



Management of Asthma in Children and Adults

OBJECTIVE

The objective of this Clinical Practice Guideline (CPG) is to provide evidence-based practice recommendations for the treatment of Asthma. The CPG discusses categories of Asthma, the importance of an Asthma Action Plan, common triggers and core symptoms, and behavioral health implications. In addition, the CPG outlines the organizations that WellCare aligns with regarding Asthma and relevant Measureable Health Outcomes.

OVERVIEW

According to the American Lung Association approximately 26 million Americans, including 7 million children, have asthma. Asthma is a chronic inflammatory disease of the airways. Inflammation causes the airways to spasm and swell periodically, causing the airways to narrow. The individual then must wheeze or gasp for air. Obstruction to air flow either resolves spontaneously or responds to a wide range of treatments, but continuing inflammation makes the airways hyper-responsive to stimuli such as cold air, exercise, dust mites, air pollutants, and even stress and anxiety.

Hierarchy of Support

GUIDELINE HIERARCHY

CPGs are updated annually or as necessary due to updates made to the National Heart, Lung, and Blood Institute and the Global Initiative for Asthma guidelines. When there are differing opinions noted by national organizations, WellCare will default to the Member's benefit structure as deemed by state contracts and Medicaid / Medicare regulations. If there is no specific language pertaining to asthma, WellCare will default (in order) to the following:

- National Committee for Quality Assurance (NCQA);
- United States Preventive Services Task Force (USPSTF), National Quality Strategy (NQS), Agency for Healthcare Research and Quality (AHRQ);
- Specialty associations, colleges, societies, etc. (e.g., American Academy of Family Physicians, American Congress of Obstetricians and Gynecologists, American Cancer Society, etc.).

Links to websites within the CPGs are provided for the convenience of Providers. Listings do not imply endorsement by WellCare of the information contained on these websites. NOTE: All links are current and accessible at the time of MPC approval.

WellCare aligns with the National Heart, Lung, and Blood Institute and the Global Initiative for Asthma on the topic of asthma. The following are highlights from the organizations.

NATIONAL HEART, LUNG AND BLOOD INSTITUTE¹

The National Heart, Lung, and Blood Institute publication *Guidelines for the Diagnosis and Management of Asthma (Expert Panel Report-3)* provides an overview of medical literature review and updated recommendations for managing asthma long term and for managing exacerbations around four essential components of asthma care. The components of care include: assessment and monitoring, patient education, control of factors contributing to asthma severity, and pharmacologic treatment. The full report can be accessed [here](#). An addendum of useful figures is included below.

GLOBAL INITIATIVE FOR ASTHMA²

The Global Initiative for Asthma states that treatment of asthma for symptom control and risk reduction includes medications, treating modifiable risk factors, and non-pharmacological therapies and strategies. Every patient should also be trained in essential skills and guided asthma self-management, including:

- Asthma information
- Inhaler skills
- Adherence
- Written asthma action plan
- Self-monitoring
- Regular medical review

For the 2016 GINA Report, *Global Strategy for Asthma Management and Prevention*, visit the Global Initiative for Asthma web site at <http://ginasthma.org/gina-reports/>.

Evidence Based Practice

MEASUREMENT OF COMPLIANCE

WellCare is committed to adhering to the measures and standards published by the Centers for Medicare and Medicaid Services (CMS) and the National Committee for Quality Assurance (NCQA). Please reference WellCare's Clinical Policy Guiding Document titled *Measures of Compliance*.

NOTE: To access Clinical Policy Guiding Documents visit www.wellcare.com – select the Provider tab, then “Tools” and “Clinical Guidelines”.

