



Pediatric Asthma Initiative: Creating Asthma Friendly Environments and Promoting Access to Guidelines-Based Care for Children with Asthma

Presenter

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Faculty Disclosures

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I disclose the **absence** of personal financial relationships with commercial interests relevant to this educational activity.

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Guiding Statements

- **Purpose:** To cultivate an environmentally conscious and responsible public.
- **Vision:** That people's everyday actions are guided by an understanding and concern for the well-being of people and the planet.
- **Mission:** To make the environment more accessible, relatable, relevant, and connected to the daily lives of all Americans.

Pediatric Asthma Initiative

Goal

- Integrate environmental management of asthma into pediatric health care to improve access to quality asthma care

Goal

- Strengthen and advance competencies of healthcare professionals

Goal

- Improve health outcomes for children with asthma

Learning Objectives

At the end of the presentation, attendees will be able to:

1. Describe the Guidelines Implementation Panel six priority messages and underlying EPR 3 recommendations of the asthma management guidelines.
2. Be familiar with the Environmental Management of Pediatric Asthma: Guidelines for Health Care Providers environmental history form to assess environmental exposures.
3. Identify common environmental triggers that impact the severity of asthma. Understand that the leading indoor allergens are pets, dust mites, mice, rats, cockroaches, and molds. Indoor pollutants include airborne PM, SHS, NO₂.
4. Recommend prevention and intervention strategies to eliminate exposures to common environmental triggers.
5. Review the 2020 focused updates to the Asthma Management Guidelines: Recommendations for Indoor Allergen Mitigation in Management of Asthma

Asthma Disparities

- Asthma burden in America is unevenly distributed
- Poor, black, and Hispanic children living in households with incomes less than the federal poverty have higher burden^{1,2,3}
 - Twice the risk of developing asthma
- African-American and Latino children **have** worse asthma status than comparable white children¹
- African-American children, compared to white children, are^{2,3}
 - 2 times as likely to be hospitalized
 - 3 times as likely to die from asthma

¹ Forno et al., "Asthma and Ethnic Minorities: Socioeconomic Status and Beyond," *Current Opinion in Allergy and Clinical Immunology* 9, no. 2 (April 2009):154-160.

² Akinbami et al., "Asthma Prevalence, Healthcare Use, and Mortality," *National Health Statistics Report* 12, no. 32 (January 2011):1-14.

³ Akinbami et al., "Changing Trends in Asthma Prevalence Among Children," *Pediatrics* 137, no. 1 (January 2016).

Variations in Asthma Care by Race/Ethnicity

- African-American children less likely to have made an office visit for asthma (OR 0.77)¹
- African-American and Latino children less likely to use inhaled corticosteroids (OR 0.78 and 0.66 respectively)²

¹ Kim et al., "Health care utilization by children with asthma," *Preventing Chronic Disease* 6, no. 1 (January 2009):A12.

² Crocker et al., "Racial and ethnic disparities in asthma medication usage and health-care utilization: data from the National Asthma Survey," *Chest*, 136, no. 4 (October 2009):1063-71.

