

CARE GUIDE for *ASTHMA*

SUGGESTED GUIDELINES	PROCESS	IMPORTANT FINDINGS, MEASUREMENTS AND VALUES	INTERVENTIONS	SUGGESTED FOLLOW – UP
Diagnosis ⁽¹⁾	<ul style="list-style-type: none"> • Confirm a diagnosis by establishing that: <ul style="list-style-type: none"> ➢ Episodic symptoms of airflow obstruction or airway hyper-responsiveness are present ➢ Airflow obstruction is at least partially reversible ➢ Alternative diagnoses are excluded 	<ul style="list-style-type: none"> • Typical symptoms: <ul style="list-style-type: none"> ➢ episodic wheezing, ➢ cough, ➢ dyspnea, ➢ chest tightness • Spirometry (age ≥ 5): Increase in FEV1 of ≥ 12% and ≥ 200 ml from baseline or ≥ 10% of predicted FEV1 after inhalation of a short-acting bronchodilator 	<ul style="list-style-type: none"> • Spirometry • Exclude alternative diagnoses • For difficult diagnosis: consider methacholine or histamine challenge, imaging , or referral to specialist 	<ul style="list-style-type: none"> • Reassess as indicated
Assessment of Severity ⁽¹⁾	<ul style="list-style-type: none"> • Classify disease severity, best determined in a patient not yet receiving long-term control therapy: <ul style="list-style-type: none"> ➢ Class 1: Intermittent ➢ Class 2: Mild Persistent ➢ Class 3: Moderate Persistent ➢ Class 4: Severe Persistent Evaluate risk based on frequency of exacerbations and /or wheezing episodes 	<ul style="list-style-type: none"> • Degree of impairment: <ul style="list-style-type: none"> ➢ Symptom frequency ➢ Nocturnal awakenings ➢ Beta agonist use ➢ Interference with normal activity 	<ul style="list-style-type: none"> • Initiate treatment according to severity classification • Modify therapy based on control • Consider specialty referral with life threatening exacerbations or multiple hospitalization, atypical signs/symptoms, difficulty with differential DX, unmet treatment goals after 3-6 months or earlier, complicating factors such as sinusitis, nasal polyps, aspergillosis, VD, GERD, COPD, Step 3 or 4 or higher depending on age, additional diagnostic testing, high dose corticosteroid therapy, or immunotherapy. 	<ul style="list-style-type: none"> • Reassess as indicated

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Asthma Control ⁽¹⁾	<ul style="list-style-type: none"> Determine degree of asthma control by assessing degree of: <ul style="list-style-type: none"> ➤ Daytime symptoms ➤ Nocturnal symptoms ➤ Beta agonist use Ability to perform daily activities. Identify those at high risk for severe attacks or for need of specialty care 	<ul style="list-style-type: none"> Use validated asthma control assessment tool Well-controlled asthma: <ul style="list-style-type: none"> ➤ Daytime symptoms ≤ 2 days/wk ➤ Nocturnal awakenings ≤ 1/month age <12, ≤ 2/month ≥ 12 y/o ➤ No interference with normal activity ➤ Short acting beta-agonist medication use ≤ 2 days/wk ➤ FEV1 $> 80\%$ predicted or $>80\%$ of personal best or in the green zone of the peak flow meter (adults and children ≥ 5 y/o) ➤ FEV1/FVC $> 80\%$ (children age 5-11) ➤ Exacerbations requiring oral systemic corticosteroids 0-1/yr 	<ul style="list-style-type: none"> Make stepwise adjustments in therapy based on degree of asthma control Once good control has been maintained for 3+ months, consider step down in therapy Patients should be taught: <ul style="list-style-type: none"> ➤ the s/sx of exacerbation, ➤ know when to seek emergency medical treatment and ➤ to follow their action plan 	<ul style="list-style-type: none"> At every encounter
Spirometry ⁽¹⁾	<ul style="list-style-type: none"> Assess pulmonary function with spirometry to help establish a diagnosis, evaluate severity level, and monitor asthma control 	<ul style="list-style-type: none"> FEV 1 FEV 6 FEV 1/FVC 	<ul style="list-style-type: none"> Make stepwise adjustments in therapy based on degree of asthma control as assessed by history and spirometry Consider using spirometry as an accuracy check of the peak flow readings; when more precision is needed in measuring lung function; when an individual's capacity to accurately perform peak flow measurements is impaired by age, physical problems present, or when technical problems are suspected. 	<ul style="list-style-type: none"> Initial assessment After treatment has begun and symptoms stabilized During periods of progressive or prolonged worsening At least every 1-2 years

