

Existing Programs for Asthma Home Interventions

Northeast Denver Asthma Trigger Study



Healthy Homes
Healthy Kids
Breathing Better in Denver

Mike Van Dyke, Ph.D., CIH

Section Chief, Environmental Epidemiology and Occupational Health
Colorado Department of Public Health and Environment



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Health & Environment



Disclaimer

- The views expressed in this presentation do not reflect the official views or policies of the Colorado Department of Public Health and Environment.
- This work was performed while an employee of National Jewish Health.

Northeast Denver Study



Healthy Homes
Healthy Kids
Breathing Better in Denver

- HUD funded healthy homes demonstration grant
- Improve asthma outcomes in Northeast Denver by reducing asthma triggers
 - Educational interventions
 - Environmental remediation
- Novel collaboration



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Health[®]
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Study Hypothesis

Home environmental interventions (education and/or professional remediation) will result in:

- Health improvements:
 - Reduction in asthma symptoms
 - Reduction in medication usage
 - Fewer missed school days
 - Improved quality of life
- Environmental improvements
 - Reduced levels of asthma triggers
 - Changes in cleaning behaviors

Unique Feature of Study



- Low intensity educational intervention
 - Single home visit
 - Results of home assessment
 - Written educational materials
 - Monthly telephone support
 - Designed to be low-cost and scalable

Study Eligibility & Recruitment

Does your child have asthma?



We can test **your house** to see if there is **dust** or **mold** that might make your child's asthma worse, and **help you fix** problems we find.

Please call us if you:

- Live (rent or own) in zip codes 80207, 80216, 80205, 80206, 80203, 80220, or 80218
- Have a child 12 or younger with asthma or wheezing

You will get:

- A **free vacuum cleaner** and other cleaning and home safety supplies.
- **Free professional guidance** in repairing problems with your home.
- 2 **free** visits to your home by health workers to test your home.
- **Free** monthly telephone support for home improvement efforts.
- The possibility of financial assistance in repairing problems with your home.

For more information call:
Andrés Díaz at (303) 398-1447 or DiazA@NJHealth.org.

Project Director: Dr. Mike Van Dyke



- **Eligibility**
 - Reside in Northeast Denver (own or rent)
 - Child < 12 with asthma or recurrent wheeze
- **Recruitment**
 - Flyers
 - Medical providers
 - Community fairs

Study Enrollment



- Informed consent
- Baseline questionnaires
 - Asthma symptoms and medications
 - Cleaning behaviors
- Free cleaning products
 - Vacuum cleaner
 - Mop, broom, bucket, and rags
 - Green cleaning products

Home Assessment



- Visual inspection
 - Standardized inspection form
- Collection of settled dust
 - Dog, cat, dust mite, and cockroach allergens
 - Mold spores
- Air measurements
 - Relative humidity
 - Carbon monoxide

Prioritized Interventions

- Team approach
 - Industrial hygienist, physician, and building professional
- Standardized, evidence-based decision-making tool based on sampling, visual inspection, and asthma severity
- All received focused educational intervention
- Remediation for major findings

Example of Decision-Making Tool for Mold and Moisture

None	<ul style="list-style-type: none"> •→ No evidence of moisture or mold
Minor	<ul style="list-style-type: none"> •→ < 1 ft.² visible mold other than in the shower or the Child's bedroom in the home •→ Minor moisture issue anywhere in the home other than the Child's bedroom including condensation, a slow dripping pipe, or RH > 50% •→ Obvious moldy smell anywhere in the home
Moderate	<ul style="list-style-type: none"> •→ Any visible mold in Child's bedroom •→ 1-4 ft.² visible mold anywhere other than the child's bedroom or shower without current water intrusion issue
Major	<ul style="list-style-type: none"> •→ > 1 ft.² visible mold in Child's Bedroom •→ > 4 ft.² visible mold anywhere in the home •→ Obvious current water intrusion issue anywhere in the home (not condensation or a slow dripping pipe)

Focused Educational Intervention

- Focused on three highest priority findings
- Appropriate for low-literacy participants
- Limited to one page of bulleted text
- Listed achievable changes that a participant could make to reduce specific asthma triggers
- Monthly telephone coaching to gauge progress and offer technical support

