

How To Make a House or Apartment Allergy & Asthma Friendly

Sharmilee Nyenhuis, MD FAAAAI and Dameka Edwards-Hart, CHW



May 25th, 2023

The mission of

ALLERGY & ASTHMA NETWORK

Is to end the needless death
and suffering due to asthma,
allergies and related conditions
through outreach, education,
advocacy and research.



This will be recorded

The recording will be posted on our website shortly



MEET OUR SPEAKERS



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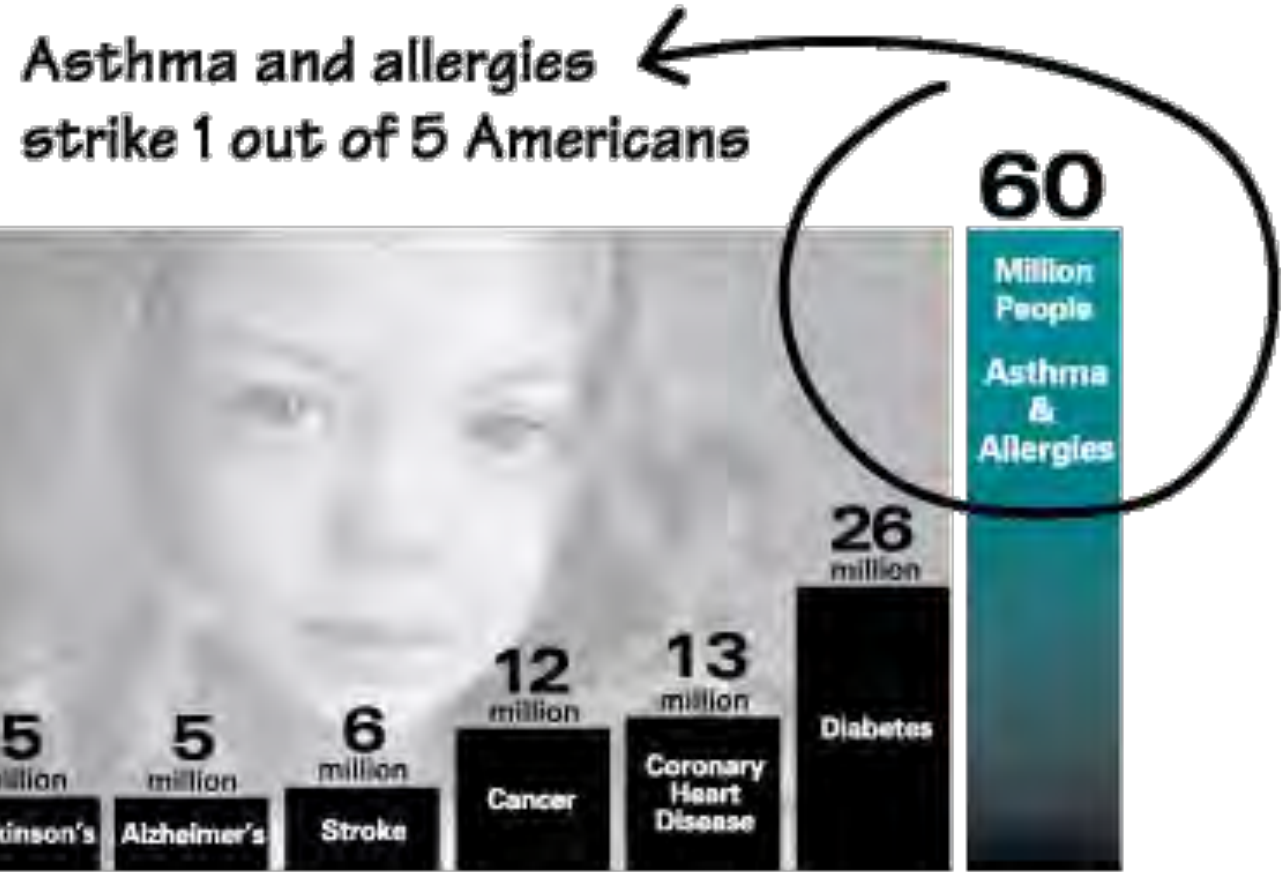


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Asthma and Allergies





~60% of asthma is allergic asthma



Allergies can develop at any age



Having allergies is a risk factor for developing asthma



Asthma patients who have allergies have increases in asthma symptoms



Allergies can also trigger asthma flares

What is an allergen?

- Allergen
 - Substance that causes the immune system to overreact
 - Also known as “allergic trigger”
 - Examples: pollen, shellfish, antibiotics, poison ivy



