

Idaho Health Initiative Appropriate Asthma Treatment

Background

Asthma is a condition characterized by chronic inflammation of the airways and is estimated to affect approximately 17 million people in the United States. In 1999, asthma was responsible for two million emergency room visits and over four thousand deaths.^{1,2} Recent evidence indicates that this inflammatory condition may result in *irreversible* airway injury in some patients. It is postulated that more appropriate use of inhaled beta₂-agonists and anti-inflammatory agents (corticosteroids) may help attenuate airway injury, improve quality of life, and result in better outcomes for asthma patients.

The Guidelines

Guidelines for the Diagnosis and Management of Asthma^{1,2} were released by the U.S. National Asthma Education and Prevention Program (NAEPP) in July of 1997 and then updated in August of 2002. This publication was the culmination of many years of literature review and analysis by a multidisciplinary group of clinicians and scientists with expertise in asthma management. It provides an overview for diagnosis and monitoring of the asthma patient as well as a framework for clinicians to guide decision-making and the formation of individualized treatment plans.

The NAEPP guidelines separate asthma medications into two general categories: long-term control medications (with an emphasis on the use of inhaled corticosteroids, but also including theophylline, leukotriene inhibitors, and mast cell stabilizers) and quick-relief medications (particularly short-acting beta₂-agonists) for exacerbations. The guidelines suggest that patients who are regular users of inhaled short-acting beta₂-agonists are candidates for inhaled anti-inflammatory therapy. When patients begin using greater than one beta₂-agonist canister monthly for quick relief, re-evaluation of pharmacologic therapy may be indicated. In addition, it is recommended that inhaled corticosteroid therapy be optimized before the addition of long-acting beta₂-agonists (salmeterol, formoterol) and that such long-acting agents not be used in the absence of anti-inflammatory treatment. Although leukotriene inhibitors (montelukast, zafirlukast) may be considered alternatives to inhaled corticosteroids in all forms of persistent asthma, both their expense and lower levels of clinical evidence should cause the clinician to carefully evaluate their place in therapy.

Risks of Beta-Agonist Overuse

Excessive use of beta₂-agonists has been associated with both deteriorating asthma control as well as increased mortality. Sears et al reported that patients with moderate disease severity who constantly overutilized inhaled beta₂-agonists experienced diminishing asthma control and pulmonary function.³ Spitzer et al found that patients who regularly utilized inhaled beta₂-agonists were at increased risk for death or near death from asthma.⁴ It is not known if the increase in mortality can be solely attributed to overuse of beta₂-agonists or if overuse of these agents was simply part of improperly treated disease.

Appropriate Use of Inhaled Corticosteroids

Corticosteroids have been called the most consistently effective long-term-control medications for the treatment of asthma. Their efficacy is largely due to their broad activity on the inflammatory process and result in a reduction in symptom severity, improvement in peak expiratory flow, decreased airway hyperresponsiveness, and may have some effects on airway remodeling. Most patients will require at least twice daily dosing of these agents; however, some studies indicated that even once daily dosing is effective in mild persistent asthma.^{1,2}

Idaho Drug Utilization Review Program

Use of Spacers

Spacers or holding chambers are useful devices which have been shown to decrease local side effects and improve drug delivery when used with metered dose inhalers. NAAEP recommends their use by children and the elderly and for *all* patients on medium- to high-dose corticosteroids. Furthermore, these devices are covered by Idaho Medicaid when ordered by prescription.

Table 1: Classification of Asthma Severity and Stepwise Approach for Managing Asthma in Adults and Children Older than 5 Years of Age (Condensed)^{1,2}

	Symptoms (Before Treatment)*	Long -Term Control
STEP 4 Severe Persistent	<ul style="list-style-type: none"> • Continual symptoms • Limited physical activity • Frequent exacerbations • Frequent nighttime symptoms 	<p>Preferred treatment Inhaled corticosteroid (high dose) AND a long-acting inhaled beta₂ agonist</p> <p>If needed Oral corticosteroid</p>
STEP 3 Moderate Persistent	<ul style="list-style-type: none"> • Daily symptoms • Daily use of inhaled short-acting beta₂-agonist • Exacerbations affect activity • Exacerbations > 2 times a week: may last days • Nighttime symptoms > 1 time a week 	<p>Preferred treatment Inhaled corticosteroid (low to medium dose) AND a long-acting inhaled beta₂ agonist</p> <p>Alternatives Increase inhaled corticosteroids within medium-dose range OR Inhaled corticosteroids (low to medium dose) and leukotriene inhibitor or theophylline</p>
STEP 2 Mild Persistent	<ul style="list-style-type: none"> • Symptoms > 2 times a week but < 1 time a day • Exacerbations may affect activity • Nighttime symptoms > 2 times a month 	<p>Preferred treatment Inhaled corticosteroid (low dose) OR cromolyn or nedocromil</p> <p>Alternatives Leukotriene inhibitor or theophylline</p>
STEP 1 Mild Intermittent	<ul style="list-style-type: none"> • Symptoms ≤ 2 times a week • Asymptomatic and normal PEF between exacerbations • Exacerbations brief, intensity may vary • Nighttime symptoms ≤ 2 times a month 	No daily medications

*The presence of one of the features of severity is sufficient to place a patient in that category. An individual should be assigned to the most severe grade in which any feature occurs. The characteristics noted in this figure are general and may overlap because asthma is highly variable.

Recommendations

Patients consistently using greater than one canister monthly of their short-acting beta₂-agonist should be re-evaluated for both disease progression and appropriate inhaler technique. If inhaler technique is inadequate, use of a spacer should be considered. If patient symptoms are classified as mild persistent or greater, inhaled anti-inflammatory therapy is likely warranted. Long-acting beta₂-agonists should not be used without an anti-inflammatory agent. The stepwise approach to asthma adapted in the table above emphasizes placing patients in the highest level of severity their symptoms qualify them for and then stepping down once asthma control becomes more established.

References

1. Guidelines for the diagnosis and management of asthma. NIH Publication. 1997:97-4051.
2. Executive Summary of the NAEPP Expert Panel Report. Guidelines for the diagnosis and management of asthma-update on selected topics 2002. <http://www.nhlbi.nih.gov/guidelines/asthma/> (Accessed February 2005)
3. Spitzer WO, et al. The use of beta-agonists and the risk of death and near death from asthma. N Engl J Med. 1992;326(8): 501-6.
4. Sears MR, et al. Regular inhaled beta-agonist treatment in bronchial asthma. Lancet. 1990;336(8728): 1391-6.