Focused Educational Interventions



1234 Main St
Denver, CO 80205

3 Things You Can Do to Improve Your Child's Asthma

- 1 Reduce Chemical Irritants:** Reduce the levels of chemical irritants in your child's bedroom.
Why? We noticed chemical irritants such as cleaning chemicals in your child's bedroom. These can make your child's asthma worse.
- 2 Eliminate Tobacco Smoke:** Quit smoking completely or at least smoke only outside your home.
Why? Smoke particles are a strong asthma trigger and smoking anywhere in your home exposes your child to smoke particles.
- 3 Reduce Mold:** Reduce mold and moisture in your home.
Why? We observed a musty odor in your child's closet. This might be a sign of a moisture problem that could cause mold growth. Mold can make your child's asthma worse.

How? Look at the following pages for suggestions on how to do these 3 things.

Call your home asthma specialist, Andres Diaz at (303) 398-1447 if you need help or have questions.



Eliminate Cockroaches

Ver. 2.0

Step ① Learn about cockroaches



- Cockroaches can survive (and thrive) under the right conditions even in the low humidity environments of Colorado.
- Children can be allergic to substances found in the roaches' feces, saliva, and eggs.
- Cockroaches can make asthma symptoms worse for allergic children.
- Cockroaches prefer to live in warm, moist areas, such as under kitchen sinks and appliances, under bathroom sinks, and around furnaces.
- Common food sources for cockroaches include unwashed dishes, pet dishes, uncovered pet food containers, litter boxes, waste containers, splattered grease on stoves, and crumbs under refrigerators.
- Cockroaches can go for months without food, but only about 24 hours without water.

Step ② Take Action

1. Clean up clutter and debris, especially in the kitchen and bathroom.
2. Wash and sanitize dishes and dishes.
3. Store food in sealed containers.
4. Use garbage in sealed containers.
5. Clean under and around your stove and place the necessary water.
6. Clean up food crumbs in spill-prone areas of the house.
7. Store pet food in sealed containers.
8. Clean pet dishes and bowls, and change and store them.
9. Remove trash from your house, especially from the kitchen and bathroom.
10. Cockroaches in the home are a sign of a moisture problem and should be addressed with other strategies.

