

Community Health Workers

Bringing Asthma Control Home



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Public Health
Seattle & King County



Seattle – King County Asthma Program

1997-2001	Healthy Homes I	CHW home environment visits Children
2001-2005	Healthy Homes II	CHW comprehensive home visits Children
2001-2005	Allies Against Asthma	Coalition-based systems change
2004-2007	Breathe Easy Homes	New asthma-friendly housing Children
2007-2012	HomeBASE	CHW comprehensive home visits Adults
2009-2012	Highline Communities Healthy Homes	Existing asthma-friendly housing Remediation and weatherization
2009-2013	Medicaid Healthy Homes	CHW comprehensive home visits Children enrolled in managed care

What is a Community Health Worker?

- Frontline public health worker
- Trusted member of/unusually close understanding of community
- Liaison/intermediary between health/social services and community
- Facilitates access and improves quality and cultural competence of services
- Builds individual and community capacity by increasing health knowledge and self-sufficiency
- A CHW distinguished from other health professionals:
 - Is hired primarily for his or her understanding of the populations and communities he or she serves;
 - Works a significant portion of the time in the community
 - Has experience in providing services in community settings.



Seattle-King County Healthy Homes

Seattle-King County



Healthy Homes Project



Community Health Worker Home Visits

- 3-5 visits over one year
- Assessment
 - Asthma control
 - Self-management actions
 - Home environment
- Asthma self-management skills
 - Medication use
 - Self monitoring
 - Action plan use
 - Trigger recognition and reduction
- Asthma Control Plan



Community Health Worker Home Visits

- Assessment of home environment
- Education and support to reduce triggers
- Promote tenant-landlord communication
- Liaison with Housing Authority
- Social support
- Advocacy/referral (housing, food, furniture, jobs, etc.)



Community Health Worker Home Visits Systems Linkages

- Provider-patient communication
- Health system navigation
- Social support
- Promote tenant-landlord communication
- Liaison with Housing Authority
- Offer advocacy/referral (housing, food, furniture, jobs, etc.)



Participant Supplies





Do CHW Home Visits Work?

Jose's Story

Success Story - Jose Gets Well

When community health worker, Maria, first met one year old Jose, he had been hospitalized as well as treated in the emergency room for severe asthma symptoms. His asthma symptoms woke him up at night constantly. He was sleeping on the floor, surrounded by stuffed animals. His home contained lots of clutter that encouraged the presence of dust, dust mites and roaches. Jose's mother was confused about how to give him his medications and

she used undiluted bleach to clean the home.

Maria worked with Jose's mother to help her understand that Jose's asthma was triggered by dust mites, roaches and bleach. She helped the mother learn to give Jose's asthma medications correctly, assisted the family with the roach abatement process and helped her substitute other cleaning agents for the bleach she had been using. Two months from Jose's enrollment in the Medicaid Asthma Program, he had improved so much that he had not suffered from any asthma symptoms.



Maria R.

