2009-2010 VIRGINIA PREMIER HEALTH PLAN
ASTHMA PRACTICE GUIDELINES[1]

These standards of care seek to provide physicians and other health care providers with a means to set treatment goals, assess the quality of care provided, identify areas where more attention or self-management training are needed, and define timely and necessary referral patterns to appropriate specialists.

I. **Medical History** - A detailed medical history of the new patient who is known or thought to have asthma should address the follow items:

A. Symptoms
B. Patterns of symptoms (e.g. perennial, episodic, diurnal variations, exercise induced asthma)
C. Precipitating and/or aggravating factors
D. Development of disease and treatment
E. Family history
F. Social history (to include characteristics of home environment, smoking, social factors influencing adherence)
G. Profile of typical exacerbation
H. Impact of asthma on patient and family
I. Assessment of patient's and family's perceptions of disease
J. Frequency of admission
K. Medications used
L. School/Work absenteeism (# of days absent because of asthma last school/work year.

II. **Physical Examination** - The upper respiratory tract, chest, and skin are the focus of the physical examination for asthma. Physical findings that increase the probability of asthma include:

A. Respiratory Rate
B. Hyperexpansion of the thorax, especially in children; use of accessory muscles; appearance of hunched shoulders; and chest deformity.
C. Sounds of wheezing during normal breathing, or a prolonged phase of forced exhalation.
D. Increased nasal secretion, mucosal swelling, and nasal polyps.
E. Atopic dermatitis/eczema or any other manifestation of an allergic skin condition.

III. **Pulmonary Function Testing (Spirometry)**

A. Spirometry should be performed using equipment and techniques that meet standards developed by the American Thoracic Society for those patients referred to a specialist or are not responding to routine asthma therapy.

[1] Adapted from, " National Asthma Education and Prevention Program, Expert Panel Report (EPR3): Guidelines for the Diagnosis and Management of Asthma. Bethesda, Md.: National Heart, Lung, and Blood Institute; 2007. NIH Publication 08-4051.

B. Office-based physicians who care for asthma patients should have access to a referral source of spirometry, which is useful in both diagnosis and periodic monitoring for those patients who are atypical or do not respond to the usual asthma regimen.
C. Spirometry measurements (FEV1, FVC, FEV1/FVC) before and after the patient inhales a short-acting bronchodilator should be considered for patients in whom the diagnosis of asthma is being considered.
D. When condition deteriorates, shows severe abnormalities, or if questions arise regarding test accuracy or interpretation, further assessment should take place in a pulmonary function laboratory.

IV. **Additional Studies** - Although additional studies are not routine, they may be considered. The following procedures may be useful when considering alternative diagnoses, identifying precipitating factors, assessing severity, and investigating potential complications:

A. Additional pulmonary function studies (lung volumes, inspiratory and expiratory flow volume loops, and diffusing capacity tests).
B. Assessment of diurnal variation in peak expiratory flow over 1-2 weeks.
C. Bronchoprovocation with methacholine, histamine or exercise challenge (should be carried out by a trained individual in an appropriate facility, not recommended if FEV1 is <65% predicted).
D. Chest x-ray.
E. Allergy testing.
F. Evaluation of the nose for nasal polyps and the sinuses for sinus disease.
G. Evaluation for gastroesophageal reflux.
H. When indicated CBC, immune globulin, RAST testing, Sweat Test.

V. **Goals of Asthma Therapy**

A. Prevent chronic and troublesome symptoms (e.g. coughing or breathlessness in the night, in the early morning, or after exertion.
B. Maintain (near) "normal" pulmonary function.
C. Maintain normal activity levels (including exercise, school /work attendance and other physical activities).
D. Prevent recurrent exacerbations of asthma and minimize the need for emergency department visits or hospitalizations.
E. Provide optimal pharmacotherapy with minimal or no adverse effects.
F. Meet patients' and families' expectations of and satisfaction with asthma care.

VI. **Anti-inflammatory Therapy** - Asthma is defined as a chronic inflammatory disorder of the airways. In susceptible individuals, this inflammation causes recurrent episodes of wheezing, breathlessness, chest tightness and cough. Asthma medications are classified into two categories: *long-term-control* medications to achieve and maintain control of persistent asthma; and *quick-relief* medications to treat symptoms and exacerbations. The most effective medications for long-term control are those shown to have anti-inflammatory effects. Inhaled corticosteroids are the most effective long-term therapy available for mild, moderate or severe persistent asthma. In general, inhaled corticosteroids are well tolerated and safe at the recommended dosages. The

potential but small risk of adverse events from the use of inhaled corticosteroids is well balanced by their efficacy. All inhaled asthma medications are best administered using an MDI with spacer and possibly a mask depending upon age of the patient.

VII. **Periodic Assessment and Monitoring** - The purpose of periodic assessment and ongoing monitoring is to determine whether the goals of asthma therapy are being achieved. Patients should be assessed and initial level of severity documented. (e.g. mild, intermittent, severe) Patients with mild intermittent or mild persistent asthma that has been under control for at least three months should be seen by a clinician about every six months. Those classified as more severe, at least every three months.

Patients with uncontrolled and/or severe persistent asthma and those needing additional supervision to help them follow their treatment plan need to be seen more often.

