Healthy Homes and Home Assessment for Asthma Triggers
Association of Asthma Educators
2019 Annual AAE Conference
Erin Thanik, MD, MPH

Conflicts of Interest
▶ None

Learning Objectives
▶ Outline the relationship between indoor environment and health
▶ Discuss the source and mitigation strategies for individual asthma triggers
▶ Review the evidence supporting home-based interventions for asthmatics
▶ Highlight the importance of community partnerships
Healthy Homes

▷ Outline the relationship between indoor environment and health
▷ Discuss asthma triggers
▷ Review evidence supporting home-based interventions for asthmatics
▷ Highlight the importance of community partnerships

Housing and Health

▷ There are proven links between quality of housing and health
▷ Americans spend approximately 90% of time indoors
▷ Indoor air is often more polluted than outdoor air

Background

▷ The EPA ranks indoor air as one of the top five human health risks

“Indoor air is typically 2–5 times more polluted than outdoor air, owing to the presence of asthma-inducing agents such as mold and toxic chemicals in carpets, paints, and other synthetic materials.”

EPA
Asthma Prevalence

- Asthma is the leading chronic disease of childhood
- **Asthma Prevalence**
  - 7.9% of the general US population
  - 8.4% of US children
  - 11.7% of those below 100% of poverty level
  - 7.9-17.3% inner-city (Keet et al)

Asthma Disparities

- **Asthma prevalence** among racial/ethnic groups:
  - African American children - 1.6 times risk asthma (compared to white children)
  - Puerto Rican children - 2.4 times risk asthma (compared to white children)
- **Increased morbidity** among residents in high-poverty neighborhoods
  - Increased frequency of hospitalizations and ED visits
26% children had asthma

**Risk Factors:** dampness of home, humidifier use, parental smoking, frequent truck traffic, race/ethnicity (African American and Hispanic children),
**Housing and Asthma**

- Housing conditions are related to asthma morbidity
- **Sub-standard housing** more likely to have higher levels of asthma triggers

**Asthma Triggers**

<table>
<thead>
<tr>
<th>Allergens</th>
<th>Pollutants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pests (Cockroach, Rodents)</td>
<td>Environmental Tobacco Smoke</td>
</tr>
<tr>
<td>Pets (Cat, Dog)</td>
<td>Particulate Matter</td>
</tr>
<tr>
<td>Dust Mite</td>
<td>Volatile Organic Compounds (VOCs)</td>
</tr>
<tr>
<td>Mold</td>
<td>Nitrogen Dioxide (NO₂)</td>
</tr>
</tbody>
</table>

**Housing Conditions**

- **Dampness**: mold and dust mite
- **Poor Ventilation**: mold, increased pollutant levels
- **Cracks and holes**: rodents, cockroaches
- **Leaks**: mold, cockroaches
Healthy Homes Principles

- **Keep Your Home:**
  - Dry
  - Clean
  - Well Ventilated
  - Pest-free
  - Contaminant-free
  - Safe
  - Well-maintained

Healthy Homes

- Outline the relationship between indoor environment and health
- **Discuss asthma triggers**
- Review evidence supporting home-based interventions for asthmatics
- Highlight the importance of community partnerships

Asthma Triggers – Allergens

- Dust Mite
- Cockroach/Rodents
- Mold
**Dust Mite Mitigation Strategies**

**Dust Mite**
- **Microscopic** 8-legged arthropods
- 30-62% of children with persistent asthma are sensitized
- 84% of US homes have detectable DM
- Require moisture/humidity to thrive

**Dust Mite Avoidance Strategies**
- Many studies have shown the benefit of decreasing DM exposure to improve respiratory outcomes
  - Decreased morbidity
  - Decreased need for medications
  - Decreased bronchial hyper-responsiveness
Dust Mite Avoidance

▶ Most effective if part of a multi-component approach
▶ Benefits for patients who are not mite allergic, pro-inflammatory properties that act through non-IgE mechanisms