Professional Remediation

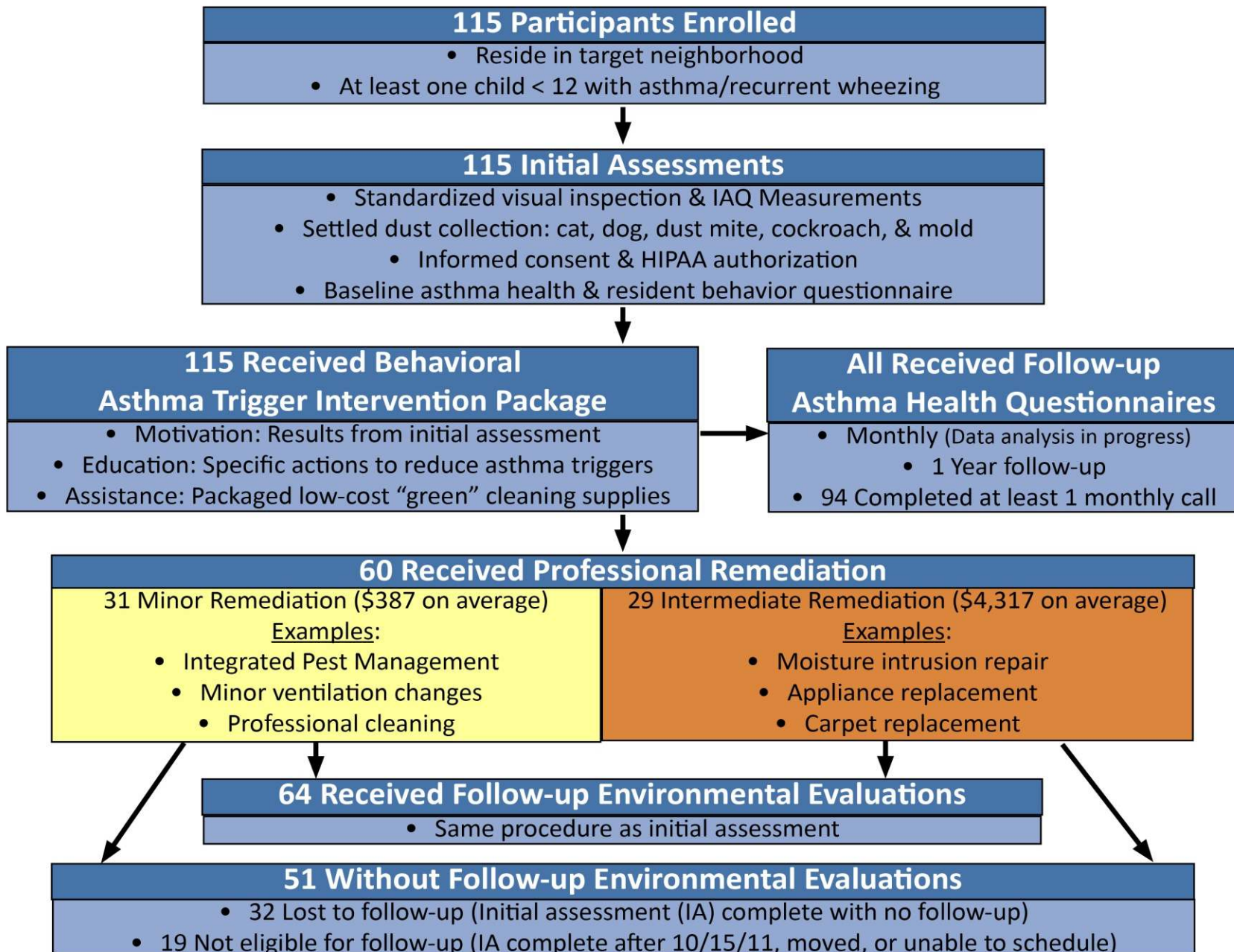


- Managed by community housing center (Northeast Denver Housing Center)
- Examples
 - Integrated pest management
 - Mold remediation
 - Ventilation modifications