Care Management

The goals for Care Management is to support the Member's ability to self-manage their disease, minimize risk of exacerbations of asthma, and remove barriers preventing the Member from achieving those goals. Primary episodic symptoms to assess (and educate the Member on) include:³

Symptoms requiring escalated self-management (Asthma Action Plan Yellow Zone)

- Cough, wheeze, chest tightness
- Waking at night due to asthma
- shortness of breath
- Can do some, but not all, usual activities

Symptoms requiring emergent medical care (Asthma Action Plan Red Zone)

- Very short of breath
- Cannot do usual activities
- Quick-relief medicines have not helped
- Symptoms are same or get worse after 24 hours in Yellow Zone

Integrated care management of asthma involves:

- Identifying and removing asthma triggers from the Member's environment. (This may involve other family Members, especially those who are smokers).
- Ensuring adherence to maintenance medications.
- Vaccinating against influenza and pneumonia.
- Having an asthma action plan.
- Screening for anxiety and depression (and based on findings) and initiate treatment or continued surveillance.

MEASURABLE HEALTH OUTCOMES

Targeted Health Outcomes (Extended Program Goals) result from successful member self-management (see Case Management Objectives).

1. The Member has decreased need for rescue medication over a specific period of time after Case Management (CM) engagement. Compare pharmacy data pre- and post-case management intervention to validate adherence to timely refill of the prescribed controller and number/frequency of refills for the rescue medication(s). In absence of pharmacy data, CM may use Provider and/or Member narrative.
2. The Member experiences fewer exacerbations requiring acute medical care and intervention. The case manager compares the recent utilization frequency to the frequency prior to CM engagement. Monitor for ED and inpatient authorization/utilization related to the primary diagnosis of asthma. In absence of ED and inpatient utilization, authorizations and claims data, or to otherwise demonstrate fewer exacerbations requiring medical intervention, CM may use Provider and/or Member narrative.

CASE MANAGEMENT GOALS

Case Goals should target specific care gaps and/or adherence issues, and measure the member's progress towards self-management and adherence which will lead to the targeted health outcomes above. Examples:

1. Member is able to describe steps taken to minimize exposure to and / or avoid asthma triggers and other irritants, measured by the member's description of known triggers and avoidance strategies pre- and post- case management intervention.
2. Member describes new Asthma Action Plan detail, including maintenance activities, symptoms to watch for, and actions to take for yellow and red zones.
3. Member exhibits at least a 20% decrease in the frequency of yellow/red zone symptoms over the last 30 days, evidenced by member's response to symptom-related questions in the assessment. (Member-specific goals should reference member's individual symptoms.)
4. Specific for Members requiring hospitalization: The Member participates in provider follow-up visit within 7 days of hospital discharge.

CASE MANAGEMENT OBJECTIVES

Case Management Objectives should focus on improving the member's self-management skills including:

- Identifying and removing triggers (dust, mold, smoke, certain foods, pets, exercise, cold/hot weather, pollen, feathers, certain chemicals, older carpeting, etc.)
- Using hypoallergenic (allergen control) bedding
- Adhering to Provider visit(s) as scheduled
- Keeping and sharing a diary with your doctor
- Taking maintenance medications as prescribed and understanding when to use rescue medications
- Using metered-dose inhalers and spacers appropriately
- Tobacco cessation
- Avoiding second-hand smoke
- Avoiding fumes, dust, and other lung irritants
- Vaccinating against influenza and pneumonia
- Handwashing to prevent infection
- Early identification of oncoming symptoms
- Implementing an Asthma Action Plan

The care team should ensure screening for and treatment of anxiety and/or depression, as appropriate

Asthma Action Plan. All Members with Asthma should have a written Asthma Action Plan, evaluated at least annually, which incorporates all aspects of their Asthma care. A team approach, which includes the Member, PCP, a certified asthma educator, and a pulmonary specialist (when appropriate) is the ideal delivery model for the effective and efficient treatment of Asthma. Action Plan templates are available through the American Lung Association at:

Standard: <http://www.lung.org/assets/documents/asthma/asthma-action-plan.pdf>

School-Age: <http://www.lung.org/assets/documents/asthma/asthma-action-plan-for-home.pdf>

Additional Care Management training items are located in the Addendum of this CPG.