Environmental assessment and exposure control of dust mites: a practice parameter

Jay Portnoy, MD; Jeffrey D. Miller, MD; P. Brock Williams, PhD; Ginger L. Chey, ScD; J. David Miller, PhD; Forrest Zahniser, MD; Wanda Phuyazsakol, MD, MS; Kevin Kennedy, MPH; Charles Barnes, PhD; Carl Grimes, CBC; Déborah Lamens-Dalstra, MD; James Sultana, MD; David Berminini, MD; Joanne Winning-Ameze, MD; David Khan, MD; David Lang, MD; Richard Naldi, MD; John Oppenheimer, MD; Christopher Randolph, MD; Darius Schuller, MD; Sheldon Spector, MD; Stephen A. Tillis, MD; and Dana Wallace, MD

Dust Mite - Asthma

▶ Parameter Recommendation: advise dust-mite sensitized patients with asthma to minimize exposure to DM allergens
▶ Increased mite levels associated with presence of moisture, cockroach and mold
  ▶ Recommend a multifaceted approach – combination of techniques
**Dust Mite - Humidity**

- **Parameter Recommendation:** Keep relative humidity in the home should be kept at **35%-50%**
- Decreased survival of DM humidity < 50%
- Techniques to control inside humidity:
  - Hygrometer to monitor RH
  - Air Conditioning
  - De-humidifier

**Dust Mite - Bedding**

- **Parameter Recommendation:** use mite allergen-proof encasings for pillow, mattress and box spring
- Focus on bed – DM feed on skin scales
- Mite allergen found in settled dust in bedding (as well as carpeting, upholstered furniture)
- Tightly woven microfiber (pore size <10 microns)

**Dust Mite - Cleaning**

- **Parameter Recommendation:** wash bedding weekly to decrease dust mite allergen levels
- High temperature not necessary (home hot water should be kept below 120 degrees F)

- **Parameter Recommendation:** Regular vacuuming with high-efficiency particulate air (HEPA) filtration
  - At least weekly
Dust Mite – HEPA Filtration

- **Parameter Recommendation:** HEPA filtration alone is of uncertain benefit for patients with mite allergy
- Dust mite allergens are carried on larger particles (>10 micrometers)
- Only remain airborne for short periods (settle within 15 minutes of disturbance)
- Expensive, replace filters

Dust Mite

- **Parameter Recommendation:** Do NOT recommend tannic acid (only marginally effective)
- **Parameter Recommendation:** Do NOT recommend acaricides – limited efficacy and concerns about use of chemical agents in the home

Pest Mitigation Strategies
Pests - Cockroach

- Most common cockroach in US inner cities are German (Bla g 1 and Bla g 2) cockroaches
- Prefer sites with moisture and food – kitchen, bathrooms, any food storage area

German Cockroach

- 2 Vertical Stripes below head
- Tend to stay in small spaces, most active at night
- If see cockroaches, active infestation

Health Effects – Cockroach Exposure

- First time CR allergen exposure was linked to asthma morbidity among sensitized children was published in 1997 from the National Cooperative Inner-City Asthma Study
- Sensitization and Exposure to CR linked to higher ED visits, hospitalizations and asthma symptoms
- Higher rates of asthma (35.9 times more likely with Bla g 1 or 2 levels > 2U/g compared to undetectable exposure)

References:
Integrated Pest Management

▶ EPA definition:

Environmentally sensitive approach to pest management, using means with the least possible hazard to people, property and the environment

Integrated Pest Management

BAITS

AVOID PESTICIDE SPRAYS

Integrated Pest Management

▶ Reducing Facilitative Factors

– Portals of Entry
– Food and Water
– Shelter
Home Visits – Integrated Pest Management

- Identify signs of CR infestation (frass)
- Clean
- Seal Cracks
- Provide Supplies (food containers, bait stations)

