

Fresh Air



VOLUME 6

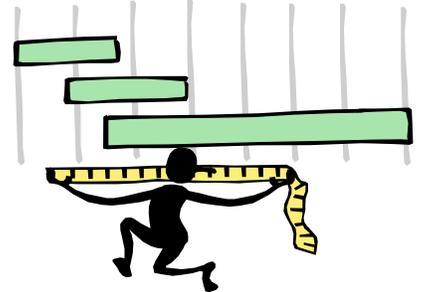
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The Epidemiology of Home Allergens and Asthma Study

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We would like to thank you for your continued participation in the Epidemiology of Home Allergens and Asthma Study. We really appreciate every moment that you spend talking to us and taking the time out of your busy day to share information about your child's health and development. Thanks to all for welcoming us into your homes and coming to the Children's Hospital clinic in the effort to understand what environmental exposures may reduce or increase the risk of allergy, airway hyperreactivity, and asthma.

In this issue of our newsletter, "Fresh Air", we bring you up-to-date on results of our study. If you have any questions as you read through the newsletter, do not hesitate to contact us at 617-525-0963.



Growth and Development in the Preteen Years

All of the children whose health and growth have been followed since birth are now at least 8 years old, and some turned 10 this fall! The pre-teen and teen years are very important times. The factors that increase or decrease the risk of asthma and allergy can change. Some children lose their asthma and allergy symptoms; some develop new allergies or continue wheezing.

Pre-teen physical activity, weight and height changes, stress, hormones, the indoor environment (including indoor allergen exposure), as well as genetic inheritance and early life events may all play a role in whether allergy and wheeze resolve, continue, or begin for the first time.

To follow the relationship of asthma to growth, development and environmental exposures in the pre-teen and teen years, the National Institutes of Health have funded this study for an additional 5 years. For the first time, for interested families, we will be communicating directly with children about their activities and growth every

year. United States health policy makers and scientists at the National Institutes of Health look to results of studies such as ours for guidance regarding policy and funding efforts aimed at reducing asthma rates and asthma severity.

We would like to revisit interested families in their homes when children participating in this project are between ages 11 and 13. At that time, we hope to get the opportunity to meet your child again, while measuring him or her for height, weight, lung function growth, and allergy. We are still working out the methods and timing of revisiting families, and will provide more information on this in the future. We welcome input or suggestions from parents and children who are participating in this project.

Your participation counts. Healthy children with no symptoms tell us as much about what it takes to prevent allergic disease and asthma as children who have symptoms. Complete follow-up from everyone will make our study most valuable to our public health effort!



Questions Parents Ask

What is the rate of wheeze, asthma, eczema or allergy among children in our study?

Percent with diagnosis
and active symptoms

	<u>Age 1</u>	<u>Age 7</u>
Wheeze	39%	15%
Asthma		10%
Eczema	28%	8%
Hayfever	1%	15%

Fifty-four percent of those who were tested for allergy had at least one positive skin or blood test. We tested for allergy to dust mite, cat, dog, cockroach, mouse, ragweed mix, tree mix (maple, oak and birch), grass, and mold (*Alternaria*, *Cladosporium*, *Penicillium* and *Aspergillus*).

My house is damp and has mold. Who can I turn to for advice on how to take care of it?

For information about mold, its health effects and how to deal with it, check our website for links to the EPA and other contacts and two recent Institute of Medicine/ National Academy of Science publications: “*Damp Indoor Spaces and Health*” and “*Clearing the Air*” (read these for free at www.nap.edu). Both books review the world literature (including results from the Epidemiology of Home Allergens and Asthma study) on health effects of dampness/mold in the home. Our website can be found at www.HomeAllergens.org



My child is well and has never had hayfever or asthma. When you follow her, what does her information contribute to the study?

Because she is well, her information is crucial in figuring out what environmental or genetic factors may *protect* children with allergic or asthmatic parents from getting hayfever or asthma.



My daughter has eczema and allergies but no wheeze; my older son has asthma but no eczema; My younger son doesn't have either. Why are they different?

Even in the same family, genetic factors and environmental exposures can be different for different children. You and your family are helping us to sort out the factors that matter in the development of asthma.



Our child has asthma. What have you learned about what we can do for him? What changes should we make in his home environment?

- Your pediatrician is always the first person to go to for clinical advice about your child's asthma.
- Knowing your child's allergies will help your pediatrician give advice that is tailor-made to your child.

- If someone with asthma is allergic to cats, having a cat in the home will increase their asthma symptoms (Lewis et al. *Am J Respir Crit Care Med* 2002;165:961-966)
- If someone with asthma is allergic to cockroach, having cockroach allergen in the home will increase their asthma symptoms. (Lewis et al. *Am J Respir Crit Care Med* 2002;165:961-966)
- Our collaboration with the Inner City Asthma study has taught us that a comprehensive home environment intervention can reduce asthma symptoms and improve asthma control in children with allergic asthma. These interventions, tailor-made to target reduction of the child's specific allergen triggers, are detailed in articles that we can provide you. Practical advice about asthma is also available through links on our website. (Morgan WJ et al. Results of a home-based environmental intervention among urban children with asthma. *N Engl J Med* 2004;351:1068-80)
- Some environmental changes (for example, reducing passive cigarette smoke exposure) can improve symptoms for all children with asthma, but other changes (for example, deciding whether or not to have a cat or dog) may need to be tailor-made to fit the child's specific allergies. Similarly, some medications work better for some children with asthma than for others—and that may partly depend on genes as well as the environment.

