

Environmental Management of Pediatric Asthma

Leyla Erk McCurdy

Winner of



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- Private, non-profit organization chartered by Congress
- Provide knowledge to trusted and credible professionals who amplify messages to national audiences to solve everyday environmental problems. Together, we generate lasting positive change

www.neefusa.org



Health & Environment

A National Environmental Education Foundation Program

- Goal: Advance environmental knowledge among health professionals to improve the public's health with a special emphasis on children and underserved populations.
- Through development of national agendas, educational programs, and strategic partnerships, we facilitate the integration of environmental health into health care provider education and practice.

www.neefusa.org/health/index.htm

Environmental Health Programs

- **Environmental Health Initiative**
 - Pediatric Environmental History Initiative
 - Children's Environmental Health Faculty Champions
- **Asthma Initiative**
 - Environmental Management of Pediatric Asthma tools and resources
 - Pediatric Asthma Faculty Champions
- **Pesticides Initiative**
 - Implementation Plan
 - Competency and Practice Skills Guidelines
- **Children and Nature Initiative**
 - Nature Champions
- **Tools and Resources for Critical Environmental Health Topics**
- **Peer-reviewed Publications**

Pediatric Asthma

- Most prevalent chronic medical condition in childhood
- 7 million (9.5%) US children¹
- Disproportionately affects minority and low income children

¹Akinbami LJ, Moorman JE, Liu X. “Asthma Prevalence, Health Care Use, and Mortality: United States, 2005–2009”. National Health Statistics Reports; No. 32. Hyattsville, MD: National Center for Health Statistics. 2011.

Asthma Disparities

- African-American and Latino children worse asthma status than comparable white children¹
- African-American children as compared to white children²
 - 2 times as likely to have asthma
 - >2 times as likely to be hospitalized
 - 4 times as likely to die from asthma

¹Bloom B, Cohen RA, Freeman G. Summary health statistics for U.S. children: National Health Interview Survey, 2008. National Center for Health Statistics. Vital Health Stat 10(244). 2009.

²Akinbami LJ, Moorman JE, et al. *Pediatrics* 2009: 123; S131-S145.

Asthma Disparities

- Low income populations, minorities, and children living in inner cities experience more emergency department visits, hospitalizations, and deaths due to asthma
- Low income children are more likely to have increased morbidity from asthma and less likely to receive preventive care

Asthma and Schools

- 1 out of 10-11 school-age children has asthma
- Asthma is the leading cause of school absenteeism due to a chronic condition. Over 10.5 million missed school days per year are due to asthma
- Nearly 1 in 2 children with asthma report missing at least 1 day of school each year because of asthma

¹Bloom B, Cohen RA, Freeman G. Summary health statistics for U.S. children: National Health Interview Survey, 2008. National Center for Health Statistics. Vital Health Stat 10(244). 2009.

²Akinbami LJ, Moorman JE, et al. *Pediatrics* 2009: 123; S131-S145.

SUMMARY REPORT 2007

National Asthma Education
and Prevention Program
Expert Panel Report 3

Guidelines for the Diagnosis and Management of Asthma



U.S. Department of Health and Human Services
National Institutes of Health
National Heart, Lung, and Blood Institute

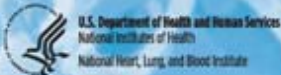
National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma

www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm

National Asthma Education and Prevention Program

Guidelines Implementation Panel Report for: Expert Panel Report 3—Guidelines for the
Diagnosis and Management of Asthma

Partners Putting Guidelines
Into Action



Guidelines Implementation Panel Report for Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma

www.nhlbi.nih.gov/guidelines/asthma/gip_rpt.pdf

GIP Report: Six Priority Messages

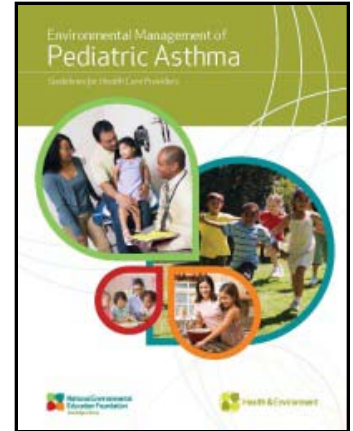
- Use inhaled corticosteroids
- Use a written asthma action plan
- Assess asthma severity
- Assess and monitor asthma control
- Schedule periodic asthma visits
- **Control environmental exposures**

