or after an upper respiratory tract infection were analyzed in relation to the severity of asthma in the week after an infection.

**Results.** Two hundred nineteen episodes of upper respiratory tract infection occurred among 99 subjects. Lower respiratory tract symptom scores were increased and PEF values were decreased with increasing personal exposure to NO\(_2\) in the week before infection for all upper respiratory tract infections combined and for piconavirus and respiratory syncytial virus individually. There was no significant change in lower respiratory tract symptom scores or PEF values with high NO\(_2\) exposure in the week after infection.

**Conclusions.** Higher levels of NO\(_2\) exposure in the week before the beginning of a respiratory tract infection were associated with increases in the severity of resulting asthma exacerbations.

**Reviewer’s Comments.** NO\(_2\) exposure may be derived from indoor sources, such as gas-burning stoves or wood-burning fireplaces. The levels of NO\(_2\) in this study were well within the standards for air quality safety. NO\(_2\) exposure itself, in the range experienced by the study cohort, was not associated with adverse symptom scores or lower PEF values. The highest levels of exposure were associated with worsening of asthma symptoms and decreased PEF values in the presence of upper respiratory tract infection. The results should be interpreted with caution, however, because there were no control aspirates from subjects with stable symptom scores and PEF values.

**ASSOCIATION OF RECURRENT WHEEZING WITH SENSITIVITY TO COCKROACH ALLERGEN IN INNER-CITY CHILDREN**


**Purpose of the Study.** To assess the prevalence of positive allergy skin test results for common inhaled allergens and the association with wheezing among inner-city children being examined in a general pediatric clinic.

**Study Population.** Seventy-five children, 2 months to 10 years of age, were studied. The children were undergoing well-child or follow-up visits in the general pediatric clinic at a teaching hospital in Chicago, Illinois. Children who had not been previously diagnosed as having asthma or other atopic diseases, as documented in their medical records, were selected.

**Methods.** Demographic data were collected for suburban versus urban residents. A questionnaire was administered regarding episodes of wheezing in the previous year and the presence of other allergic symptoms, family history, exposure to smoking and pets, and the presence of cockroaches in the home. Each child underwent standard allergy skin testing performed with the puncture method, with the Qüintest skin test device (Hollister Stier Laboratories, Spokane, WA). Testing was performed for dust mites, cockroach mixture, cat hair, dog dander, mold mixture, grass mixture, and ragweed, with positive and negative control samples.

**Results.** A total of 37% of the children demonstrated positive skin test results for ≥1 allergen; 29% of the children were sensitive to dust mites, 15% to cockroach mixture, 9% to cat hair, 7% to mold, 4% to grass, 3% to ragweed, and 1% to dog dander. Cockroach allergen was the only allergen that was correlated significantly with previous episodes of wheezing. Sixty-four percent of children with positive skin tests results for cockroach allergen had a history of wheezing, compared with 33% of those with negative results for cockroach allergen (P = .05). None of the families acknowledged seeing cockroaches in their homes. No significant correlation between exposure to cigarette smoke at home and a history of wheezing was noted.

**Conclusions.** Among a population of inner-city children not previously identified as atopic, more than one-third of the children showed sensitivity to ≥1 environmental allergen. Although dust mite allergen was the most common allergen to which children were sensitized, cockroach allergen sensitivity was the only response that was induced smaller effects, compared with subsequent exposures.
correlated significantly with previous episodes of wheezing.

Reviewer’s Comments. Although this study was conducted in a general pediatric population, there are 3 messages that are very consistent with others that have focused on inner-city children with diagnosed asthma. First, wheezing is very common; second, allergic sensitization is extremely common, especially considering the age group included in this study; and third, cockroach is the allergen that is most associated with asthma morbidity in inner-city children.

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COCKROACH ALLERGEN EXPOSURE AND SENSITIZATION IN SUBURBAN MIDDLE-CLASS CHILDREN WITH ASTHMA


Purpose of the Study. To evaluate the prevalence of cockroach allergen exposure in middle-class suburban environments and its relationship to sensitization.

Study Population. A total of 339 children (6–17 years of age) with physician-diagnosed asthma were recruited from 3 pediatric practices located in suburban and rural counties surrounding Baltimore, Maryland, and from 1 practice located within Baltimore city. The children were required to have currently active asthma, and the families needed to agree to a home visit.

