Control of asthma refers to the degree to which the manifestations of asthma (symptoms, functional impairments, and risks of exacerbations) are minimized and the goals of therapy are met, including future risk of adverse outcomes. Asthma symptoms can be provoked by common allergens, such as house dust mites, animal dander, molds, pollen, and cockroach droppings; tobacco smoke; air pollution or fumes; exercise; medications, such as aspirin, other NSAIDs, and beta-blockers; emotional anxiety and stress; viral and bacterial infections; exposure to cold, dry air and acid reflux.

Both asthma severity and control include the domains of impairment, the frequency and intensity of symptoms and functional limitations that a patient is experiencing or has recently experienced, and risk or the likelihood of either asthma exacerbations or progressive decline in lung function (reduced lung growth in children). Risk of exacerbations can be inferred from a patient’s medical history. Emergency department (ED) visits, hospitalization, or intensive care unit admission, especially in the past year, suggest an elevated risk of exacerbations in the future. Ultimately, only symptoms, exacerbations, and quality of life over time are measures of asthma control. Poor asthma control leads to increases in hospitalization rates and ED visits. Patients with allergic asthma (~60% of asthmatics) living in urban centers may be especially affected.
Peer Perspectives on Allergic Asthma: Managing Asthma in Urban Areas

**Phenotype Assessment**

Patients with persistent asthma may share similar characteristics of disease including patient symptoms, exacerbations, inflammation, and low FEV1. However, there are distinct differences in the types of patients with asthma – from young children to obese elderly patients. Patients with asthma can be classified into phenotypic groups based on clinical characteristics, factors related to asthma triggers, and pathobiological characteristics.⁹

**Prevalence of Allergic Asthma**

Allergic asthma, characterized by asthma symptoms brought on by allergen exposure, is the most common type of asthma.⁸ Allergens can stimulate the immune system, resulting in a release of immunoglobulin E (IgE) and swelling in the airways that leads to shortness of breath and wheezing, creating the conditions that can lead to an asthma attack. Approximately 60% of all asthma patients have IgE-mediated allergic asthma.⁸

NHLBI Guidelines recommend testing for allergies once the diagnosis of persistent asthma is made.⁵ Allergy testing is the only reliable way to determine sensitivity to perennial aeroallergens.⁵ Specific IgE testing can be performed as a skin or blood test. Identifying IgE-mediated allergic asthma can help tailor management to the needs of your patient, ie, advocating for avoidance of triggers.⁵

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**Figure 3. Percentage of asthmatics with allergic asthma⁸**

<table>
<thead>
<tr>
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<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td><strong>Allergic Asthma</strong></td>
<td>60%</td>
</tr>
<tr>
<td><strong>Other Asthma</strong></td>
<td>40%</td>
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</tbody>
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The majority of patients with asthma have allergic asthma.

**Figure 4. Allergy testing**

- **Skin Test**
- **Blood Test**

**Figure 4. Allergy testing**

- **Skin Test**
- **Blood Test**

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Reducing the Frequency and Severity of Allergic Asthma Exacerbations

When determining risk for future exacerbations in a patient with allergic asthma, comorbidity risk factors that should be considered include rhinitis, respiratory infections, gastroesophageal reflux (GERD), obesity, and anxiety and depression.\textsuperscript{10-12}

Allergy testing can help identify allergic asthma triggers, such as house dust mites, animal dander, molds, pollen, and cockroach droppings. Testing followed by allergen avoidance and environmental control are feasible measures for reducing the frequency of allergic asthma exacerbations.\textsuperscript{7}

Respiratory infections in patients with allergic asthma can have a synergistic influence in both children and adults because viral respiratory infections, most commonly human rhinovirus (HRV), are associated with nearly 80% of asthma exacerbations.\textsuperscript{11}

Viral infections weaken epithelial barrier function, leading to enhanced absorption of allergens, while allergen-induced damage to airway epithelium promotes viral replication. Additionally, cross linked IgE on peripheral blood dendritic cells interferes with innate antiviral immune response by inhibiting interferon secretion. This interaction can lead to severe clinical illness, increased likelihood of asthma exacerbations, and progressive decline in lung function, including reduced lung growth in children.\textsuperscript{5,11}

For more information on viral infections and allergic asthma see: Busse et al. Role of viral respiratory infections in asthma and asthma exacerbations. \textit{Lancet}. 2010;376:826-834.

