New Asthma Guidelines Encourage More Activity and a Better Night’s Sleep

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Ten years after the last full set of asthma guidelines were published, the National Heart, Lung, and Blood Institute (NHLBI) recently released a fully updated set of guidelines.¹ The guidelines were built upon information from past updates and include new information regarding the disease of asthma, its management, and treatment. The complete set of guidelines or Expert Panel Report-3 can be accessed at http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf. A summary set is available at http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm.

The guidelines are organized into four categories, each with their own subcategories. The four categories are assessment and monitoring, patient education, control of triggers, and pharmacologic interventions. Since the first publication of the guidelines in 1991, the definition of asthma has changed from a bronchospastic disease to an inflammatory disease. The guidelines and change of definition were put into place to (a) heighten awareness of asthma; (b) increase better management and understanding of asthma; and (c) decrease deaths and hospitalizations related to asthma. The primary goals of this latest edition are to help asthmatic patients remain active and sleep well.

Monitoring

One change to the updated guidelines is that monitoring should be distinguished between severity and control. Severity relates to the intrinsic quality of the disease, and control is measured by how well symptoms are minimized to achieve the goals of staying active and sleeping well.

Within the measurements of severity and control are the two variables of impairment and risk. Impairment is the interference in one’s life caused by the lack of asthma control. Risk relates to adverse effects on lung function or other aspects of physical well being from frequent exacerbations or medication side effects.

Monitoring is accomplished by having patients report use of rescue inhaler (short-acting beta agonist [SABA]), symptoms, and activity level. Monitoring also includes following spirometry, which should be obtained every 1 to 2 years at a minimum. Spirometry should also be obtained when impairment or risk issues are changing. Monitoring includes the patient’s information, physical assessment, and spirometry, and should occur at follow-up visits. Proper medication use, side effects, and an action plan should be evaluated at each visit. Newly diagnosed individuals or individuals with frequent exacerbations will need frequent office visits; stable patients may only require an office visit every 4 to 6 months.

Age Grouping

Another guideline change is age grouping. The panel recognized that asthma can change and vary over time as can the effect of medications. Age grouping is now divided into three ranges: 0 to 4 years; 5 to 11 years; and 12 years and over.

0 to 4 Years

Due to the potential for frequent exacerbations in children ages 0 to 4 years, long-term controller medication therapy should be considered. Practitioners should especially consider this in children with a history of wheezing episodes equal to or greater than four times in the past year which lasted for 24 hours or more, and who also have a positive asthma risk profile (see Table: “Asthma Risk Profile”). Long-term therapy should also be considered if the child has used a SABA inhaler more than 2 days a week for the past month or if the child has been on a burst of oral corticosteroids more than twice in the past 6 months. If long-term therapy is initiated, monitor the patient frequently. If by 3 months the child has improved and is stable, consider stepping down therapy. It is recognized that very young children can have spontaneous remission of wheezing and asthma symptoms.

Asthma Risk Profile

One of the following:
• Parental history of asthma
• Atopic dermatitis
• Environmental allergies
OR
Two of the following:
• Food allergy
• Eosinophilia greater than 4% on complete blood count
• History of wheezing not affiliated with an upper respiratory infection.
Stepwise Approach for Managing Asthma in Patients 12 Years of Age and Older

**Step 1**

**Preferred:**
Low-dose ICS + LABA

**Alternative:**
Low-dose ICS or Medium-dose ICS

**Step 2**

**Preferred:**
Low-dose ICS + LABA

**Alternative:**
Low-dose ICS + either LTRA, Theophylline, or Zileuton

**Step 3**

**Preferred:**
Medium-dose ICS + LABA

**Alternative:**
Medium-dose ICS + either LTRA, Theophylline, or Zileuton

**Step 4**

**Preferred:**
High-dose ICS + LABA

**Alternative:**
Omalizumab for patients who have allergies

**Step 5**

**Preferred:**
High-dose ICS + oral corticosteroid 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

**Interruption**

Consult with asthma specialist if step 4 care or higher is required.

**Consider consultation at step 3.**

**Persistent asthma: daily medication**

Consult with asthma specialist if step 4 care or higher is required.

**Consider consultation at step 3.**

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

Steps 2 to 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-min intervals as needed. Short course of oral systemic corticosteroids may be needed.
- Use of SABA more than 2 days a week for symptom relief (not prevention of EIB) generally indicates inadequate control and the need to step up treatment.