OTHER CONSIDERATIONS

Behavioral Health and Asthma. According to a recent research report, depression is found in 45% of Asthma patients. Anxiety and asthma symptoms overlap but can be separated.¹

Anxiety symptoms:

- Shortness of breath
- Worry
- Dread
- Somatic symptoms

Asthma symptoms:

- Shortness of breath
- Worry
- Dread
- Coughing

- Avoidance of activities
- Normal spirometry
- Continuous
- Wheezing
- Abnormal spirometry
- Intermittent

The PHQ-4 is a brief screen for depression and anxiety. The PHQ-4, a PHQ-9 and GAD-7 subset questionnaire, is a brief screen for depression and anxiety and is a recommended tool for screening members with asthma.

For details regarding the screening tool, it's scoring, and subsequent actions recommended based on score, visit <https://phqscreeners.pfizer.edrupalgardens.com/sites/g/files/g10016261/f/201412/instructions.pdf> to view an Instructional Manual supporting several screenings, including the PHQ-4.

The PHQ-9 is available at <http://www.phqscreeners.com>.

The GAD-7 is available at <http://www.integration.samhsa.gov/clinical-practice/screening-tools>.

The PHQ-2 is available at <http://www.aafp.org/afp/2012/0115/p139.html>.

The PHQ-4 is available at <http://www.phqscreeners.com>

As steroid and inhaler use may precipitate psychiatric symptoms, the care team should be watchful for such symptoms.

MEMBER EDUCATIONAL RESOURCES

WellCare contracts with Krames/StayWell for Member educational materials utilized by Case Managers. Items are available to review with Members to address knowledge gaps. Case Managers verbally educate Members on the topics below related to asthma. (Titles may also be sent to the member).

NOTE: Links are internal for WellCare Care Management staff.

- [Caring For Your Inhaler](#)
- [Using an Inhaler with a Spacer](#)
- [Using an Inhaler Without a Spacer](#)
- [Controlling Triggers - Irritants](#)
- [Controlling Triggers - Allergens](#)
- [Controlling Triggers - Other](#)
- [Exercising with Asthma](#)
- [Controlling Allergens Dust Mites](#)
- [Using Dry-Powder Inhalers \(DPIs\)](#)
- [Using a Nebulizer \(Adult\)](#)
- [Asthma Medication](#)
- [Asthma Symptom Diary](#)

Providers may wish to research the titles above related to asthma that Case Managers utilize with Members.

PHARMACOLOGY

High-dose steroids used to treat asthma may result in psychiatric symptoms such as anxiety, depression, psychosis.

Related WellCare Guidelines

In addition to the information contained in this document, please reference the following CPGs: *COPD (HS-1007)* and *Smoking Cessation (HS-1035)*. Georgia market, please reference the CPG *Asthma (HS-1001GA)*. The CPGs for age-specific *Preventive Health (Pediatric: HS-1019, Adolescent: HS-1051, Adult: HS-1018 and Older Adult: HS-1063)* also details information related to the NCQA measures noted above (see "Measures of Compliance").

NOTE: Clinical Policies can be accessed by going to www.wellcare.com – select the Provider tab, then "Tools" and "Clinical Guidelines".

References

1. Guidelines for the diagnosis and management of asthma (Expert Panel Report-3). National Heart, Lung, and Blood Institute Web site. <http://www.nhlbi.nih.gov/guidelines/asthma/index.htm>. Published 2007. Accessed November 4, 2016.
2. 2016 GINA Report, Global Strategy for Asthma Management and Prevention. Global Initiative for Asthma Web site. <http://ginasthma.org/gina-reports/>. Updated 2016. Accessed November 4, 2016.
3. Asthma action plan. National Heart, Lung, and Blood Institute Web site. https://www.nhlbi.nih.gov/files/docs/public/lung/asthma_actplan.pdf. Accessed November 16, 2016.