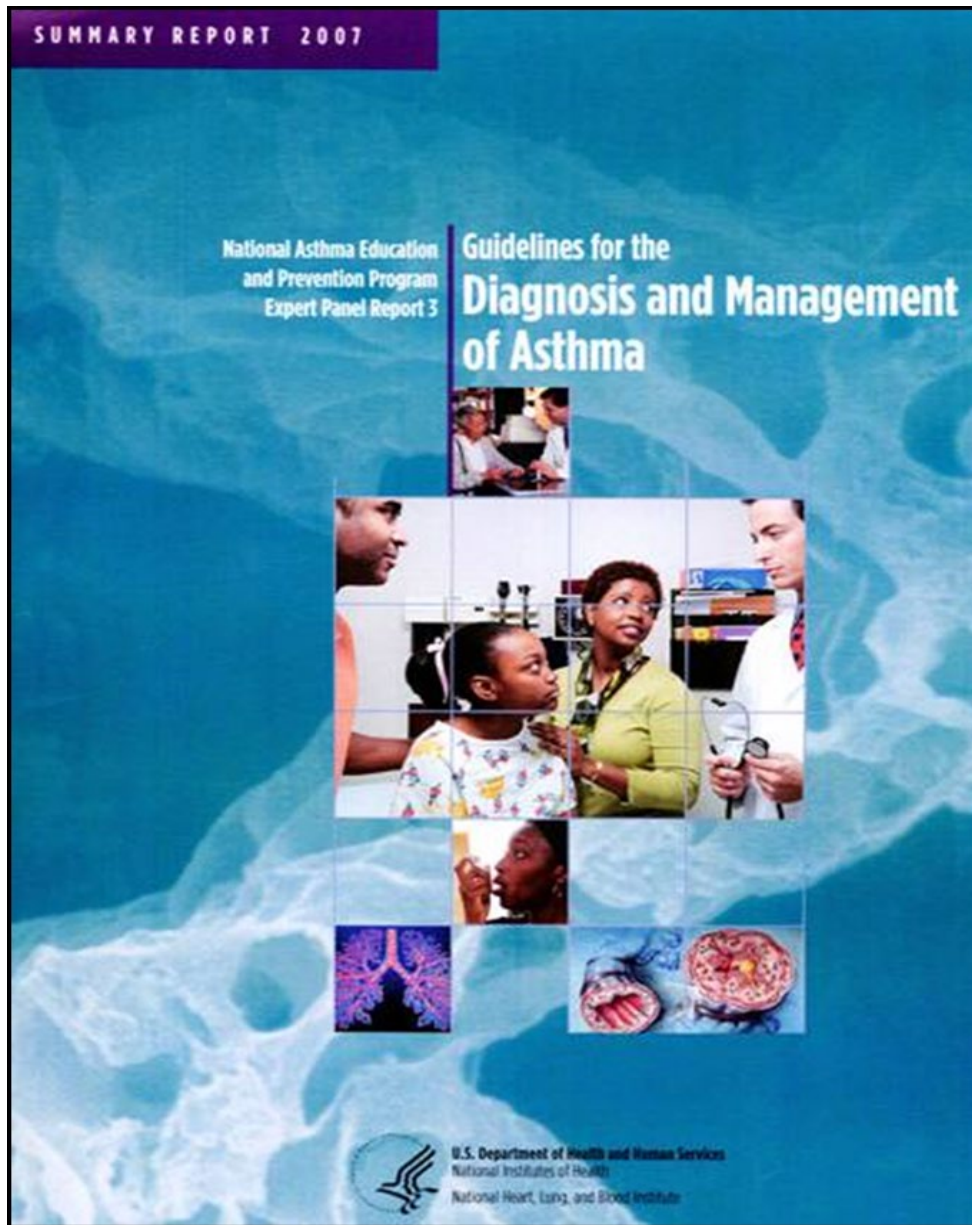
National Survey on Environmental Management of Asthma

Assessed public's knowledge of environmental asthma triggers and their actions to manage environmental triggers

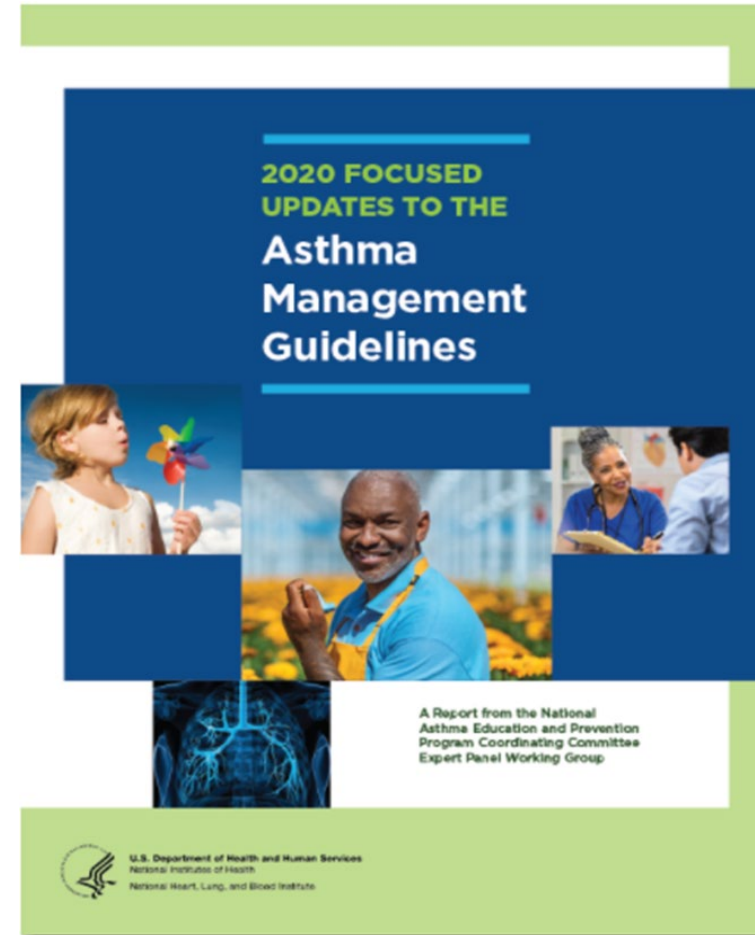
- People from low income, low education households -more likely to have asthma
- < 30% with asthma are taking actions to reduce their exposure to indoor environmental asthma triggers
- People with written asthma action plans are more likely to reduce exposures - only 30% of people with asthma have a written asthma action plan
- Children with asthma just as likely to be exposed to ETS in their home as children in general

