SummaCare
ASTHMA PRACTICE GUIDELINE

Risk Intervention	Recommendations
Goals	**Reduce Impairment** ▪ Prevent chronic troublesome symptoms. ▪ Require infrequent use of inhaled short-acting beta 2 agonist. ▪ Maintain (near) normal pulmonary function. ▪ Maintain normal activity levels. ▪ Have and be able to carry out an asthma action plan. Peak flow meters and asthma action plans can be used selectively. ▪ Meet patients' and families' expectations of/and satisfaction with asthma care. **Reduce Risk** ▪ Prevent recurrent exacerbations of asthma and minimize the need for ED visits or hospitalizations ▪ Prevent loss of lung function: for children, prevent educed lung growth ▪ Provide optimal pharmacotherapy with minimal or no adverse effects of therapy.
Medication Reconciliation	Accurately and completely reconcile all medications patient is taking across the continuum. ***(National Patient Safety Goal)***
Initial Assessment	**Medical History** Symptoms ▪ Cough ▪ Wheezing ▪ Shortness of breath ▪ Chest tightness ▪ Sputum production ▪ Episodic symptoms of airflow obstruction Pattern of symptoms ▪ Perennial, seasonal or both; ▪ Continual, episodic or both; ▪ Onset, duration, frequency (number of days or nights, per week or month); ▪ Diurnal variations, especially nocturnal and on awakening in early morning. Precipitating or aggravating factors ▪ Viral respiratory infections ▪ Environmental allergens indoor (mold, house-dust mite, cockroach, animal dander or secretory products) and outdoor (e.g., pollen) ▪ Exercise ▪ Occupational chemicals or allergens ▪ Environmental change (e.g., moving to a new home, going on vacation, alterations in workplace, work processes or materials used) ▪ Irritants (e.g., tobacco smoke, strong odors, air pollutants, occupational chemical dusts and particulates, vapors, gases and aerosols) ▪ Emotional expressions (e.g., fear, anger, frustration, hard crying or laughing) ▪ Drugs (e.g., aspirin, beta-blockers, including eye drops, non-steroidal anti-inflammatory drugs, others) ▪ Food, food additives and preservatives (e.g., sulfites) ▪ Changes in weather, exposure to cold air ▪ Endocrine factors (e.g., menses, pregnancy, thyroid disease) ▪ All patients should be treated for rhinitis, sinusitis and gastroesophageal reflux, if present. Development of disease and treatment ▪ Age of onset and diagnosis ▪ History of early-life injury to airways ▪ Progress of disease (better or worse) ▪ Present management and response, including plans for managing exacerbations ▪ Need for oral corticosteroids and frequency of use ▪ Comorbid conditions Profile of typical exacerbation ▪ Usual prodromal signs and symptoms ▪ Usual patterns and management (what works?) Assessment of patient's and family's perceptions of disease ▪ Patient, parental and spouse or partner's knowledge of asthma and belief in the chronicity of asthma and in the efficacy of treatment. ▪ Patient perception and beliefs regarding use and long-term effects of medications ▪ Ability of patient and parents, spouse or partner to cope with disease ▪ Level of family support and patient's and parent's, spouse's or partner's capacity to recognize severity of an exacerbation ▪ Economic resources ▪ Sociocultural beliefs - Alternative diagnoses are excluded ▪ **Physical** ▪ Hyperexpansion of thorax

Deleted: *14*
Deleted: *16*

Risk Intervention	Recommendations
	▪ Evidence of airflow obstruction (wheezes during normal breathing or a prolonged force expiratory time) ▪ Increased nasal secretion, mucosal swelling and nasal polyps ▪ Atopic dermatitis/eczema or any other manifestation of an allergic skin condition ▪ Spirometry measurements (FEV1, FVC, FEV1/FVC) before and after the patient inhales a short-acting bronchodilator should be undertaken for patients **Control of Factors Contributing to Asthma Severity** ▪ Patients with asthma at any level of severity should avoid; - Exposure to allergens to which they are sensitive - Smoking and exposure to environmental tobacco smoke - Exertion when levels of air pollution are high - Use of beta-blockers (in most cases) - Sulfite-containing and other foods to which they are sensitive ▪ Patients with persistent asthma should: - Receive skin testing or in vitro testing to assess sensitivity to perennial indoor allergens - If sensitive to aspirin or non-steroidal anti-inflammatories, receive counseling regarding the risk of severe and even fatal exacerbations from using these drugs. - Receive an annual influenza vaccination early each flu season
Treatment Recommendations	**Pharmacologic therapy: A Stepwise approach is recommended to gain and maintain control of Asthma:** **See Attachments** Stepwise Approach for Managing Infants and Young Children (5 Years of Age and Younger) With Acute or Chronic Asthma Stepwise Approach for Managing Asthma in Adults and Children Older Than 5 Years of Age:
Key Points for Managing Asthma in Infants and Young Children	▪ Diagnosing asthma in infants is often difficult, yet under-diagnosis and under-treatment are key problems in this age group. A diagnostic trial of inhaled bronchodilators and anti-inflammatory medication may be helpful. ▪ Reponses to therapy should be carefully monitored. Once control of asthma symptoms is established and sustained, a careful step down in therapy should be attempted. If clear benefit is not observed, alternative therapies or diagnoses should be considered. Once able to do so, the child should be provided with a peak flow meter and taught how to use it, and the caretaker should receive a written action plan for defined peak flow ranges and related self-management actions, especially for patients with moderate or severe persistent asthma and patients with a history of severe exacerbations. Peak flow meters and asthma action plans can be used selectively.
Key Points for Managing Asthma in School-age Children and Adolescents	▪ Pulmonary function testing should use appropriate reference populations. Adolescents compare best to childhood rather than adult predicted norms. ▪ Adolescents (and younger school-age children as appropriate) should be directly involved in establishing goals for therapy and developing their asthma treatment plans. ▪ Active participation in physical activities/exercise and sports should be promoted. ▪ Peak flow monitoring as part of a written asthma management plan should be prepared for the student's school, including plans to ensure reliable, prompt access to medications
Key Points for Managing Asthma in Older Adults	▪ Chronic bronchitis/emphysema may coexist with asthma. A trial of systemic corticosteriods will determine the extent of reversibility and therapeutic benefit. ▪ Asthma medications may aggravate coexisting medical conditions (e.g., cardiac disease, osteoporosis) adjustments in the medication plan may need to be made. ▪ Be aware of increased potential for adverse drug/disease interaction (e.g., aspirin, beta-blockers) ▪ Review of patient technique in using medications and devices is essential. ▪ The patient should be provided with a peak flow meter, taught how to use it, and receive an intervention plan for defined peak flow ranges and related self-management actions, especially for patients with moderate to severe persistent asthma and patients with a history of severe exacerbations.
Lifestyle Modification	***Reviewed and evaluated at least once a year***. • Regular exercise • Smoking cessation • Stress management
Self Management Education	– Assess educational needs and provide self-management education. – Provide access to an interdisciplinary team (RN, CDE, nutritionist, PCP) – Develop individualized educational plans
Psychosocial assessment	**Screening completed at every office visit**. Teach and Reinforce at each visit Basic Facts About Asthma ▪ The Contrast between Airways of a person who has nad a person who does not have asthma: the role of inflammation