Identifying Cockroach Infestation

- Cockroach Frass
- Seen in areas where cockroaches hide
- Pro-inflammatory material – airway inflammation

Environmental Assessment and Exposure reduction of rodents: a practice
Asthma Symptoms - Mouse

Health Care Utilization - Mouse

Mold Mitigation Strategies
Mold

- Many building characteristics associated with mold growth including age of building, inadequate ventilation, poor maintenance/leaks and cracks in building structure

Institute of Medicine Review

- Critical review of scientific literature
- Sufficient Evidence of an association between mold:
  - URI symptoms
  - Cough
  - Wheeze
  - Asthma symptoms in sensitize individuals

Moisture & Mold

Where does it come from?

- Damaged windows
- Indoor plumbing
- Steam from bathroom or kitchen

There are >100,000 species of mold (multicellular fungi). Mold is ubiquitous in indoor and outdoor environments, especially areas that are damp/wet.
A Brief Guide to Mold, Moisture and Your Home

- The key to mold control is **moisture control**
- Dry water-damaged areas and items within 24-48 hours to prevent mold growth
- Keep humidity <60% (ideally between 30-50%)
- Adequate ventilation – run exhaust fan or open window when showering

A Brief Guide to Mold, Moisture and Your Home

- If moldy area <10 square feet – can remove yourself
- Scrub mold off of hard surfaces with **detergent and water** and dry completely
- May need to dispose of absorbent or porous materials such as ceiling tiles and carpet
- Clean the mold and fix underlying problem
  - eg. don’t simply paint over mold
A Brief Guide to Mold, Moisture and Your Home

▶ Should I get testing for mold?
  - Typically sampling not needed
  - No EPA or national limits have been set for mold spores
  - If testing is done, should be conducted by professionals with experience in mold sampling protocols and interpreting results

Asthma Triggers – Pollutants

Particulate Matter
NO\textsubscript{2}
Tobacco Smoke

Particulate Matter (PM\textsubscript{2.5}) Reduction Strategies
What is Particulate Matter (PM)?

- Complex and heterogeneous mixture of particles that can be **solid, liquid or both**
  - Vary in size, composition, and origin

<table>
<thead>
<tr>
<th>Particulates: Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
<tr>
<td>PM(_{10})</td>
</tr>
<tr>
<td>PM(_{2.5})</td>
</tr>
<tr>
<td>PM(_{0.1})</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Particulates</th>
</tr>
</thead>
</table>
| **Coarse Particles**
  (2.5-10 micrometers)
  - deposited in upper respiratory tract and large airways |
| **Fine Particles**
  (<2.5 micrometers)
  - may reach terminal bronchioles and alveoli |
| **Ultrafine Particles**
  (<0.1 micrometers)
  - particles < 0.1micrometers can enter the bloodstream |
Particulate Matter

▶ Sources: cooking, re-suspended dust from activities such as sweeping, combustion activities (smoking, fireplaces, unvented space or kerosene heaters)

▶ Outdoor pollution can penetrate the indoors and contribute to indoor pollution
  – About 28% indoor PM$_{2.5}$ is from outdoor sources

Indoor vs Outdoor PM$_{2.5}$ Levels

PM – Respiratory Effects

▶ Multiple studies have found an association between PM and:
  – Asthma exacerbations
  – Increased coughing
  – Respiratory infections
  – Higher rate of death among those with lung disease
  – Impaired lung function
  – Indoor PM$_{2.5}$ levels are associated with decreased lung function (every 1-unit increase in PM$_{2.5}$ associated with a 4.1% decrease in FEV1/FVC ratio (95% CI = −6.6, −1.4))
Strategies to Decrease PM$_{2.5}$

- Adequate ventilation
- Open windows
- Use stove hood while cooking

Key Concept: Ventilation

Ventilation = circulation of air throughout a building

- Natural ventilation
- Mechanical ventilation: forced air, ducts
- More effective than natural ventilation alone
- Heat, Ventilating, and Air Conditioning (HVAC) systems remove indoor air and introduce outdoor air