Inhaled Allergens

- Most important allergens for children and adults with asthma



How Inhaling Allergens Affect Asthma

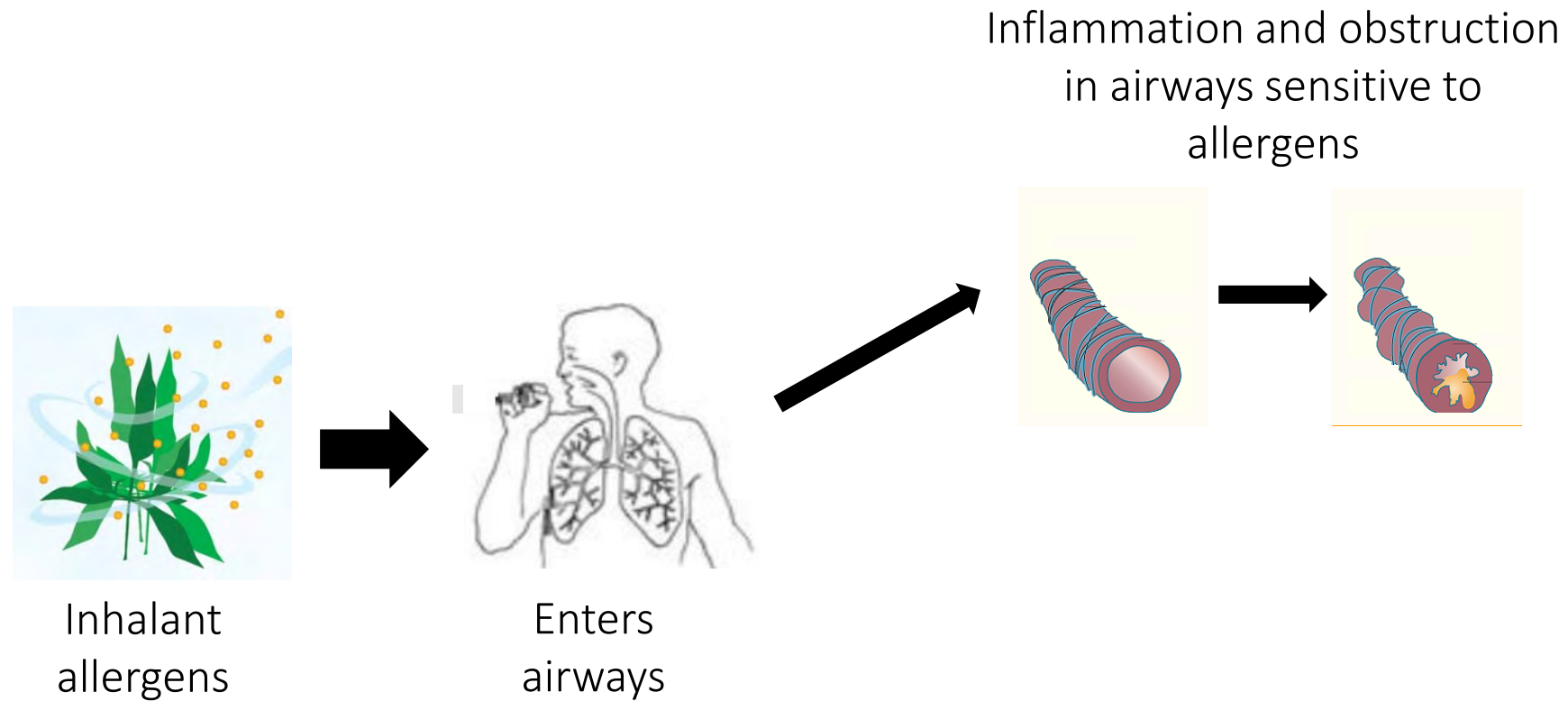


Inhalant allergens

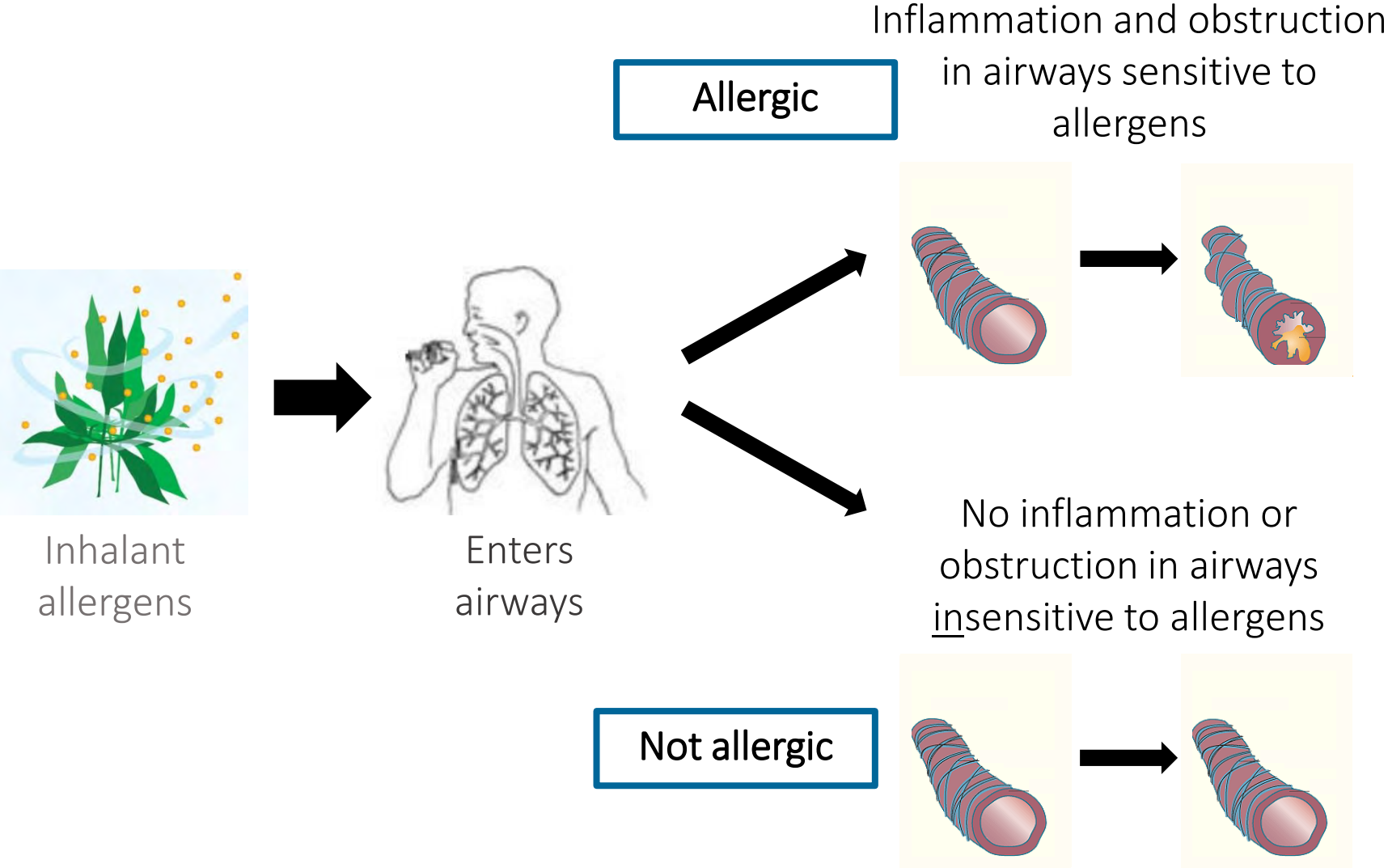


Enters airways