US Environmental Protection Agency 2004





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



<http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm>





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

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



Guidelines: Six Priority Messages

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

Message #1: Assess Asthma Severity

- Classify all patients' asthma based on measures of current impairment and future risk
- **Impairment:** Think Rule of 2s
 - Intermittent: ≤ 2 days/week of symptoms, ≤ 2 days/week of bronchodilators
 - Persistent: if at least > 2 days/ week of symptoms and bronchodilator use. Nocturnal awakenings > 2 nights per month.
 - Persistent asthma also includes activity limitations
- **Risk:** # exacerbations requiring oral steroids
 - 0-1/ year = Intermittent asthma
 - ≥ 2 /year = Persistent asthma

Message #2: Assess and Monitor Asthma Control

- **Well Controlled** (regardless of classification)
 - ≤ 2 days/week of symptoms
 - ≤ 2 days/week of bronchodilator
 - ≤ 1 nighttime awakening/month
 - No limit in activity
- **Not well controlled**
 - > 2 days/week symptoms
 - ≥ 2 nighttime awakenings/month
 - > 2 days/ week of bronchodilator
 - Some limitation in activity
- **Very Poorly Controlled**
 - Daily symptoms and multiple doses of bronchodilator/day
 - Extremely limited activity

Message #3: Use Inhaled Corticosteroids

- Inhaled corticosteroids most effective medication for persistent asthma
- Reduction in both impairment and risk
 - Decrease daytime and nighttime symptoms
 - Fewer hospitalizations and urgent care visits
 - Increases in FEV¹
- Inhaled route preferred over systemic route: Increased effect in lungs with decreased systemic side effects
- Well tolerated
 - Small decrease in linear growth, but diminishes over time
- Superior to montelukast alone as preventative agent^{1,2}

¹Rachelefsky G. "Inhaled corticosteroids and asthma control in children: assessing impairment and risk," *Pediatrics* 123, no. 1 (January 2009): 353-66.

²Castro-Rodriguez and Rodrigo. "The role of inhaled corticosteroids and montelukast in children with mild-moderate asthma: results of a systematic review with meta-analysis," *Archives of Disease in Childhood* 95, no.5 (May 2010):365-70.



Message #4: Use Written Asthma Action Plan

- All medications written in one place
- Includes tailored instructions for child during acute exacerbations
- Based on either symptoms or peak flow monitoring
- Predicted PF based on height
- **Green Zone:** 80% of predicted or greater
- **Yellow Zone:** 50-80% of predicted
- **Red Zone:** 50% of predicted or less

Asthma Action Plan

Asthma Action Plan

For: _____ Doctor: _____ Date: _____
 Doctor's Phone Number _____ Hospital/Emergency Department Phone Number _____

GREEN ZONE

Doing Well

- No cough, wheeze, chest tightness, or shortness of breath during the day or night
- Can do usual activities

And, if a peak flow meter is used,

Peak flow: more than _____
 (80 percent or more of my best peak flow)

My best peak flow is: _____

Before exercise _____ 2 or 4 puffs 5 to 60 minutes before exercise

Take these long-term control medicines each day (include an anti-inflammatory).

Medicine	How much to take	When to take it
_____	_____	_____
_____	_____	_____

YELLOW ZONE

Asthma Is Getting Worse

- Cough, wheeze, chest tightness, or shortness of breath, or
- Waking at night due to asthma, or
- Can do some, but not all, usual activities

-Or-

Peak flow: _____ to _____
 (50 to 79 percent of my best peak flow)

First Add: quick-relief medicine—and keep taking your GREEN ZONE medicine.