NO$_2$ Reduction Strategies
NO₂

- NO₂ is a product of high-temperature combustion
- Indoor Sources:
  - Gas stove
  - Improperly vented furnace or fireplace
  - Space heaters (kerosene or gas)
  - Tobacco smoke

A Longitudinal Study of Indoor Nitrogen Dioxide Levels and Respiratory Symptoms in Inner-City Children with Asthma

Breysse, et al, Indoor Air Pollution and Asthma in Children, Ann Allergy Asthma Immunol 2011; 106:308-315


Increased NO₂ levels associated with presence of gas stove, space heater or oven for heat

Table 3. Risk of asthma symptoms per 30 ppb increase in NO₂ exposure.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Unadjusted</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daytime wheezing, coughing, or shortness of breath</td>
<td>1.56</td>
<td>0.90–2.72</td>
</tr>
<tr>
<td>Shoveling activity due to asthma, wheezing, shortness of breath, or coughing</td>
<td>1.07</td>
<td>0.93–1.14</td>
</tr>
<tr>
<td>Limited speed due to asthma, wheezing, shortness of breath, or coughing</td>
<td>1.12</td>
<td>0.99–1.27</td>
</tr>
<tr>
<td>Wheezing, cough or shortness of breath while running</td>
<td>1.06</td>
<td>0.95–1.20</td>
</tr>
<tr>
<td>Waking, coughing, or shortness of breath while running</td>
<td>1.13</td>
<td>0.96–1.30</td>
</tr>
<tr>
<td>Waking, wheezing, or shortness of breath while running</td>
<td>1.11</td>
<td>0.95–1.29</td>
</tr>
</tbody>
</table>

NO₂ – Reduction Strategies

- Use an exhaust fan vented to the outdoors with gas stoves
- Ensure proper ventilation
Environmental Tobacco Smoke

ETS – Respiratory Effects

- Exposure to Second Hand Smoke:
  - Increased risk of developing asthma
  - Earlier asthma symptom onset
  - Increase in asthma exacerbations, prolonged recovery
  - Increased medication use

ETS Exposure in Multiunit Housing

Up to 65% of air can be exchanged between units → drift of ETS between units is common

Children living in apartments have 45% higher levels of cotinine (biomarker for nicotine) vs children living in detached homes... despite no smokers living in the apartment or home.
Smoking Ban

- Department of Housing and Development (HUD) developed a smoke-free policy for all public housing
- All public housing agencies were required to implement smoke-free policy by July 2018

NYS Quit Line

- Free service for NYS residents
- Staffed by quit coaches
- Provide motivational interviewing and free nicotine patches
- Healthcare providers can call the quit line for smoking cessation information and to order patient materials

SMOKING IS AN ADDICTION
Get support. Don’t give up.
1-866-NY-QUITS (1-866-697-8487)
Healthy Homes

- Outline the relationship between indoor environment and health
- Discuss asthma triggers
- Review evidence supporting home-based interventions for asthmatics
- Highlight the importance of community partnerships

Effectiveness of Home-Based, Multi-Trigger, Multicomponent Interventions with an Environmental Focus for Reducing Asthma Morbidity

- Crocker, et al performed a systematic review including 20 studies evaluating home based interventions
- Intervention: trigger reduction through environmental assessment, education and remediation
- Concluded that intervention resulted in decreased:
  - Days with asthma symptoms
  - Missed school days
  - Acute care visits for asthma

Inner City Asthma Study: Relationships among sensitivity, allergen exposure, and asthma morbidity

Rebecca S. Groshall, MD, PhD;* Jacqueline Pongracz, MD,* Marshall Plaut, MD,* Richard Evans, III, MD, MPH,* Cynthia M. Vones, MA, MPH,* Michelle Walter, MS,* Ellen F. Crain, MD, PhD,* Meyer Kattan, MD, CM,* Wayne J. Morgan, MD, CM,* Suzanne Steinbach, MD,* James Stout, MD, MPH,* George Malindzak, PhD,* Ernestine Smartt, RN,* and Herman Mitchell, PhD,†

