



Communities in Action

NATIONAL ASTHMA FORUM

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Communities in Action Knowledge Base – Tailored Environmental Interventions

How to Listen

- ***What works about Tailored Environmental Interventions and what makes it work?***
- ***Dramatic Results you want to achieve***
- ***Vast array of opportunities for action***
- ***Setting where you can have the most impact-
Clinical, Home, School***

Economic evaluation of home based environmental interventions to reduce asthma morbidity

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The findings and conclusions in this presentation have not been formally disseminated by the Centers for Disease Control and Prevention and should not be construed to represent any agency determination or policy



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Elements of economic evaluation

- **Program cost**

- ◆ The value of all recourses required to conduct intervention

- **Costs averted**

- ◆ Direct cost:

- Hospitalizations
- ED visits
- Outpatient office visits (scheduled and unscheduled)
- Medication use

- ◆ Indirect cost:

- School days missed
- Work days missed

- **Effectiveness measure**

- ◆ Symptom-free days (SFDs)



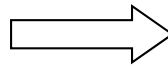
Home based multi-trigger multicomponent environmental interventions (home based interventions)

- **Home-based:** at least one home visit conducted by someone with training or experience
- **Multicomponent:** at least one component directed towards the home environment:
 - Environmental Assessment
 - Environmental Remediation
 - Environmental Education
- **Multi-trigger:** environmental component(s) targets two or more potential asthma triggers

From effectiveness review to economic review

Task Force recommends home-based interventions for their effectiveness based on:

- **Reducing symptom days** (median increase 21 SFDs per year)
- **Improving quality of life or symptom scores** (by 16.5%)
- **Reducing the number of school days missed** (median decrease 12.3 days per year)



Are these interventions economically worthwhile?

Economic summary measures are based on:

- **Program costs**
- **Direct costs averted**
- **Indirect cost averted**
- **Symptom free days**

