

Fresh Air



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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 the 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.



Research Assistant Michaela Vine and study participant Hunter Lyons are hard at work on lung function testing during a home visit.

Growth and Development in the Preteen Years

All of the children whose health and growth have been followed since birth are now at least 10 years old, and some turned 12 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. In order to learn more about the growth and activities of the children, we are continuing to send out a yearly questionnaire for the children to complete and send back.

Last winter, we entered a new phase of the study, revisiting New England-area families in their homes when the children participating in this project are between ages

11 and 13. As of January 1, 2007, we had visited 105 families. At the home visits, we conduct lung function testing and allergy testing, collect dust samples, record height and weight of participating children, and ask questions about families' homes and the children's health. If you have participated in the home visit phase of the study, thank you for your help! If we have not contacted your family about the home visit yet, we will be in touch—we look forward to meeting you soon!

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. 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

My child gets a stuffy nose and runny eyes in the spring. What might he be allergic to?

To look for allergies related to hay fever, doctors test for allergies to grasses, local trees, and molds. As always we suggest that you talk with your pediatrician or allergist about your child's symptoms, and we would be happy to send you and your doctor the information we have about your child's allergy testing done between the ages of 6 and 10. We tested for allergies to a mix of trees (oak, birch and maple), grasses, and 4 kinds of mold (*Alternaria*, *Cladosporium*, *Aspergillus*, and *Penicillium*). We will soon be testing for outdoor allergies for children who had blood drawn after age 11 in 2005-6. We do this testing in batches, for quality assurance, but if there is a clinical reason to get these results sooner, let us know!

What can I do to minimize dust in my home?

Check our website (www.homeallergens.org) for links to the Environmental Protection Agency, American Lung Association, and Asthma Network recommendations and the Institute of Medicine documents "Clearing the Air" and "Damp Indoor Spaces and Health". We also have a link to recent multi-center U.S. study suggesting that home interventions to improve asthma symptoms are most likely to be successful if they target reduction of home exposures to the specific allergens that children are allergic to.

My child has never had asthma symptoms and now suddenly has developed them—Why? With your help and the help of your child we are trying to figure out how the home environment, diet and growth and development in the preteen years may influence asthma symptoms.



Joseph Marie shows us the movie tickets and the stylish nose clips he received during his home visit.

Recent Publications

The 15 new Home Allergens publications from 2005-6 are available on line at our website, as are the articles from past years. Here are some highlights from 2005-6:

Mold

Increased levels of mold and water damage in the home in infancy increased the risk of allergic rhinitis ("hay fever") in the first 5 years of life. (Stark et al. *Environ Health Perspect* 2005; 25:314-20.)

Endotoxin: the Good, the Bad and the....

Endotoxin is a part of the wall of gram negative bacteria that can come from dogs and sources of dampness. Eczema and early life blood markers connected to allergy (IL-13) were reduced in homes with higher levels of endotoxin. Endotoxin may irritate the airways, increasing the chance of wheeze, yet it may protect against allergy. The wheeze and allergy responses may partly depend on genetic inheritance. (Abraham J et al. *J Allergy Clin Immunol* 2005;116:431-7)

Wheeze, Respiratory Infections, Airway Responsiveness

Dr. Ly and Dr. Clare Ramsey have also shown how early life wheezing and respiratory infections relate to

allergy and asthma. Dr. Ly has found that early life blood cell production of IL-13 is related to increased risk of allergy. Dr. Tepas has shown that those with airway hyperresponsiveness have a greater risk of allergy as well as asthma. (Ramsey CD et al. *J Allergy Clin Immunol* 2007 Jan;119(1): 150-6. Ly NP et al. *Pediatrics* 2006;117:1132-38. Tepas EC et al. *Chest* 2006;129:1500-08)

Mice and More

Dr. Wanda Phipatanakul, an allergist from Boston Children's Hospital, found mouse allergen in 42% of homes, though often in very low amounts. Having mouse allergen in the home increased the risk of wheeze in the first year of life, though the relation of mouse allergen to later wheeze symptoms is not as certain. Dr. Phipatanakul is also beginning a project with some Boston schools to help evaluate the school environment and asthma. (Phipatanakul W et al. *Ann Allergy Asthma Immunol* 2005;94:593-99. *Allergy* 2005;50:697-701.)

Mapping of Allergy in Boston Moms

Asthma, allergy, and hay fever rates vary widely among different Boston communities! (See Litonjua AA et al. *J Allergy Clin Immunol* 2005;115:751-7).