 - Carpet replacement
 - Appliance replacement
 - Drainage improvement

Follow-Up

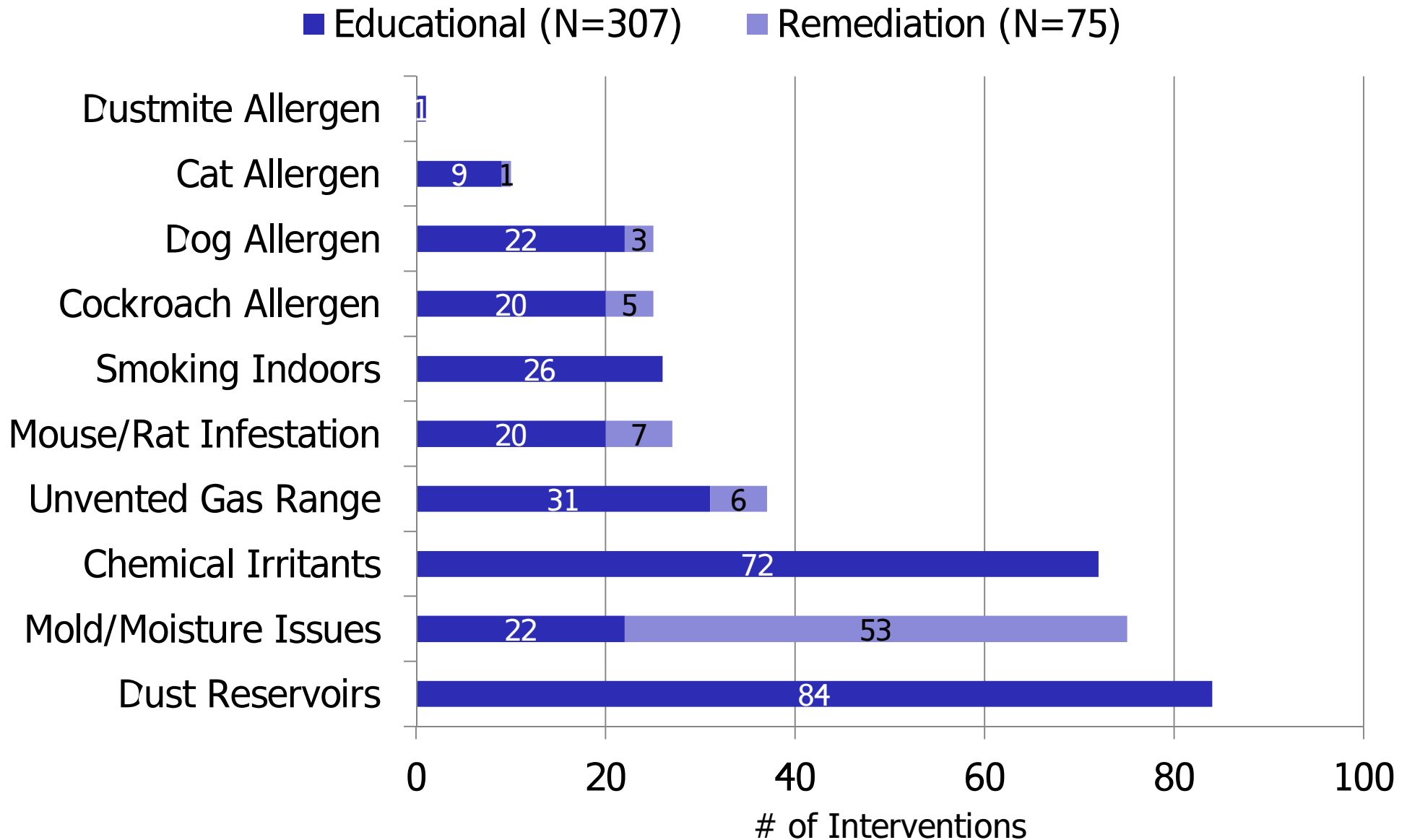
- Repeat visit 1 year post-intervention
 - Health and cleaning behavior questionnaires
 - Home inspection and sampling

