How To Make a House or Apartment Allergy & Asthma Friendly

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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
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Asthma and Allergies

Asthma and allergies strike 1 out of 5 Americans

https://www.aafa.org/display.cfm?sub=42&id=8
~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

Expert Panel Report 3 (EPR3): Guidelines for the Diagnosis and Management of Asthma
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

Inhalant allergens

Enters airways

Inflammation and obstruction in airways sensitive to allergens
How Inhaling Allergens Affect Asthma

Inhalant allergens

Enters airways

Inflammation and obstruction in airways sensitive to allergens

Allergic

No inflammation or obstruction in airways insensitive to allergens

Not allergic
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

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Odds Ratio (95% CI)</th>
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</thead>
<tbody>
<tr>
<td><strong>Type of dwelling</strong></td>
<td></td>
</tr>
<tr>
<td>Detached (reference)</td>
<td>1.0</td>
</tr>
<tr>
<td>High rise apartment</td>
<td>70.0 (16.6-295.9)</td>
</tr>
<tr>
<td><strong>No of units in building</strong></td>
<td></td>
</tr>
<tr>
<td>Single family (reference)</td>
<td>1.0</td>
</tr>
<tr>
<td>Multifamily</td>
<td>4.89 (1.87-12.8)</td>
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<tr>
<td><strong>Construction year</strong></td>
<td></td>
</tr>
<tr>
<td>1978-1998 (reference)</td>
<td>1.0</td>
</tr>
<tr>
<td>pre-1940</td>
<td>3.29 (0.87-12.4)</td>
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<tr>
<td><strong>Urbanization</strong></td>
<td></td>
</tr>
<tr>
<td>population &lt; 1 million (reference)</td>
<td>1.0</td>
</tr>
<tr>
<td>population &gt; 1 million</td>
<td>3.15 (1.06-9.37)</td>
</tr>
</tbody>
</table>
Indoor Inhalant Allergens

Mold allergens
- Outdoors
- Indoors
Common Irritants (triggers)
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

Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma, 2007; Middleton’s Allergy 7th Ed., 2009
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 reduce 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 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, CIIC; Désirée Lareuas-Linnenmann, 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


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
References

Put your questions in the question box
We’ll get to as many as we can!
Thank you!

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Join us for two June webinars

1

Long COVID: Lasting Lung Problems

Tuesday June 13th, 2023
1:00 PM ET

2

Knowing the Difference: Asthma or COPD?
Credentialled webinar for clinicians

Wednesday June 14th, 2023
3:00 PM ET