**Barriers to Effective Asthma Care**

Testing for allergic asthma can be used to differentiate and personalize care.

There are several barriers to effective asthma care including: seasonal factors, the persistence of environmental factors, and disparities in care that stem from poverty and cultural differences (including literacy and communication).\textsuperscript{12,13}

**Seasonal Factors:** Asthma-related hospitalizations exhibit a consistent seasonal pattern, reflecting the school calendar for children when viral transmission rates are rampant.\textsuperscript{12} Viral infection can cause greater upper-and lower-respiratory tract symptom duration and severity and more likely loss of asthma control in patients with allergic asthma versus those with non-allergic asthma.\textsuperscript{11}
Environmental Factors: Development of asthma is positively associated with urban environments, low socioeconomic status, and lack of physical activity.\textsuperscript{13,14} Controlling environmental factors in deteriorating, low-income housing can be very difficult.\textsuperscript{14}

Poverty and Cultural Differences: Disparities in morbidity and mortality related to ethnicity and income level may stem from complex interrelationships among poverty, cultural differences, and other factors.\textsuperscript{13} Black children with asthma are 3 times as likely to be hospitalized and 4 times as likely to die from asthma compared with white children with asthma.\textsuperscript{13} This disparity is thought to be related to morbidity associated with access to care rather than prevalence.\textsuperscript{14}

Although difficult, overcoming barriers to effective asthma care is worthwhile. For each dollar spent on outpatient asthma control programs, $71 can be saved in asthma treatment expenses, such as hospitalizations and emergency department visits.\textsuperscript{15}

Comprehensive Approach to Disease Management

Effective personalized treatment with monitoring is critical.

Effective disease management requires a comprehensive partnership and includes prevention, treatment, and follow-up.\textsuperscript{7} Patients may be seen by many different healthcare professionals (HCPs), with little continuity or collaboration. For an effective, personalized asthma management plan, cooperation among the patient, their family, a specialist, and other healthcare providers is necessary.\textsuperscript{7}
Kinzie Bashline, PA

“A common barrier to effective asthma control is communication with patients and treatment adherence. I think having staff that can understand and help facilitate the explanation of the diagnosis allows for the patient and family members to comprehend and ensure the patient is on board. When explaining the diagnosis, you need to communicate what it is, what’s causing it, and where it comes from. Our practice lists out avoidance measures (especially for perennial triggers), medications, and things like allergy immunotherapy, each time we talk to a patient about their allergic asthma. Medication nonadherence and lack of following up on medications can be detrimental barriers to effective asthma control as well.”

Renee Lantner, MD

“We do skin or in vitro testing on most patients at my practice. The rationale for testing is based on the patient history. For instance, if I know the patient has animals in the house, then I almost always do testing. Generally, the testing is not done for just perennial indoor allergens, but is also done for seasonal allergens.”

Kris McGrath, MD

“With asthma, we have three evaluation criteria: the patient story, their chest tightness, and their shortness of breath. We use lung function tests, office spirometry, and asthma control tests at regular intervals to help make treatment decisions to step up or step down treatment. Usually, in adult asthma, we don’t step off treatment. It’s a complex, chronic disease of inflammation, hyper-responsiveness, and bronchial constriction presenting with a variety of symptoms.”

Patricia Mikes, MD

“It’s necessary for us to really find out what their triggers are, what makes them better, what makes them worse, and teach them how to recognize warning signs so they can get to healthcare quickly.”

Payal Patel, MD

“Skin and in vitro testing are part of the approach that I take with my patients. For those who have persistent asthma, we do an assessment for perennial indoor allergies. We also routinely do skin prick testing for inhalant allergies. If skin prick testing is not feasible, then we do in vitro testing. In addition to looking for perennial indoor allergies, I also look for outdoor allergies, such as pollen and mold, because they can lead to persistent asthma symptoms for several months of the year.”
Learn More!
Visit the following organizations to learn more about these important topics.

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<th>Asthma in the Inner City</th>
<th>Asthma in Schools</th>
<th>Patient Education</th>
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<td>Inner-city Asthma Consortium (ICAC)</td>
<td>American Academy of Allergy, Asthma, and Immunology School-Based Management Program (SAMPRO™)</td>
<td>American Lung Association: Create an Asthma Action Plan</td>
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**References:**