

# 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...



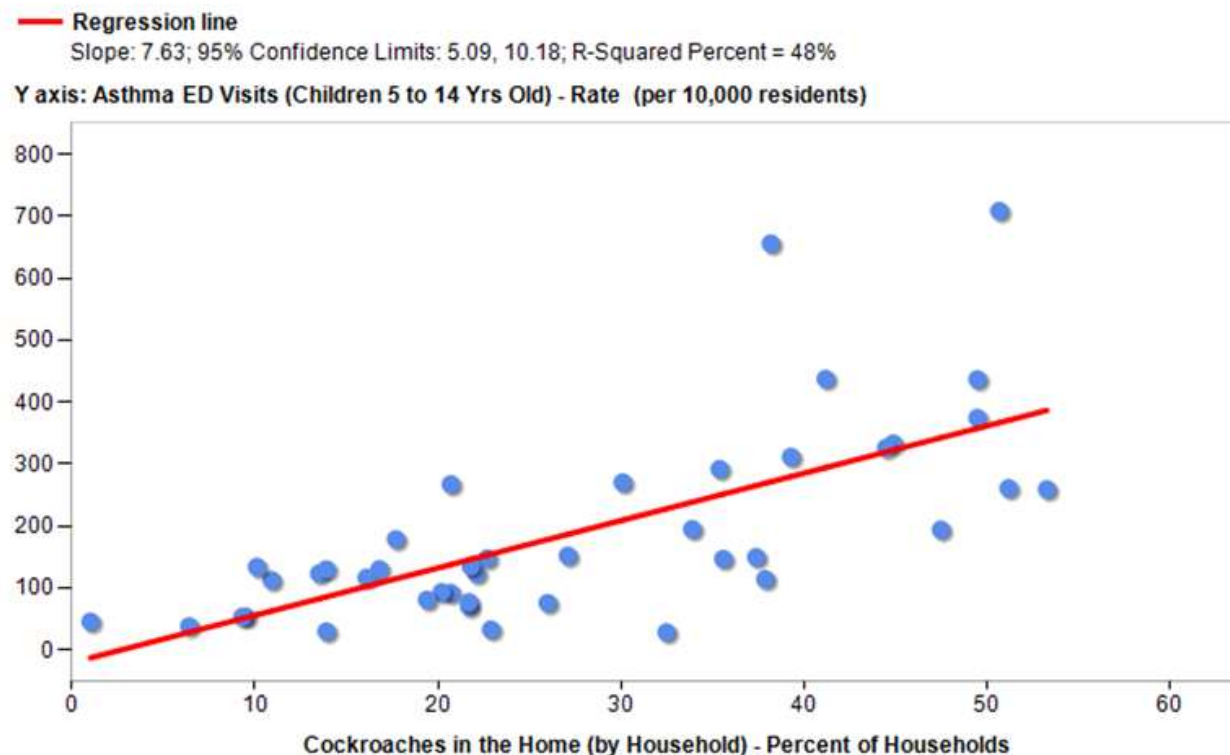
Shanahan

*"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

- **1<sup>st</sup> Visit: Inspection and Assessment**

- Identify pests and conditions conducive to pests
- Educate participant caregiver(s) about treatment
- Placement of pest monitoring devices (traps)

- **2<sup>nd</sup> 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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