Disclaimer

Clinical Practice Guidelines (CPGs) made available by WellCare are informational in nature and are not a substitute for the professional medical judgment of treating physicians or other health care practitioners. CPGs are based on information available at the time and may not be updated with the most current information available at subsequent times. Individuals should consult with their

physician(s) regarding the appropriateness of care or treatment options to meet their specific needs or medical condition. Disclosure of a CPG is not a guarantee of coverage and is not intended to be used for Utilization Management Decisions or for claims. Members of WellCare Health Plans should consult their individual coverage documents for information regarding covered benefits. WellCare does not offer medical advice or provide medical care, and therefore cannot guarantee any results or outcomes. WellCare does not warrant or guarantee, and shall not be liable for any deficiencies in the information contained herein or for any inaccuracies or recommendations made by independent third parties from whom any of the information contained herein was obtained. Links are current at time of approval by the Medical Policy Committee (MPC) and are subject to change. Lines of business are also subject to change without notice and are noted on www.wellcare.com. Guidelines are also available on the site by selecting the Provider tab, then "Tools" and "Clinical Guidelines".

Easy Choice Health Plan ~ Harmony Health Plan of Illinois ~ Missouri Care ~ 'Ohana Health Plan, a plan offered by WellCare Health Insurance of Arizona OneCare (Care 1st Health Plan Arizona, Inc.) ~ Staywell of Florida ~ WellCare Prescription Insurance ~ WellCare Texan Plus (Medicare – Dallas and Houston markets) WellCare (Arizona, Arkansas, Connecticut, Florida, Georgia, Illinois, Kentucky, Louisiana, Mississippi, Nebraska, New Jersey, New York, South Carolina, Tennessee, Texas)

Medical Policy Committee Approval History

Date History and Revisions by the Medical Policy Committee

- | | |
|---|---|
| <p>10/10/2017
12/8/2016
1/7/2016
12/16/2015
2/5/2015
6/17/2014
6/7/2012

12/1/2011
9/2010</p> | <ul style="list-style-type: none"> • Approved by MPC. No changes. • Approved by MPC. Enhanced Care Management and Measures of Compliance sections. • Approved by MPC. Cross referenced Georgia specific CPG on Asthma. • Approved by MPC. Inclusion of the Global Initiative for Asthma reference. • Approved by MPC. Included items from Care Management training. • Approved by MPC. Inclusion of NCQA Disease Management Performance Measure. • Approved by MPC. Added <i>Recommended Key Clinical Activities for the Diagnosis and Management of Asthma</i> (source: NHLBI, 2007). See pp. 8-9. Updated HEDIS age range, inserted new reference. • New template design approved by MPC. • Approved by MPC. |
|---|---|

Addendum

The following figures can be found in the National Heart, Lung, and Blood Institute's publication *Guidelines for the Diagnosis and Management of Asthma (Expert Panel Report-3)*. The full report can be accessed [here](#).¹

Classifying Severity in Children Who Are Not Currently Taking Long-Term Control Medication (0-4 years of age)

Components of Severity		Classification of Asthma Severity (Children 0-4 years of age)			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment	Symptoms	≤ 2 days / week	> 2 days / week but not daily	Daily	Throughout the day
	<i>Nighttime awakenings</i>	0	1-2x/month	3-4x/month	>1x/week
	<i>Short-acting beta₂-agonist use for symptom control (not prevention of EIB)</i>	≤ 2 days / week	> 2 days / week but not daily	Daily	Several times per day
	<i>Interference with normal activity</i>	None	Minor limitation	Some limitation	Extremely limited
Risk	<i>Exacerbations requiring oral systemic corticosteroids</i>	0-1/year	>2 exacerbations in 6 months requiring oral steroids, or ≥4 wheezing episodes / 1 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.			

**Classifying Severity in Children Who Are Not Currently
Taking Long-Term Control Medication (5-11 years of age)¹**

Components of Severity		Classification of Asthma Severity (Children 5-11 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	≤ 2 x / 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	Daily	Several times per day
	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 >85%	FEV ₁ = >80% predicted FEV ₁ / FVC >85%	FEV ₁ = 60-80% predicted FEV ₁ / FVC = 75-80% ¹	FEV ₁ = 60-80% predicted FEV ₁ / FVC = 75-80%
Risk	Exacerbations requiring oral systemic corticosteroids	0-1/year	>2 in 1 year (see guideline for full 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 .			