_____ 2 or 4 puffs, every 20 minutes for up to 1 hour
 (short-acting beta₂-agonist) Nebulizer, once

Second If your symptoms (and peak flow, if used) return to GREEN ZONE after 1 hour of above treatment:

Continue monitoring to be sure you stay in the green zone.

-Or-

If your symptoms (and peak flow, if used) do not return to GREEN ZONE after 1 hour of above treatment:

Take: _____ 2 or 4 puffs or Nebulizer
 (short-acting beta₂-agonist)

Add: _____ mg per day For _____ (3–10) days
 (oral steroid)

Call the doctor before/ within _____ hours after taking the oral steroid.

RED ZONE

Medical Alert!

- Very short of breath, or
- Quick-relief medicines have not helped, or
- Cannot do usual activities, or
- Symptoms are same or get worse after 24 hours in Yellow Zone

-Or-

Peak flow: less than _____
 (50 percent of my best peak flow)

Take this medicine:

_____ 4 or 6 puffs or Nebulizer
 (short-acting beta₂-agonist)

_____ mg
 (oral steroid)

Then call your doctor NOW. Go to the hospital or call an ambulance if:

- You are still in the red zone after 15 minutes AND
- You have not reached your doctor.

DANGER SIGNS ■ Trouble walking and talking due to shortness of breath ■ Take 4 or 6 puffs of your quick-relief medicine AND
 ■ Lips or fingernails are blue ■ Go to the hospital or call for an ambulance _____ NOW!
 (phone)

See the reverse side for things you can do to avoid your asthma triggers.

How To Control Things That Make Your Asthma Worse

This guide suggests things you can do to avoid your asthma triggers. Put a check next to the triggers that you know make your asthma worse and ask your doctor to help you find out if you have other triggers as well. Then decide with your doctor what steps you will take.

Allergens

Animal Dander

Some people are allergic to the flakes of skin or dried saliva from animals with fur or feathers.

The best thing to do:

- Keep furred or feathered pets out of your home.
- If you can't keep the pet outdoors, then:
 - Keep the pet out of your bedroom and other sleeping areas at all times, and keep the door closed.
 - Remove carpets and furniture covered with cloth from your home.
- If that is not possible, keep the pet away from fabric-covered furniture and carpets.

Dust Mites

Many people with asthma are allergic to dust mites. Dust mites are tiny bugs that are found in every home—in mattresses, pillows, carpets, upholstered furniture, bedcovers, clothes, stuffed toys, and fabric or other fabric-covered items.

Things that can help:

- Encase your mattress in a special dust-proof cover.
- Encase your pillow in a special dust-proof cover or wash the pillow each week in hot water. Water must be hotter than 130° F to kill the mites. Cold or warm water used with detergent and bleach can also be effective.
- Wash the sheets and blankets on your bed each week in hot water.
- Reduce indoor humidity to below 60 percent (daily between 30–60 percent). Dehumidifiers or central air conditioners can do this.
- Try not to sleep or lie on cloth-covered cushions.
- Remove carpets from your bedroom and those laid on concrete, if you can.
- Keep stuffed toys out of the bed or wash the toys weekly in hot water or cooler water with detergent and bleach.

Cockroaches

Many people with asthma are allergic to the dried droppings and remains of cockroaches.

The best thing to do:

- Keep food and garbage in closed containers. Never leave food out.
- Use poison baits, powders, gels, or traps (for example, boric acid). You can also use traps.
- If a spray is used to kill roaches, stay out of the room until the odor goes away.

Indoor Mold

- Fix leaky faucets, pipes, or other sources of water that have mold around them.
- Clean moldy surfaces with a cleaner that has bleach in it.

Pollen and Outdoor Mold

What to do during your allergy season (when pollen or mold spore counts are high):

- Try to keep your windows closed.
- Stay indoors with windows closed from late morning to afternoon, if you can. Pollen and some mold spore counts are highest at that time.
- Ask your doctor whether you need to take or increase anti-inflammatory medicine before your allergy season starts.

Irritants

Tobacco Smoke

- If you smoke, ask your doctor for ways to help you quit. Ask family members to quit smoking, too.
- Do not allow smoking in your home or car.