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Triggers ^(1,8)	<ul style="list-style-type: none"> • Assess allergen and trigger exposure • Assess medication triggers 	<ul style="list-style-type: none"> • Exposure to dust mites, mold, cockroaches, tobacco smoke, pets and rodents • Skin testing or in vitro testing for allergen sensitivity • Aspirin/NSAID allergy • Use of non-cardioselective beta-blockers 	<ul style="list-style-type: none"> • Trigger avoidance: <ul style="list-style-type: none"> ➢ Multifaceted approach to allergen control based on sensitivities, including pets, dust, molds, cockroaches ➢ Avoid exertion outdoors when pollution is heavy ➢ Avoid exposure to first and second hand smoke ➢ Avoid occupational exposure to specific triggers ▪ Consider allergy testing for patients with persistent, non-seasonal asthma who are taking daily medication for their asthma ▪ Treat rhinitis/sinusitis ▪ Consider allergy immunotherapy ▪ When beta-blockers are needed for management of co-morbidities, consider cardio-selective beta-blockers, monitor carefully 	<ul style="list-style-type: none"> ▪ Reassess as indicated ▪ Consider referral to allergist or asthma specialist
Tobacco ^(1,4)	<ul style="list-style-type: none"> ▪ Document smoking status at each encounter 	<ul style="list-style-type: none"> ▪ History of prior attempts to quit ▪ Readiness assessment ▪ Tobacco use patterns ▪ Exposure to second-hand smoke 	<ul style="list-style-type: none"> ▪ Think: 5 As <ul style="list-style-type: none"> ➢ Ask about smoking ➢ Advise user to quit ➢ Assess willingness to quit ➢ Assist user to quit (i.e., refer to smoking cessation program and consider pharmacotherapy) ➢ Arrange follow-up ▪ Strongly consider use of pharmacologic adjuvants; they can double or triple smoking cessation rates ▪ Educate household contacts about detrimental effects of passive smoking 	<ul style="list-style-type: none"> ▪ Call on quit date or within 72 hours to boost self-efficacy (can delegate to DM program or SC program) ▪ Assess each visit: smoking status, weight gain, nicotine withdrawal symptoms

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Asthma Self Management ^(1,7,9)	<ul style="list-style-type: none"> ▪ Provide self management education at multiple points of care including clinics, homes, pharmacies, schools, EDs, and hospitals ▪ Self management education should include: <ul style="list-style-type: none"> ➢ Asthma information and training in management skills ➢ Self monitoring ➢ Asthma action plan ➢ Regular assessment by a consistent clinician 	<ul style="list-style-type: none"> • Symptoms • Home Peak Expiratory Flow (PEF) monitoring • Inhaler technique • Written asthma action plan 	<ul style="list-style-type: none"> • Asthma education: Use written material, interactive computer programs, videos, individual or group sessions • Tailor contents to patient’s age, culture ethnicity, and social, emotional and disease status • Consider home PEF monitoring in patients who have moderate to severe persistent asthma, history of severe exacerbations, poor symptom perception, or a preference for this monitoring method <ul style="list-style-type: none"> • Asthma action plan: Provide each patient with a personalized written asthma action plan including instructions on daily management and how to recognize and handle worsening symptoms. The action plan may be based on symptoms or PEF readings or a combination of both 	<ul style="list-style-type: none"> ▪ Reassess educational needs, self management goals, inhaler use, and action plan. Indicated at every opportunity in appropriate formats. ▪ Include caregivers of both adults and minors • Update or review written asthma action plan at least annually
Influenza Vaccinations ^(1,10)	<ul style="list-style-type: none"> • Annual vaccinations 	<ul style="list-style-type: none"> • Document that each patient has had an influenza vaccination every year and document if adverse event occurs 	<ul style="list-style-type: none"> • Administer vaccine annually to all patients with asthma and \geq 6 months old beginning each September 	<ul style="list-style-type: none"> • Annually
Pneumococcal Vaccine ⁽¹⁰⁾	<ul style="list-style-type: none"> • Pneumococcal vaccine 	<ul style="list-style-type: none"> • Record date of last immunization 	<ul style="list-style-type: none"> • Administer vaccine to all adults with asthma age 19 through 64 years of age. Vaccinate all adults age 19 through 64 with ASTHMA with the pneumococcal vaccine once, with a booster given at age 65 or older if 5 years or longer since the last dose was given prior to the age of 65. 	<ul style="list-style-type: none"> • As indicated
Depression/Anxiety ^(1, 2,6)	<ul style="list-style-type: none"> • Screen for depression/anxiety 	<ul style="list-style-type: none"> • Use validated depression screening tool such as the PHQ-2. If positive, use the PHQ-9. • Assess for signs of anxiety 	<ul style="list-style-type: none"> • Assess for symptoms of anxiety often, especially during times of exacerbation • Administer the PHQ-2 at least yearly • If positive, administer the 	<ul style="list-style-type: none"> • Refer appropriate individuals to a mental health professional when