How Inhaling Allergens Affect Asthma



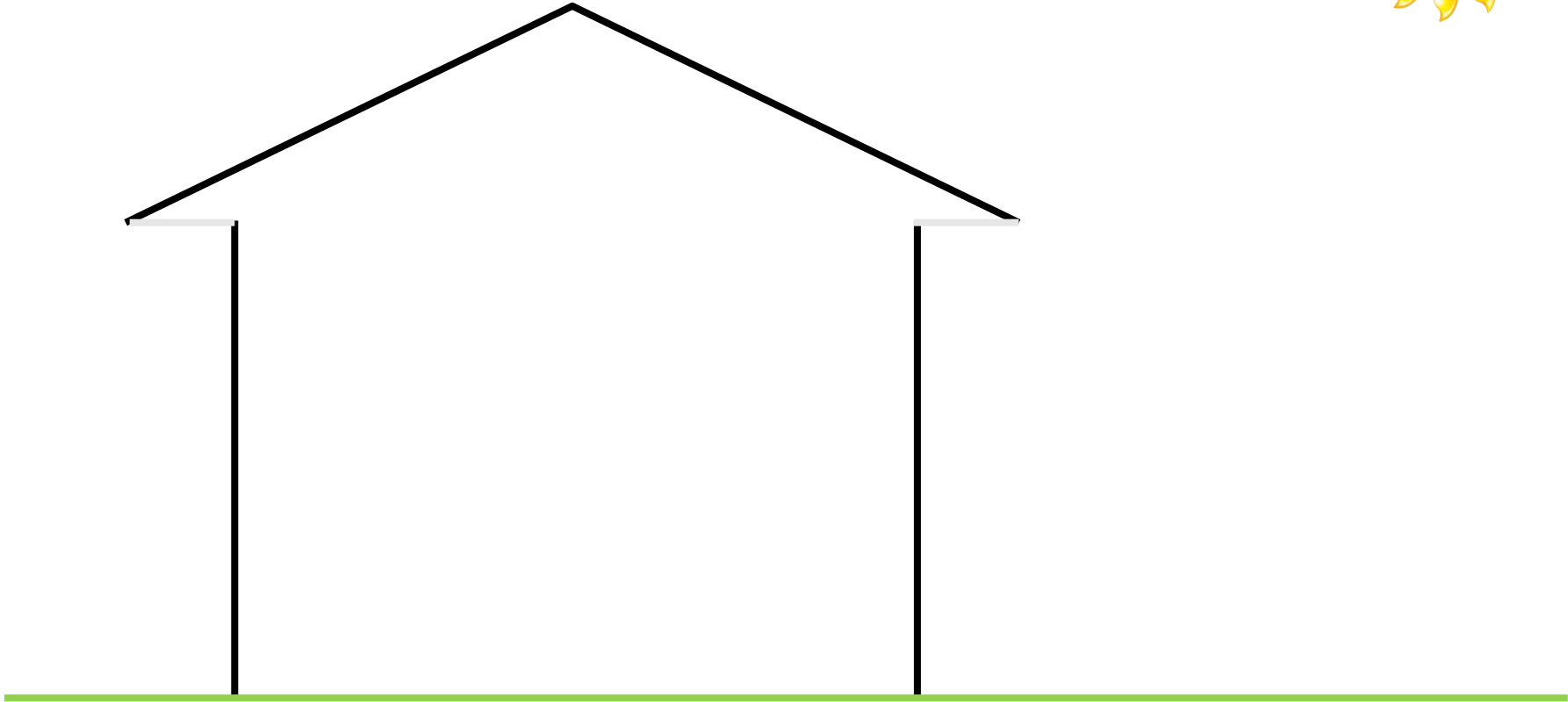
How Inhaling Allergens Affect Asthma



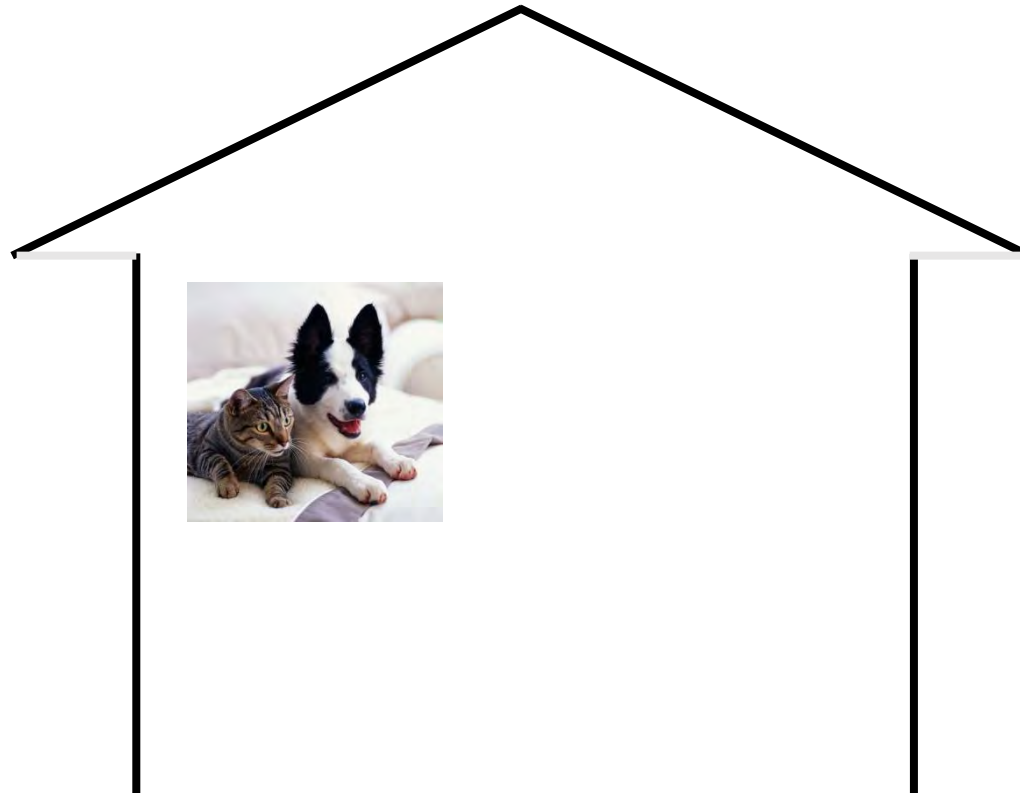
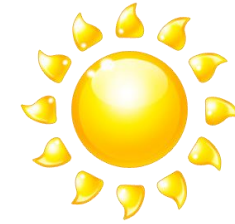
Types of inhalant allergens



