when more than one treatment option is listed with either preferred or alternative therapy. EIB, exercise-induced bronchospasm; ICS, inhaled corticosteroid; LABA, inhaled long-acting beta 2 agonist; LTRA, leukotriene receptor agonist; SABA, inhaled short-acting beta 2 agonist.