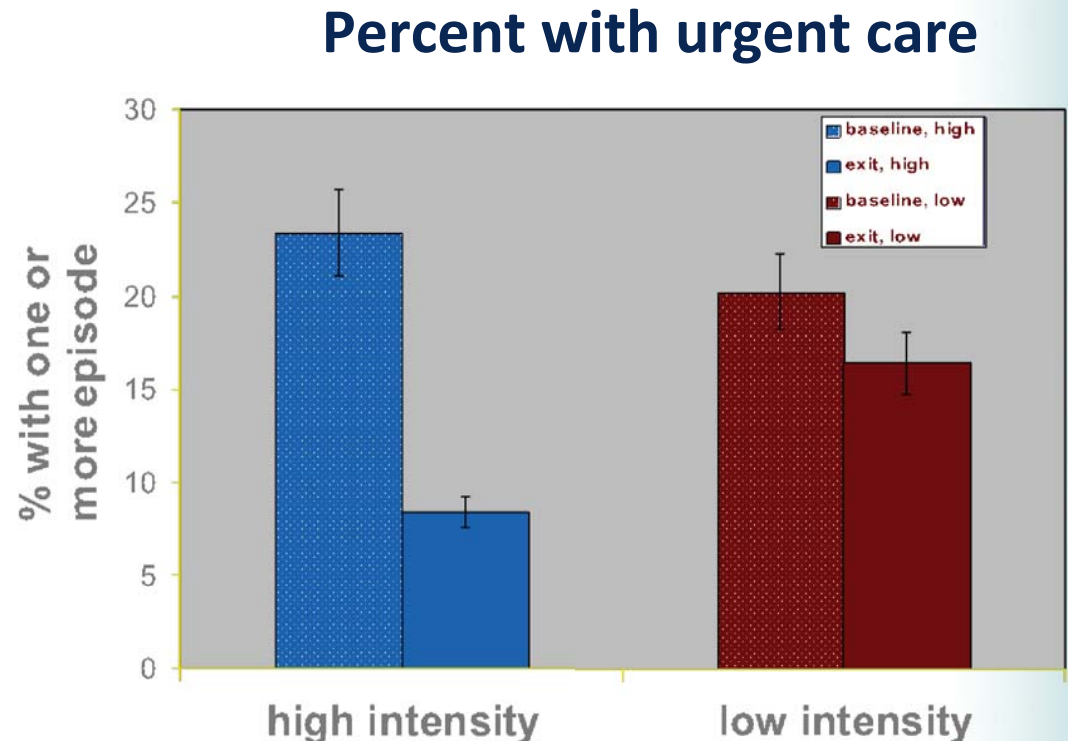
Healthy Homes I

- In-home environmental assessment and education by community health workers
- Low-income children age 4-12
- Comparison of **single visit model** to more intensive **multi-visit model**
- RCT of 274 households
- Published in American Journal of Public Health, April 2005



Outcomes

- **Symptom days:**
Decrease 1.2 days per two weeks more
($p = 0.138$)
- **Quality of life score:**
Increase 5.4 points more
($p = 0.005$)
- **Percent with urgent care:**
Decrease 62% more
($p = 0.026$)



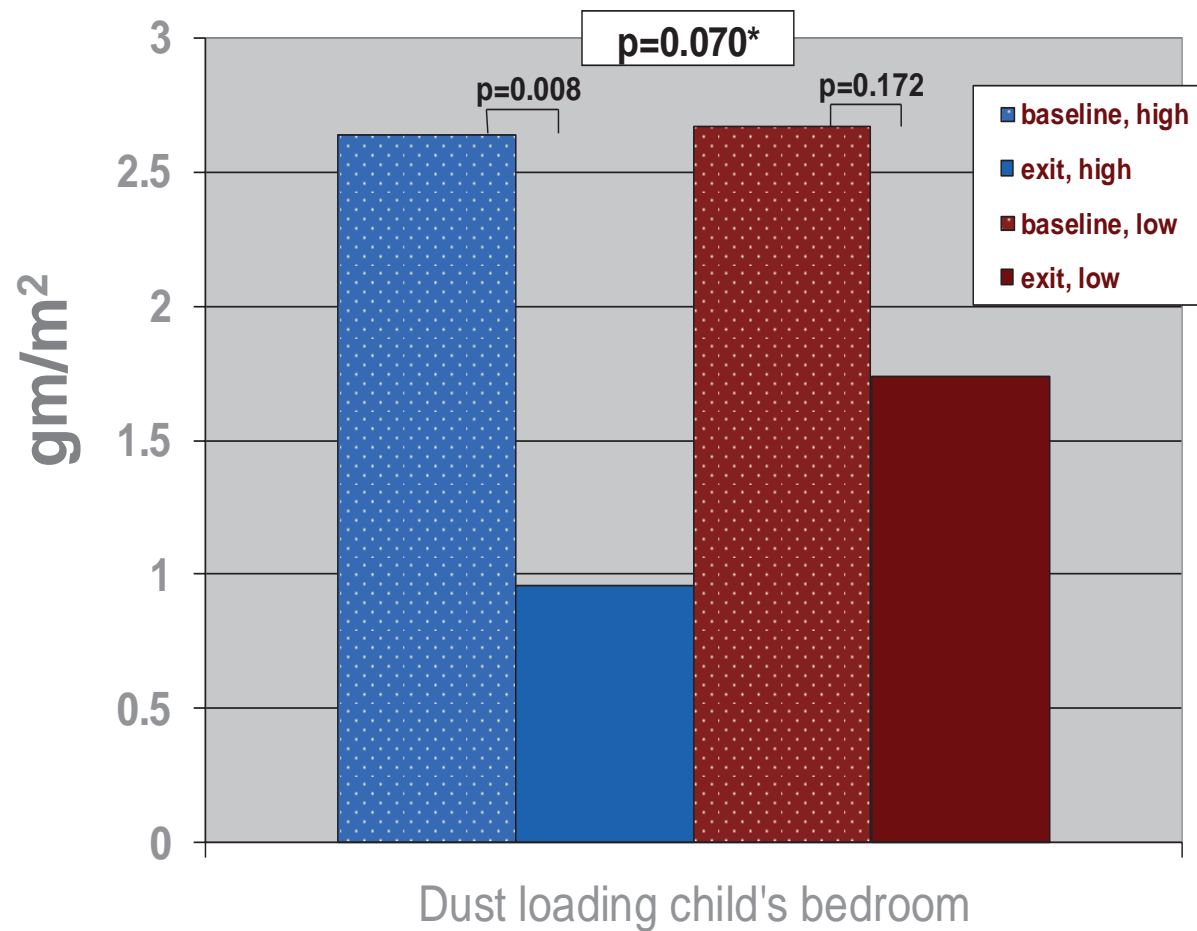
p-values:

