Children With Poorly Controlled Asthma: Randomized Controlled Trial of a Home-Based Environmental Control Intervention

**PURPOSE OF THE STUDY:** To determine the efficacy of a home-based environmental control (EC) intervention, based on biomarkers for allergen sensitization and secondhand smoke (SHS) exposure, in reducing asthma emergency department (ED) visits among inner-city children with persistent asthma.

**STUDY POPULATION:** Children (mean age: 6.3 years) with physician-diagnosed persistent asthma (*n* = 222) were recruited from an asthma ED visit from August 2013 to February 2016. Subjects had had ≥2 ED asthma visits or ≥1 hospitalization in the past 12 months and were residents in the Baltimore metropolitan area. Children in foster care and other significant nonasthma respiratory conditions were excluded.

**METHODS:** In this prospective randomized controlled trial, children in the intervention or attention control group were stratified by age. All children had serological immunoglobulin E testing to common environmental allergens and salivary cotinine measurements for SHS exposure. Caregivers completed surveys about the child’s indoor exposure to mice, cockroaches, cats, and dogs at the baseline, 6-month, and 12-month time points. The intervention group had a medical follow-up visit in the ED within 7 days of enrollment, 2 home nurse visits for asthma follow-up, a targeted EC educational and remediation program based on the child’s sensitizations, and motivational interviews with caregivers of children with a positive salivary cotinine result to encourage a ban on home smoking. The control group had 3 home nurse visits, basic EC education without remediation, and a smoking cessation referral.

**RESULTS:** Most (204 out of 222) completed the study at 1 year. Subjects were 65% boys, 94% African American, and 94% Medicaid insured. Approximately 75% had moderate to severe asthma with ≥1 asthma ED visit in the previous 3 months. Eighty-three percent had positive serological allergy test results, and 56% had positive salivary cotinine results. The asthma medication ratio of controller to total controller or rescue canisters used, cotinine levels, mouse or cockroach exposure, symptom-free nights, and caregiver worry about medication side effects were different between groups. Children who resided in homes with no SHS exposure and who were in the control group, atopic children, younger children, and children with an asthma medication ratio >0.5 were more likely to have a repeat ED visit. For children with positive SHS exposure, time to first repeat ED visit did not differ by group. For children with no SHS exposure and after adjusting for age, allergic sensitization, and medication fills, the control subjects (70%) were more likely than intervention subjects (45%) to have a repeat ED visit. Overall, baseline increased controller and rescue medication fills were the only factors associated with increased risk for repeat ED visits for all subjects.

**CONCLUSIONS:** Home-based, targeted EC intervention was not more effective in reducing repeat asthma ED visits in children with persistent asthma and SHS exposure compared with controls.

**REVIEWER COMMENTS:** This study further illustrates that achieving good asthma control truly requires a consistent, multipronged approach. Indoor allergies and SHS are problematic factors in asthma management, and smoking and/or indoor allergen interventions in other studies have reported mixed success in improving asthma outcomes. The type or number of interventions in this study may have been inadequate and/or did not account for all other caregiver or social challenges. Not considering the baseline and asthma medical management during the study is a significant limitation. Also, this study included mostly inner-city, minority subjects with very poorly controlled asthma, so possibly, these interventions could have different outcomes in other populations.

**URL:** www.pediatrics.org/cgi/doi/10.1542/peds.2019–2461B

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Building Bridges for Asthma Care: Reducing School Absence for Inner-City Children With Health Disparities

**PURPOSE OF THE STUDY:** To assess the effect of a school-based asthma care program on improving school attendance and asthma control.

**STUDY POPULATION:** Researchers in this study included children ages 5 to 14 years in 28 schools within the Denver and Hartford public school systems who were managed for 2 consecutive school years.

**METHODS:** Students were identified by using school health and medication authorization forms; risk was assessed by using the Asthma Intake Form, which used self-reported criteria such as emergency department or hospital visits, oral steroid requirement, school absenteeism, and markers of uncontrolled asthma. Students and their caregivers received targeted case management, including asthma education, inhaler training, regular school nurse visits, assessment of asthma control, and coordination with primary care. The control group consisted of matched children who did not participate in the program. The primary outcome was rate of absences; secondary
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*Pediatrics* 2019;144;S53
DOI: 10.1542/peds.2019-2461

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DOI: 10.1542/peds.2019-2461BBBB

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