Methods. The families completed a demographic questionnaire, and an environmental technician conducted a house inspection and collected dust samples, which were analyzed for cat, dog, cockroach, and dust mite allergens. The children underwent skin testing with a sampling of perennial and seasonal allergens, including cat, dog, cockroach, and dust mite allergens.

Results. Of the study children, 44% were male and 49% were white. Seventy-seven percent lived in rural or suburban areas, 53% of the families had an annual income of more than $50,000, and 49% of the mothers had college degrees. Thirty percent of the suburban-rural homes were found to have measurable cockroach antigen, whereas dust mite, cat, and dog allergens were detected for 40%. Only 5% of the suburban-rural homes with measurable cockroach antigen had evidence of cockroach infestation. Sensitization testing with perennial allergens revealed that 71% of subjects were sensitized to dust mite allergens, 29% to cat allergen, 76% to ≥1 seasonal outdoor allergen, and 10% to dog allergen. Cockroach allergen sensitization did discriminate between urban and suburban dwellers, identifying 35% of urban residents, compared with 21% of suburban-rural residents. A kitchen cockroach allergen (Bla g 1) level of ≥1 U/g was significantly associated with cockroach sensitization and was found in both urban and suburban groups.

Conclusions. The presence of cockroach allergen occurs more frequently in suburban-middle-class homes than previously thought, and low-level exposure to this antigen is a risk factor for sensitization.

Reviewer’s Comments. Cockroach antigen was demonstrated for a surprisingly high percentage of middle-class suburban homes. The results show that even low levels of exposure can cause sensitization. Interestingly, only a small percentage of homes in which cockroach antigen was identified exhibited evidence of infestation when examined by the environmental technician. The reason for this is not totally clear. This study suggests that reliance on questions about the presence of cockroach infestation in the home may underestimate the risk of cockroach exposure among children with asthma.

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THE PREVALENCE OF RAT ALLERGEN IN INNER-CITY HOMES AND ITS RELATIONSHIP TO SENSITIZATION AND ASTHMA MORBIDITY


Purpose of the Study. To determine the prevalence of rat allergen in the homes of inner-city children with asthma and to examine the relationship between rat allergen exposure, sensitization, and asthma morbidity.

Study Population. Children enrolled in the National Cooperative Inner-City Asthma Study were studied.

Methods. Dust samples collected from the homes of 1528 asthmatic children from 8 major inner-city areas were analyzed with the use of a new monoclonal antibody-based enzyme-linked immunosorbent assay, to determine the prevalence of rat allergen in dust samples from inner-city homes of the National Cooperative Inner-City Asthma Study population. Home characteristics were evaluated to identify variables that were associated with the presence of rat allergen. Data were also analyzed to assess the relationships between the presence of rat allergen, sensitization, and asthma morbidity.

Results. Thirty-three percent of inner-city homes had detectable rat allergen (Rat n 1). The presence of rat allergen was associated with reported rat and mouse infestation, as well as evidence of mouse infestation in home inspections. Twenty-one percent of the participants were sensitized to rat allergen; however, sensitization was not more common when rat allergen was found in the home. The numbers of hospitalizations, unscheduled medical visits, and days with decreased activity because of asthma were significantly increased for individuals who were both sensitized and exposed to rat allergen.

Conclusions. Rat allergen sensitization and exposure were associated with increased asthma morbidity among inner-city children.

Reviewer’s Comments. Rodent allergens are known to cause immunoglobulin E-mediated hypersensitivity in occupational settings. Recently, mouse allergen was identified as an important allergen among asthmatic children. This is the first study to investigate the prevalence and significance of rat allergen in inner-city homes. The most remarkable finding in this study was the relationship between rat allergen and morbidity among inner-city asthmatic children. These results suggest that rat allergen exposure is an important public health concern and control measures should be implemented in inner-city neighborhoods. Rat allergen reduction measures might have significant effects on asthma morbidity and might reduce overall health care utilization for inner-city children with asthma.

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EFFECT OF MATTRESS AND PILLOW ENCsASINGS ON CHILDREN WITH ASTHMA AND HOUSE DUST MITE ALLERGY

ASSOCIATION OF RECURRENT WHEEZING WITH SENSITIVITY TO COCKROACH ALLERGEN IN INNER-CITY CHILDREN

Alan B. Goldsobel

_Pediatrics_ 2004;114;538

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