

SOUTHWESTERN NEWS

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Study finds indoor allergen levels vary in U.S. cities, cockroach allergens cause more asthma symptoms

DALLAS – March 8, 2005 – Cockroach allergens exacerbate the symptoms of asthmatic children living in inner cities – more so than dust mite or pet allergens – and amounts of cockroach allergens varies widely in cities across the country, according to a UT Southwestern Medical Center researcher involved in a multicenter study.

The National Institutes of Health study, which appears in the March issue of the *Journal of Allergy and Clinical Immunology*, evaluates the relationships among allergen exposure, sensitivity and asthma morbidity in inner-city children. It is the first study to compare allergen levels and exposure on such a geographically large scale in an inner-city population.

“It is known that cockroach allergens play a very important role in exacerbating asthma symptoms in inner-city children who are sensitive and exposed to high levels of that allergen,” said Dr. Rebecca Gruchalla, chief of allergy at UT Southwestern and the study’s lead author. “Our study has expanded this finding by demonstrating that cockroach allergen levels vary dramatically across the country and that there are marked geographic differences in both allergen exposure and skin test reactivity in this group of children.”

Asthma, a chronic lung disease, affects about 20 million Americans. Inner-city children suffer disproportionately from the disease, and exposure to high levels of multiple indoor allergens and tobacco smoke is a contributing factor.

Researchers followed more than 900 children aged 5 to 11 with moderate to severe asthma who live in inner-city areas in the Bronx, Boston, Chicago, Dallas, New York City, Seattle and Tucson, Ariz.

Children with moderate or severe allergies to cockroaches were found to have more asthma symptoms, miss more school days and have more unscheduled asthma-related doctor visits than children who were sensitive to other indoor allergens. Exposure to dust mite allergens was not found to exacerbate asthma symptoms. Exposure to pet allergens resulted in an increase in unscheduled visits to the doctor, but the increase was found to be of borderline significance.

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Researchers also found that exposure and sensitivity to specific allergens depend greatly on the type of housing and location. Cockroach allergens were common in apartment buildings while dust mite allergens were more often found in houses. Cockroach allergen levels were highest in the Bronx and New York City, while dust mite levels were highest in Dallas and Seattle. In Dallas 70 percent of homes studied had elevated levels of dust-mite allergens, and almost 50 percent of homes had elevated levels of cockroach allergens.

Exposure to dust mite allergens can be reduced by encasing mattresses, springs and pillows in allergen-impermeable covers; removing carpet, if possible; and washing sheets weekly in very hot water, Dr. Gruchalla said. To minimize exposure to cockroach allergens, she recommends fixing leaky faucets, eating only in the kitchen and dining room, keeping shelf-stable food in plastic containers or sealable bags, taking garbage out daily and cleaning counter tops and floors regularly.

Study participants had suffered at least one asthma-related hospitalization or two asthma-related emergency room visits during the six months prior to enrollment in the study. They also had a positive allergy skin test to at least one of 11 indoor allergens such as dust mites, molds, cockroaches, pets or rodents. Children slept in the primary caretaker's home at least five nights per week.

Researchers performed a baseline clinical evaluation, including questionnaires on asthma symptoms, skin testing and medication use. Later, researchers performed baseline home evaluations by visually inspecting and collecting dust from each child's sleeping area.

The project was part of the Inner-City Asthma Study, a multicenter study comprising seven medical centers – including UT Southwestern –and a statistical center. Centers included the University of Arizona College of Medicine; Albert Einstein College of Medicine of Yeshiva University/Jacobi Medical Center; Boston University School of Medicine; Mount Sinai School of Medicine of New York University; Children's Memorial Hospital in Chicago; the University of Washington School of Medicine; and Rho Inc. in Chapel Hill, N.C. The National Institute of Allergy and Infectious Diseases and the National Institute of Environmental Health Sciences also participated in the study.

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