0.000 (high intensity, baseline vs. exit, chi-square)

0.414 (low intensity, baseline vs. exit, chi-square)

0.026 (exit, low vs. high intensity, regression)

Outcome: Floor Dust Loading



* p value comparing high vs. low exit values after adjustment for baseline values using linear regression

Healthy Homes II

- Home visits by Community Health Workers
- Address reduction of indoor triggers and improving self-management skills
- Comparison of addition of CHW in-home asthma support to clinic-based nurse-provided education
- RCT of 309 low-income households with children age 3-13 with persistent/poorly controlled asthma
- Archives of Peds and Adol Med 2009



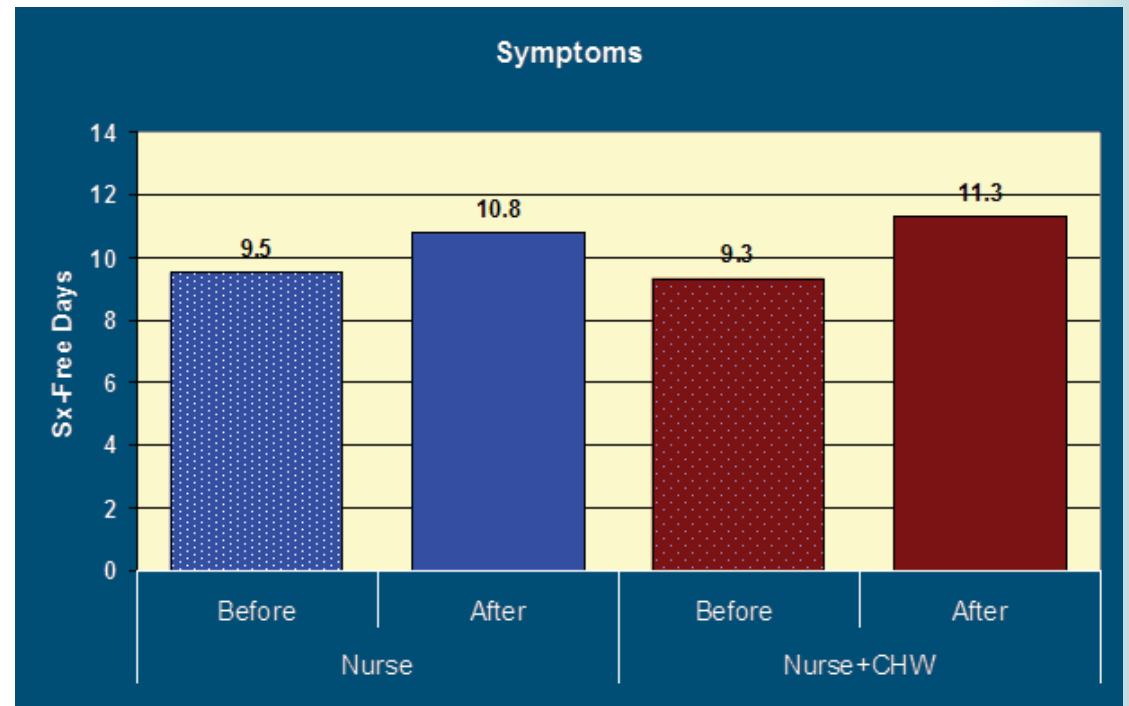
Clinic-Based Education

- Received by all participants
- Initial assessment
- Average of 1 follow-up clinic visit
- Asthma action plan
- Allergen-proof bedding covers for all participants