Indoor Inhalant Allergens



Indoor Inhalant Allergens



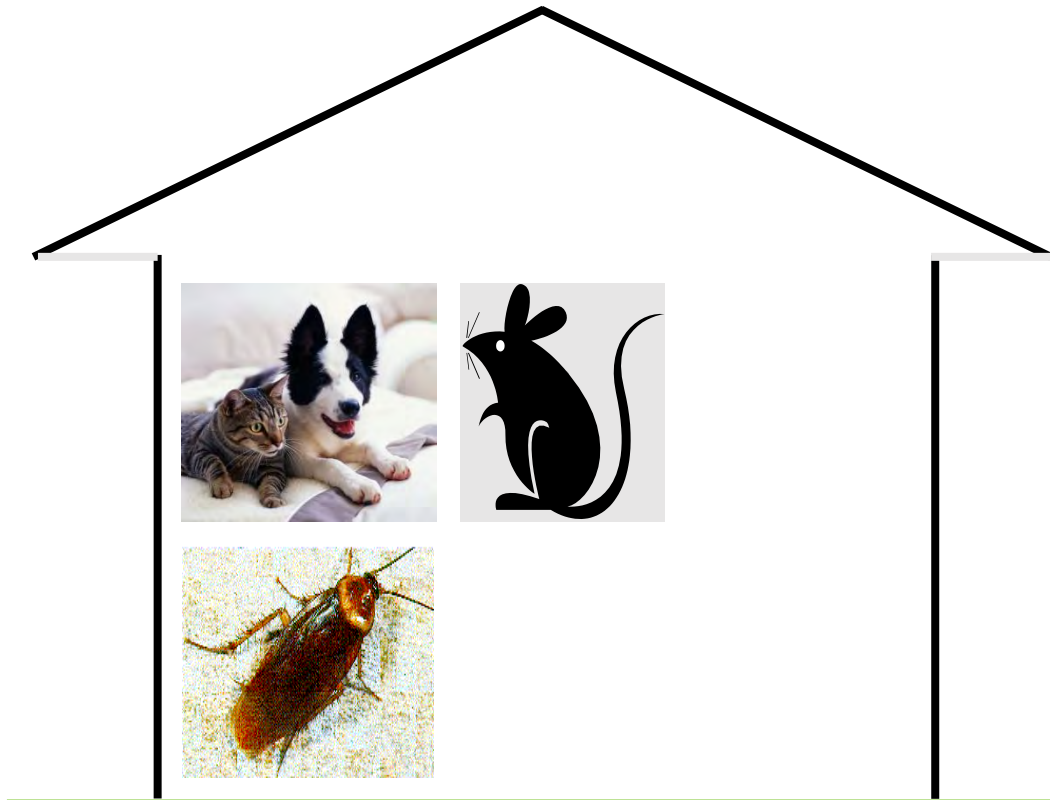
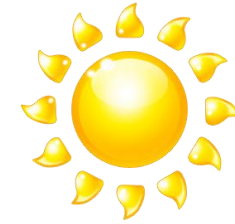
- Furry animal pets
 - Cats
 - Dogs
 - Rabbits
 - Hamsters
 - Guinea pigs

Cat and Dog Allergens

- Particles that carry cat and dog allergens can be small, become airborne with minimal disturbance and remain airborne for hours.
- Are ubiquitous in public buildings and moderate exposure in communities with domestic cat ownership is unavoidable.
- Homes with pets have allergen levels ~100x higher than homes without



Indoor Inhalant Allergens



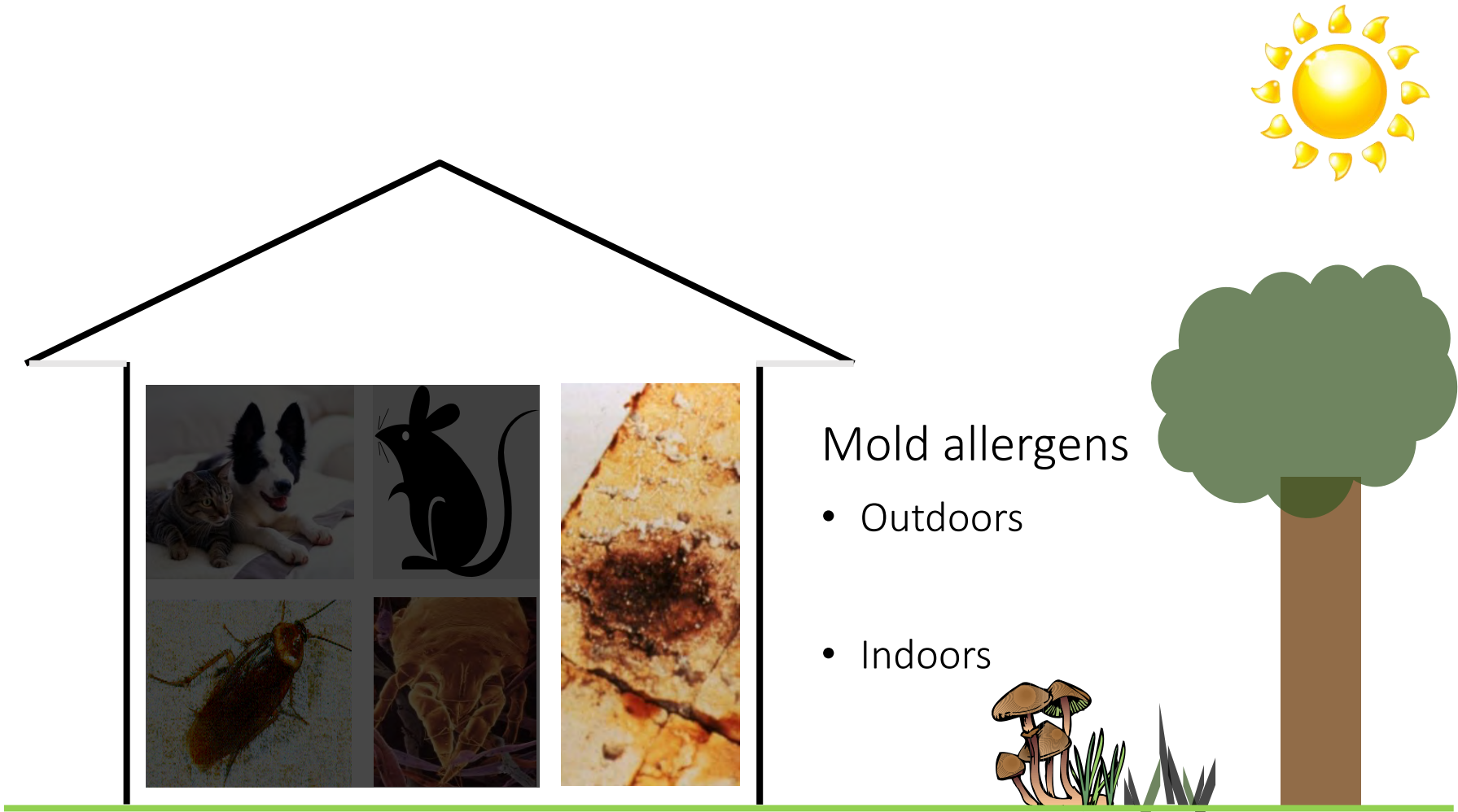
- Furry animal pets
- Mice
- Cockroaches