**Classifying Severity in Children Who Are Not Currently
Taking Long-Term Control Medication (≥ 12 years of Age and Adults)**

Components of Severity		Classification of Asthma Severity (Youths ≥ 12 years of age and adults)			
		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 >1x/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/FEC normal 	<ul style="list-style-type: none"> FEV₁ >80% predicted FEV₁/FEC normal 	<ul style="list-style-type: none"> FEV₁ >60% but <80% predicted FEV₁/FEC reduced 5% 	<ul style="list-style-type: none"> FEV₁ >60% predicted FEV₁/FEC 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 →			

Assessing Asthma Control and Adjusting Therapy in Children (0-4 years of age)¹

Components of Control		Classification of Asthma Control (Children 0-4 years of age)		
		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
	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
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.		

Assessing Asthma Control and Adjusting Therapy in Youths ≥ 12 years of Age and Adults¹

Components of Control		Classification of Asthma Control (Youth ≥12 years of age and adults)		
		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 follow up 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 the specific levels of control but should be considered in the overall assessment of risk.		

Assessing Asthma Control and Adjusting Therapy in Children (5-11 years of age)¹

Components of Control		Classification of Asthma Control (Children 5-11 years of age)		
		Well-Controlled	Not Well-Controlled	Very Poorly Controlled
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	≥2x/month	≥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 or peak flow • FEV ₁ /FVC	>80% predicted or personal best >80%	60-80% predicted or personal best >75-80%	>60% predicted or personal best >80%
Risk	Exacerbations Requiring oral systemic corticosteroids	0-1/year	≥2/year (see note) Consider severity and interval since last exacerbation	
	Reduction in Lung Growth	Evaluation requires long-term follow-up.		
	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 the specific levels of control but should be considered in the overall assessment of risk.		

Figure 1. Summary of Recommended Key Clinical Activities for the Diagnosis and Management of Asthma¹

Clinical Issue	Key Clinical Activities	Action Steps
DIAGNOSIS		
	Establish asthma diagnosis.	<ul style="list-style-type: none"> Use medical history and physical examination to determine that symptoms of recurrent episodes of airflow obstruction are present. Use spirometry in all patients ≥5 years of age to determine that airway obstruction is at least partially reversible. Consider alternative causes of airway obstruction.
MANAGING ASTHMA LONG TERM	<p>Goal of asthma therapy is asthma control:</p> <ul style="list-style-type: none"> Reduce impairment (prevent chronic symptoms, require infrequent use of short-acting beta2-agonist (SABA), maintain (near) normal lung function and normal activity levels). Reduce risk (prevent exacerbations, minimize need for emergency care or hospitalization, prevent loss of lung function, or for children, prevent reduced lung growth, have minimal or no adverse effects of therapy). 	
FOUR COMPONENTS OF CARE		
Assessment and Monitoring	<p>Assess asthma severity to initiate therapy.</p> <p>Assess asthma control to monitor and adjust therapy.</p>	<ul style="list-style-type: none"> Use severity classification chart, assessing both domains of impairment and risk, to determine initial treatment. Use asthma control chart, assessing both domains of impairment and risk, to determine if therapy should be maintained or adjusted (step up if necessary, step down if possible). Use multiple measures of impairment and risk: different measures assess different manifestations of asthma; they may not correlate with each other; and they may respond differently to therapy. Obtain lung function measures by spirometry at least every 1–2 years, more frequently for not-well-controlled asthma.

