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Results of a Home-Based Environmental Intervention among Urban Children with Asthma

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ABSTRACT

Background Children with asthma who live in the inner city are exposed to multiple indoor allergens and environmental tobacco smoke in their homes. Reductions in these triggers of asthma have been difficult to achieve and have seldom been associated with decreased morbidity from asthma. The objective of this study was to determine whether an environmental intervention tailored to each child's allergic sensitization and environmental risk factors could improve asthma-related outcomes.

Methods We enrolled 937 children with atopic asthma (age, 5 to 11 years) in seven major U.S. cities in a randomized, controlled trial of an environmental intervention that lasted one year (intervention year) and included education and remediation for exposure to both allergens and environmental tobacco smoke. Home environmental exposures were assessed every six months, and asthma-related complications were assessed every two months during the intervention and for one year after the intervention.

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Results For every 2-week period, the intervention group had fewer days with symptoms than did the control group both during the intervention year (3.39 vs. 4.20 days, $P < 0.001$) and the year afterward (2.62 vs. 3.21 days, $P < 0.001$), as well as greater declines in the levels of allergens at home, such as *Dermatophagoides farinae* (Der f1) allergen in the bed ($P < 0.001$) and on the bedroom floor ($P = 0.004$), *D. pteronyssinus* in the bed ($P = 0.007$), and cockroach allergen on the bedroom floor ($P < 0.001$). Reductions in the levels of cockroach allergen and dust-mite allergen (Der f1) on the bedroom floor were significantly correlated with reduced complications of asthma ($P < 0.001$).

Conclusions Among inner-city children with atopic asthma, an individualized, home-based, comprehensive environmental intervention decreases exposure to indoor allergens, including cockroach and dust-mite allergens, resulting in reduced asthma-associated morbidity.

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