

2007 NHLBI Guidelines for the Diagnosis & Management of Asthma - Major Changes in Expert Panel Report 3 *

*The following highlights major changes. Many recommendations were updated or expanded based on new evidence. See Full Report for key differences at the beginning of each section and full discussion.

New focus on monitoring asthma control as the goal for asthma therapy and distinguishing between classifying asthma severity and monitoring asthma control

- Severity: the intrinsic intensity of the disease process. Assess asthma severity to initiate therapy.
- Control: the degree to which the manifestations of asthma are minimized by therapeutic interventions and the goals of therapy are met. Assess and monitor asthma control to adjust therapy.

New focus on impairment and risk as the two key domains of severity and control, and multiple measures for assessment. The domains represent different manifestations of asthma, may not correlate with each other, and may respond differentially to treatment.

- Impairment: frequency and intensity of symptoms and functional limitations the patient is experiencing currently or has recently experienced
- Risk: the likelihood of either asthma exacerbations, progressive decline in lung function (or, for children, lung growth), or risk of adverse effects from medication

Modifications in the stepwise approach to Managing Asthma Long Term

- Treatment recommendations are presented for 3 age groups (0-4 years of age, 5-11 years of age, and youths ≥ 12 years and adults). The course of the disease may change over time, the relevance of different measures of impairment or risk and the potential short and long term impact of medications may be age related, and there are varied levels of scientific evidence available for these 3 age groups.
- The Stepwise approach expands to 6 steps to simplify the actions within each step. Previous guidelines had several progressive actions within different steps; they have now been separated into different steps.
- Medications have been repositioned within the 6 steps of care
 - Inhaled Corticosteroids (ICS's) continue as preferred long-term control therapy for all ages
 - Combination of long-acting beta2-agonist (LABA) and ICS is presented as an equally preferred option with increasing the dose of ICS in step 3 or 4 care, depending on the age group. This balances the established beneficial effects of combination therapy in older children and adults with the increased risk for severe exacerbations, although uncommon, associated with daily use of LABA.
 - Omalizumab is recommended for consideration for allergic youths ≥ 12 years of age or adults who require step 5 or step 6 care (severe asthma).

New emphasis on multifaceted approaches to patient education and control of environmental factors or co-morbid conditions that affect asthma.

- Patient Education: encourages education at all points of care: clinic settings (separate self-management programs as well as integrating education into every patient visit), emergency departments and hospitals, pharmacies, schools and other community settings, and patient homes.
- Environmental control includes several strategies:
 - Multifaceted approaches to reduce exposures are necessary; single interventions are generally ineffective.
 - Consideration of subcutaneous immunotherapy for allergic patients at steps 2-5 of care (mild or moderate persistent asthma)
 - Potential benefits to asthma control of treating co-morbid conditions.

Modifications to treatment strategies for managing asthma exacerbations

- Simplifies the classification of severity of exacerbations. For the urgent or emergency care setting: <40 percent FEV1 or PEF indicates severe exacerbation and use of adjunctive therapies; ≥70 percent indicates suitability for discharge.
- Encourages development of pre-hospital protocols for emergency medical services to allow administration of albuterol, oxygen, and, with medical oversight, anticholinergics and oral systemic corticosteroids
- Modifies recommendations on medications:
 - Adds levalbuterol
 - Adds magnesium sulfate or heliox for severe exacerbations unresponsive to initial treatments
 - Emphasizes use of oral corticosteroids. Doubling the dose of ICS is not effective.
 - Emphasizes that anticholinergics are used in emergency care, not hospital care.
 - Adds consideration of initiating ICS at discharge

Section 2, Definition, Pathophysiology and Pathogenesis of Asthma, and Natural History of Asthma 12 August 28, 2007

KEY DIFFERENCES FROM 1997 AND 2002 EXPERT PANEL REPORTS

- ✓ The critical role of inflammation has been further substantiated, but evidence is emerging for considerable variability in the pattern of inflammation, thus indicating phenotypic differences that may influence treatment responses.
- ✓ Gene-by-environmental interactions are important to the development and expression of asthma. Of the environmental factors, allergic reactions remain important. Evidence also suggests a key and expanding role for viral respiratory infections in these processes.
- ✓ The onset of asthma for most patients begins early in life with the pattern of disease persistence determined by early, recognizable risk factors including atopic disease, recurrent wheezing, and a parental history of asthma.
- ✓ Current asthma treatment with anti-inflammatory therapy does not appear to prevent progression of the underlying disease severity.