Cockroach Allergen Exposure

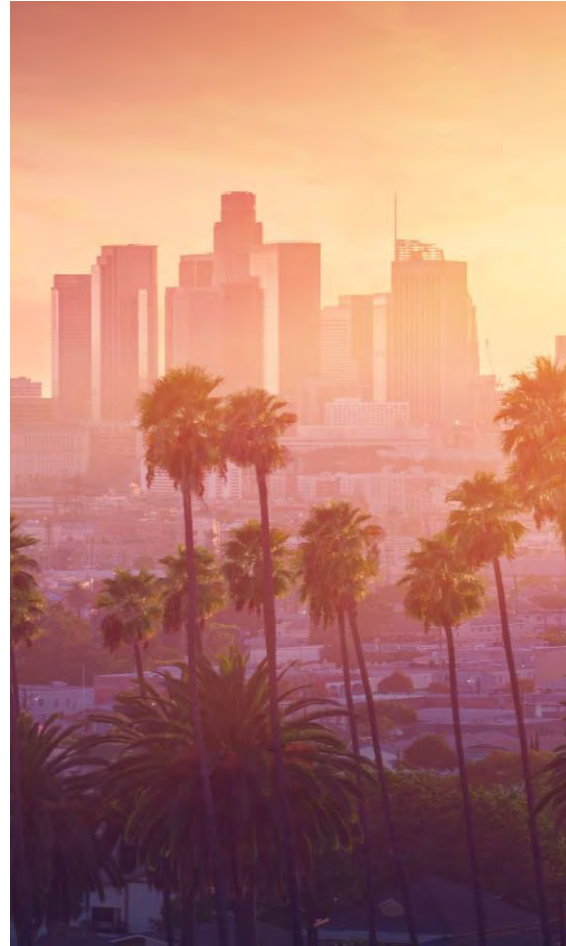
Risk Factors for High Cockroach Allergen Levels


<u>Risk Factor</u>	<u>Odds Ratio (95% CI)</u>
Type of dwelling	
Detached (reference)	1.0
High rise apartment	70.0 (16.6-295.9)
No of units in building	
Single family (reference)	1.0
Multifamily	4.89 (1.87-12.8)
Construction year	
1978-1998 (reference)	1.0
pre-1940	3.29 (0.87-12.4)
Urbanization	
population < 1 million (reference)	1.0
population > 1 million	3.15 (1.06-9.37)

Indoor Inhalant Allergens



Common Irritants (triggers)



A woman with long blonde hair is looking at a computer screen in a dimly lit office. In the background, another person is visible working at a desk with a computer monitor. The scene is set in a modern office environment with soft lighting.

Evaluation of inhalant allergens

Who Should Be Evaluated for Allergies?

All patients that have asthma should be asked about exposures to inhaled allergens, especially indoor allergens.



Who should be evaluated?



- Patients who have persistent asthma:
- Use the patient's medical history to identify allergen exposures that may worsen the patient's asthma
- Use allergy skin testing or blood testing to reliably determine allergies to allergens to which the patient is exposed

Inhalant Allergens Tested Can Vary

- By residential area
 - Geographic region
 - Urban, suburban, or rural
- By individual circumstances
 - Pets
 - Work exposures



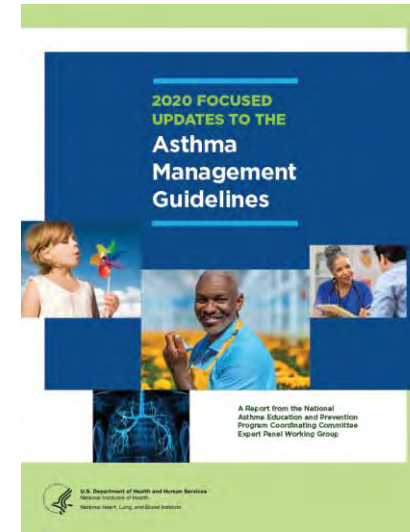
Control of inhalant allergens



National Asthma Guidelines Recommendations

Patients who have asthma at any level of severity should:

- Reduce, if possible, exposure to allergens to which the patient is allergic to and is exposed to the allergen

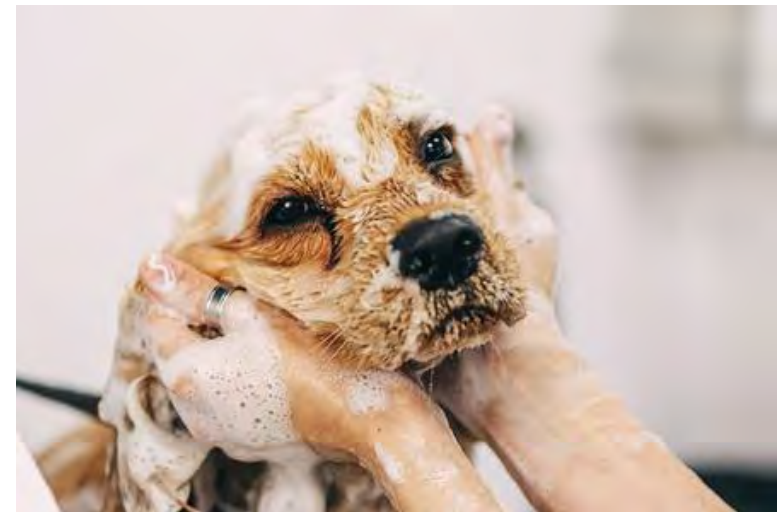


Recommendation 5: In individuals with asthma who do not have sensitization to specific indoor allergens or who do not have symptoms related to exposure to specific indoor allergens, the Expert Panel conditionally recommends against allergen mitigation interventions as part of routine asthma management.