	Schedule follow-up care.	<ul style="list-style-type: none"> Asthma is highly variable over time; periodic monitoring is essential. Consider scheduling patients at 2- to 6-week intervals while gaining control; at 1–6 month intervals, depending on step of care required or duration of control, to monitor if sufficient control is maintained; at 3-month intervals if a step down in therapy is anticipated. Assess asthma control, medication technique, written asthma action plan, patient adherence and concerns at every visit.
Education	<p>Provide self-management education.</p> <p><i>Tailor education to literacy level of patient. Appreciate the potential role of a patient's cultural beliefs and practices in asthma management.</i></p> <p>Develop a written asthma action plan in w/ patient.</p> <p>Integrate education into all points of care where health professionals interact with patients.</p>	<p>Teach and reinforce:</p> <ul style="list-style-type: none"> Self-monitoring to assess level of asthma control and signs of worsening asthma (either symptom or peak flow monitoring shows similar benefits for most patients). Peak flow monitoring may be helpful for patients who have difficulty perceiving symptoms, a history of severe exacerbations, or moderate or severe asthma. Using written asthma action plan (review differences between long-term control and quick-relief medication). Taking medication correctly (inhaler technique and use of devices). Avoiding environmental factors that worsen asthma. Agree on treatment goals and address patient concerns. Provide instructions for (1) daily management (long-term control medication, if appropriate, and environmental control measures) and (2) managing worsening asthma (how to adjust medication, and know when to seek medical care). Involve all members of the health care team in providing / reinforcing education, including physicians, nurses, pharmacists, respiratory therapists, and asthma educators. Encourage education at all points of care: clinics (offering separate self-management education programs as well as incorporating education into every patient visit), Emergency Departments and hospitals, pharmacies, schools and other community settings, and patients' homes. Use a variety of educational strategies and methods.
Control Environmental Factors and Comorbid conditions	<p>Recommend measures to control exposures to allergens and pollutants or irritants that make and asthma worse.</p> <p>Treat comorbid conditions.</p>	<ul style="list-style-type: none"> Determine exposures, history of symptoms in presence of exposures, and sensitivities (In patients who have persistent asthma, use skin or in vitro testing to assess sensitivity to perennial indoor allergens.). Advise patients on ways to reduce exposure to those allergens and pollutants, or irritants to which the patient is sensitive. Multifaceted approaches are beneficial; single steps alone are generally ineffective. Advise all patients and pregnant women to avoid exposure to tobacco smoke. Consider allergen immunotherapy, by specifically trained personnel, for patients who have persistent asthma and when there is clear evidence of a relationship between symptoms and exposure to an allergen to which the patient is sensitive. Consider especially: allergic bronchopulmonary aspergillosis; gastroesophageal reflux, obesity, obstructive sleep apnea, rhinitis and sinusitis, and stress or depression. Recognition and treatment of conditions may improve asthma control. Consider inactivated influenza vaccine for all patients over 6 months of age.
Medications	Select medication and delivery devices to meet patient's needs and circumstances.	<ul style="list-style-type: none"> Use stepwise approach (See below.) to identify appropriate treatment options. Inhaled corticosteroids (ICSs) are the most effective long-term control therapy. When choosing among treatment options, consider domain of relevance to the patient (impairment, risk, or both), patient's history of response to the medication, and patient's willingness and ability to use the medication.
STEPWISE APPROACH		
General Principles for All Age Groups	Incorporate four components of care.	<ul style="list-style-type: none"> Include medications, patient education, environmental control measures, and management of comorbidities at each step. Monitor asthma control regularly (See above, assessment and monitoring.)
	Initiate therapy based on asthma severity.	<ul style="list-style-type: none"> For patients not taking long-term control therapy, select treatment step based on severity (See figures on stepwise approach for different age groups.). Patients who have persistent asthma require daily long-term control medication.
	Adjust therapy based on asthma control.	<ul style="list-style-type: none"> Once therapy is initiated, monitor the level of asthma control and adjust therapy accordingly: step up if necessary and step down if possible to identify the minimum amount of medication required to maintain asthma control.