Section 3, Component 1: Measures of Asthma Assessment and Monitoring

KEY DIFFERENCES FROM 1997 AND 2002 EXPERT PANEL REPORTS

- ✓ The key elements of assessment and monitoring are refined to include the separate, but related, concepts of severity, control, and responsiveness to treatment. Classifying severity is emphasized for initiating therapy; assessing control is emphasized for monitoring and adjusting therapy. Asthma severity and control are defined in terms of two domains: impairment and risk.
- ✓ The distinction between the domains of impairment and risk for assessing asthma severity and control emphasizes the need to consider separately asthma's effects on quality of life and functional capacity on an ongoing basis (i.e., in the present) and the risks it presents for adverse events in the future, such as exacerbations and progressive loss of pulmonary function. These domains of asthma may respond differentially to treatment.

Section 3, Component 2: Education for a Partnership in Asthma Care

KEY DIFFERENCES FROM 1997 AND 2002 EXPERT PANEL REPORTS

Patient Education:

- ✓ Emphasis on the many potential points of care and sites available in which to provide asthma education, including review of new evidence regarding the efficacy of asthma self-management education outside the usual office setting.
- ✓ Greater emphasis on the two aspects of the written asthma action plan—(1) daily

management, and (2) how to recognize and handle worsening asthma. Use of the terminology “written asthma action plan” encompasses both aspects. This change addresses confusion over the previous guidelines’ use of different terms. One term is now used for the written asthma action plan, although in some studies cited, investigators may have used a variation of this term.

- ✓ New sections on the impact of cultural and ethnic factors and health literacy that affect delivery of asthma self-management education.

Provider Education:

- ✓ New section with review of system-based interventions to improve the quality of asthma care, to support clinical decision making and to enhance clinical information systems
Review of tested programs that use effective strategies to provide clinician education in asthma care, e.g., multidimensional approaches, interactive formats, and practice-based case studies

Section 3, Component 3: Control of Environmental Factors and Co-morbid Conditions That Affect Asthma

KEY DIFFERENCES FROM 1997 EXPERT PANEL REPORT

- ✓ Evidence strengthens recommendations that reducing exposure to inhalant indoor allergens can improve asthma control and notes that a multifaceted approach is required; single steps to reduce exposure are generally ineffective.
- ✓ Formaldehyde and volatile organic compounds (VOCs) have been implicated as potential risk factors for asthma and wheezing.
- ✓ Evidence shows that influenza vaccine, while having other benefits, does not appear to reduce either the frequency or severity of asthma exacerbations during the influenza season.
- ✓ The section has been expanded to include discussion of ABPA, obesity, OSA, and stress as chronic co-morbid conditions, in addition to rhinitis, sinusitis, and gastroesophageal reflux that may interfere with asthma management.

Section 3, Component 4: Medications

KEY DIFFERENCES FROM 1997 AND 2002 EXPERT PANEL REPORTS

- ✓ Information about asthma medications has been updated based on review of evidence published since 1997. *This updated report (EPR—3: Full Report 2007) continues to emphasize that the most effective medications for long-term therapy are those shown to have anti-inflammatory effects.*
- ✓ New medications—immuno-modulators—are available for long-term control of asthma.
- ✓ New data on the safety of LABAs are discussed, and the position of LABA in therapy has been revised (see text). The most significant difference is that for youths ≥ 12 years of age and adults who have moderate persistent asthma or asthma inadequately controlled on low-dose ICS, the option of increasing the dose of medium-dose ICS should be given equal weight to the option of adding LABA to low-dose ICS.
- ✓ The estimated clinical comparability of different ICS preparations has been updated. (See Section 4, “Managing Asthma Long-Term,” figures 4–4b and 4–8b.) The significant role of ICS’s in asthma therapy continues to be supported.