Conditional recommendation, low certainty of evidence

Management of Furry Animal Pets

- If the patient is sensitive to the animal, the treatment of choice is removal of the exposure from the home
- If removal of the animal is not acceptable:
 - Keep the pet out of the patient's bedroom
 - Keep the patient's bedroom door closed
 - Use Air cleaners
 - Wash pet regularly





Effect of Air Filters and Pet Washing

01

The clinical effects of home air filtration in homes where the cat remains has been mixed

02

No effect on symptoms or peak flow for young adults with asthma

03

A reduction in airway reactivity (twitching) in children with asthma when air filters were placed in the living and bedrooms.

04

Washing cats and dogs can significantly reduced cat allergen, but the decrease is not maintained for more than a few days.

Wood et al , AJRCCM 1998;158:115-20]

Van der Heide et al. , JACI 1999;104:447-51]

Management of Animal Pests



Physical Changes

Kitchen and Bathroom

- Cleaning*
- Pesticide application (low toxicity)
- Sealing cracks and holes

Patient's Bedroom

- Cleaning*
- Pesticide (low toxicity)

**Cleaning to remove dead cockroaches, cockroach fecal pellets, or mouse urine that could contain allergens*

Education

- Clean up spills
- Eat only in kitchen
- Use sealed food containers
- Dispose of trash frequently



Recommendation 7: In individuals with asthma who have sensitization or symptoms related to exposure to pests (cockroaches and rodents), the Expert Panel conditionally recommends the use of integrated pest management alone, or as part of a multicomponent allergen-specific mitigation intervention.

Mouse & Rat Allergens



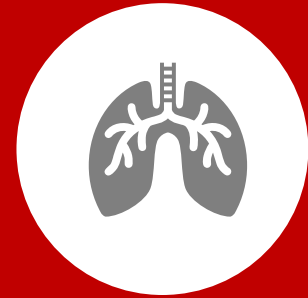
Mouse allergen is widespread in occupation and home settings, with higher levels occurring in urban areas and low income, multi-family dwellings



Exposure to high levels of mouse/rat allergen is associated with worse asthma in inner city children who are allergic to mouse/rat allergen



Effective mouse allergen mitigation involves basic principles of integrated pest management (IPM)



Reductions in mouse allergen in inner city children with asthma may improve asthma symptoms

Management of House Dust Mites

- Encase mattress and pillow(s) in allergen-impermeable covers
- Wash sheets and blankets weekly



Recommendation 8: In individuals with asthma who have sensitization or symptoms related to exposure to dust mites, the Expert Panel conditionally recommends impermeable pillow/mattress covers only as part of a multicomponent allergen mitigation intervention, not as a single-component intervention.

Conditional recommendation, moderate certainty of evidence

Management of House Dust Mites

- Encase mattress and pillow(s) in allergen-impermeable covers
- Wash sheets and blankets weekly

