

# Safe Control of Pest and Pet Asthma Triggers

Patricia Newcomb



## ABSTRACT

Asthma remains a substantial public health problem. Collecting environmental history and educating patients about asthma triggers are crucial for influencing asthma morbidity. Failure to educate patients and families about avoiding asthma triggers is a predictor of preventable hospitalization for asthma. This review of control measures focuses on common pests, such as cockroaches, dust mites, and rodents, and warm-blooded pets. Emphasis is placed on control through integrated pest management, an environmentally sensitive approach that uses knowledge about the life cycles and habits of pests to eliminate them.

**Keywords:** allergens, asthma, cockroach, disease management, dust mites, patient education, pests, pets, rodents, self management

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Asthma continues to be one of the leading public health problems in the United States. Although hospitalizations and deaths due to asthma have decreased, asthma symptoms continue to seriously affect national school and work productivity. U.S. data reported by the American Lung Association show that asthma was responsible for almost 14 million lost school days and 14.5 million lost work days for adult employees in 2004.<sup>1</sup> Over 30% of the caregivers of children with asthma lose workdays when their children experience asthma symptoms.<sup>2</sup> While the

origins of asthma remain obscure, there is wide evidence-based consensus on exposures that cause asthma symptoms, including infectious illnesses, airborne allergens, airborne particulates, and emotional stress.<sup>3-9</sup> Nurse practitioners (NPs) can impact the costs of asthma by counseling patients about ways to minimize exposures, especially in the environments in which they spend the most time, such as homes.

The role of indoor pollutants and allergens as asthma triggers is well known. The substantial amount of time that

children in the United States and other developed countries spend indoors is also recognized. U.S. guidelines for the diagnosis and management of asthma recommend assessing for exposure to indoor and outdoor asthma triggers, and provide information about how to control such triggers.<sup>10</sup>

Failure to educate patients and their families about the importance of avoiding known disease triggers has been identified as one predictor of preventable hospitalization for childhood asthma.<sup>11</sup> Primary care nurses and physicians do not routinely take environmental histories or counsel on indoor pollution control,<sup>12</sup> nor is this skill typically included in medical and nursing education.<sup>13</sup>

The purposes of this paper are to encourage clinicians to obtain environmental histories for patients with asthma and to provide information about the management of asthma triggers that are commonly encountered in indoor environments.

### OBTAINING AN ENVIRONMENTAL HISTORY

Many individuals are aware that environmental factors influence health, but understanding which factors are relevant and how to control them is rare. The collection of environmental history from an asthma patient may be the first time patients and families make the connection between specific environmental conditions and asthma symptoms. This process provides an opportunity to educate families and answer their questions, while helping clinicians gain insight into the specific triggers that may play a role in an individual's symptom patterns.

One barrier to collecting the environmental history is the clinical time permitted for each patient. While a simple environmental screening for well individuals might take 2 or 3 minutes, the environmental history collection for asthma patients is more detailed, and time for it should be included in the encounter. Because the process involves counseling and education, as well as collection of data, clinicians caring for children or adults covered by Medicaid may consider billing based on time/counseling for this encounter. Delegating the task to an educator may be an option in some settings, although it is imperative that a system for clinician review of the information and counseling occur, because treatment decisions should incorporate this important information. Conducting the assessment in a face-to-face encounter, rather than having patients or parents fill out histories prior to the visit, has the advantage of helping to build a partner relationship between the medical care providers and the patients and their families. It is expected that children with asthma

will receive the routine environmental screenings that well children receive, such as screening for exposures to lead and household poisons, in addition to the more focused asthma-related environmental history.

Learning about exposures to asthma triggers involves attention to all environments in which an individual may spend time. Number and diversity of environments increase as patients age, but even infants rarely remain in a single environment. Day care, school, after-school programs, relatives' and friends' homes, and shopping venues contribute to children's exposures to triggers, as well as the home in which the children live. For adults, occupational and recreational exposures are additional important factors. Forms for recording the asthma-related environmental history have been created by multiple groups and are easily accessible on the Internet. For example, the National Environmental Education and Training Foundation created a popular environmental history form specifically for patients with asthma, which can be downloaded and used without charge.<sup>14</sup>

Standard components should be included in the asthma environmental history, but regional and demographic variations may affect the significance of some routine items. For instance, regions with warm, humid climates promote the growth of dust mites and mold, while regional preferences in heating systems influence indoor combustion products. Socioeconomic factors, including housing type and family income, are associated with exposure to indoor asthma triggers. Minority, inner-city residence, and low-income status are risk factors for asthma morbidity.<sup>15-17</sup>

Developmental factors play an important role. For instance, during the pre-school through middle-school periods, allergy increases in importance. By age 12, about 80% to 90% of children with asthma will have allergic triggers, and a history of atopic dermatitis or parental asthma is strongly associated with allergic airway disease.<sup>18</sup> Thus, the environmental history must be interpreted in conjunction with the patient's development, family and personal medical histories, geography, and socioeconomic factors. The routine environmental history for asthma patients should include the minimum components outlined in Table 1. The presence of pests and pets are common indoor exposures revealed in the environmental history. Strategies for reducing these exposures are explored in the following sections.

### MANAGING PESTS

#### Cockroaches

Cockroach infestations are common in inner-city areas globally, particularly where warmth and humidity provide

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