Deleted: 14

Deleted: 16

Risk Intervention	Recommendations
	▪ What happens to the airways during an asthma attack Role of Medications: Understanding the Difference between: ▪ Long-term control medications: prevent symptoms, often by reducing inflammation. Must be taken daily. Do not expect them to give quick relief. ▪ Quick-relief medications: Short-acting beta 2 agonists (SABA) relax airway muscles to provide prompt relief of symptoms. Do not expect them to provide long-term asthma control. Using SABA > 2 days a week indicates the need for starting or increasing long-term control medications. Patient Skills ▪ Taking Medications correctly Demonstrate inhaler technique and then have patient demonstrate. Use of devices, such as valve holding chamber and nebulizer ▪ Identifying and avoiding environmental exposures that worsen the patient's asthma ▪ Self-monitoring Assess level of asthma control Monitor symptoms and, if prescribed, PEF(peak expiratory flow) measure. Recognize early signs and symptoms of worsening asthma. ▪ Using a written asthma action plan to know when and how to: Recognize and avoid triggers Take daily actions to control asthma. Use a peak flow meter benchmark to indicate level of asthma control Adjust medication in response to signs of worsening asthma. ▪ Seeking medical care as appropriate Should include but is not limited to: • Attitudes about the illness • Expectations for medical management • General quality of life Reassess periodically during assessment contacts to mental health specialist should occur when the patient exhibits any of the following: • Gross noncompliance with medical regimen (due to self or others) • Depression • Cognitive functioning that significantly impairs judgment.
Smoking ***Goal:*** ***Complete Cessation***	**Follow: Ask, Assess, Advise, Assist, and Arrange method**. Strongly encourage patient and family to stop smoking. Provide counseling, nicotine replacement, and formal cessation programs as appropriate.

Source: National Asthma Education and Prevention Program (NAEPP), *"Guidelines for the Diagnosis and Management of Asthma",* NIH Publication No. 08-5846, October 2007.

Guidelines reviewed/updated:

Guidelines Approved: 2/12/98 -Utilization Review Committee
Guideline reviewed/approved: 5/23/00 – Clinical Quality Committee
Guideline reviewed/updated/approved: 5/28/02 – Clinical Quality Committee
Guideline reviewed/updated/approved: 9/23/03 – Clinical Quality Committee
Guideline reviewed/updated/approved: 10/6/2005 – Clinical Quality & Resource Management
Guideline reviewed/updated/approved: 8/7/07—Clinical Quality & Resource Management
Guideline reviewed/updated/approved: 12/6/07 – Clinical Quality & Resource Management
Guideline reviewed/updated/approved: 10/1/09 – Clinical Quality & Resource Management

Deleted: *14*

Deleted: *16*

Stepwise Approach for Managing Infants and Young Children (5 Years of Age and Younger) With Acute or Chronic Asthma