Highlights from Published Results (2002-2004)



The study that you have participated in has resulted in more than 30 articles that are already published or are in press. Our website (www.HomeAllergens.org) has links to our published articles. More results are yet to come.

DOES ONE SIZE FIT ALL?

We find that some home environmental exposures (for example, home dampness or higher mold exposure in the first year of life) increase the risk of respiratory symptoms for all children in our study. On the other hand, the effects of other home environmental exposures (for example, having a cat in the home) can be positive or negative, depending on the child and the history of asthma in the parents (see below). Thus for some exposures, the public health message is relatively simple. For other exposures, one message does not fit all families—the message has to be tailored to the specific child and his/her family.

Here are some highlights from the past two years:

Mold

Increased levels of mold in the home increased the risk of lower respiratory illnesses that children had in the first year of life. (Stark et al. *Am J Respir Crit Care Med* 2003;168:232-237)

Bottle-feeding

Bottle feeding in the bed or crib before sleep time in the first year of life was a risk factor for recurrent wheeze and asthma at 5 years of age. (Celedon et al. *Pediatrics* 2002;110:e77)

Antibiotic Use

While children with asthma may be given more courses of antibiotics, we did not find that antibiotic use in early life influenced the development of asthma. (Celedon et al. *Am J Respir Crit Care Med* 2002; 166:72-5)

Cats

Passing on antibodies in pregnancy. We have shown that children living in homes with cats have higher antibodies (IgG) to cat, and have antibodies to cat passed to them from their moms during pregnancy---whether this influences cat allergy development is not



yet certain. (Platts-Mills et al. *J Allergy Clin Immunol* 2003;111:123-30)

Not all children respond the same way to early life cat exposure. Having a cat in your home in infancy may be protective against asthma/wheeze for some children, yet may be a risk factor for others. For children whose moms did not have asthma, cat exposure reduced the risk of wheezing between ages 1 and 5. For children whose moms had asthma, cat exposure increased the risk of wheeze and asthma at or after age 3. Thus public health and pediatrician advice to parents about keeping pets may need to be customized to fit the individual child. (Celedon et al. *Lancet* 2002;360:781-82)

Cat exposure in allergic asthmatic individuals. Once individuals have cat allergy plus asthma, there is no question that cat exposure in the home worsens control of asthma. (Lewis et al. *Am J Respir Crit Care Med* 2002;165:961-966)

Dogs and Endotoxin

In very early life more wheezing was found in homes with higher levels of endotoxin (Endotoxin is part of the wall of gram negative bacteria that can come from dogs and sources of dampness). Endotoxin may irritate the airways, yet may protect against allergic disease. Eczema and early life blood-markers connected to allergy (IL-13) were reduced in homes with higher levels of endotoxin. (Litonjua et al. *J Allergy Clin Immunol* 2002;110:736-742) (Phipatanakul et al. *Pediatrics* 2004;114:13-18). (Abraham et al. *Am J Respir Crit Care Med* 2002;165:A245)



Chronic Stress and the Immune System

Chronic stress in the family may influence the immune system, resulting in higher levels of a marker of allergy (IgE) and a blood marker (TNF-alpha) which can be increased with chronic inflammation. (Wright et al. *J Allergy Clin Immunol* 2004;113:1051-1057)

Early Life Blood Markers of Allergy

By age 2 through 3, we can find markers in the blood called cytokines that are associated with increased risk of allergy and wheeze. These markers give us clues about the way our blood cells express allergy very early in life. (Contreras, Ly et al. *J Allergy Clin Immunol* 2003;112:1072-7)

Upcoming Article Topics

- Allergy rates in greater Boston differ by neighborhood and community
- Children with greater airway sensitivity have higher rates of allergy





OUR RESEARCH TEAM:
Paul, Elisabeth and Sarah

**Feel free to call your research assistants
with questions or for more information:**

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Meet the Research Team!

Our research assistants thank you for your continued participation in this public health project! We have several new members of our team to introduce to you. Elisabeth Wirsing graduated in anthropology from Mount Holyoke College, where she also was an EMT, responding to medical emergencies. She has a strong interest in finding out how public health measures might improve symptoms of asthma and allergy in children and adults. On the side, she continues as a strong crew member, rowing on the Charles! Paul D'Ambrosio recently completed his graduate work in Public Administration at Suffolk University after studying psychology and sociology at the University of Massachusetts, Boston. Paul is interested in respiratory health and therapy. Sarah Douglas continues to be a part of our research team (although you may remember her as Sarah May—she was married this past spring). Sarah loves working with children and science, and plans ultimately to combine these two interests by pursuing a career in teaching. All of our research assistants appreciate your taking the time to share information about your child's health and development and look forward to further conversations with you in the coming years!



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