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			PHQ-9	necessary based on assessment
Quality of Life (QOL) ^(1, 2)	<ul style="list-style-type: none"> Assess QOL 	Areas of greatest importance include: <ul style="list-style-type: none"> ➤ Missed work/school ➤ Limitation of usual activities ➤ Change in caregiver’s activity due to child’s asthma ➤ Disturbances in sleep due to asthma ➤ ED visit or unscheduled hospital stays since the last office visit 	<ul style="list-style-type: none"> Assess QOL using a validated, asthma specific or generic QOL tool 	<ul style="list-style-type: none"> Annually or when indicated
Osteoporosis ^(1,5)	<ul style="list-style-type: none"> Assess those at increased risk for osteoporosis 	<ul style="list-style-type: none"> Screening in adults with asthma include: <ul style="list-style-type: none"> ➤ Individuals taking glucocorticoids \geq 5 mg/day for \geq 3 months ever ➤ Individuals with a possible osteoporosis-related fracture ➤ Individuals taking high doses of inhaled steroids (ICS) 	<ul style="list-style-type: none"> Measurement of bone mineral density (BMD) depends on the duration of and dose of ICS and oral corticosteroids as well as any previous BMD scores 	<ul style="list-style-type: none"> Every 1-2 years

Step Drug Therapy ^(1,3)

<ul style="list-style-type: none"> Provide reliever and controller medications based on severity assessment and degree of control Step up controller therapy until effective control is achieved In patients with good control for at least 3 months, step down therapy to minimum level needed for control 	<p style="text-align: center;">Age 0 - 4</p>	<p style="text-align: center;">Age 5 - 11</p>	<p style="text-align: center;">Age ≥ 12</p>
<ul style="list-style-type: none"> Step 1: Intermittent asthma 	<ul style="list-style-type: none"> SABA PRN 	<ul style="list-style-type: none"> SABA PRN 	<ul style="list-style-type: none"> SABA PRN
<ul style="list-style-type: none"> Step 2: Persistent asthma 	<ul style="list-style-type: none"> <i>Preferred:</i> Low dose ICS <i>Alternatives:</i> cromolyn or montelukast 	<ul style="list-style-type: none"> <i>Preferred:</i> Low dose ICS <i>Alternatives:</i> cromolyn LTRA, nedocromil, or Theophylline 	<ul style="list-style-type: none"> <i>Preferred:</i> Low dose ICS <i>Alternatives:</i> cromolyn LTRA, nedocromil, or Theophylline
<ul style="list-style-type: none"> Step 3: Persistent asthma 	<ul style="list-style-type: none"> Medium dose ICS 	<ul style="list-style-type: none"> <i>Preferred:</i> Low dose ICS + either LABA, LTRA, or Theophylline OR Medium dose ICS 	<ul style="list-style-type: none"> <i>Preferred:</i> Low dose ICS + LABA OR Medium dose ICS <i>Alternatives:</i> Low dose ICS + either LTRA, Theophylline, or zileuton
<ul style="list-style-type: none"> Step 4: Persistent asthma 	<ul style="list-style-type: none"> Medium dose ICS + either LABA or montelukast 	<ul style="list-style-type: none"> <i>Preferred:</i> Medium dose ICS + LABA <i>Alternatives:</i> Medium dose ICS + either LTRA or Theophylline 	<ul style="list-style-type: none"> <i>Preferred:</i> Medium dose ICS + LABA <i>Alternatives:</i> Medium dose ICS + either LTRA, Theophylline, or zileuton
<ul style="list-style-type: none"> Step 5: Persistent asthma 	<ul style="list-style-type: none"> High dose ICS + either LABA or montelukast 	<ul style="list-style-type: none"> <i>Preferred:</i> High dose ICS + LABA <i>Alternatives:</i> High dose ICS + either LTRA or Theophylline 	<ul style="list-style-type: none"> <i>Preferred:</i> High dose ICS + LABA AND Consider omalizumab for patients with allergies
<ul style="list-style-type: none"> Step 6: Persistent asthma 	<ul style="list-style-type: none"> High dose ICS + either LABA or montelukast Oral systemic corticosteroid 	<ul style="list-style-type: none"> <i>Preferred:</i> High dose ICS + LABA + oral systemic corticosteroid <i>Alternatives:</i> High dose ICS + either LTRA or Theophylline + oral systemic corticosteroid 	<ul style="list-style-type: none"> <i>Preferred:</i> High dose ICS + LABA + oral systemic corticosteroid AND Consider omalizumab for patients with allergies