Classify Severity: Clinical Features Before Treatment or Adequate Control	Symptoms/Day Symptoms/Night	Medications Required to Maintain Long-Term Control Daily Medications
Step 4 Severe Persistent	Continual Frequent	▪ Preferred treatment: - High-dose inhaled corticosteroids AND - Long-acting inhaled beta$_2$-agonists AND, if needed, - Corticosteroid tablets or syrup long term (2 mg/kg/day, generally do not exceed 60 mg per day). (Make repeat attempts to reduce systemic corticosteroids and maintain control with high-dose inhaled corticosteroids.)
Step 3 Moderate Persistent	Daily > 1 night/week	▪ Preferred treatments: - Low-dose inhaled corticosteroids and long-acting inhaled beta$_2$-agonists OR - medium-dose inhaled corticosteroids ▪ Alternative treatment: - Low-dose inhaled corticosteroids and either leukotriene receptor antagonist or theophylline. If needed (particularly in patients with recurring severe exacerbations): ▪ **Preferred treatment:** - **Medium-dose inhaled corticosteroids and long-acting beta$_2$-agonists.** ▪ Alternative treatment: - Medium-dose inhaled corticosteroids and either leukotriene receptor antagonist OR theophylline.
Step 2 Mild Persistent	> 2/week but < 1x/day > 2 nights/month	▪ Preferred treatment: - Low-dose inhaled corticosteroid (with nebulizer or MDI with holding chamber with or without face mask or DPI). ▪ Alternative treatment (listed alphabetically): - Cromolyn (nebulizer is preferred or MDI with holding chamber) OR leukotriene receptor antagonist.
Step 1 Mild Intermittent	≤ 2 days/week ≤ 2 nights/month	▪ No daily medication needed.

Quick Relief

All Patients

- Bronchodilator as needed for symptoms. Intensity of treatment will depend upon severity of exacerbation.
  - **Preferred treatment: Short-acting inhaled beta$_2$-agonists** by nebulizer or face mask and space/holding chamber
  - Alternative treatment: Oral beta$_2$-agonist
- With viral respiratory infection
  - Bronchodilator q 4-6 hours up to 24 hours (longer with physician consult); in general, repeat no more than once every 6 weeks
  - Consider systemic corticosteroid if exacerbation is severe or patient has history of previous severe exacerbations
- Use of short-acting beta$_2$-agonists > 2 times a week in intermittent asthma (daily, or increasing use in persistent asthma) may indicate the need to initiate (increase) long-term control therapy.

Step down
Renew treatment every 1 to 6 months; a gradual stepwise reduction in treatment may be possible

Step up
If control is not maintained, consider step up. First, review patient medication technique, adherence, and environmental control.

Goals of Therapy: Asthma Control

- Minimal or no chronic symptoms day or night
- Minimal or no exacerbations
- No limitations on activities; no school/parent's work missed
- Minimal use of short-acting inhaled beta$_2$-agonist (< 1x per day, <1 canister/month)
- Minimal or no adverse effects from medications

Note

- The stepwise approach is intended to assist, not replace, the clinical decision making required to meet individual patient needs.
- Classify severity; assign patient to most severe step in which any feature occurs.
- There are very few studies on asthma therapy for infants.
- Gain control as quickly as possible (a course of short systemic corticosteroids may be required); then step down to the least medication necessary to maintain control.
- Provide parent education on asthma management and controlling environmental factors that make asthma worse (e.g., allergies and irritants).
- Consultation with an asthma specialist is recommended for patients with moderate or severe persistent asthma. Consider consultation for patients with mild persistent asthma.

National Heart, Lung, and Blood Institute. *Executive Summary of the NAEPP Expert Panel Report: Guidelines for the Diagnosis and Management of Asthma-Update on Selected Topics 2002*. Bethesda, MD; US Department of Health and Human Services, 2002; NIH Publication No. 97-4051.

Deleted: *14*

Deleted: *16*

Stepwise Approach for Managing Asthma in Adults and Children Older Than 5 Years of Age: Treatment

Classify Severity: Clinical Features Before Treatment or Adequate Control	Symptoms/Day Symptoms/Night	PEF or FEV_1 PEF Variability	Medications Required to Maintain Long-Term Control Daily Medications
Step 4 Severe Persistent	Continual Frequent	≤ 60% > 30%	▪ Preferred treatment: - High-dose inhaled corticosteroids AND - Long-acting inhaled $beta_2$-agonists AND, if needed, - Corticosteroid tablets or syrup long term (2 mg/kg/day, generally do not exceed 60 mg per day). (Make repeat attempts to reduce systemic corticosteroids and maintain control with high-dose inhaled corticosteroids.)
Step 3 Moderate Persistent	Daily > 1 night/week	> 60% - < 80% > 30%	▪ Preferred treatments: - Low-to-medium dose inhaled corticosteroids and long-acting inhaled $beta_2$-agonists ▪ Alternative treatment (listed alphabetically): - Increase inhaled corticosteroids within medium-dose range OR - Low-to-medium dose inhaled corticosteroids and either leukotriene modifier or theophylline. If needed (particularly in patients with recurring severe exacerbations): ▪ **Preferred treatment:** - **Increase inhaled corticosteroids within medium-dose range and add long-acting inhaled $beta_2$-agonists.** ▪ Alternative treatment: - Increase inhaled corticosteroids within medium-dose range and add either leukotriene modifier or theophylline.
Step 2 Mild Persistent	> 2/week but < 1x/day > 2 nights/month	≥ 80% 20-30%	▪ Preferred treatment: - Low-dose inhaled corticosteroids. ▪ Alternative treatment (listed alphabetically): cromolyn, leukotriene modifier, nedocromil, OR sustained release theophylline to serum concentration of 5-15 mcg/mL.
Step 1 Mild Intermittent	≤ 2 days/week ≤ 2 nights/month	> 80% > 20%	▪ No daily medication needed. ▪ Severe exacerbations may occur, separated by long periods of normal lung function and no symptoms. A course of systemic corticosteroids is recommended.

