Do Indoor Environments Influence Asthma & Asthma-Related Symptoms?

Allergy Partners discusses the prevalence of asthma in recent decades that has been steadily increasing despite advances in medical care and technology mostly due to influences from environmental factors such as indoor air pollution and allergens.

ASHEVILLE, N.C. (PRWEB) August 02, 2019 -- Asthma is a complex, chronic airway disorder characterized by clinical symptoms such as cough, wheezing, and shortness of breath. Symptoms can be quite variable and often recur due to obstruction of airflow within the lungs, underlying airway inflammation, and bronchial (i.e., airway) hyper-responsiveness. In recent decades, the prevalence of asthma has been steadily increasing despite advances in medical care and improvements in hygiene and building technology. Most of this increase has been evident in urban areas and influences from environmental factors such as indoor air pollution and allergens are likely factors(1). Examples of indoor air pollutants include cigarette smoke, ozone, nitrogen dioxide and volatile organic compounds (VOCs). Animal dander, dust mites and cockroach are well-known indoor allergens. Our increasing time spent indoors coupled with sedentary lifestyles are also impacting indoor environmental conditions. Discussion of potential allergic and non-allergic triggers within the indoor environment with a board certified allergist can help to identify factors involved with asthma. In addition, appropriate advice regarding intervention strategies for such triggers can optimize asthma symptom control.

Data suggest there is an association between exposure and sensitization to indoor allergens with asthma (2). Further, the National Asthma Education and Prevention Program (NAEPP) Expert Panel Report 3 (EPR-3) discusses the importance of evaluating the potential role of indoor allergens and its impact on asthma. A detailed history, along with allergy skin testing conducted by a board certified allergist, can help to identify allergen exposures that could be playing a role in a patient’s asthma. Knowledge of allergen sensitivity and exposure can help guide recommendations regarding avoidance measures. For example, control of dust mite allergen with the use of bed/pillow encasings have been shown to be effective (3). Allergy Guardian® mattress products, endorsed by Allergy Partners, are an excellent option and are available for review and purchase (allergyguardian.com). An allergist may also recommend additional home measures which can include flooring options (such as carpet removal), vacuuming with high-efficiency vacuums and laundering in hot water (i.e., greater than 55°C or 131°F), depending on an individual’s evaluation. When it comes to pets within the home, control of cat and dog allergen can be very difficult despite appropriate measures. Although removal of the pet has been a primary intervention strategy, a thorough discussion with an allergist can help patients to maximize their options for treatment.

In addition to allergens, particulate matter and indoor air pollutants can also impact respiratory health. Americans typically spend approximately 22 hours of their day indoors, thus posing an increased risk for chronic exposure to indoor pollutants (4). Indoor ozone levels can be influenced by outdoor sources. However, electrostatic and negative ion air purifiers can also contribute to indoor ozone levels. In allergy sufferers, ozone can enhance responses to inhaled allergens. Gas-fueled cooking and heating has been identified as the main source of indoor nitrogen dioxide levels. Children with allergies and asthma may experience increased symptoms secondary to inhaled nitrogen dioxide. Further, nitrogen dioxide may also have an influence on reactions to inhaled allergens (4). In regard to volatile organic compounds, there are two primary types: chemical and microbial. Sources for chemical VOCs include cleaning chemicals, adhesives and tobacco smoke (4). Indoor fungi have been associated with a variety of microbial VOCs. Whole-house filtration (i.e., high-efficiency particulate air (HEPA) filters on central HVAC units) and portable free-standing air cleaners have been shown to reduce indoor particulate levels (5). The cost and maintenance of cleaning devices ultimately
play significant roles in the form of air cleaner selected. However, the O2 BioHygienic™ air purifier, also endorsed by Allergy Partners, is a water-based filtration device that is an excellent option to consider. Further, this particular device removes particulates below the 0.03 micron level and does not emit ozone. A board certified allergist can help in identifying potential sources of pollution and provide appropriate intervention strategies.

The relationship between indoor allergen and pollutant exposures with asthma symptoms can be quite complex. We encourage you to visit your Allergy Partners physician to discuss your symptoms and find options for treatment.

References
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