Dallas, Tex; Chicago, Ill; Bethesda, Md; Chapel Hill and Research Triangle Park, NC; Bronx and New York, NY; Tucson, Ariz; Boston, Mass; and Seattle, Wash.
Inner City Asthma Study

- NIH-funded, large multi-city trial (7 sites)
- 937 children with moderate-severe asthma
- Allergen levels were measured in homes and skin testing was done to assess allergic status
- Intervention and a Control group

ICAS - Results

- Over 93% of children tested positive to at least one indoor allergen
- Highest rates of skin test positivity: cockroach (69%), dust mite (62%) and molds (50%)
- Relationship between housing type and indoor allergen levels – cockroach highest in high-rise apartments (>3 floors)

ICAS - Results

- Children both sensitized and exposed to CR:
  - More asthma symptom days
  - More caretaker interrupted sleep
  - More missed school days
ICAS - Intervention

- Intervention: 5 mandatory and 2 optional home visits over 12 month period
- Education regarding indoor triggers
- Environmental remediation plan
- Supplies
  - Dust mite covers
  - HEPA Vacuum
  - HEPA Air Purifier (certain participants)

ICAS - Results

- Participants in intervention group:
  - Fewer symptoms in first year (3.39 vs 4.20 in 2 week period, p<0.001), persisted 2nd year
  - Reduction in dust mite allergen (p<0.004) and cockroach allergen (p<0.001) on bedroom floor
  - Reductions in levels of these allergens were significantly correlated with complications of asthma (p<0.001)
Reducing Childhood Asthma Triggers in Public Housing: Implementation and Outcomes from an East Harlem Community Health Worker Program

Ray López, Tongtian Chantarat, Anne Buzack, Amanda Lopez, and Linda Weiss

Little Sisters - Publication

- Evaluated their CAHR (Controlling Asthma through Home Remediation) Program
- Program offers remediation, repair, training, comprehensive care management
- East Harlem families in NYCHA housing who have a child with severe and/or persistent asthma

Results

- Pre-post analysis, 60 CAHR children
- Statistically significant reductions in:
  - Nighttime awakenings secondary to asthma
  - Emergency department visits
  - Rescue medication use
Healthy Homes

▶ Outline the relationship between indoor environment and health
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National Guidelines

National Asthma Education and Prevention Program
Expert Panel Report 3
Guidelines for the Diagnosis and Management of Asthma
SUMMARY REPORT 2007

Clinical Asthma Guidelines

★ Recommends that asthmatics should reduce exposure to allergens that they are sensitized to, while emphasizing that a multifaceted approach is necessary
The Community Guide

▶ Established in 1996 by the U.S. Department of Health and Human Services (DHHS)
▶ Develop guidance on effective community-based health promotion and disease prevention approaches

Task Force Finding

▶ The Task Force recommends the use of home-based, multi-trigger, multicomponent interventions with an environmental focus for children and adolescents with asthma

Implementation

▶ Home-based asthma interventions have been proven to be effective and are recommended by the Community Guide
▶ Community partners who provide home-based interventions play an important role in asthma care for high-risk asthmatics
▶ Currently not a systematic way for these interventions to get paid for
How do you identify patients who might benefit from an environmental intervention for asthma?

- Need to identify families with health risk related to indoor environment
- Ask patient’s about their home environment

Pediatric Environmental History (0-18 Years of Age)

The Screening Environmental History

For all of the questions below, most are often asked about the child’s primary residence. Although some questions may specify certain locations, one should always consider all places where the child spends time, such as daycare centers, schools, and relative’s houses.

Where does your child live and spend most of her time?

What are the age, condition, and location of your home?