- Refer to an asthma specialist for consultation or co-management if there are difficulties achieving or maintaining control; step 4 care or higher is required (step 3 care or higher for children 0–4 years of age); immunotherapy or omalizumab is considered; or additional testing is indicated; or if the patient required 2 bursts of oral systemic corticosteroids in the past year or a hospitalization.

BASIC CATEGORIES OF ASTHMA

Child-onset: When asthma begins in childhood, it is often associated with genetic reasons, and the child becomes sensitized to common allergens in the environment (atopic person). These children produce a type of antibody that is intended to engulf and destroy the foreign materials. This has the effect of making the airway cells sensitive to particular materials. Further exposure can lead rapidly to an asthmatic response.

Adult-onset: Allergies also may play a role when adults become asthmatic. Adult-onset asthma tends to be more continuous, while childhood asthma often is marked by asthmatic episodes followed by asthma-free periods.

Exercise induced. People who may not have allergies can still develop a form of asthma that is brought on by aerobic exercise. Breathing in cold air, aerobic exercise lasting more than 10 minutes, or shorter periods of very heavy aerobic exercise tend to bring on an exercise-induced asthma attack in susceptible individuals.

DIAGNOSIS AND MANAGEMENT OF ASTHMA

A critical aspect of the diagnosis and management of asthma is the precise and periodic measurement of lung function – both before and after bronco-dilator therapy to determine both the severity and the effectiveness of therapeutic interventions. When establishing the diagnosis of asthma, evaluate:

- **Medical history** including smoking, drug and alcohol use; physical examination; and supportive diagnostic lung function testing.
- **Establish that episodic symptoms of airflow obstruction are present**, and objectively demonstrate that obstruction is at least partially reversible with Spirometry.
- **Exclude the presence of any alternative diagnoses**, particularly COPD or vocal chord obstruction in adults; and aspiration, cardiac failure, inhaled foreign body, structural abnormality or cystic fibrosis in children.
- **Medication requirements.** Short-acting bronchodilators used more than twice per week should prompt daily inhaled corticosteroid administration for persistent asthma, even if mild severity

Measures of assessment and monitoring should include:

- **Spirometry**, to be conducted at least once a year before and after inhaled bronchodilator therapy. Significant reversibility is indicated by an increase of $\geq 12\%$ and 200 ml in FEV1
- **Peak Flow.** Symptomatic patients with normal spirometry should:
 - Have a daily assessment of peak flow monitoring upon rising and before bedtime; and
 - Maintain an accurate log of daily measurements to help detect subtle changes in lung function that may otherwise go unnoticed by the patient or the provider.

Contributing Factors. Assess at the initial evaluation & additional visits based on seasonal variations:

- Smoking and secondhand smoke. If the member smokes, address the value and available resources to aid in smoking cessation.
- Identify possible environmental inhalant allergens, indoor irritants, pet dander, air pollution
- Viral Respiratory Infection component to induction of Reactive Airways Disease
- Identify all the modifiable risk factors: sedentary lifestyle, obesity, stress, smoking, drug use
- Identify other factors: acute/chronic rhino-sinusitis, gastro-esophageal reflux, drugs (ASA/NSAIDS, sulfites, beta-adrenergic blockers in sensitive patients)

Monitoring, Reporting and Follow Up

- Establish therapeutic goals: normal Activity without restriction, rare symptoms.
- Provide instructions for monitoring and reporting.
 - Practice use of peak flow meter as a monitoring tool and instruct patient to record missed school/work days,

altered activity, symptom changes.

- Routine office exams seasonally or every 1 to 6 months if stable, with increased frequency in acute cases or if patient's routine "stable" status changes
- Assess attainment of patient goals and concerns
- Adjust treatment plans as often as necessary for optimal control; add inhaled corticosteroids for all persistent (rescue meds > twice per week) asthma, no matter how mild the severity
- Update the Asthma Action Plan and self-management plan at least annually, and more often as indicated for changes in status
- Re-assess patient's peak flow and inhaler technique
- Smoking cessation program referral for smokers