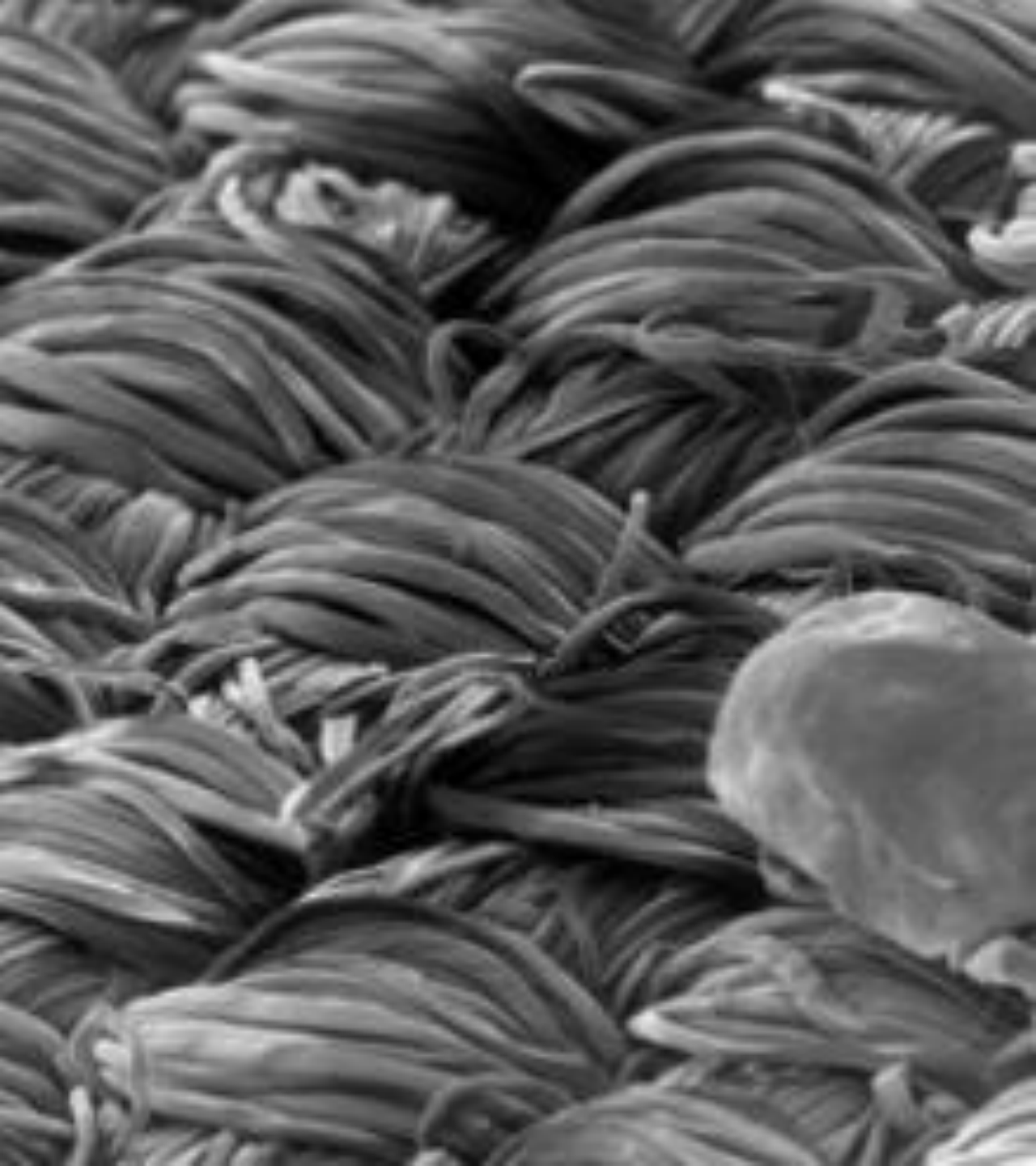


Environmental assessment and exposure control of dust mites: a practice parameter

Jay Portnoy, MD; Jeffrey D. Miller, MD; P. Brock Williams, PhD; Ginger L. Chew, ScD^{*}; J. David Miller, PhD; Fares Zaitoun, MD; Wanda Phipatanakul, MD, MS; Kevin Kennedy, MPH; Charles Barnes, PhD; Carl Grimes, CIEC; Désirée Larenas-Linnemann, MD; James Sublett, MD; David Bernstein, MD; Joann Blessing-Moore, MD; David Khan, MD; David Lang, MD; Richard Nicklas, MD; John Oppenheimer, MD; Christopher Randolph, MD; Diane Schuller, MD; Sheldon Spector, MD; Stephen A. Tilles, MD; and Dana Wallace, MD
Chief Editors: Jay Portnoy, MD; Jeffrey D. Miller, MD; P. Brock Williams, PhD; Ginger L. Chew, ScD^{*}



13. Advise patients that bedding should be washed weekly to decrease dust mite numbers and mite allergen levels, and that high temperature is not necessary. Home hot water should be kept below the temperature (120°F) that causes a scalding risk to occupants. (Strength of recommendation: strong, B evidence)



Reducing Dust Mite Allergen Exposure in the Home

- 1st Line
- Mattress, pillow covers
- Wash bedding
- Remove stuffed animals
- Control humidity

- Second Line
- Remove carpets
- Remove upholstered furniture
- HEPA vacuum cleaners
- Acaricides in fabrics
- Tannic acid
- Air filters unlikely to help

Dust mite on bedding encasement material.
John Vaughan and Thomas Platts-Mills

Management of Indoor Molds

01

Decrease indoor humidity to < 50%

02

Ventilate bathrooms and kitchens

03

Repair leaks

04

Address water condensation problems

05

Humidifiers and vaporizers increase indoor humidity and can become contaminated with mold

06

Should not be used in homes of patients with asthma

Management of Indoor Irritants

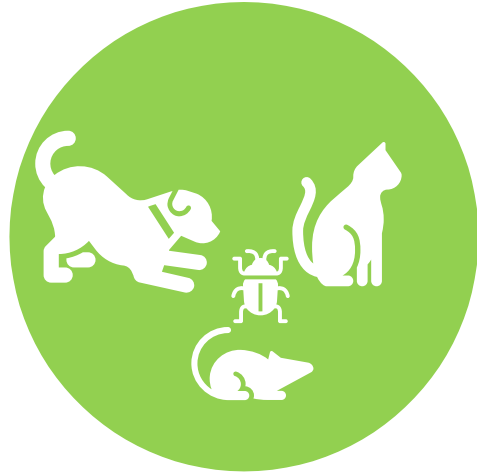
- Do not use strong cleaning sprays/supplies around person with asthma
- Do not wear strong smelling perfumes/colognes
- Second-hand smoke/smoke:
 - Ideally, quit smoking
 - Smoke outside
 - Do not smoke in the car
 - Stay away from camp-fires or barbecue pits



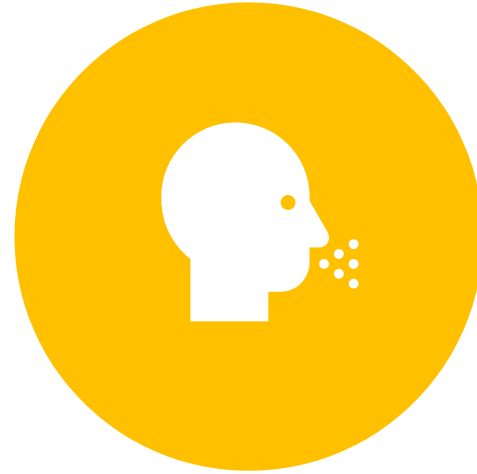
Conclusion



Inhalant allergens cause airway swelling and obstruction



Indoor allergens include furry animal pets, mice, cockroaches, house dust mites, and molds



Outdoor allergens include molds, as well as pollens from trees, grasses, and weeds



Outdoor allergens vary by season and geography

Conclusions

- All persons with asthma should be asked about exposures to inhalant allergens
 - Potential effect on asthma
 - Importance of indoor allergens
- Allergy testing can reliably determine an allergy to inhaled allergens
- Reducing exposure to allergens one is sensitive to can be beneficial
- Effective allergen avoidance requires a multifaceted, comprehensive approach



Additional Resources

Expert panel report 3: guidelines for the diagnosis and management of asthma (EPR–3 2007). NIH Publication No. 07-4051. Bethesda, MD: U.S. Department of Health and Human Services; National Institutes of Health; National Heart, Lung, and Blood Institute; National Asthma Education and Prevention Program, 2007.