Outcomes

- **Symptom free days:**
Increase 0.94 days per two weeks more
($p = 0.046$)
- **Quality of life score:**
Increase 0.22 more
($p = 0.049$)
- **Percent with urgent care:**
Decrease 31% more
($p = 0.23$)



Costs

- **Costs of asthma treatments**
 - Home Visits : \$1350/year
 - Inhaled Steroids: Fluticasone 110 ug: \$2160/year
 - Xolair: \$10,400-20,800+
- **High vs. Low Intensity projected over 4 years (HH-I)**
 - Marginal cost of high: \$1127
 - Marginal savings in urgent medical care: \$1316-1849
 - Net savings: \$189-721
- **Medicaid Demonstration Project (annual)**
 - Marginal costs \$707-1327
 - Marginal savings: \$1341
 - Net savings: \$14 -634
 - ROI: 1.02-1.90
 - Cost-effectiveness: \$18 per symptom-free day





What Have We Learned from Visiting 1400+ Homes?

Implementing Home Visits

- **Visitor: CHW with caseload of 50-60 clients**
 - Shares culture and life experiences
 - Personal or family experience with asthma
 - Well trained: 40 hour initial training, weekly in-service training
 - Well supervised: structured work environment, activity monitoring, clinical backup
- **Client: Poorly controlled asthma**
- **Number of visits: Initial and 3 follow-up**
- **Visit Content**
 - Assessment
 - Medical self-management skills
 - Trigger reduction self-management skills
 - Effective communication with medical provider



Implementing Home Visits

- **Approach**
 - Client-centered, motivational interviewing
 - Address psychosocial needs and resource barriers
 - Systems linkages
 - Provide social support
- **Supplies**
 - Vacuum
 - Bedding encasements
 - Cleaning kit
 - HEPA air filter for subset
- **Client tracking and follow-up**
- **Program infrastructure**
 - Quality monitoring
 - Data system



Implementing Home Visits

- **Cost: \$1300 per household**
- **Recruitment**
 - Plan
 - Providers
 - Community
- **Coordination with providers**
 - Visit encounters shared with plan and provider
 - Phone, email and or fax link between CHW and provider and plan chronic disease care coordinator



How About Adults?