Legend

SABA: short-acting beta2 (β_2)-agonist; LABA: long-acting beta2 (β_2)-agonist; ICS: inhaled corticosteroids; LTRA: leukotriene receptor antagonists

ACTION	FREQUENCY
ASSESSMENT OF ASTHMA SEVERITY AND CONTROL	EACH VISIT
SMOKING CESSATION COUNSELING	EACH VISIT
TRIGGER ASSESSMENT	INITIALLY AND AS INDICATED
PHARMACOLOGICAL THERAPY INHALED CORTICOSTEROIDS SYSTEMIC CORTICOSTEROIDS LONG-ACTING INHALED BETA-2 AGONISTS COMBINED MEDICATIONS LEUKOTRIENE INHIBITORS METHYLXANTHINES	INITIALLY AND ONGOING
SPIROMETRY	INITIALLY AND EVERY 1-2 YEARS, OR AS INDICATED
ACTION PLAN	EACH VISIT
FLU VACCINE	ANNUALLY

Table 1: Levels of Asthma Control

Source: Global Strategy for Asthma Management and Prevention, Global Initiative for Asthma (GINA) 2010. Available from: <http://www.ginasthma.org>

Levels of Asthma Control			
Characteristic	Controlled (all of the following)	Partly Controlled (any measure present in any week)	Uncontrolled
Daytime symptoms	Twice or less/week	More than twice/week	Three or more features of partly controlled asthma present in any week *†
Limitations of activities	None	Any	
Nocturnal symptoms/awakening	None	Any	
Need for reliever/rescue treatment	Twice or less/week	More than twice/week	
Lung function (PF or FEV ₁)‡	Normal	<80% predicted or <80% personal best (not in green zone of peak flow meter), if known.	
Assessment of Future Risk (risk of exacerbations, instability, rapid decline in lung function, side effects)			
Features that are associated with increased risk of adverse events in the future include: Poor clinical control, frequent exacerbations in the past year, ever admission to critical care for asthma, low FEV ₁ , exposure to cigarette smoke, high dose medications.			

* Any exacerbation should prompt review of maintenance treatment to ensure that it is adequate

† By definition, an exacerbation in any week makes that an uncontrolled asthma week

‡ Lung function is not a reliable test for children 5 years and younger

Reference List

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<p>2. National Asthma Education and Prevention Program. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma 2007. (NIH Publication No. 07-4051). 2007. National Heart Lung and Blood Institute.</p>	<p>7. A clinical practice guideline for treating tobacco use and dependence: A US Public Health Service report. The Tobacco Use and Dependence Clinical Practice Guideline Panel, Staff, and Consortium Representatives. <i>JAMA</i>. 2000; 283:3244-54.</p>
<p>3. Juniper EF, O'Byrne PM, Guyatt GH, Ferrie PJ, King DR. Development and validation of a questionnaire to measure asthma control. <i>Eur Respir J</i>. 1999;14:902-7</p>	<p>8. Ranney L, Melvin C, Lux L, McClain E, Lohr KN. Systematic review: smoking cessation intervention strategies for adults and adults in special populations. <i>Ann Intern Med</i>. 2006; 145:845-56.</p>
<p>4. Liu AH, Zeiger R, Sorkness C, Mahr T, Ostrom N, Burgess S, et al. Development and cross-sectional validation of the Childhood Asthma Control Test. <i>J Allergy Clin Immunol</i>. 2007; 119:817-25.</p>	<p>9. National Osteoporosis Foundation. Clinician's Guide to Prevention and Treatment of Osteoporosis. Washington, DC: National Osteoporosis Foundation; 2010 http://www.nof.org/professionals/pdfs/NOF_ClinicianGuide2009_v7.pdf</p>
<p>5. Nathan RA, Sorkness CA, Kosinski M, Schatz M, Li JT, Marcus P, et al. Development of the asthma control test: a survey for assessing asthma control. <i>J Allergy Clin Immunol</i>. 2004; 113:59-65.</p>	<p>10. Centers for Disease Control and Prevention, Department of Health and Human Services. Vaccines and Preventable Diseases: Pneumococcal Vaccination, April 2011 http://www.cdc.gov/vaccines/vpdvac/pneumo/default.htm</p>