Study Summary



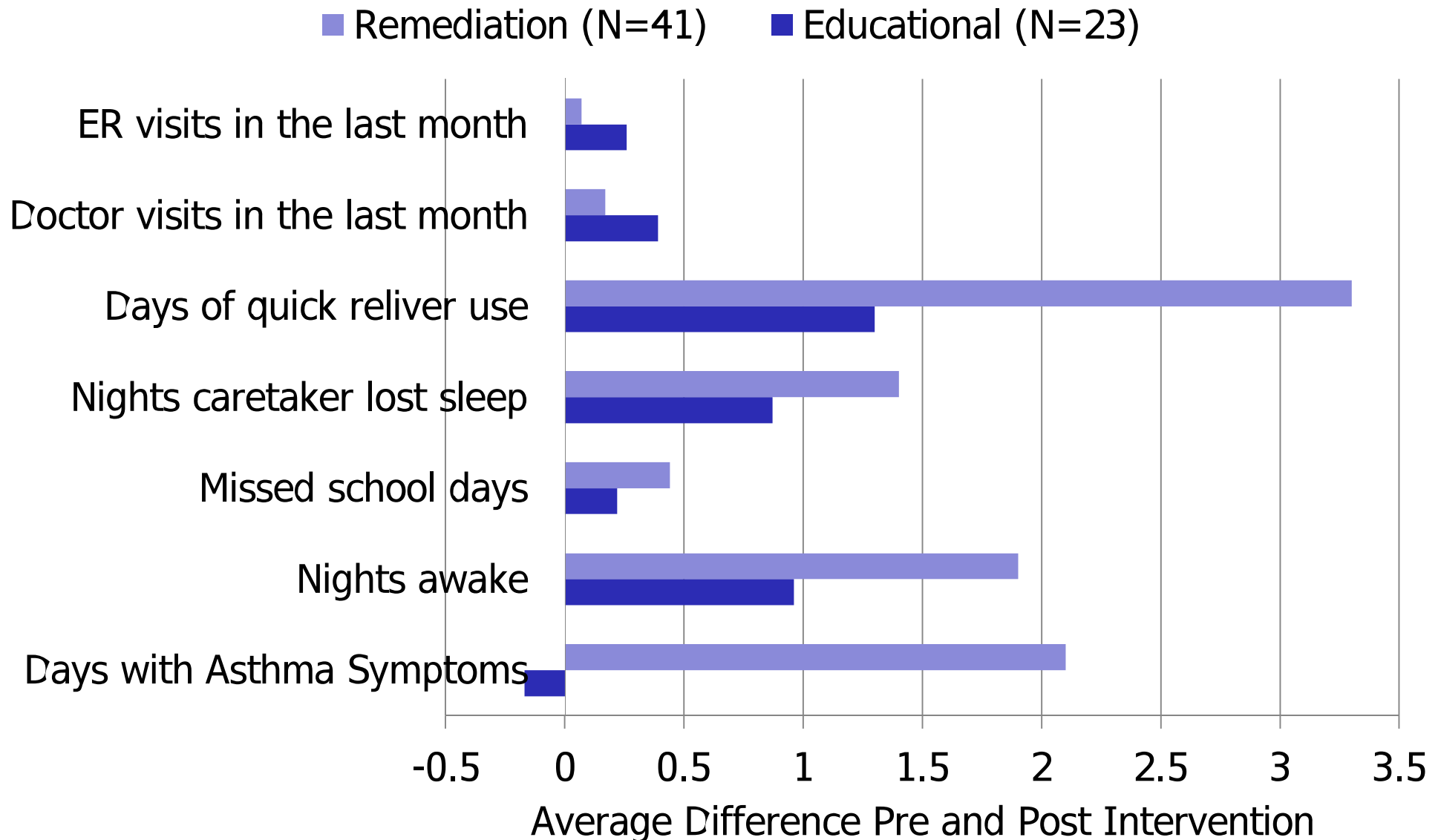
Numbers and Types of Interventions

(N=115 homes)



Asthma Symptoms Pre and Post Intervention

(Symptoms are per the last two weeks)



Significant Results

- Low-intensity educational interventions
 - Reduced cockroach allergen in settled dust
 - Improvements in caretaker vigilance regarding dust reservoirs, pest control, chemical irritants, and indoor smoking
 - Suggestive evidence of reduced quick reliever use and less healthcare utilization
- Remediation interventions
 - Significant reductions in asthma symptom measures
 - 54 additional symptom-free days per year
 - 8 fewer missed school days per year

Summary

- High prevalence of indoor asthma triggers in homes of low income Northeast Denver residents
- Low intensity asthma trigger intervention might improve home environments and reduce asthma symptoms
- Consistent with systematic reviews, asthma trigger remediation can significantly reduce asthma morbidity

Systematic Review

Economic Evidence

- Program costs per participant
 - Major remediation: \$3,796 to \$14,858
 - Minor/Moderate remediation: \$231 to \$1,720
- Minor/Moderate remediation value
 - Healthcare/productivity savings of \$5 to \$14 per dollar invested
 - Cost of \$12 to \$57 per additional symptom-free day

Systematic Review

Asthma outcomes in children and adolescents

CDC Community Preventive Services Task Force

Systematic Review

Home-Based Multi-Trigger, Multicomponent Environmental Interventions
(Based on 23 studies)

- Reduced asthma symptom days by median 21 days per year
- Reduced missed school days by a median 11 days per year
- Reduced acute healthcare visits by a median of 0.6 visits per year

Recommended Public Health Practice



The Community Preventive Services Task Force recommends the use of home-based multi-trigger, multicomponent interventions with an environmental focus for children and adolescents with asthma based on strong evidence of effectiveness in improving overall quality of life and productivity, specifically:

- Improving asthma symptoms
- Reducing the number of school days missed due to asthma

Economic Evidence

The Task Force finds that home-based multi-trigger, multicomponent interventions with a combination of minor or moderate environmental remediation with an educational component provide good value for the money invested based on:

- Improvement in symptom free days
- Savings from averted costs of asthma care/improved productivity

Future Directions & Challenges

- For this study....
 - More data analysis and publication
- Larger, better designed studies to test low intensity interventions
 - Need a scalable solution that starts in the healthcare setting
- Scalable solutions for home remediation
- Sustainable funding for trained home assessors and educators

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Housing Center**

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Questions?



Mike Van Dyke
mike.vandyke@state.co.us