**Key:** Alphabetical order is used when more than one treatment option is listed within either preferred or alternative therapy. EIB, exercise-induced bronchospasm; ICS, inhaled corticosteroid; LABA, long-acting inhaled beta₂-agonist; LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta₂-agonist.

**Notes:**

- The stepwise approach is meant to assist, not replace, the clinical decision making 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 systemic 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 A for LTRA, Evidence B for theophylline and Evidence D for zileuton. Step 4 preferred therapy is based on Evidence B for LTRA and theophylline and Evidence D for 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 to 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.
5 to 11 Years/12 Years and Over
For children 5 to 11 years and 12 years and over, emphasis includes exercise-induced bronchospasm (EIB). In children with EIB, treatment to prevent exacerbations is built into the action plan to help children exercise to their fullest potential and to promote physical activity. EIB prevention and control can include long-term controller therapy, pretreatment therapy, and warming up with or without the use of a covering over the mouth to warm inhaled air. Pretreatment strategies can include leukotriene receptor antagonists, cromolyn, nedocromil (Tilade), or a SABA inhaler. Using a long-acting beta agonist (LABA) as a pretreatment therapy is discouraged as it may mask poorly controlled asthma.

Prevention of osteoporosis should be considered in patients with asthma, especially for those maintained on inhaled corticosteroids (ICS) or who have experienced oral corticosteroid bursts. Osteoporosis prevention strategies can begin in patients 12 years of age and over and include adequate calcium and vitamin D intake.

■ Stepwise Treatment
The stepwise approach is still used with the idea of stepping up and down to control asthma as symptoms change. The steps have increased from four to six to simplify the approach (see Figure: “Stepwise Approach for Managing Asthma in Patients 12 Years of Age and Older”). For long-term control, ICS are the medications of choice for all steps and all ages. Combination medications with ICS and LABAs can also be considered at all stages. LABAs are associated with an increased risk for severe asthma exacerbations; however, the risk of a severe asthma exacerbation with LABA in older age groups is rare. An injectable omalizumab (Xolair) should be considered in patients 12 years of age and over who have allergies or in adults at step 5 or 6.

Consider immunotherapy for patients at steps 2, 3, or 4, particularly when multiple allergens are identified as triggers and when total avoidance is impractical.

Patients should be referred to an asthma specialist if treatment has not reduced impairment and risk. Patients should also be referred to a specialist if they are on step 4, 5, or 6 and require immunotherapy or omalizumab, need additional testing, had more than two oral corticosteroid bursts in the past year, or were hospitalized in the past year for asthma.

■ Patient Education
Patient education includes controlling environmental factors and co-morbid conditions that influence asthma. Allergens should be minimized if identified as triggers. Education can help the patient identify specific symptoms of asthma to ward off exacerbations as soon as possible. For patients who have difficulty recognizing symptoms, or for parents managing a child’s asthma, a peak flow meter may be useful. A peak flow meter is also recommended for individuals who have moderate-to-severe asthma or a history of numerous severe exacerbations. At each visit, use of the peak flow meter and inhaler technique should be observed and the action plan evaluated and changed if necessary.

■ Acute Exacerbations
The classification of acute exacerbations has been changed to simplify the diagnostic criteria for severity. All patients should be evaluated via history, observation, and physical findings, as well as with a peak flow meter in those patients over the age of 5 years. A peak flow reading or forced expiratory volume in 1 second of less than 40% predicted is considered severe; readings equal to or greater than 70% are now the criteria for discharge to home. During emergent treatment, in those patients who are not responding to SABAs and in whom exacerbation is considered severe, magnesium sulfate or heliox can be administered. The use of anticholinergics, such as ipratropium, can be used in the urgent or emergent setting but should not be extended into care of the patient who changes from an outpatient to admission status.

All patients seen for asthma exacerbation should receive oxygen and SABAs, either via repetitive or continuous nebulized treatments. Levalbuterol (Xopenex) or albuterol can be used for emergencies. Oral corticosteroids should also be administered. Response to SABAs should be evaluated via pulse oximetry, peak flow readings, lung sounds, and subjective evaluation of symptoms by both the patient and by the provider.

■ Discharge to Home
When discharging, medications should include an oral corticosteroid burst, SABA, and consideration of ICS. It is no longer recommended that ICS doses should be doubled in place of an oral steroid burst. Patients should be given an action plan, and follow-up should be scheduled within a few days or even the next day depending on the severity of the patient’s condition.

REFERENCE

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