- Does anyone in the family smoke?  ☑ Yes ☐ No ☐ Not sure
- Do you have a carbon monoxide detector?  ☑ Yes ☐ No ☐ Not sure
- Do you have any indoor furry pets?  ☑ Yes ☐ No ☐ Not sure
- What type of heating/air system does your home have?
  ☑ Radiator  ☑ Forced air  ☑ Gas stove  ☑ Wood stove  ☐ Other

Screening and Referral to Community Partners
Provide Education to Identified Families

▶ Rx for Prevention educational materials
▶ Explains simple steps for reducing environmental exposures and lists key resources that families can use to help address the concern

NYSDOH Healthy Neighborhoods Program

What Countries Participate?

<table>
<thead>
<tr>
<th>County</th>
<th>Email / Contact Information</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albany</td>
<td>UCC (716) 668-7007</td>
<td><a href="http://www.health.ny.gov/environmental/indoors/healthy_neighborhoods/">www.health.ny.gov/environmental/indoors/healthy_neighborhoods/</a></td>
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<tr>
<td>Broome</td>
<td>(607) 778-3847</td>
<td>broomecounty.ny.gov/env/healthy-neighbors.html</td>
</tr>
<tr>
<td>Cayuga</td>
<td>(607) 588-0422</td>
<td><a href="http://www.cayugacountyny.gov/env/healthy-neighbors.html">www.cayugacountyny.gov/env/healthy-neighbors.html</a></td>
</tr>
<tr>
<td>Chenango</td>
<td>(607) 388-4181</td>
<td>Chenango County Health Department</td>
</tr>
<tr>
<td>Chautauka</td>
<td>(716) 662-8110</td>
<td><a href="http://www.chautaukacounty.ny.gov/env/healthy-neighbors.html">www.chautaukacounty.ny.gov/env/healthy-neighbors.html</a></td>
</tr>
<tr>
<td>Cortland</td>
<td>(607) 753-5640</td>
<td>Cortland County Healthy Neighborhood Program</td>
</tr>
<tr>
<td>Delaware</td>
<td>(315) 392-0660</td>
<td>delawarecounty.ny.gov/env/healthy-neighbors.html</td>
</tr>
<tr>
<td>Erie</td>
<td>(716) 852-4595</td>
<td><a href="http://www.eriecounty.ny.gov/env/healthy-neighbors.html">www.eriecounty.ny.gov/env/healthy-neighbors.html</a></td>
</tr>
<tr>
<td>Greene</td>
<td>(518) 963-6300</td>
<td>greenecounty.ny.gov/env/healthy-neighbors.html</td>
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<tr>
<td>Herkimer</td>
<td>(315) 366-6500</td>
<td>herkimercounty.ny.gov/env/healthy-neighbors.html</td>
</tr>
<tr>
<td>Jefferson</td>
<td>(315) 783-4440</td>
<td>jeffersoncounty.ny.gov/env/healthy-neighbors.html</td>
</tr>
<tr>
<td>Kennebec</td>
<td>(207) 623-4379</td>
<td>kennebeccounty.ny.gov/env/healthy-neighbors.html</td>
</tr>
<tr>
<td>Lewis</td>
<td>(315) 374-1474</td>
<td>lewiscounty.ny.gov/env/healthy-neighbors.html</td>
</tr>
<tr>
<td>Livingston</td>
<td>(315) 586-5612</td>
<td>livingstoncountyny.gov/env/healthy-neighbors.html</td>
</tr>
<tr>
<td>Madison</td>
<td>(607) 585-5500</td>
<td>madisoncounty.ny.gov/env/healthy-neighbors.html</td>
</tr>
<tr>
<td>Monroe</td>
<td>(585) 753-8570 or (585) 753-8572</td>
<td>monroecounty.ny.gov/env/healthy-neighbors.html</td>
</tr>
<tr>
<td>New York City</td>
<td>(718) 953-4830</td>
<td>nycdphehealth.nyc.gov/neighborhoods/</td>
</tr>
<tr>
<td>Niagara</td>
<td>(716) 445-1359</td>
<td>niagaracounty.ny.gov/env/healthy-neighbors.html</td>
</tr>
</tbody>
</table>

https://www.health.ny.gov/environmental/indoors/healthy_neighborhoods/
Environmental Justice