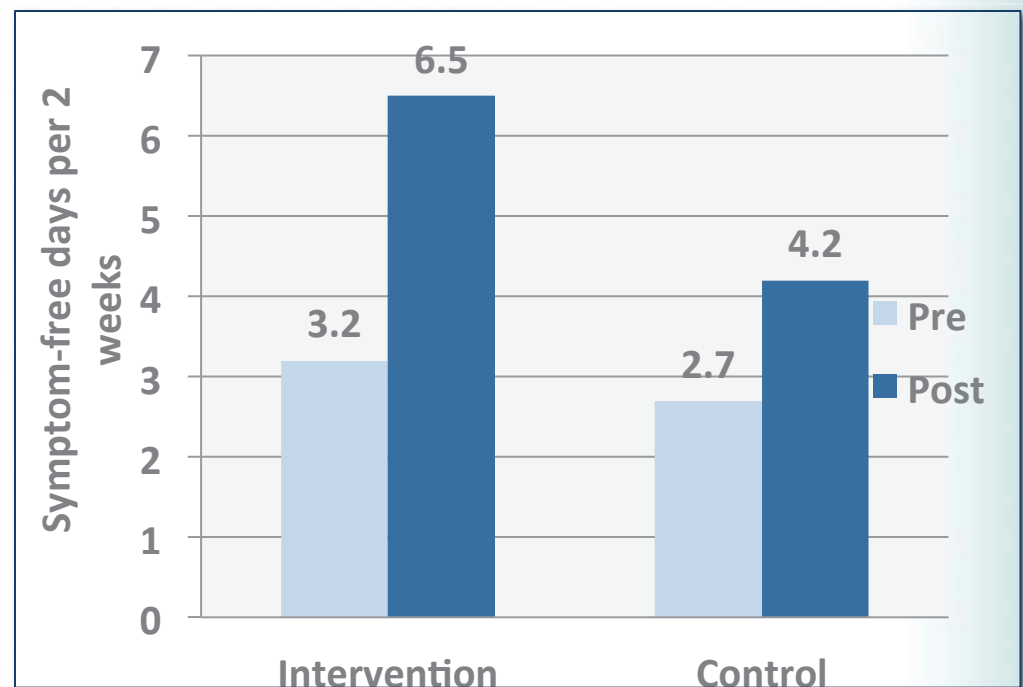
HomeBASE

- Randomized controlled trial comparing intervention to usual-care
- 366 participants
 - Age 18-65
 - Not well controlled asthma or worse
 - Speak either English or Spanish
 - Household income below 250% of federal poverty level
- Intervention
 - Intake visit and 4 follow-up visits by CHW
 - Self-management support
 - Supplies (bedding covers, bedding encasement, cleaning supplies, HEPA air filters, medication boxes)
 - Coordination with primary care



Symptom-Free Days

- **Symptom free days:**
Increase 2.1 days per 2 weeks more in CHW group ($p < 0.000$)
- **Quality of life score:**
Increase 0.50 more in CHW group ($p < 0.000$)
- **Number urgent care episodes:**
No difference ($p = 0.89$)