Quick Relief

All Patients

- Short-acting bronchodilator: 2-4 puffs **short-acting inhaled $beta_2$-agonists** as needed for symptoms.
- Intensity of treatment will depend on severity of exacerbation; up to 3 treatments at 20-minute intervals or a single nebulizer treatment as needed. Course of systemic corticosteroids may be needed.
- Use of short-acting $beta_2$-agonists > 2 times a week in intermittent asthma (daily, or increasing use in persistent asthma) may indicate the need to initiate (increase) long-term control therapy.

Step down
Renew treatment every 1 to 6 months; a gradual stepwise reduction in treatment may be possible

Step up
If control is not maintained, consider step up. First, review patient medication technique, adherence, and environmental control.

Goals of Therapy: Asthma Control

- Minimal or no chronic symptoms day or night
- Minimal or no exacerbations
- No limitations on activities; no school/parent's work missed
- Maintain (near) normal pulmonary function
- Minimal use of short-acting inhaled $beta_2$-agonist (<1x per day, < 1 canister/month)
- Minimal or no adverse effects from medications

Note

- The stepwise approach is intended to assist, not replace, the clinical decision making required to meet individual patient needs.
- Classify severity; assign patient to most severe step in which any feature occurs (PEF is % of personal best; FEV_1 is % predicted).
- Gain control as quickly as possible (a course of short course of systemic corticosteroids); then step down to the least medication necessary to maintain control.
- Provide education on self-management and controlling environmental factors that make asthma worse (e.g., allergies and irritants).
- Refer to an asthma specialist if there are difficulties controlling asthma or if step 4 care is required. Referral may be considered if step 3 care is required.

National Heart, Lung, and Blood Institute. *Executive Summary of the NAEPP Expert Panel Report*: *Guidelines for the Diagnosis and Management of Asthma-Update on Selected Topics 2002*. Bethesda, MD; US Department of Health and Human Services, 2002; NIH Publication No. 97-4051.

Deleted: *14*

Deleted: *16*

Classifying Asthma Severity and Initiating Therapy in Children

Components of Severity		Classifying Asthma Severity and Initiating Therapy in Children							
		Intermittent		Persistent					
				Mild		Moderate		Severe	
		Ages 0-4	Ages 5-11	Ages 0-4	Ages 5-11	Ages 0-4	Ages 5-11	Ages 0-4	Ages 5-11
Impairment	Symptons	≤ 2 days/week		> 2 days/week but not daily		Daily		Throughout the day	
	Nighttime awakenings	0	≤ 2x/month	1-2x/month	3-4x/month	3-4x/month	> 1x/week but not nightly	> 1x/week	Often 7x/week
	Short-acting $beta_2$-agonist use for symptom	≤ 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 ▪ FEV_1 (predicted) or peak flow (personal best) ▪ FEV_1/FVC	N/A	Normal FEV_1 between exacerbations > 80% > 85%	N/A	> 80% > 80%	N/A	60-80% 75-80%	N/A	< 60% < 75%
Risk	Exacerbations requiring oral systemic corticosteroids (consider severity and interval since last exacerbation)	0-1x/year (see notes)		≥ 2 exacerbations in 6 months requiring oral systemic corticosteroids, or ≥ 4 wheezing episodes/1 year lasting > 1 day AND risk factors for persistent asthma	≥ 2x/year (see notes) Relative annual risk may be related to FEV_1				
Recommended Step for Initiating Therapy (See "Stepwise Approach for Managing Asthma" for treatment steps.) The Stepwise Approach is meant to assist, not replace, the clinical decisionmaking required to meet individual patient needs.		Step 1 (for both age groups		Step 2 (for both age groups)		Step 3 and consider short course of oral systemic cortico-steroids	Step 3: medium-dose ICS option and consider short course of oral systemic corticosteroids	Step 3 and consider short course of oral systemic cortico-steroids	Step 3: medium-dose ICS option OR Step 4 and consider short course of oral systemic cortico-steroids
		In 2-6 weeks, depending on severity, evaluate level of asthma control that is achieved. • Children 0-4 years old: if no clear benefit is observed in 4-6 weeks, stop treatment and consider alternative diagnoses or adjusting therapy. • Children 5-11 years old: adjust therapy accordingly.							

Key: FEV_1, forced expiratory volume in 1 second; FVC, forced vital capacity; ICS, inhaled corticosteroids; ICU, intensive care unit; N/A, not applicable

Notes:

Level of severity is determined by both impairment and risk. Assess impairment domain by caregiver's recall of previous 2-4 weeks. Assign severity to the most severe category in which any feature occurs.

Frequency and severity of exacerbations may fluctuate over time for patients in any severity category. At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma severity. In general, more frequent and severe exacerbations (e.g., requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate greater underlying disease severity. For treatment purposes, patients with ≥ 2 exacerbations described above may be considered the same as patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.