Pediatric Asthma Initiative

- Goal: Integrate environmental management of pediatric asthma into pediatric medical and nursing education and practice
- Expert Steering Committee developed the *Environmental Management of Pediatric Asthma: Guidelines for Health Care Providers*

Environmental Management of Pediatric Asthma: Guidelines for Health Care Providers

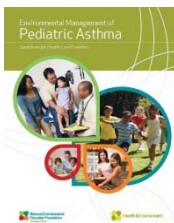
- Founded upon NHLBI/NAEPP Guidelines
 - Intended to complement its clinical and pharmacological components
- Developed for primary care providers
 - Pediatricians, family physicians, internists
 - Nurse practitioners, physician assistants
- Authored by expert steering committee and peer reviewed
- Built on scientific literature and current best practices



www.neefusa.org/Health/asthma

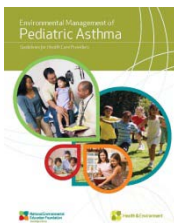
Overview of Guidelines

- Developed for children 0-18 years already diagnosed with asthma
- Applies to all settings where children spend time
 - Homes, schools, and daycare centers
 - Cars, school buses
 - Camps, other recreational/housing settings
 - Occupational environments
- Officially supported by:
 - Academic Pediatric Association
 - American Academy of Pediatrics
 - American Association of Colleges of Nursing
 - Association of Faculties of Pediatric Nurse Practitioners
 - National Association of Pediatric Nurse Practitioners



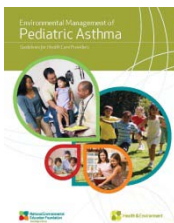
Components of Guidelines

- Educational competencies
- Environmental history form
- Environmental intervention guidelines
- Sample patient flyers and references
- Supplemented by online list of resources with links
www.neefusa.org/health/asthma/asthma_resources
- Available in English and Spanish online, in hard copy, and on CD-ROM
www.neefusa.org/health/asthma/asthmaguidelines



Environmental History Form

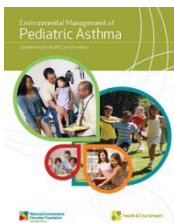
- Quick intake form
- Administered by health care provider
- Available online as PDF and Word document
- Can be pasted or re-copied into electronic medical record template
- Questions are in yes/no format
 - Yes answers can be followed up with more in-depth questions from the Environmental Management of Pediatric Asthma: Guidelines for Health Care Providers manual



Environmental History Form

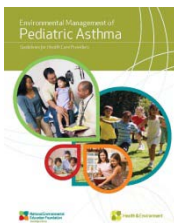
- Parent or child will likely answer questions about exposure with own home in mind
 - Remember to consider other places the child spends time: school, daycare, car, work
- Designed to capture major trigger areas
 - Once identified as a problem, (i.e. dust mites) the intervention sheet provides additional questions

www.neefusa.org/health/asthma/astmahistoryform



Intervention Guidelines

- Two-visit concept
- Short introduction
- Additional in-depth questions
 - Explore exposure sources
 - Parents' current practices
- Intervention recommendations
- Sample patient handouts to download
- Additional resources on initiative's website



Dust Mites

Dust mites are microscopic insects that live on fabric items in every home. They feed on shed flakes of skin from people and pets and thrive in warm, humid environments. Their body parts and feces can trigger asthma.

Is your child's asthma worse at night?

Have you noticed whether dust

exposure makes your child's asthma worse?

Does your child sleep with stuffed animals?

Is there wall-to-wall carpet in your child's bedroom?