Goal of Environmental Justice will be achieved when everyone enjoys:

- The same degree of protection from environmental and health hazards
- Equal access to the decision-making process to have a healthy environment in which to live, learn and work

Environmental Justice Mapping Tool

[Link: https://ejscreen.epa.gov/mapper/]
Summary

▶ Indoor environment impacts respiratory health and has public health implications
▶ Important to identify exposures in the home that may be affecting asthma
▶ Patient education regarding trigger reduction and referral to home-based interventions when available are important components to asthma management

Resources

▶ Community Guide: https://www.thecommunityguide.org
▶ NAEPP Asthma Guidelines: https://www.nhlbi.nih.gov/health-topics/guidelines-for-diagnosis-management-of-asthma
▶ NYS Children’s Env Health Center: https://nyscheck.org
▶ Educational Materials: https://nyscheck.org/np/
Resources
▶ Environmental Justice Tool:
https://ejscreen.epa.gov/mapper/
▶ EPA Mold Guide:
https://www.epa.gov/mold/brief-guide-mold-moisture-and-your-home
▶ EPA Indoor Air Quality House:
▶ NEEF Screener:
https://www.neefusa.org/resource/pediatric-environmental-history

Resources for developing home-based asthma interventions
▶ Community Asthma Initiative – Replication Manual
▶ King’s County Asthma Program
▶ EPA’s Home Assessment Tool
▶ Asthma Community Network
King County Asthma Program
Asthma guidelines and educational resources

For patients with asthma
- Facts about asthma
- Methods for controlling asthma
- Green cleaning recipes
- Información en español

For health care providers
- Tools and documents
- Community health worker guidelines
- Patient education materials
- Current and past programs

https://www.kingcounty.gov/depts/health/chronic-diseases/asthma.aspx

Home Characteristics and Asthma Triggers

Checklist for Home Visitors

Using this Home Assessment Can Help Make Homes Healthier.
A trained home visitor can help find common asthma triggers in homes and discuss ways to reduce and remove triggers. Removing asthma triggers in the home, along with proper medical care, can improve health.

PESTS

<table>
<thead>
<tr>
<th>Checklist Questions</th>
<th>Potential Action Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the last 12 months, have you seen cockroaches inside your home?</td>
<td>Do integrated pest management (IPM) described below. For those with asthma, especially avoid the use of sprays and foggers.</td>
</tr>
<tr>
<td>• Yes</td>
<td>IPM concepts include:</td>
</tr>
<tr>
<td>• No</td>
<td>- Keep counters, sinks, tables, and floors clean and free of clutter.</td>
</tr>
<tr>
<td>• Don’t know</td>
<td>- Clean dishes, crumbs, and spills right away.</td>
</tr>
<tr>
<td></td>
<td>- Store food in airtight containers. This also applies to pet food.</td>
</tr>
<tr>
<td></td>
<td>- Seal cracks or openings in cabinets, walls, baseboards, and around plumbing.</td>
</tr>
<tr>
<td></td>
<td>- Keep trash in a closed container.</td>
</tr>
<tr>
<td></td>
<td>- Use pesticide bait and traps in areas away from children and pets.</td>
</tr>
<tr>
<td></td>
<td>Follow manufacturer’s instructions for correct use.</td>
</tr>
</tbody>
</table>

ASTHMA COMMUNITY NETWORK.ORG
Communities in Action

New Resource Available!
Home Characteristics and Asthma Triggers Checklist

http://www.asthmacommunitynetwork.org/home
THANK YOU