Smoke, Strong Odors, and Sprays

- If possible, do not use a wood-burning stove, kerosene heater, or fireplace.
- Try to stay away from strong odors and sprays, such as perfume, talcum powder, hair spray, and paints.

Other things that bring on asthma symptoms in some people include:

Vacuum Cleaning

- Try to get someone else to vacuum for you once or twice a week, if you can. Stay out of rooms while they are being vacuumed and for a short while afterward.
- If you vacuum, use a dust mask (from a hardware store), a double-layered or microfilter vacuum cleaner bag, or a vacuum cleaner with a HEPA filter.

Other Things That Can Make Asthma Worse

- Sulfites in foods and beverages: Do not drink beer or wine or eat dried fruit, processed potatoes, or shrimp if they cause asthma symptoms.
- Cold air: Cover your nose and mouth with a scarf on cold or windy days.
- Other medicines: Tell your doctor about all the medicines you take. Include cold medicines, aspirin, vitamins and other supplements, and nonselective beta-blockers (including those in eye drops).



U.S. Department of Health and Human Services
 National Institutes of Health



For More Information, go to: www.nhlbi.nih.gov

NHL Publication No. 07-5251
 April 2007



Message #5: Schedule Follow-Up Visits

- Schedule planned follow-up visits at periodic intervals to assess asthma control and modify treatment if needed
 - 1-6 months depending on level of control
 - 3-month interval if step down in therapy is anticipated
- Consider a patient reminder system for these visits

Message #6: Control Environmental Exposures

- Review the environmental history of exposures
- Develop a multi-pronged strategy to reduce exposure to those triggers to which a patient is sensitive
- Remainder of presentation focuses on evidence of exposure mediation and recommendations for your patient

Common Asthma Triggers

- Poor air quality
 - Traffic related pollutants
- Extremes in weather
 - Hot, cold, windy, humid, dry
- Dusty environment
- Allergens
 - Mold
 - Pets (carried on clothes)
 - Grass, trees, flowers, weeds
 - Pests
 - House dust mites
- Strong odors/fragrances
 - Personal care products
 - Chemicals/ cleaning products
 - Air fresheners
- Building construction
- Physical activity
- Respiratory infections

Importance of Triggers in Asthma

- Allergen exposure plays a significant role in childhood asthma. Most school-aged children with asthma have evidence of allergic sensitization.
- 20% of school-aged children with persistent asthma are not atopic but are susceptible to pollutants and irritants as are all children with asthma.
- Viruses are a major trigger of exacerbations.
- Schools can be sources of exposure to allergens (mold, pests, animals) and pollutants

American Academy of Pediatrics 2016 Clinical Report

- Individually tailored environmental control measures reduce asthma symptoms/ exacerbations and are cost-effective.
- Environmental history to identify indoor exposures that trigger asthma symptoms (indoor pollutants and allergens).
- Leading indoor allergens: pets, dust mites, mice, rats, cockroaches, and molds. Pollutants include airborne PM, SHS (ETS), NO₂.
- Assessment of clinically relevant indoor allergens: Serum allergen-specific IgE antibody tests or referral to an allergist for evaluation, allergy skin testing
- Environmental control strategies tailored to relevant indoor exposures: source removal, source control, and mitigation strategies.

American Academy of Pediatrics 2016 Clinical Report 2

- Environmental control targeting **all** the exposures is important to achieve maximal benefit.

Sample Environmental Control Plan (supplementary data)

Goals and actions for all children with asthma

2020 FOCUSED UPDATES TO THE Asthma Management Guidelines:

In individuals with asthma who have symptoms related to exposure to identified indoor allergens, confirmed by history taking or allergy testing, the Expert Panel conditionally recommends a multicomponent allergen-specific mitigation intervention.