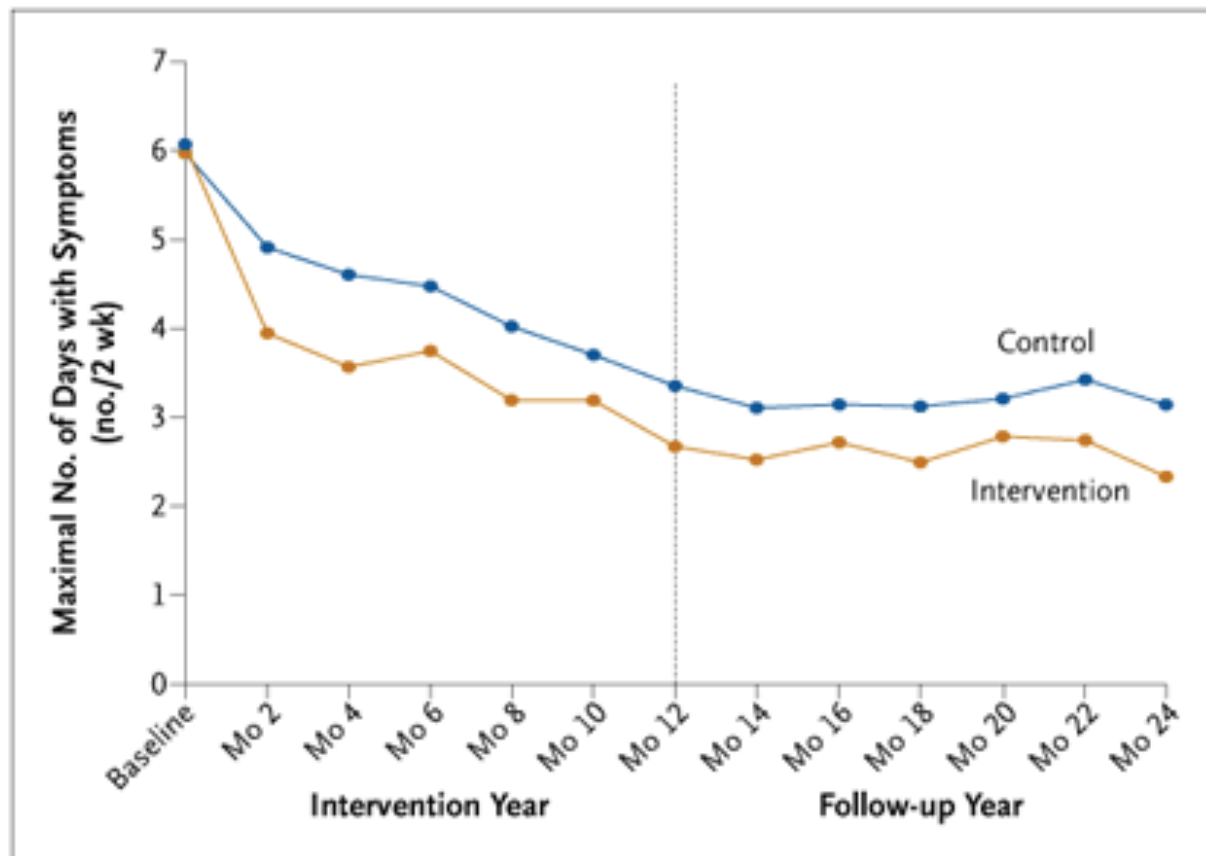


Beyond Seattle/King County

Many, many CHW asthma programs

- Tacoma, WA
 - <http://www.tpchd.org/health-wellness-1/diseases-conditions/asthma/>
- Long Beach/San Bernardino, CA
 - <http://www.asthmapartners.org/component/content/article/64/236.html>
- Imperial Valley, CA
 - http://www.ivcap.org/index.php?option=com_content&view=article&id=10&Itemid=16
- NYC (Harlem):
 - <http://www.harlemasthma.org/air/Services/>
- NYC
 - http://nyp.org/services/acn_outreach_win.html
- Boston
 - <http://www.childrenshospital.org/cai>
- Springfield, MA
 - <http://www.springfieldpartnersinc.com/ourprograms/asthmaoutreach/>
- Baltimore
 - <http://baltimorehealth.org/asthma.html#services>
- Indianapolis:
 - http://www.in.gov/isdh/files/Room_19_Robin_Costley_presentation_2013_CHW_Symposium.pdf,
 - <http://www.asthmaindy.org/>
- Chicago
 - <http://www.suhichicago.org/research-evaluation/helping-children-breathe-and-thrive-in-chicagos-public-housing-hcibt>
- Portland
 - <https://web.multco.us/health/healthy-homes>
- Philadelphia
 - <http://www.chop.edu/service/community-asthma-prevention-program-capp/>

Inner City Asthma Study



**21 fewer
days with
symptoms
per year in
intervention
group**

($P < 0.001$)

CDC Community Guide Meta-Analysis (2011)

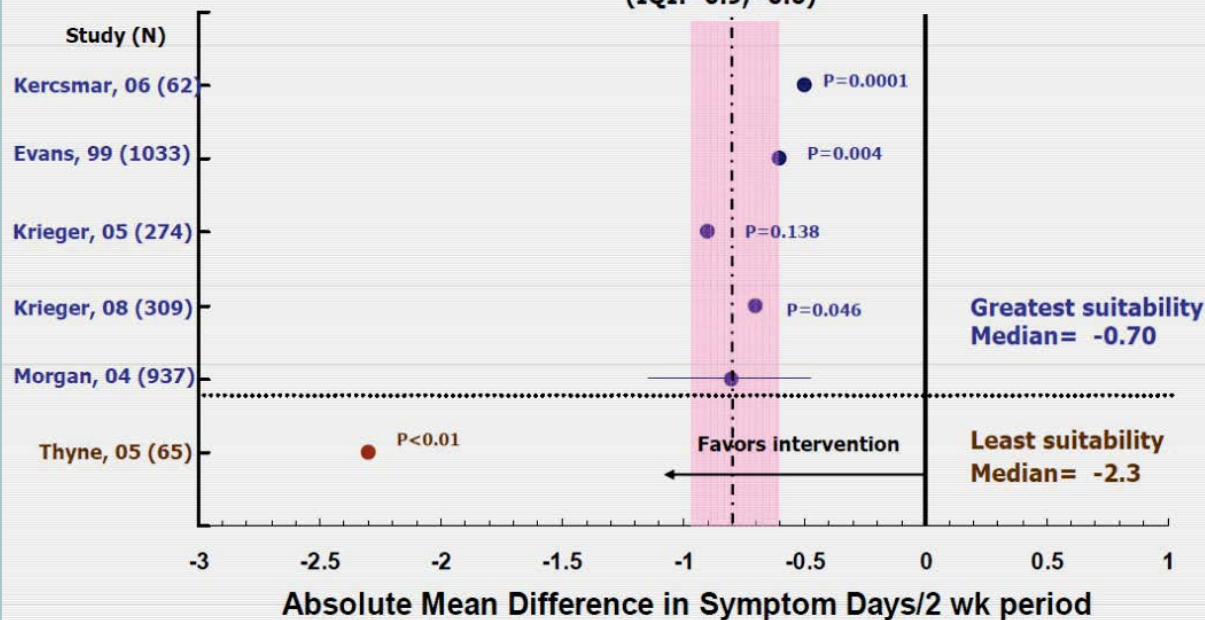
- The Task Force recommends the use of home-based multi-component, multi-trigger environmental interventions in children with asthma on the basis of strong evidence of effectiveness in reducing symptom days, improving quality of life or symptom scores, and reducing the number of school days missed.
- Reviewed 760 articles and included 25 studies
- Included studies published 1966-2008