Dust Mites

Interventions

- Encase all pillows and mattresses
- Wash bedding and stuffed toys weekly in hot water (130° F) to remove allergens and kill mites
- Avoid use of ozone generators and certain ionic air cleaners that can generate harmful ozone
- Vacuum with a HEPA vacuum cleaner
- Avoid humidifiers
- High cost interventions where skin test proven allergy recommended prior to implementation
 - Replace draperies with blinds
 - Remove carpet from child's bedroom
 - Remove upholstered furniture

Animal Allergens

Animal allergies are not caused by fur. Proteins secreted in the animal's saliva or by oil glands that are shed as dander cause animal allergies. These allergens are carried on very small particles that can persist for weeks or months even after a pet is gone.

Do you have any furry pets?

Do your child sleep with the pet?

Has your child's asthma become worse since having the pet?

Do you see evidence of rats or mice in your home weekly?



Animal Allergens

Interventions

- Find a new home for indoor pets
- At a minimum, keep pets outside
- If these aren't possible...
 - Keep pets out of the bedroom
 - Follow similar interventions as with dust mites
- Bathing cats and dogs has been shown to decrease these allergens but...
 - It must be done at least twice a week to be effective
- To exterminate rats or mice, use the least toxic method, such as baits and traps



Cockroach Allergen

Droppings, body parts, and the saliva of cockroaches and other pests contain protein allergens that can cause allergic reactions or trigger asthma symptoms. Cockroaches follow food and water sources in your house and eradication can be very difficult.

Do you see cockroaches in your home daily?

Do you see evidence of cockroach droppings?

How do you get rid of cockroaches in your home?

Does your child's school or other places he/she spends time have cockroaches?



Cockroach Allergens

Interventions

- Clean up all food items, crumbs, and spills ASAP
- Store food and trash in closed containers
- Limit spread of food around house, especially bedrooms
- Fix water leaks under sinks
- Mop kitchen floor at least once a week
- Clean counter tops daily
- Use least toxic extermination method, such as bait stations and gels
 - Never use industrial strength pesticide sprays without consulting a professional



Molds and Mildew

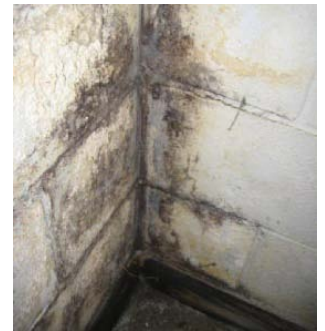
Mold spores are allergens that can be found both indoors and outdoors. Indoors they are found in dark, warm, humid environments like bathrooms, attics, basements, and laundry rooms. Outdoors they grow in moist, shady areas and are common in soil, decaying vegetation, compost piles, rotting wood, and fallen leaves.

Do you see or smell mold/mildew in your home?

Is there evidence of water damage in your home?

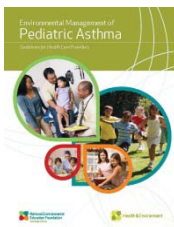
Do you use a humidifier or swamp cooler?

Do you frequently have condensation on your windows?



Mold and Mildew Interventions

- Control all sources of moisture in house
 - Repair leaky faucets, pipes, and ductwork
 - Use dehumidifier or air conditioner
 - Vent bathrooms and dryers to outside
 - Use exhaust fans in kitchen, bathroom, and other damp areas
- Items too moldy to clean should be discarded
- Clean small areas with:
 - Chlorine bleach mixed 1:10 with water
 - Remember, this solution kills mold but does not remove allergens
 - Be aware of respiratory irritant effect of bleach for asthmatics
 - Quaternary ammonia cleaners if bleach can't be used
 - Don't mix bleach and ammonia cleaners due to toxic fumes!
- Areas larger than 9 square feet should be professionally cleaned



Environmental Tobacco Smoke

Children exposed to tobacco have more asthma attacks, lower respiratory infections, middle ear infections and an increased risk of sudden infant death syndrome. Smoking outside is not enough to limit harm to children. Smoke settles in clothes, hair, car upholstery, and furniture.