Sample Environmental Control Plan (supplementary data)

SAMPLE ENVIRONMENTAL CONTROL PLAN		
	GOALS	ACTIONS
<input checked="" type="checkbox"/> FOR ALL CHILDREN WITH ASTHMA	<p>Keep the home free of smoke and irritants:</p> <ul style="list-style-type: none"> • Cigarette smoke • Perfumes • Candles/incense, scented air "fresheners" 	<ul style="list-style-type: none"> • Keep the home and car smoke free • Do not allow visitors to smoke in the home. • Refer parents and household members who are smokers to treatment for tobacco dependence to support smoking cessation • HEPA purifiers can help decrease pollution from cigarette smoke, but not as much as smoking cessation or banning smoking in the home will • Avoid exposure to: perfumes, candles, incense, and scented air "fresheners"
If your child: is allergic to at least one indoor allergen (dust mites, molds, cat, dog, other furry pets, cockroaches, and/or mice)	<p>Keep the home clean:</p> <ul style="list-style-type: none"> • Dust contains allergens • Allergens are substances made by animals and other living things. • Exposure to allergens makes asthma harder to control in children who are allergic 	<ul style="list-style-type: none"> • Get rid of dust by effective cleaning • Vacuum/damp mop 1-2 times a week • Wash ALL bedding in hot water every 1-2 weeks to kill dust mites and remove allergens • Use allergy control covers on mattress and pillows to reduce allergen exposure while sleeping • Keep stuffed animals/toys out of sleeping area
is allergic to dust mites	<p>Keep dust mite levels low:</p> <ul style="list-style-type: none"> • Dust mites are microscopic bugs that eat skin particles sloughed off by people 	<p>The actions for keeping the home clean are also helpful for keeping dust mite allergen levels low:</p> <ul style="list-style-type: none"> • Wash ALL bedding in hot water every 1-2 weeks to kill dust mites and remove dust mite allergens • Use allergy control covers on mattress and pillows to reduce allergen exposure to dust mites • Keep stuffed animals/toys out of sleeping area
is allergic to cockroaches	<p>Keep the home pest free:</p> <p><u>Cockroaches</u></p> <ul style="list-style-type: none"> • Roaches are common indoor pests found in all types of homes • Many homes have roaches no matter how clean they seem • If allergic to roaches, getting rid of roaches from the home can control asthma • It is important to figure out why there are roaches in the home and help get rid of them 	<p><u>Cockroaches</u></p> <p>Integrated Pest Management (IPM) includes: removing sources of water, making food inaccessible to roaches, eliminate hiding places for roaches.</p> <ul style="list-style-type: none"> • Do not leave food out, store in air tight containers. • Empty garbage every day. • If these strategies do not control roaches, consider professional pest management services
is allergic to mice	<p><u>Mice</u></p> <ul style="list-style-type: none"> • The urine and hair of the mice contain allergens. • Reducing exposure to rodent allergens is an important strategy in helping to control asthma. • Mice can enter homes through holes that a pencil can fit through 	<p><u>Mice</u></p> <ul style="list-style-type: none"> • IPM strategies: prevent rodents from entering house. Remove rodent attractants such as food, garbage, and clutter from both indoor and outside home. • Setting traps and sealing holes and cracks that can be used to enter the home are important steps to control the mouse population. • If these strategies do not control mice, consider professional pest management services that include sealing of holes and cracks as part of their services.
is allergic to mold	<p>Keep the home dry:</p> <p>Molds are found both indoors and outdoors, but grow best where there is moisture or dampness</p>	<ul style="list-style-type: none"> • Wash mold off hard surfaces and dry completely. • Detergent or a dilute bleach solution are recommended by the EPA and the CDC, respectively.* Note that these can be respiratory irritants. • The most important way to control mold is to get rid of dampness and moisture problems. Strategies include fixing leaky plumbing or other water sources and improving ventilation by installing a fan in bathrooms.
is allergic to these furry pets: _____ _____ _____	<p>Keep the home free of furry animals:</p> <p>Cats, dogs, and other furry pets</p> <ul style="list-style-type: none"> • Furry pet allergens are airborne and travel all over the house and are sticky, so they stick to walls, floors, furniture, etc. This makes them very difficult to remove without removing the pet from the home. 	<ul style="list-style-type: none"> • The first-line approach to reduce furry pet allergens (cats, dogs) is to not have a furry pet in the home, or to find the furry pet that is already in the home a new home. <ul style="list-style-type: none"> ○ It takes 4-6 months after removing a pet from the home for allergen levels to drop enough to be of benefit to asthma and allergies. • Second-line measures that can be tried, but are minimally effective, are: <ul style="list-style-type: none"> ○ Restricting the pet to one area of the home ○ Having the child's bedroom be a "safe room" where the pet is never allowed and the door is kept closed ○ Using HEPA purifiers in the child's bedroom

