GOALS OF THERAPY: ASTHMA CONTROL

The purpose of periodic assessment and ongoing monitoring is to determine whether the goals of asthma therapy are being achieved and asthma is controlled. When asthma is not controlled, it is associated with significant asthma burden (Fuhlbrigge et al. 2002), decreased quality of life (Schatz et al. 2005b), and increased health care utilization (Schatz et al. 2005a; Vollmer et al. 2002). The level of asthma control (well controlled, not well controlled, or poorly controlled) is the degree to which both dimensions of the manifestations of asthma—impairment and risk—are minimized by therapeutic intervention. The level of control at the time of followup assessment will determine clinical actions—that is, whether to maintain or adjust therapy. In previous guidelines (EPR—2 1997; GINA 2002), parameters for control were selected on the basis of research that used individual outcomes for evaluating the effectiveness of asthma treatments. The composite list of goals reflected the Panel’s opinions of a complete list of relevant outcomes that could define asthma control. A recent large international trial demonstrated that significant reductions in the rate of severe exacerbations and improvements in quality of life were achieved by aiming at achieving guideline-defined asthma control and by adjusting therapy to achieve it. At the end of 1 year, 30 percent of the patients achieved total control (i.e., the absence of any sign or symptom of asthma), and 60 percent had achieved well-controlled asthma (Bateman et al. 2004).

Interpretation of previous asthma guidelines, in which severity classifications before treatment corresponded to recommended steps of treatment, has raised questions about applying severity classifications once treatment is established and what elements of asthma should be used to monitor asthma during clinical followup (Graham 2006; Wolfenden et al. 2003). This update (EPR—3: Full Report 2007) clarifies the issue. For initiating treatment, asthma severity should be classified, and the initial treatment should correspond to the appropriate category of severity. Once treatment is established, the emphasis is on assessing asthma control to determine if the goals for therapy have been met and if adjustments in therapy (step up or step down) would be appropriate.

The Expert Panel recommends that asthma control be defined as follows (Evidence A):

Asthma Control

- Reduce impairment
  - Prevent chronic and troublesome symptoms (e.g., coughing or breathlessness in the daytime, in the night, or after exertion)
  - Require infrequent use (<2 days a week) of SABA for quick relief of symptoms
  - Maintain (near) “normal” pulmonary function
  - Maintain normal activity levels (including exercise and other physical activity and attendance at work or school)
  - Meet patients’ and families’ expectations of and satisfaction with asthma care
Reduce risk

- Prevent recurrent exacerbations of asthma and minimize the need for ED visits or hospitalizations
- Prevent progressive loss of lung function; for children, prevent reduced lung growth
- Provide optimal pharmacotherapy with minimal or no adverse effects

See figures 3–5a, b, and c for classification of asthma control in three different age groups. Specific discussion of measures for assessment are in the following section. In general:

- Assessment of impairment is in the form of questions, such as those presented in figure 3–6 and within figure 3–7. The focus of these questions is to assess the degree of asthma control in the present. The key elements include current pulmonary function and patient’s recall of symptoms, physical activity, quality of life, and need for SABA for quick relief of symptoms over the previous 2–4 weeks.

- Assessing the risk of exacerbations is through questions regarding the use of medications, particularly oral corticosteroids, or urgent care visits. Low FEV₁ is associated with increased risk for severe exacerbations (Fuhlbrigge et al. 2001).

- Assessment of the risk of progressive loss function, or, for children, the risk of reduced lung growth (measured by prolonged failure to attain predicted lung function values for age) requires longitudinal assessment of lung function, preferably using spirometry.

- Assessment of the risk of side effects from medication does not directly correspond to the varying levels of asthma control. For example, a patient might have well-controlled asthma with high doses of ICS and chronic oral corticosteroids but is likely to experience some adverse effects from this intense therapy. The risk of side effects can vary in intensity from none to very troublesome and worrisome; see component 4—Medications for discussion of potential adverse effects associated with different asthma medications. Although not directly correlated to control, the risk or evidence of side effects should be included in the overall assessment of the risk domain of asthma control.

- Future work on assessment of asthma control tools will define the relative value of including specific biological markers and test how well the tool predicts the risk of exacerbations.

MEASURES FOR PERIODIC ASSESSMENT AND MONITORING OF ASTHMA CONTROL

The Expert Panel recommends that ongoing monitoring of asthma control be performed to determine whether all the goals of therapy are met—that is, reducing both impairment and risk (Evidence B); see figures 3–5 a, b, and c for assessing asthma control for different age groups.

The Expert Panel recommends that the frequency of visits to a clinician for review of asthma control is a matter of clinical judgment; in general, patients who have intermittent or mild persistent asthma that has been under control for at least 3 months should be seen by a clinician about every 6 months, and patients who have uncontrolled and/or severe persistent asthma and those who need additional supervision to help them follow their treatment plan need to be seen more often (EPR—2 1997).
The assessment measures for control monitor six areas described in this section and are recommended based on the opinion of the Expert Panel and review of the scientific literature. A seventh area, monitoring asthma control with minimally invasive markers, is of increasing interest, but many of these markers require further evaluation before they can be recommended widely for routine asthma care.

- Monitoring signs and symptoms of asthma
- Monitoring pulmonary function
  - Spirometry
  - Peak flow monitoring
- Monitoring quality of life
- Monitoring history of asthma exacerbations
- Monitoring pharmacotherapy for adherence and for potential side effects
- Monitoring patient–provider communication and patient satisfaction
- Monitoring asthma control with minimally invasive markers and pharmacogenetics (requires further evaluation)

**Monitoring Signs and Symptoms of Asthma**

The Expert Panel recommends that every patient who has asthma should be taught to recognize symptom patterns that indicate inadequate asthma control (Evidence A) (See also “Component 2: Education for a Partnership in Asthma Care.”). Either symptom and/or PEF monitoring should be used as a means to determine the need for intervention, including additional medication, in the context of a written asthma action plan.

The Expert Panel recommends that symptoms and clinical signs of asthma should be assessed at each health care visit through physical examination and appropriate questions (EPR—2 1997). This is important for optimal asthma care.

The Expert Panel recommends that the detailed symptoms history should be based on a short (2–4 weeks) recall period (EPR—2 1997). Patients’ detailed recall of symptoms decreases over time; therefore, the clinician may choose to assess over a 2-week, 3-week, or 4-week recall period. Symptom assessment for periods longer than 4 weeks should reflect more global symptom assessment, such as inquiring whether the patient’s asthma has been better or worse since the last visit and inquiring whether the patient has encountered any particular difficulties during specific seasons or events. Figure 3–7 provides an example of a set of questions that can be used to characterize both global (long-term recall) and recent (short-term recall) asthma symptoms.