www.cdc.gov/asthma/public_health.html

Home-based Multi-trigger, Multi-component Environmental Interventions
Asthma: A Presentation of Asthma Management and Prevention

www.cdc.gov/mold

The image features a word cloud in the shape of a heart. The largest and most prominent word is "allergies", written in a large, bold, pink font at the bottom center. Above it, the word "Learn" is written in a large, bold, blue font. To the left of "Learn", the word "Symptoms" is written vertically in a large, bold, green font. To the right of "Learn", the word "Asthma" is written in a large, bold, pink font. Other significant words include "Reaction" in orange, "Allergic" in orange, "Sinus" in purple, "Foods" in green, "Mold" in pink, "Warning" in orange, "Check" in orange, "Poison" in purple, "Eczema" in purple, "Bee" in orange, "Children" in orange, "Products" in orange, "Know" in purple, "Infection" in purple, "Sulfite" in purple, "Potential" in purple, "Normal" in purple, "Spot" in purple, "Dog" in orange, "Common" in pink, "Fever" in orange, "Sting" in orange, "Milk" in orange, "Fall" in orange, "Egg" in orange, "Contain" in orange, "Latex" in orange, "Types" in orange, "Related" in orange, "Wheat" in orange, "Difference" in blue, "Hay" in orange, "Tell" in orange, "Look" in orange, "Problems" in orange, "Find" in orange, "Fish" in orange, "Shellfish" in orange, "People" in orange, "Many" in orange, "Get" in orange, "Signs" in orange, "Food" in orange, "Severe" in orange, "Avoid" in orange, "Response" in orange, "Help" in orange, "Infants" in orange, "Health" in orange, "Eye" in orange, "Dog" in orange, "Soy" in orange, "Normal" in purple, "Spot" in purple, "Dog" in orange, "Fever" in orange, "Sting" in orange, "Milk" in orange, "Fall" in orange, "Egg" in orange, "Contain" in orange, "Latex" in orange, "Types" in orange, "Related" in orange, "Wheat" in orange, "Difference" in blue, "Hay" in orange, "Tell" in orange, "Look" in orange, "Problems" in orange, "Find" in orange, "Fish" in orange, "Shellfish" in orange, "People" in orange, "Many" in orange, "Get" in orange, "Signs" in orange, "Food" in orange, "Severe" in orange, "Avoid" in orange, "Response" in orange, "Help" in orange, "Infants" in orange, "Health" in orange, "Eye" in orange.

allergies

Learn

Symptoms

Asthma

Reaction

Allergic

Sinus

Foods

Mold

Warning

Check

Poison

Eczema

Bee

Children

Products

Know

Infection

Sulfite

Potential

Normal

Spot

Dog

Common

Fever

Sting

Milk

Fall

Egg

Contain

Latex

Types

Related

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Hay

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Look

Problems

Find

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Shellfish

People

Many

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Signs

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Help

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Health

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References

- CDC, Asthma: A Presentation of Asthma Management and Prevention, <http://www.cdc.gov/asthma/speakit/default.htm>
- EPR–3. Expert panel report 3: guidelines for the diagnosis and management of asthma (EPR–3 2007). NIH Publication No. 07-4051. Bethesda, MD: U.S. Department of Health and Human Services; National Institutes of Health; National Heart, Lung, and Blood Institute; National Asthma Education and Prevention Program, 2007.
- Chew GL, et al. Mold and endotoxin levels in the aftermath of Hurricane Katrina: a pilot project of homes in New Orleans undergoing renovation. Environ Health Perspect. 2006 Dec;114(12):1883-9.
- Esch, Robert E. and Bush, Robert K. Middleton's Allergy. 7th Ed. Ed. N. Franklin Adkinson Jr. et al. Philadelphia: Mosby, 2009.
- Kass D, et al. Effectiveness of an integrated pest management intervention in controlling cockroaches, mice, and allergens in New York City public housing. Environ Health Perspect. 2009 Aug;117(8):1219-25.
- Portnoy J, et al. Environmental assessment and exposure control of dust mites: a practice parameter. Ann Allergy Asthma Immunol. 2013 Dec;111(6):465-507.
- Portnoy J, et al. Environmental assessment and exposure reduction of cockroaches: a practice parameter. J Allergy Clin Immunol. 2013 Oct;132(4):802-8.e1-25.
- Portnoy J, et al. Environmental assessment and exposure control: a practice parameter —furry animals. Ann Allergy Asthma Immunol. 2012 Apr;108(4):223.e1-15.



QUESTIONS



**Put your questions in the question box
We'll get to as many as we can!**



*Have ideas for webinars? Want to provide feedback?
Fill out the evaluation survey!*

Thank you!

1

Next Webinars

Join us for two June webinars

2

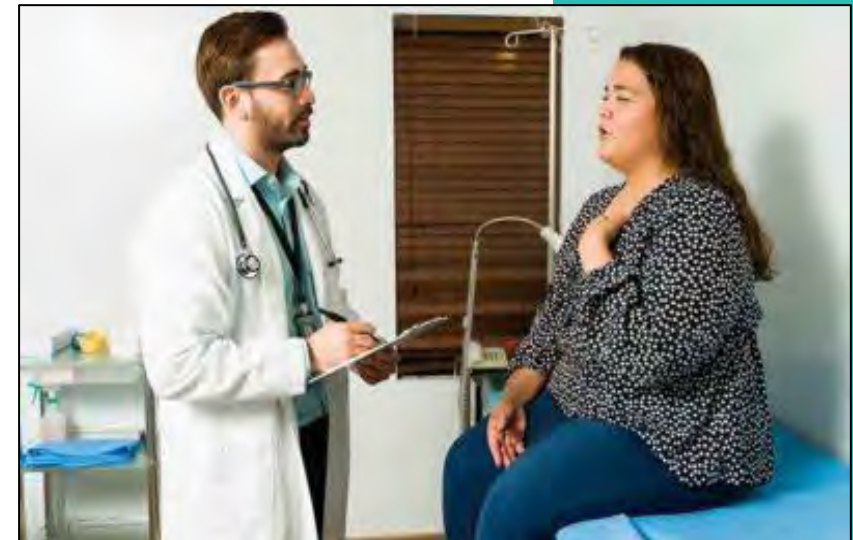
Long COVID: Lasting Lung Problems



Tuesday June 13th, 2023
1:00 PM ET

Knowing the Difference: Asthma or COPD?

Credentialed webinar for clinicians



Wednesday June 14th, 2023
3:00 PM ET