Source: Adapted from "Environmental Key Messages" document provided courtesy of the Massachusetts Department of Public Health Asthma Office.
 *<http://emergency.cdc.gov/disasters/psa/moldremoval.asp>, <http://emergency.cdc.gov/disasters/bleach.asp>, and <http://www.epa.gov/mold/moldguide.html#moldcleanup>

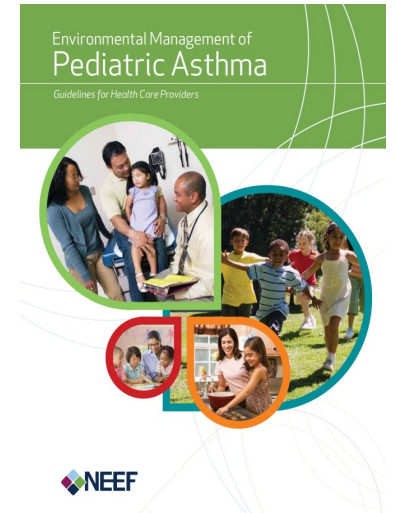
SUPPLEMENTAL FIGURE 1
Sample Environmental Control Plan.



Environmental Management of Pediatric Asthma: Guidelines for Health Care Providers

- Founded upon NHLBI Guidelines
- Developed for primary care providers
- Authored by expert steering committee and peer reviewed
- Built on scientific literature and best current practices
- **Environmental history form**
- **Environmental intervention guidelines**
- **Sample Patient Flyers and References**
- Supplemented by online list of resources with web-links
- Available in English and Spanish online

<https://www.neefusa.org/resource/environmental-management-pediatric-asthma-guidelines-health-care-providers>



Environmental History Form for Pediatric Asthma

PEDIATRIC ASTHMA

Environmental History Form for Pediatric Asthma Patient

Specify that questions related to the child's home also apply to other indoor environments where the child spends time, including school, daycare, car, school bus, work, and recreational facilities.

	Followup/ Notes
Is your child's asthma worse at night?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Is your child's asthma worse at specific locations? If so, where?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Is your child's asthma worse during a particular season? If so, which one?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Is your child's asthma worse with a particular change in climate? If so, what?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Can you identify any specific trigger(s) that makes your child's asthma worse? If so, what?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Have you noticed whether dust exposure makes your child's asthma worse?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Does your child sleep with stuffed animals?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Is there wall-to-wall carpet in your child's bedroom?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Have you used any means for dust mite control? If so, which ones?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Do you have any furry pets?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Do you see evidence of rats or mice in your home weekly?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Do you see cockroaches in your home daily?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Do any family members, caregivers or friends smoke?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Does this person(s) have an interest or desire to quit?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Does your child/teenager smoke?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Do you see or smell mold/mildew in your home?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Is there evidence of water damage in your home?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Do you use a humidifier or swamp cooler?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Have you had new carpets, paint, floor refinishing, or other changes at your house in the past year?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Does your child or another family member have a hobby that uses materials that are toxic or give off fumes?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Has outdoor air pollution ever made your child's asthma worse?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Does your child limit outdoor activities during a Code Orange or Code Red air quality alert for ozone or particle pollution?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Do you use a wood burning fireplace or stove?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Do you use unvented appliances such as a gas stove for heating your home?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
Does your child have contact with other irritants (e.g., perfumes, cleaning agents, or sprays)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
What other concerns do you have regarding your child's asthma that have not yet been discussed?	

Reference: Environmental Management of Pediatric Asthma: Guidelines for Health Care Providers www.neefusa.org/healthy/asthma/asthmaguidelines



Additional resources and Spanish language materials available at: www.neefusa.org/healthy/asthma/asthmaguidelines
health@neefusa.org

ASMA PEDIATRICA

Historia Ambiental para el Paciente con Asma Pediátrica

Las preguntas relacionadas al hogar del niño también se aplican a otros ambientes interiores donde el niño pasa tiempo, incluyendo escuela, guardería, coche, bus escolar, trabajo e instalaciones recreativas.