Asthma Teaching

A. Every patient with asthma should be taught to recognize symptom patterns that indicate inadequate asthma control.
B. Symptoms and clinical signs of asthma should be assessed at each healthcare visit through physical examination and appropriate questions.
C. Any detailed symptoms history should be based on a short (2 to 4 weeks) recall period.
D. Assessment of symptoms history should include daytime asthma symptoms; nocturnal awakening as a result of asthma symptoms; symptoms early in the morning not improved within 15 minutes after inhaling a short-acting beta2 - agonist.
E. A formal ASTHMA ACTION PLAN should be developed for every patient diagnosed with persistent asthma.
F. Spirometry testing should be done, after treatment is initiated and symptoms and peak expiratory flow have stabilized to document attainment of (near) "normal" airway function, at last every 1 to 2 years to assess the maintenance of airway function.
G. Patients with persistent asthma should learn how to monitor their PEF, have a peak flow meter at home, monitor their PEF on a long-term daily basis, and also during exacerbations of asthma.
H. Key areas of quality of life/functional status should be assessed periodically (missed work/school, reduction in usual activities, disturbances in sleep, changes in caregiver activities due to a child's asthma).
I. Patients should be queried, and providers evaluate any records of self-monitoring, to detect exacerbations, both self-treated and those treated by other healthcare providers.
J. Pharmacotherapy should be monitored for: patient adherence to the regimen, inhaler technique, level of usage of short-acting beta2-agonist versus oral corticosteroid "burst" therapy, changes in dosage of inhaled anti-inflammatory or other long-term control medications, and adverse effects of medications.

K. Immunizations – all routine immunizations should be up to date. Annual vaccine for all patients. Pneumcoccal vaccine and varicella booster vaccine should be administered.

L. Providers should routinely assess the effectiveness of patient/provider communications and evaluate patient satisfaction with asthma control and quality of care.

VIII. Patient Education

A. Patient education should begin at the time of diagnosis and be integrated into every step of medical care, in the context of medical appointments and other clinician-patient communication.

B. When nurses, pharmacists, respiratory therapists, and other healthcare professionals are available to support and expand patient education, a team approach should be used. The principal clinician should introduce the key educational messages and negotiate agreements with patients.

C. Team members should document in the patient's record the key educational points, patient concerns, and actions the patient agrees to take.

D. Providers should teach patients and families essential information concerning asthma, medication skills, self-monitoring techniques, and environmental control measures.

E. At the first visit, providers should develop a written, individualized, daily self-management plan, in consultation with the patient. In addition, a written action plan should be developed to help the patient manage acute exacerbations and emergencies.

F. Providers should provide an asthma diary to appropriate patients for self-monitoring symptoms, peak flow measurements, frequency of daily quick-relief inhaler medication use, and activity restriction.

G. Encourage adherence by: promoting open communication; eliciting and addressing patient's concerns; assessing patient's/family's perception of level of severity of the disease; assessing for level of social support; encouraging family involvement; and using methods that increase chances of compliance with written daily self-management plan.

H. It is essential that providers demonstrate, review, evaluate and correct inhaler/spacer/holding chamber technique at each visit because these skills deteriorate rapidly. Instruct on the need for mouth care after use of inhaled steroids.

I. Patients should be given simple, brief, written materials that reinforce the actions recommended and skills taught.

IX. General Guidelines for Referral to an Asthma Specialist (e.g. Allergist, Pulmonologist, Critical Care Medicine)

A. Patient has had a life-threatening asthma exacerbation. (e. g. ICU admit)

B. Patient is not meeting the goals of asthma therapy after 3 to 6 months of treatment. An earlier referral or consultation is appropriate if the physician concludes that the patient is unresponsive to therapy.

C. Signs and symptoms are atypical or there are problems in differential diagnosis.

D. Other conditions complicate asthma or its diagnosis (e.g. sinusitis, nasal polyps, apergillosis, severe rhinitis, vocal cord dysfunction, gastroesophageal reflux, and chronic obstructive pulmonary disease).
E. Additional diagnostic testing is indicated (e.g. allergy skin testing, rhinoscopy, pulmonary function studies, provocative challenge, and bronchoscopy).
F. Patient requires additional education and guidance on complications of therapy, problems with adherence, or allergen avoidance.
G. Patient is being considered for immunotherapy.
H. Patient has severe, persistent asthma, requiring step 4 care.
I. Patient requires continuous oral corticosteroid therapy or high dose inhaled corticosteroids, or has required more than two bursts of oral corticosteroids in one year.
J. Patient is under age 3 and requires step 3 or 4 care. When the patient is under age 3 and requires step 2 care or initiation of daily long-term therapy, referral should be considered.
K. Patient requires confirmation of a history that suggests that an occupational or environmental inhalant or ingested substance is provoking or contributing to asthma.

X. Special Considerations for Infants and Children

A. Spirometry is generally valuable in children over age 4; however, some children cannot conduct the maneuver adequately until after age 7.
B. Under diagnosis of asthma is a frequent problem, especially in children who wheeze when they have respiratory infections. These children are often labeled as having bronchitis, bronchiolitis, or pneumonia, even though the signs and symptoms are most compatible with a diagnosis of asthma. *Recurrent episodes of cough and wheezing are almost always due to asthma in both children and adults.* A diagnostic trial of inhaled bronchodilators and anti-inflammatory medications may be helpful.
C. Chronic asthma may start as early as the first year of life among infants with a family history of asthma, persistent rhinorrhea, atopic dermatitis, or high IgE levels. Early identification of these infants allows institution of environmental controls to reduce exposure to tobacco smoke, animal dander and house-dust mites.
D. PEF results may be unreliable in some very young patients.
E. In children's beds, minimize the number of stuffed toys and wash the toys weekly in hot water, enclose mattress n special cover.
F. In general, infants and young children consistently requiring symptomatic treatment more than two times per week should be given daily anti-inflammatory therapy.
G. Inhaled steroids are safe and the most effective long term controller medication in children with mild to moderate asthma. Children on chronic inhaled steroids should have their growth monitored for the slight, temporary reduction in growth rate that may be seen with this treatment.
H. Response 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.