Deleted: *14*

Deleted: *16*

Assessing Asthma Control and Adjusting Therapy in Children

Components of Control		Assessing Asthma Control and Adjusting Therapy in Children					
		Well Controlled		Not Well Controlled		Very Poorly Controlled	
		Ages 0-4	Ages 5-11	Ages 0-4	Ages 5-11	Ages 0-4	Ages 5-11
Impairment	Symptoms	≤ 2 days/week but not more than once on each day		> 2 days/week or multiple times on ≤ 2 days/week		Throughout the day	
	Nighttime awakenings	≤ 1x/month		> 1x/month	≥ 2x/month	> 1x/week	≥ 2x/week
	Interference with normal activity	None		Some limitation		Extremely limited	
	Short-acting $beta_2$-agonist use for symptom control (not prevention of EIB)	≤ 2 days/week		> 2 days/week		Several times per day	
	Lung function ▪ FEV_1 (predicted) or peak flow personal best ▪ FEV_1/FVC	N/A	> 80% > 80%	N/A	60-80% 75-80%	N/A	< 60% < 75%
Risk	Exacerbations requiring oral systemic corticosteroids	0-1x/year		2-3x/year	≥ 2x/year	> 3x/year	≥ 2x/year
	Reduction in lung growth	N/A	Requires long-term followup	N/A		N/A	
	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 (See "Stepwise Approach for Managing Asthma" for treatment steps.) The Stepwise Approach is meant to assist, not replace, the clinical decisionmaking required to meet individual patient needs.		• Maintain current step • Regular followup every 1-6 months • Consider step down if well controlled for at least 3 months		Step up 1 step	Step up at least 1 step	• Consider short course of oral systemic corticosteroids • Step up 1-2 steps	
				• Before step up: Review adherence to medication, inhaler technique, and environmental control. If alternative treatment was used, discontinue it and use preferred treatment for that step. • Re-evaluate the level of asthma control in 2-6 weeks to achieve control; every 1-6 months to maintain control. Children 0-4 years old: If no clear benefit is observed in 4-6 weeks, consider alternative diagnoses or adjusting therapy. Children 5-11 years old: Adjust therapy accordingly. • For side effects, consider alternative treatment options.			

Key: EIB, exercise-induced bronchospasm, FEV_1, forced expiratory volume in 1 second; FVC, forced vital capacity; ICU, intensive care unit; N/A, not applicable

Notes:

The level of control is based on the most severe impairment or risk category. Assess impairment domain by patient's or caregiver's recall of previous 2-4 weeks. Symptom assessment for longer periods should reflect a global assessment, such as whether the patient's asthma is better or worse since the last visit.

At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma control. In general, more frequent and intense exacerbations (e.g., requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate poorer disease control.

Deleted: 14

Deleted: 16

Stepwise Approach for Managing Asthma Long Term in Children, 0-4 Years of Age and 5-11 Years of Age

Step up if needed (first check inhaler technique, adherence, environmental control, and comorbid conditions)
Assess Control
Step down if possible (and asthma is well controlled at least 3 months)

		Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Notes
Children 0-4 Years of Age		**Intermittent Asthma**	**Persistent Asthma: Daily Medication** Consult with asthma specialist if Step 3 care or higher is required. Consider consultation at Step 2.					• The Stepwise Approach is meant to assist, not replace, the clinical decisionmaking required to meet individual patient needs. • If an alternative treatment is used and response is inadequate, discontinue it and use the preferred treatment before stepping up. • If clear benefit is not observed within 4-6 weeks, and patient's/family's medication technique and adherence are satisfactory, consider adjusting therapy or an alternative diagnosis. • Studies on children 0-4 years of age are limited. Step 2 preferred therapy is based on Evidence A. All other recommendations are based on expert opinion and extrapolation from studies in older children. • Clinicians who administer immunotherapy should be prepared and equipped to identify and treat anaphylaxis that may occur. Key: Alphabetical listing is used when more than one treatment option is listed within either preferred or alternative therapy. ICS, inhaled corticosteroid; LABA, inhaled long-acting beta$_2$-agonist; LTRA, leukotriene receptor antagonist; oral corticosteroids, oral systemic corticosteroids; SABA, inhaled short-acting beta$_2$-agonist.
	Preferred	SABA PRN	Low-dose ICS	Medium-dose ICS	Medium-dose ICS + LABA or Montelukast	High-dose ICS + LABA or Montelukast	High-dose ICS + Oral corticosteroids ICS + LABA or Montelukast	
	Alternative		Cromolyn or Montelukast					
		Each Step: Patient Education and Environmental Control						
	Quick-Relief Medication	• SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms. • With viral respiratory symptoms: 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.						
Children 5-11 Years of Age		**Intermittent Asthma**	**Persistent Asthma: Daily Medication** Consult with asthma specialist if Step 4 care or higher is required. Consider consultation at Step 3.					• The Stepwise Approach is meant to assist, not replace, the clinical decisionmaking required to meet individual patient needs. • If an alternative treatment is used and response is inadequate, discontinue it and use the preferred treatment before stepping up. • Theophylline is a less desirable alternative due to the need to monitor serum concentration levels. • Steps 1 and 2 medications are based on Evidence A. Step 3 ICS and ICS plus adjunctive therapy are based on Evidence B for efficacy of each treatment and extrapolation from comparator trials in older children and adults – comparator trials are not available for this age group; Steps 4-6 are based on expert opinion and extrapolation from studies in older children and adults. • Immunotherapy for Steps 2-4 is based on Evidence B for housedust mites, animal danders, and pollens; evidence is weak or lacking for molds and cockroaches. Evidence is strongest for immunotherapy with single allergens. The role of allergy in asthma is greater in children than adults. • Clinicians who administer immunotherapy should be prepared and equipped to identify and treat anaphylaxis that may occur. Key: Alphabetical listing is used when more than one treatment option is listed within either preferred or alternative therapy. ICS, inhaled corticosteroid; LABA, inhaled long-acting beta$_2$-agonist; LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta$_2$-agonist.
	Preferred	SABA PRN	Low-dose ICS	Low-dose ICS + LABA, LTRA, or Theophylline	Medium-dose ICS + LABA	High-dose ICS + LABA	High-dose ICS + LABA + Oral corticosteroids	
	Alternative		Cromolyn, LTRA, Nedocromil, or Theophylline	*OR* Medium-dose ICS	Medium-dose ICS + LTRA or Theophylline	High-dose ICS + LTRA or Theophylline	High-dose ICS + LTRA or Theophylline + oral corticosteroids	
		Each Step: Patient Education, Environmental Control, and Management of Comorbidities **Steps 2-4: Consider subcutaneous allergen immunotherapy for patients who have persistent, allergic asthma.**						
	Quick-Relief Medication	• 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 a week for symptom relief (not prevention of EIB) generally indicates inadequate control and the need to step up treatment.						