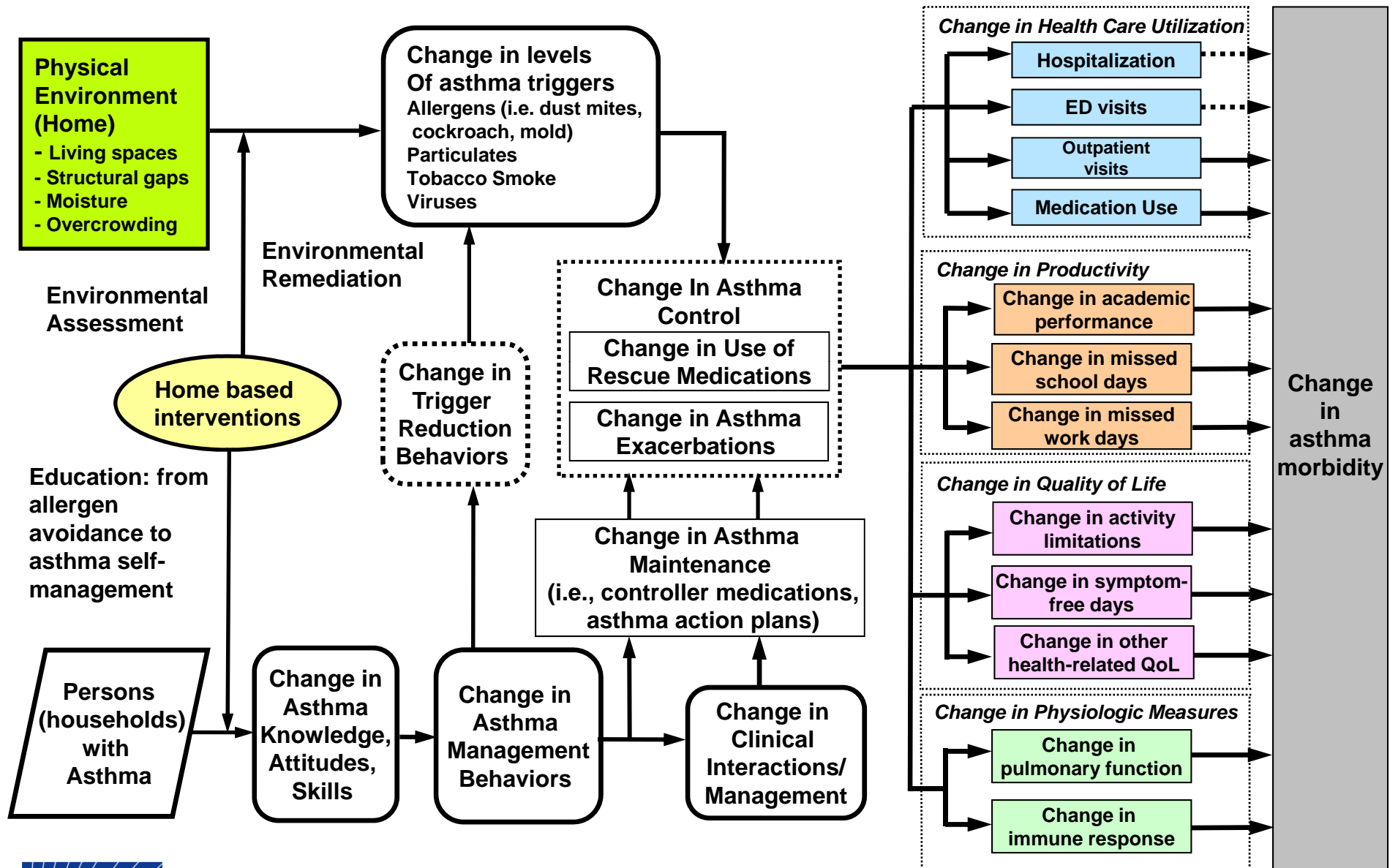


Effectiveness review

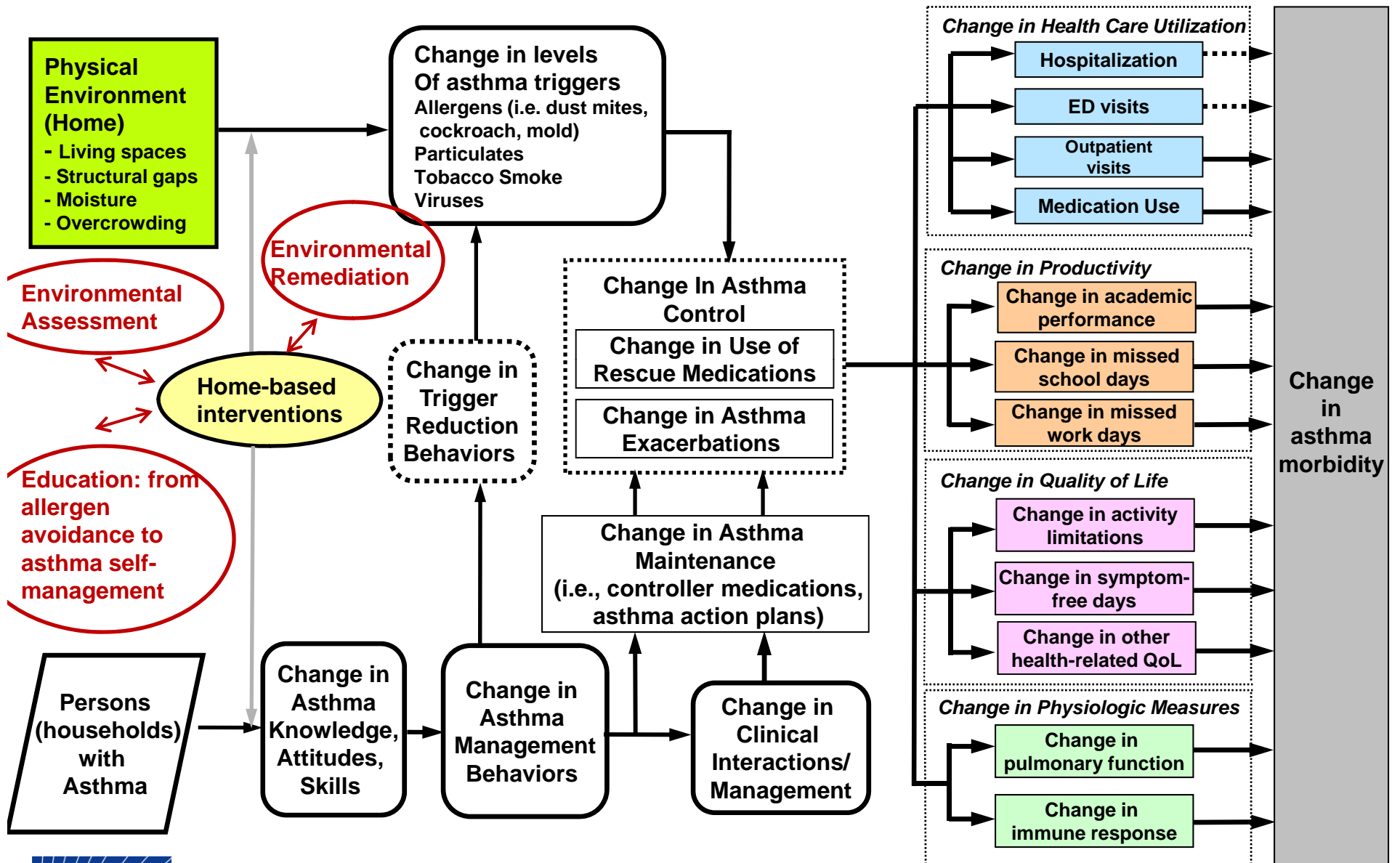