Do any family members, caregivers or friends smoke?

Does this person have an interest or desire to quit?

Does your child or teenager smoke?

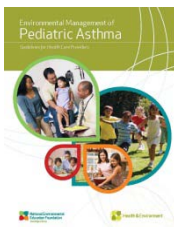
Have you established a no smoking policy in the household?

Does anyone smoke in childcare settings where the child stays?



Environmental Tobacco Smoke Interventions

- Keep home and car smoke free
- Seek support to quit smoking
 - Consider aids such as nicotine gum, patch, and medication from physician to help in quitting
- Choose smoke free childcare and social settings
- If you choose to smoke, do not smoke near your child
- If you are a provider and a parent or caregiver acknowledges he/she smokes, write a referral for a smoking cessation or community support program



Indoor Air Pollution

Americans spend up to 90% of their time indoors. Fumes from wide range of common household products can irritate the airway. Solvents and other chemicals can be found in building materials and can volatize for up to 2 years after construction. Nitrogen dioxide is an irritating gas that is a by-product of indoor fuel-burning appliances.

Have you had new carpets, paint, floor refinishing or other changes at your house in the past year?

Does your child or another family member have a hobby that uses materials that are toxic or give off fumes?

Does your child have contact with other irritants (e.g., perfumes, cleaning agents, sprays)?

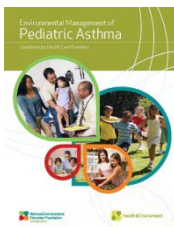
Do you use a wood burning fireplace or stove?

Do you use unvented appliances such as a gas stove for heating your home?



Indoor Air Pollution Interventions

- Eliminate tobacco smoke
- Install exhaust fans close to the source of contaminants and vent to outside
- Properly ventilate room where fuel burning appliance is being used
- Avoid strong odors and minimize use of products emitting irritants
 - Strong perfumes, talcum powder, hair sprays, cleaning products, paint fumes, air freshener sprays
- Use good housekeeping to control particles
 - Same control practices as with dust mites and animal allergens



Outdoor Air Pollution

Fine particles and ozone are the most significant outdoor air pollutants. Sources include industrial and vehicular pollution, diesel exhaust from highway traffic and school buses, pollens, and other aeroallergens. These pollutants can worsen asthma and risk is increased with outdoor exertion during poor air quality conditions.

Has outdoor air pollution ever made your child's asthma worse?

How do you hear about air quality alerts?

Does your child limit outdoor activity during air quality alerts for ozone and particulate matter?

Do you live within 300 yards of a major roadway or highway?

Is your child's asthma worse with a particular change in climate?

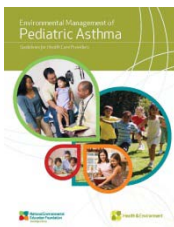


Outdoor Air Pollution Interventions

- Monitor air quality index levels <http://airnow.gov/>
 - Choose indoor physical activities if unhealthy outdoor air



- Contact health care provider if more albuterol is needed the day after AQI level is high
- Advise your child to avoid being near the exhaust pipes of idling buses and truck
 - Turn your key...be idle free
- Use HEPA filters in household vents
- Use central air conditioning



Summary

- Environmental management can and should supplement good medical care
 - Written asthma action plans
 - Use inhaled steroids as per NHLBI guidelines
 - Reassess impairment and risk with periodic asthma check-ups
- Ask about environmental exposures and seek ways to intervene
- Low cost interventions are effective in children
- Consider allergy referral to define exposure risk when:
 - Poorly controlled asthma
 - Costly interventions are being entertained

Contact Information

Leyla Erk McCurdy

Senior Director, Health & Environment

National Environmental Education Foundation

4301 Connecticut Ave., Suite 160

Washington DC, 20008

Phone: 202-261-6488

Fax: 202-261-6464

Email: mccurdy@neefusa.org

www.neefusa.org