Deleted: 14

Deleted: 16

Classifying Asthma Severity and Initiating Treatment in Youths 12 Years of Age and Adults

Assessing severity and initiating treatment for patients who are not currently taking long-term control medications.

Components of Severity		Classification of Asthma Severity ≥ 12 years of age			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment	Symptoms	≤ 2 days/week	> 2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	≤ 2x/month	3-4x/month	> 1x/week but not nightly	Often 7x/week
	Short-acting beta$_2$-agonist use for symptom control (not prevention of EIB)	≤ 2 days/week	> 2 days/week but not daily, and not more than 1x on any day	Daily	Several times per day
Normal FEV$_1$/FVC: 8-19 yr 85% 20-39 yr 80% 40-59 yr 75% 60-80 yr 70%	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	• Normal FEV$_1$ between exacerbations • FEV$_1$ >80% predicted • FEV$_1$/FVC normal	• FEV$_1$ >80% predicted • FEV$_1$/FVC normal	• FEV$_1$ >60% but <80% predicted • FEV$_1$/FVC reduced 5%	• FEV$_1$ <60% predicted • FEV$_1$/FVC reduced >5%
Risk	Exacerbations requiring oral systemic corticosteroids	0-1/year (see note)	≥ 2/year (see note)		
		Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any severity category. Relative annual risk of exacerbations may be related to FEV$_1$.			
Recommended Step for Initiating Treatment (See "Stepwise Approach for Managing Asthma" for treatment steps.)		Step 1	Step 2	Step 3 and consider short course of oral systemic corticosteroids	Step 4 or 5
		In 2-6 weeks, evaluate level of asthma control that is achieved and adjust therapy accordingly.			

Key: EIB, exercise-induced bronchospasm, FEV$_1$, forced expiratory volume in 1 second; FVC, forced vital capacity; ICU, intensive care unit

Notes:

The Stepwise Approach is meant to assist, not replace, the clinical decisionmaking required to meet individual patient needs.

Level of severity is determined by assessment of both impairment and risk. Assess impairment domain by patient's/caregiver's recall of previous 2-4 weeks and spirometry. Assign severity to the most severe category in which any feature occurs.

At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma severity. In general, more frequent and intense exacerbations (e.g., requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate greater underlying disease severity. For treatment purposes, patients who had ≥ 2 exacerbations requiring oral systemic corticosteroids in the past year may be considered the same as patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.

Deleted: 14

Deleted: 16

Assessing Asthma Control and Adjusting Therapy in Youths ≥ 12 Years of Age and Adults

Components of Control		Classification of Asthma Control (≥ 12 years of age)		
		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
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting beta$_2$-agonist use for symptom control (not prevention of EIB)	≤ 2 days/week	> 2 days/week	Several times per day
	FEV_1 or peak flow	>80% predicted/personal best	60-80% predicted/personal best	<60% predicted/personal best
	Validated questionnaires ATAQ ACQ ACT	 0 ≤ 0.75* ≥ 20	 1-2 ≥ 1.5 16-19	 3-4 N/A ≤ 15
Risk	Exacerbations requiring oral systemic corticosteroids	0-1/year	≥ 2/year (see note)	
		Consider severity and interval since last exacerbation		
	Progressive loss of lung function	Evaluation requires long-term followup care		
	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 (See "Stepwise Approach for Managing Asthma" for treatment steps.)		• Maintain current step • Regular followup at every 1-6 months to maintain control • Consider step down if well controlled for at least 3 months	• Step up 1 step • Re-evaluate in 2-6 weeks • For side effects, consider alternative treatment options	• Consider short course of oral systemic corticosteroids • Step up 1-2 steps • Re-evaluate in 2 weeks • For side effects, consider alternative treatment options

*ACQ values of 0.76-1.4 are indeterminate regarding well-controlled asthma.

Key: EIB, exercise-induced bronchospasm; ICU, intensive care unit

Notes:

The Stepwise Approach is meant to assist, not replace, the clinical decisionmaking required to meet individual patient needs.

Level of control is based on the most severe impairment or risk category. Assess impairment domain by patient's recall of previous 2-4 weeks and by spirometry/or peak flow measures. Symptom assessment for longer periods should reflect a global assessment, such as inquiring whether the patient's asthma is better or worse since the last visit.

At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma control. In general, more frequent and intense exacerbations (e.g., requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate poorer disease control. For treatment purposes, patients who had ≥2 exacerbations requiring oral systemic corticosteroids in the past year may be considered the same as patients who have not-well-controlled asthma, even in the absence of impairment levels consistent with not-well-controlled asthma.

