

Asthma and Pest Control Study

Demonstrating Return-on-Investment for
In-Home Pest Control for
Children with Persistent Asthma

**Regional Summit on Sustainable Funding
for In-Home Asthma Interventions**

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It's Never Just One Thing...



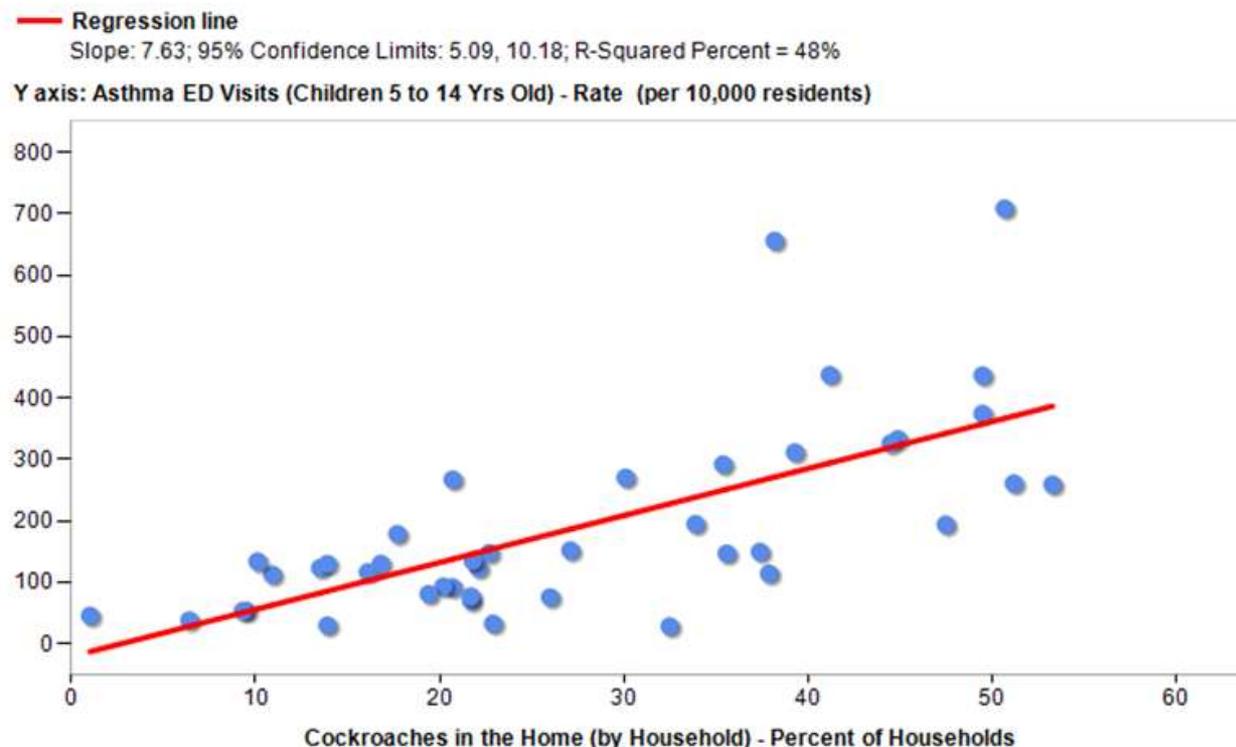
Shanahan

"I love your work."

Addressing home triggers key to improving asthma outcomes

- Neighborhood disparities in asthma linked to poorly maintained housing and pest problems

Neighborhood Asthma ED Visits (Children 5 to 14 Yrs Old) by Cockroaches in the Home (by Household)



- Sources: New York State Statewide Planning and Research Cooperative System (SPARCS) Deidentified Hospital Discharge Data, 2008; Housing and Vacancy Survey, 2008

Health care costs demand health care response to housing-related triggers

- Previously validated IPM intervention
 - Integrated pest management: prevention-based approach, multiple strategies to reduce housing conditions conducive to pests
 - Greater than 80% success in reducing pests at 6 and 12 months
- An effective pest intervention could greatly improve health outcomes and reduce urgent care health costs
 - Target most at-risk children with highest severity in high-risk communities
 - Reduce pest allergens in the home
 - Children in largely pest-free homes have fewer symptom days, school absences, ED visits, hospitalizations than those in homes with pests
- No studies have yet quantified the costs and health outcomes of IPM alone
 - 1-time basic IPM intervention cost = ~\$400 to \$600
 - Average cost of asthma-related ED visit: \$691; child hospital stay: \$7,987

STUDY: ROI for IPM

- Collaborative project: DOHMH and Montefiore Medical Center
- Health Insurance Partners: Healthfirst and Affinity
- Funders: Robin Hood Foundation, New York State Health Foundation, NYC Health Department
- For children aged 5-12 with persistent asthma in homes with pests:
 - Demonstrate feasibility of basic IPM intervention
 - Evaluate changes in asthma outcomes and asthma-related health system utilization
 - Assess return on investment
 - Work with pest control industry to establish feasible, replicable protocol for IPM intervention

Prospective RCT Study Design

- 386 children (364 families) randomly assigned to intervention (191) and control (202) groups
 - Children aged 5 to 12 in the Bronx / Upper Manhattan
 - Persistent asthma: clinical definition –mild, moderate or severe
 - At least 1 ED visit or hospitalization due to asthma in the past year
 - Caregiver-reported pest problem in home (cockroaches or mice)
- 3 assessments: baseline, 6-months, 12-months
 - Caregiver surveys
 - Montefiore medical record data
 - Health insurance claims data (HealthFirst, Affinity)
- Primary outcomes: Asthma-related ED visits and hospitalizations
 - Secondary outcomes: Symptom days, Days of missed school / work
- Incentives
 - Free IPM treatment worth ~\$600
 - Set of food storage containers
 - \$20 after completing each assessment; up to \$60 total

IPM Intervention

- **1st Visit: Inspection and Assessment**
 - Identify pests and conditions conducive to pests
 - Educate participant caregiver(s) about treatment
 - Placement of pest monitoring devices (traps)
- **2nd Visit: Treatment**
 - Trapping and removal of mice
 - Removal of cockroaches and pest evidence
 - Intensive cleaning of pest infested areas
 - Steam cleaning
 - HEPA vacuuming
 - Scrubbing of components that have roach frass/food residue
 - Sealing
 - Sealing cracks, crevices, and gaps in cabinetry etc.
 - Plugging up holes and other pest access points
 - Targeted application of low toxicity pesticides to reduce cockroach population

Before and After



Baseline Analysis

- Good study population to assess independent effects of IPM on asthma symptoms and healthcare utilization
 - Majority on Medicaid
 - Living in households with incomes below poverty level
 - Well-managed (on controller medications) but poorly controlled asthma
 - Significant pest infestations in homes
- Stay tuned: August 2016

Questions?

Thanks!

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