	Seguimiento/Notas
¿El asma empeora en la noche?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿El asma empeora en un lugar específico? Si es así, ¿dónde?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿El asma empeora durante una estación en particular? Si es así, ¿cuál?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿El asma empeora con un cambio particular de clima? Si es así, ¿cuál?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Puede identificar cualquier desencadenante(s) específico(s) de asma en su hijo(a)? Si es así, ¿cuál(es)?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Ha notado si la exposición al polvo hace que el asma de su hijo(a) empeore?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Tiene peluches?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay alfombra de pared a pared?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay evidencia de daño de agua o control de ácaros de polvo?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay evidencia de agua o humedad en su hogar, semanalmente?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Fuma el niño/a su hogar?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Fuma un amigo, o persona que cuida a su hijo(a)?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay evidencia de estufa(s) a dejar de fumar?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay evidencia de estufa(s) en su casa?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay evidencia de agua en su casa?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay evidencia de pintura, barniz, depósitos, u otro cambio en la casa durante el año pasado?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay evidencia de un miembro de la familia u un pasajero que utiliza materiales tóxicos?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay evidencia de que el asma de su hijo(a) empeore fuera de su hogar?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay evidencia de que el hijo(a) fuera durante la Alerta Naranja o Alerta Roja de ozono o partículas contaminantes?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay evidencia de que el niño/a lleve a la casa? ¿Hay evidencia de alfombras o estufas a gas?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay evidencia de perfumes (e.g. perfumes, productos de limpieza o aerosoles)?	<input type="checkbox"/> Sí <input type="checkbox"/> No <input type="checkbox"/> No está seguro
¿Hay otros problemas de su hijo(a) que le preocupan, que no fueron mencionados?	

Referencia: Historia Ambiental para el Paciente con Asma Pediátrica: Guías para el Personal de Salud www.neefusa.org/healthy/asthma/asthmaguidelines

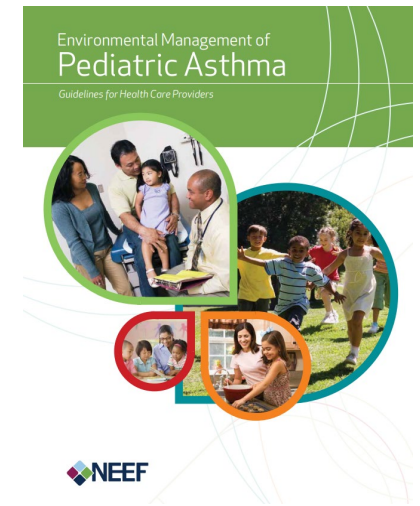


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- Quick intake form
- Administered by health care provider
- Available online as PDF and Word document
- Can be pasted, re-copied or scanned into the EMR
- Questions are in yes/no format
- Also available in Spanish

Intervention Guidelines

- Follow up “yes” answers with in-depth questions on Intervention Guidelines fact sheets
 - Explore exposure sources
 - Parents’ current practices
- Intervention recommendations
- Sample patient handouts to download
- Additional resources on initiative's website




Allergy Evaluation/ Referral

- NAEPP guidelines: assess sensitivity to indoor allergens if persistent asthma
- Serum allergen-specific immunoglobulin E (IgE) antibody tests may be performed, or allergy skin testing by a board-certified allergist
- Low-cost environmental interventions are reasonable, especially where widespread exposure occurs (i.e., dust mites in SE)
 - Costly interventions considered after confirmation of allergens
 - Testing to selected relevant allergens is preferred


What is the Evidence for Environmental Trigger Control?



Asthma Burden in Michigan




Pediatric Asthma Burden in Michigan



MICHIGAN


THE POPULATION

192,000 Michigan children are currently affected by asthma



STATISTICS

42% of children with asthma had at least 2 office visits in the last year



THE PROBLEM

1 IN 8 MICHIGAN STUDENTS WITH ASTHMA MISS MORE THAN 6 DAYS OF SCHOOL EACH YEAR DUE TO ASTHMA

COST

Annual pediatric asthma costs range from \$3076 to \$13612

Questions to Ponder: Burden of Asthma in Michigan

- What are some of the burdens of asthma?
- What factors augment the burden of asthma?
- What measures can reduce the burden of asthma?
- What particular harmful air pollutants are commonly found in Michigan and around the US?



Summary

- National Asthma Education and Prevention Program (NAEPP) Expert Panel Report-3: Guidelines for the Diagnosis and Management of Asthma was updated in 2020
- The six priority messages developed from the updated guidelines include:
 - Assess asthma severity
 - Assess and monitor asthma control
 - Use inhaled corticosteroids
 - Written asthma action plan
 - Schedule periodic asthma visits
 - Control environmental exposures

THANK YOU