ATAQ = Asthma Therapy Assessment Questionnaire©
ACQ = Asthma Control Questionnaire©
ACT = Asthma Control Test™
Minimal Important Difference: 1.0 for the ATAQ ; 0.5 for the ACQ ; not determined for the ACT

Before step up in therapy:

- Review adherence to medication, inhaler technique, environmental control, and comorbid conditions.

- If an alternative treatment option was used in a step, discontinue and use the preferred treatment for that step.

Deleted: 14

Deleted: 16

Stepwise Approach for Managing Asthma in Youths ≥ 12 Years of Age and Adults

Intermittent Asthma	Persistent Asthma: Daily Medication Consult with asthma specialist if Step 4 care or higher is required. Consider consultation at Step 3.				
Step 1 **Preferred:** SABA PRN	**Step 2** **Preferred:** Low-dose ICS **Alternative:** Cromolyn, LTRA, Nedocromil, or Theophylline	**Step 3** **Preferred:** Low-dose ICS + LABA **OR** Medium-dose ICS **Alternative:** Low-dose ICS + either LTRA, Theophylline, or Zileuton	**Step 4** **Preferred:** Medium-dose ICS + LABA **Alternative:** Medium-dose ICS + either LTRA, Theophylline, or Zileuton	**Step 5** **Preferred:** High-dose ICS + LABA **AND** Consider Omalizumab for patients who have allergies	**Step 6** **Preferred:** High-dose ICS + LABA + oral corticosteroid **AND** Consider Omalizumab for patients who have allergies

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

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

Quick-Relief Medication for All Patients

- 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.
- 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.

Step up if needed

(first check adherence, environmental control, and comorbid conditions)

Assess Control

Step down if possible

(and asthma is well controlled at least 3 months)

Key: Alphabetical order is used when more than one treatment option is listed within either preferred or alternative therapy. ICS, inhaled corticosteroid; LABA, long-acting inhaled beta$_2$-agonist; LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta$_2$-agonist.

Notes:

The Stepwise Approach is meant to assist, not replace, the clinical decisionmaking required to meet individual patient needs.

If alternative treatment is used and response is inadequate, discontinue it and use the preferred treatment before stepping up.

Zileuton is a less desirable alternative due to limited studies as adjunctive therapy and the need to monitor liver function. Theophylline requires monitoring of serum concentration levels.

In Step 6, before oral corticosteroids are introduced, a trial of high-dose ICS + LABA + either LTRA, theophylline, or zileuton may be considered, although this approach has not been studied in clinical trials.

Step 1, 2, and 3 preferred therapies are based on Evidence A; Step 3 alternative therapy is based on Evidence A for LTRA, Evidence B for theophylline, and Evidence D for zileuton. Step 4 preferred therapy is based on Evidence B, and alternative therapy is based on Evidence B for LTRA and theophylline and Evidence D zileuton. Step 5 preferred therapy is based on Evidence B. Step 6 preferred therapy is based on (EPR-2 1997) and Evidence B for omalizumab.

Immunotherapy for Steps 2-4 is based on Evidence B for house-dust mites, animal danders, and pollens; evidence is weak or lacking for molds and cockroaches. Evidence is strongest for immunotherapy with single allergens. The role of allergy in asthma is greater in children than in adults.

Clinicians who administer immunotherapy or omalizumab should be prepared and equipped to identify and treat anaphylaxis that may occur.

Deleted: 14

Deleted: 16

Classifying Severity of Asthma Exacerbations in the Urgent or Emergency Care Setting

Note: Patients are instructed to use quick-relief medications if symptoms occur or if PEF drops below 80% predicted or personal best. If PEF is 50-79%, the patient should monitor response to quick-relief medication carefully and consider contacting a clinician. If PEF is below 50%, immediate medical care is usually required. In the urgent or emergency care setting, the following parameters describe the severity and likely clinical course of an exacerbation.