Economic review



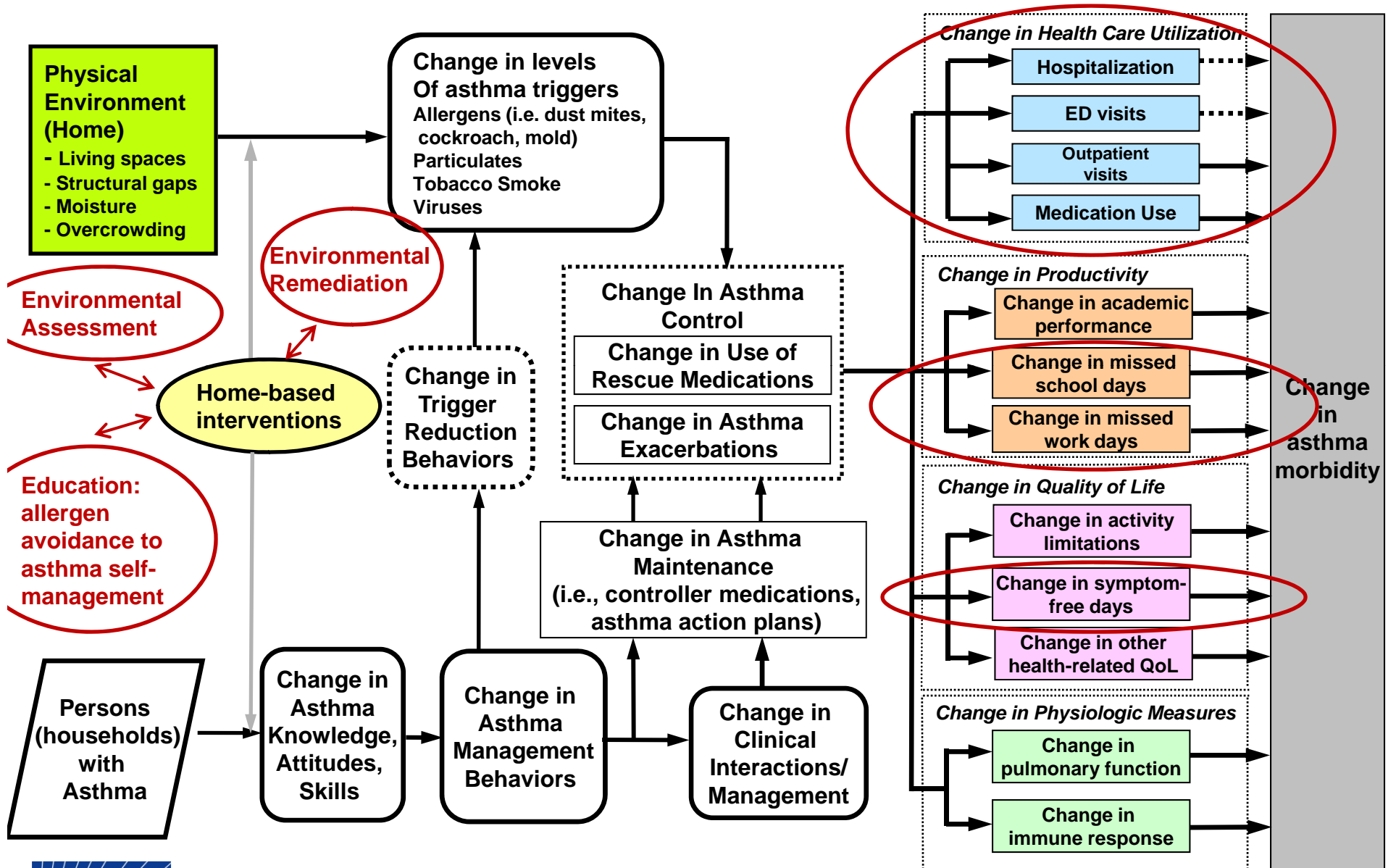
Analytic framework for home based interventions