Symptom Days

Quality of Life: Mean Symptom Days

n = 6 studies

Overall Median Change: -0.8 days
(IQI: -0.9, -0.6)



Quality of Life Score:
+0.6 points

Acute Care Visits:
-0.7 per year

Cost-Effectiveness

Summary of Key Findings

- Studies with satisfactory program cost information report the range of program costs from \$231 to \$1,720 per participant
- Cost-Benefit studies show net positive returns on investment with a benefit-cost ratio ranging from 5.3 to 14.0
- Cost-Effectiveness studies demonstrate that costs per SFD range from \$12 to \$57, and could be lower if all direct and indirect cost were included

Based on this evidence, the economic benefits from these interventions have the potential to match or even exceed the cost of intervention

Cost: ICER Review (2013)

- 14 studies
- Contexts:
 - Chronic disease support: asthma, diabetes, and HIV
 - Cancer screening
 - Interventions for high consumers of healthcare resources or other high-risk individuals.
- Majority of studies showed net cost savings over 6 months to 2 years relative to control groups





Conclusions and next steps

Conclusions

- Home visits by CHWs that address self-management support and indoor trigger exposure improve asthma outcomes
- Addition of home visits by CHWs to clinic-based education improves asthma outcomes
- CHW home visits add 21+ more symptom-free days per year
- CHW home visits reduce exposure to triggers
- CHW home visits help participants make behavior changes

Conclusions

- **Benefits in quality of life and urgent health service use are more modest**
- **Offering families a choice of options for self-management support may be optimal**
 - **Home visits**
 - **1:1 clinic-based education**
 - **Group activities**

Issues to Think About

- Who should be a CHW? Peers or professionals?
- Where should CHWs “live?”
- Specialist or generalist?
- Certification? Credentialing?
- **What else?**

Emerging Opportunities

- **ACA**
 - ACOs – aligning incentives for use of CHWs?
 - Prevention and Public Health Fund – funding?
 - Community benefits – funding?
 - Patient-Centered Medical Home – integrate CHWs?
- **More...**
 - CMS Medicaid regulation – reimburse for preventive services by unlicensed professionals (including CHWs) recommended by licensed professional
 - Health Impact Bonds
- **What else?**



Policy Priorities

- Home visits for *all* low-income people with uncontrolled asthma
 - Inclusion as a covered benefit by health plans
 - Incorporation into medical homes
 - Certification of community health workers
 - Development of community capacity to provide home visits
 - What else?