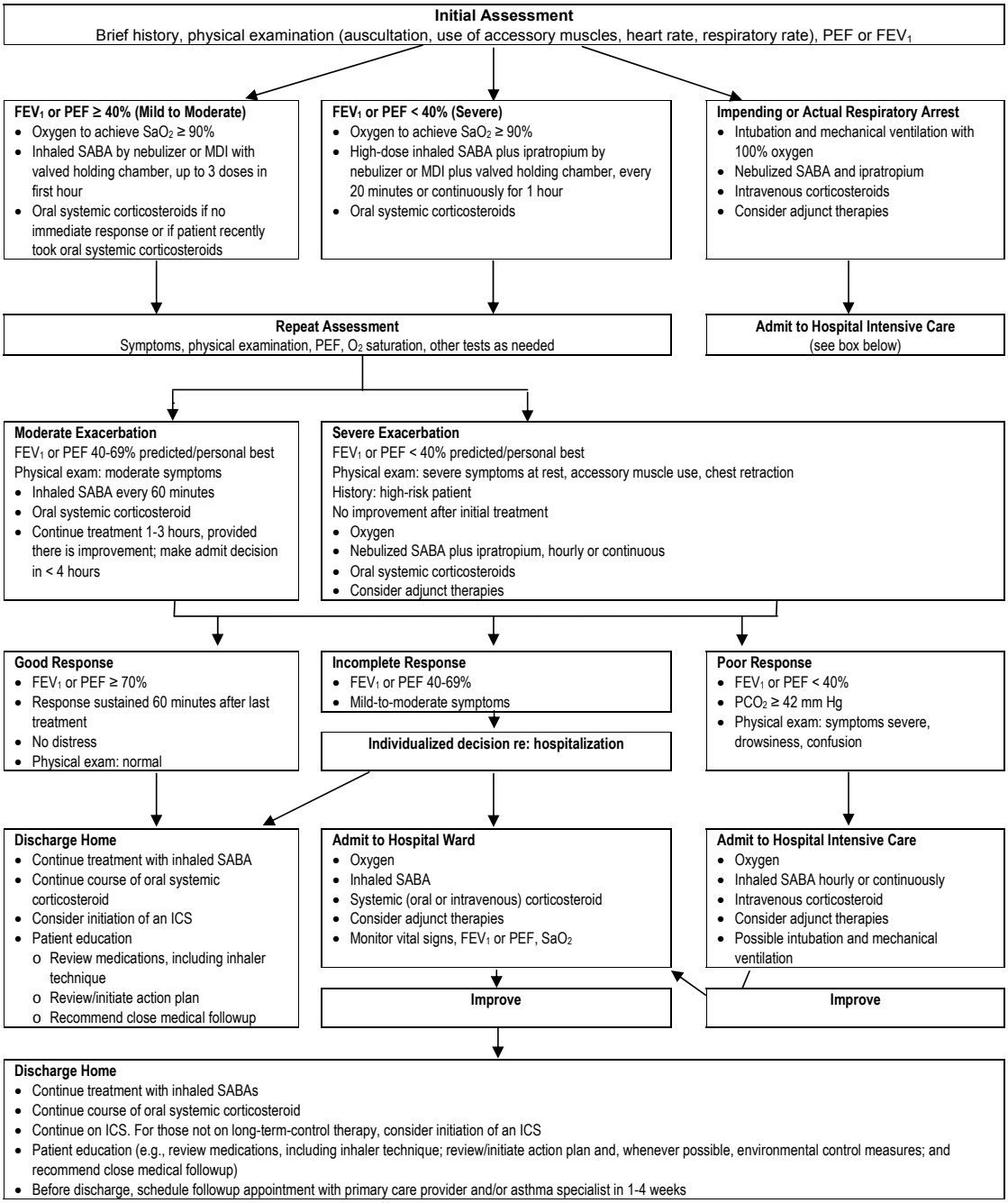
	Symptoms and Signs	Initial PEF (or FEV_1)	Clinical Course
Mild	Dyspnea only with activity (assess tachypnea in young children)	PEF ≥ 70% predicted or personal best	• Usually cared for at home • Prompt relief with inhaled SABA • Possible short course of oral systemic corticosteroids
Moderate	Dyspnea interferes with or limits usual activity	PEF 40-69% predicted or personal best	• Usually requires office or ED visit • Relief from frequent inhaled SABA • Oral systemic corticosteroids; some symptoms last for 1-2 days after treatment is begun
Severe	Dyspnea at rest; interferes with conversation	PEF < 40% predicted or personal best	• Usually requires ED visit and likely hospitalization • Partial relief from frequent inhaled SABA • Oral systemic corticosteroids; some symptoms last for > 3 days after treatment is begun • Adjunctive therapies are helpful
Subset: Life Threatening	Too dyspneic to speak; perspiring	PEF < 25% predicted or personal best	• Requires ED/hospitalization; possible ICU • Minimal or no relief from frequent inhaled SABA • Intravenous corticosteroids • Adjunctive therapies are helpful

Key: ED, emergency department; FEV_1, forced expiratory volume in 1 second; ICU, intensive care unit; PEF, peak expiratory flow; SABA, short-acting $beta_2$-agonist

Deleted: 14

Deleted: 16

Management of Asthma Exacerbations: Emergency Department and Hospital-Based Care



Key: FEV_1, forced expiratory volume in 1 second; ICS, inhaled corticosteroid; MDI, metered-dose inhaler; PCO_2, partial pressure carbon dioxide; PEF, peak expiratory flow; SABA, short-acting $beta_2$-agonist; SaO_2, oxygen saturation.

Deleted: *14*

Deleted: *16*

SUMMACARE Health Plan

Does the patient smoke?	Yes		No			
Is there a smoker in their house?	Yes		No			
Information available from previous health care provider?	Yes		No		N/A	

Member Name: _____ Allergies: _____

Please indicate items reviewed with an Y/N answer

Enter Date of Visit										
Classification of Asthma Severity										
Severe Persistent										
Moderate Persistent										
Mild Persistent										
Mild Intermittent										
Asthma Assessment										
Problems with coughing, wheezing, SOB or chest tightness during the day?										
Awakened at night from sleep due to coughing or other symptoms?										
Had symptoms while exercising or playing?										
Has asthma caused you to miss school/work or other activities?										
Medication problems?										
New Triggers?										
ER visits/hospitalization (Indicate date, visit, or inpatient stay)										
Monitoring peak flow/action plan?										
Lowest score since last visit										
Highest score since last visit										
Compliance										
Visits										
Medication										
Asthma Education										
Influenza vaccine (date of vaccine)										
Physiology, Signs/Symptoms										
Triggers, Environment Control										
Breathing Exercise										
Medication Management including proper use of nebulizer, peak flow measurement, spacers, inhalers										

Reference to the NIH Asthma Action Plan Document for Download: http://www.nhlbi.nih.gov/health/public/lung/asthma/asthma_actplan.pdf

Deleted: *14*

Deleted: *16*