Program costs



Benefits intervention used in economic evaluation



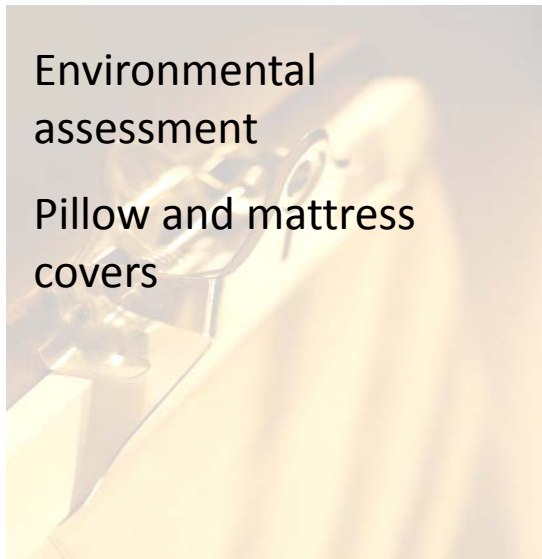
Summary of program costs information

| Study | Home Visitor | Home Visits | Remediation Intensity | Education Focus | | Program Cost per Participant (\$2007) |
|-------------------|---|-------------|-----------------------|-----------------|-----------|--|
| | | | | Environ. | Self-Mgmt | |
| Barton, 2007 | Nurse | 1 | major | | | \$14,858 (L) |
| Sommerville, 2000 | Local Housing Officer | 2 | major | | | \$6,424 (L) |
| Kercsmar, 2006 | Sanitarian | 5 | major | ✓ | ✓ | \$3,796 (L) |
| Eggleston, 2005 | Env. Educator, Exterminator | 3 | moderate | ✓ | ✓ | \$554 (P) |
| Primomo, 2006 | Outreach Worker | 2 | minor | ✓ | ✓ | \$231 (S) |
| Lin, 2005 | Outreach Worker | 2 to 3 | moderate | ✓ | ✓ | Only total program cost is available (L) |
| Oatman, 2007 | Asthma Educator, Respiratory Therapist | 3 | moderate | ✓ | ✓ | \$497 (S) |
| Jowers, 2000 | Nurse | 2 | minor | | ✓ | \$377 (L) |
| Shelledy, 2005 | Respiratory Therapist | 8 | minor | ✓ | ✓ | \$721 (P) |
| Krieger, 2005 | Community Health Worker | 5 to 9 | moderate | ✓ | | \$1,316 (P) |
| Kattan, 2005 | Environmental Counselor (high school graduates) | 5 to 7 | moderate | ✓ | | \$1,720 (S) |
| Sullivan, 2002 | Exterminator | 0 or 2 | minor | ✓ | ✓ | \$458 (S) |

Environmental remediation intensity



Minor



Moderate



Major



Cost-benefit analysis of home based interventions

| Intervention | (1) Program cost* | (2) Direct costs averted | (3) Indirect cost averted | Benefit-cost ratio [(2)+(3)]/(1) |
|----------------|-------------------------|--------------------------------|---------------------------------|-------------------------------------|
| Oatman, 2007 | \$497 | \$2,637 | Not available | 5.3 |
| Jowers, 2000 | \$377 | \$2,181 | \$772 | 7.8 |
| Shelledy, 2005 | \$721 | \$10,093 | Not available | 14.0 |

*all units are in per patient per year



Cost-effectiveness analysis of home based interventions

| Intervention | (1) Program cost* | (2) Direct costs averted | (3) Change in SFDs | Incremental cost-effectiveness ratio [(1)-(2)]/(3) |
|----------------|----------------------|-----------------------------|-----------------------|---|
| Krieger, 2005 | \$1,316 | \$124 | 20.8 | \$57 per SFD |
| Kattan, 2005 | \$1,720 | \$555 | 37.8 | \$31 per SFD |
| Sullivan, 2002 | \$458 | \$147 | 26.6 | \$12 per SFD |

*all units are in per patient per year



Task Force recommendation on economic review

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 and
- Improvement in productivity



Thank you!

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Tailored Environmental Interventions

- National Guidelines for the Diagnosis and Management of Asthma
 - EPR-3 and the Guidelines Implementation Panel Report
- Research science
- Research synthesis and cost-effectiveness
- Practical applications

GIP Priority Messages

Communities in Action System

Use Inhaled Corticosteroids

Use Written Asthma Action Plans

Assess Asthma Severity

Assess and Monitor Asthma Control

Schedule Follow Up Visits

Control Allergen and Irritant Exposure

Integrated Health Care Services

Tailored Environmental Interventions

High Quality Asthma Care

GIP Recommendations

Control Environmental Exposures

- Review exposure to allergens and irritants
- Provide a multi-pronged strategy to reduce exposure
- Use multiple approaches to reduce exposure
- Conduct a detailed environmental assessment in the patient's home when asthma is not well-controlled

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Environmental Intervention Strategies: Clinic Setting

1. Educate care teams on environmental management
2. Promote assessment of environmental sensitivity and exposures in clinical interviews
3. Provide tailored education and counseling during clinical visits
4. Promote environmental trigger management at home, school, and work

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Environmental Intervention Strategies: School Setting

Address asthma using a coordinated school health approach

- Manage exposures at school with an IAQ management plan
- Asthma action plans with triggers
- School nurses

System for Delivering High Quality Asthma Care