The End...Thanks

<http://www.kingcounty.gov/healthservices/health/chronic/asthma.aspx>

Or Google – King County Asthma Program

Home Environment Checklist

Home Walk Through: Answer with Yes/No or Don't Know unless otherwise noted (If living area and bedroom are same for client, complete living room walk through and enter 99 for bedroom)							
ASK/OBSERVE							
Inspection		Living Room	Child Bedroom	Kitchen	Bath	Basement	Other
1	Type of floor covering: 1 = Carpet loop, 2 = Carpet shag 3=Hardwood, tile, linoleum or vinyl, 4 = Other						
2	Cloth covered furniture? Enter # (N=0)						
2b	Stuffed toys? Enter # (N=0)						
3a	Can at least one window be opened? 1= Y, 2 = N						
3b	Type of window covering: 1=curtains/drapes 2= blinds or shades, 3= None/not applicable						
4	Level of dust on surfaces in the room: (flat surfaces, do not include floors) 1 = None, 2 = Slight, 3 = Moderate, 4 = Heavy						
Structural Problems		Living Room	Child Bedroom	Kitchen	Bath	Basement	Other
5a	Cracks (larger than thickness of a dime)						
5b	Holes						
5c	Peeling Paint						
5d	Other:_____						
5e	See evidence of water damage						
5f	See evidence of water leaks/drips						
5g	Source of leaks /drips: 1= Outside 2= Inside 3=Both						
5h	See evidence of condensation						

<http://www.kingcounty.gov/healthservices/health/chronic/asthma.aspx>

Baseline Assessment

Q.#	SECTION 1: MEDICATION (M)			RESPONSE
	M1. All medicines taking	M1a. # of Days taken in last 14 days <input type="checkbox"/> ₇₇ As needed, <input type="checkbox"/> ₈₈ No longer use <input type="checkbox"/> ₉₉ Don't know	M1b. Time per day (controller only)	M1c. Purpose <input type="checkbox"/> ₁ Relieve Symptoms <input type="checkbox"/> ₂ Control Asthma & Prevent Attacks <input type="checkbox"/> ₃ Other, Specify <input type="checkbox"/> ₉₉ Don't Know
1.				
2.				
3.				
4.				
5.				
6.				

Q#	SECTION 2: MEDICATION ADHERENCE (MA)			RESPONSE
Question	Yes	No	Don't Know	
MA1.	Has your child had any problems in taking his/her medicines as prescribed?			
MA2.	During the last 3 months, has your child at times been careless about or forgotten to use his/her inhaler?			
MA3.	During the last 3 months, has your child ever stopped using OR USED LESS his/her inhaler because s/he felt better?			
MA4.	Does your child have a spacer (such as an Aerochamber) to use with inhalers?			
MA5.	Have child demonstrate spacer use. Used correctly? If NO or DON'T KNOW/UNSURE Specify: _____ <input type="checkbox"/> ₉₈ N/A			
MA6.	Does your child have asthma medication available at school? <input type="checkbox"/> ₉₈ N/A			
MA7.	Does your child have asthma medication available at daycare? <input type="checkbox"/> ₉₈ N/A			

Q#	SECTION 3: ASTHMA ACTION PLAN (AA)			RESPONSE
Question	Yes	No	Don't Know	
AA1.	Doctor provided you with a written plan (action plan)			NO → Go to next Section

Protocols

Tools and documents for health care professionals - Windows Internet Explorer

http://www.kingcounty.gov/healthservices/health/chronic/asthma/resources/tools.aspx

File Edit View Favorites Tools Help

Google king county asthma program

Search Share More >>

Tools and documents for health care professionals

Public Health Centers and other office locations

News releases

Multiple language materials

Board of Health

Birth and death records

Child and youth health

Chronic diseases

Asthma program

Current programs

Past programs

Resources

Breathe Easy Homes

Questions about asthma

Healthcare resources

For health care professionals

For child care professionals

CDC translational grant tools and documents

Community health worker (CHW) and participant protocols:

- [Asthma basics](#)
- [Colds and asthma](#)
- [Communication with provider](#)
- [Depression with asthma](#)
- [Influenza and flu shots](#)
- [Medication adherence](#)
- [Peak flow monitoring](#)
- [Seeking emergency care](#)
- [Unsafe housing](#)
- [Using a metered dose inhaler](#)
- [Using an action plan](#)
- [Warning signs of asthma](#)
- [What happens when you call 911](#)
- [What to do during an asthma attack](#)

Environmental protocols:

- [Air pollution](#)
- [Allergies and pollen](#)
- [Assessing household products](#)
- [Clutter](#)
- [Cold homes](#)
- [Dust control](#)
- [Dust mites](#)
- [Environmental tobacco smoke](#)
- [Mold and moisture](#)
- [Obesity](#)
- [Occupational](#)
- [Pets](#)
- [Roaches](#)
- [Rodents](#)
- [Using a dust mask and asthma management](#)
- [Woodsmoke](#)

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