Section 4, Managing Asthma Long Term: Overview

KEY DIFFERENCES FROM 1997 AND 2002 EXPERT PANEL REPORTS

- ✓ Recommendations for managing asthma in children 0–4 and 5–11 years of age are presented separately from recommendations for managing asthma in youths ≥ 12 years of age and adults.
- ✓ Treatment decisions for *initiating* long-term control therapy are based on classifying severity (considering both the impairment and risk domains) and selecting a corresponding step for treatment. Recommendations on when to initiate therapy in children 0–4 years of age have been revised.

- ✓ Treatment decisions for *adjusting* therapy and maintaining control are based on assessing the level of asthma control (considering both the impairment and risk domains).
- ✓ The distinction between the domains of impairment and risk for assessing asthma control and guiding decisions for therapy emphasizes the need to consider separately asthma's effects on quality of life and functional capacity on an ongoing basis (i.e., in the present) and the risks it presents for adverse events in the future, such as exacerbations and progressive reduction in lung growth or lung function. These domains of asthma may respond differentially to treatment.
- ✓ Stepwise approach to managing asthma has been expanded to include six steps of care to simplify the actions within each step. For example, previous guidelines had several progressive actions within step 3, whereas the current guidelines separate the actions into different steps.
- ✓ Treatment options within the steps have been revised, especially: For patients not well controlled on low-dose inhaled corticosteroid (ICS), increasing the dose of ICS's to medium dose is recommended before adding adjunctive therapy in the 0–4 years age group; for other age groups (children 5–11 years of age and youths
- ✓ ≥12 years of age and adults), increasing the dose of ICS to medium dose or adding adjunctive therapy to a low dose of ICS is considered as equal options.
- ✓ Evidence for the selection of adjunctive therapy is limited in children under 12 years of age; recommendations vary according to the assessment of impairment or risk.
- ✓ Steps 5–6 for youths ≥12 years of age and adults include consideration of omalizumab.
- ✓ Managing special situations has been expanded to include racial and ethnic disparities.

Section 4, Managing Asthma Long Term in Children 0–4 Years of Age and 5–11 Years of Age (New Section)

Section 4, Managing Asthma Long Term—Youths ≥12 Years of Age and Adults (New Section)

Section 4, Managing Asthma Long-Term—Special Situations in Asthma (New Section)

Section 5, Managing Exacerbations of Asthma

KEY DIFFERENCES FROM 1997 AND 2002 EXPERT PANEL REPORTS

- ✓ For the assessment of exacerbations, the current update (EPR—3: Full Report 2007):
- ✓ Simplifies classification of severity of asthma exacerbations.
- ✓ Reinstates, for use in the urgent or emergency care setting, the 1991 cut points of forced expiratory volume in 1 second (FEV1) or peak expiratory flow (PEF) to indicate the goal for discharge from the urgent care or emergency care setting (≥70 percent predicted FEV1 or PEF); patients for whom response to therapy is incomplete and who usually require continued treatment in the ED (40–69 percent predicted); and the exacerbation severity level where adjunct therapies may be considered (<40 percent predicted).
- ✓ These cut points differ from those used to determine long-term asthma control and treatments, thus underscoring the distinction between acute and chronic asthma management.
- ✓ Acknowledges the limited value of pulmonary function measures in very severe exacerbations.
- ✓ For the treatment of exacerbations, the current update: Adds levalbuterol as a SABA treatment for asthma exacerbations.
- ✓ For home management of exacerbations, no longer recommends doubling the dose of ICS's.
- ✓ For pre-hospital management (e.g., emergency transport), encourages standing orders for albuterol and—for prolonged transport—repeated treatments and protocols to allow consideration of ipratropium and oral corticosteroids.
- ✓ For ED management, reduces dose and frequency of administration of oral corticosteroids in severe exacerbations, adds consideration of magnesium sulfate or heliox for severe exacerbations, and adds consideration of initiating an ICS upon discharge.
- ✓ For hospital management, no longer recommends ipratropium bromide.