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 environment 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 tailor-made to the specific child and his/her family.

Questions Kids Ask

How many kids in the study have asthma?

Percent with diagnosis and active symptoms

	Age 1	Age 7	Age 9
Wheeze	39%	15%	15%
Asthma		10%	11%
Eczema	28%	8%	9%
Hayfever	1%	15%	19%

About 11% of children in this study have asthma. We are looking to see what helps make children with asthma feel better, and what protects children from asthma and allergy in these preteen and teen years. That is why we are again coming to measure allergens in your homes and ask about your growth and development in these years.

What is albuterol? How does it work?

Albuterol is an inhaled medicine that can open up airways by relaxing the airway muscles. It is used for children with asthma to relieve their symptoms (wheezing or shortness of breath).

Why does cold air make it harder for me to breathe?

Lots of people can get a little short of breath when first walking out into very cold air. Some people (even if they don't have asthma) have trouble breathing in cold air because it makes their airways get a little more narrow. If breathing cold air makes it harder for you to breathe, tell your parents and your doctor, since they can help you figure out what will make you feel better. If you have done a breathing test, we would be happy to share the detailed results with your parents and doctor, since the test results may help them decide how to help you feel better.

Why am I involved in this study if I don't have asthma?

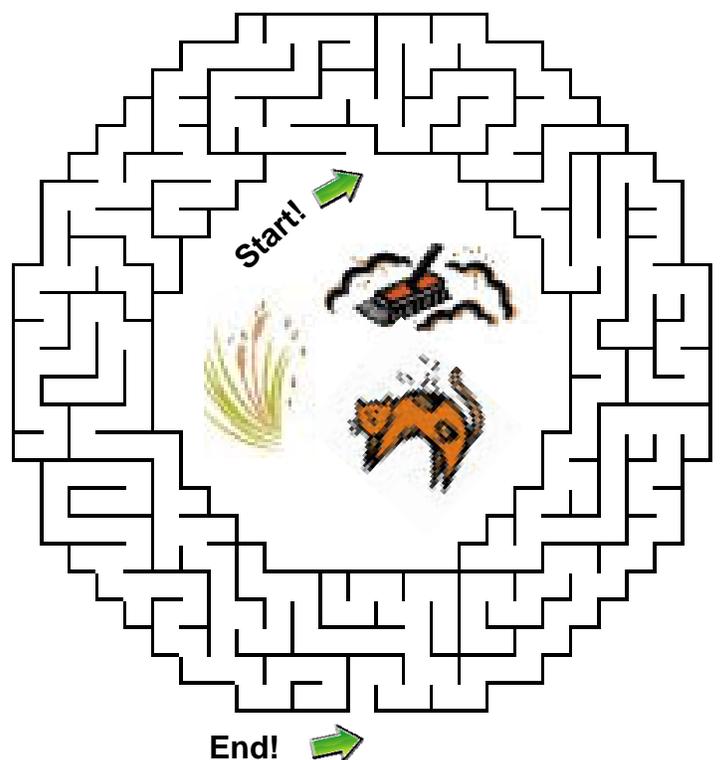
Your involvement is VERY important! Thanks so much for sticking with us! Because we have measured allergens and other things in your home environment, your involvement helps us understand the ingredients in the environment and family history that might protect children against getting symptoms of allergy and asthma.

What did you learn from the questionnaire we filled out?

At age 10, NONE of the 284 kids who filled out the questionnaire reported smoking cigarettes! We asked kids how many hours they watched TV, videos or played computer games. Half of the kids answered 1 to 5 hours per week (on week days), 9 percent of kids answered "no hours per week," and 5 kids (about 2%) answered "more than 20 hours per week." Thanks, kids! When we look at your next age 11 questionnaire, we'll be able to learn how you're growing. We will send you a thank-you gift when we receive your questionnaire in the mail!



Clockwise from the top: Spirometry masters Josh Beck, Juliana Brandao-Gonzalez and Britney Roberts.





Meet the Research Team!

All of the research assistants would like to thank you for the support you have given and continue to give the Asthma Study. The research team has seen quite a few changes in the past few years, as all the research assistants highlighted in our last publication have moved on to new and exciting things. Three new team members have started within the last year and a half. Doris Kwan graduated in December 2005. She received a Bachelors degree in biochemistry from the University of Texas at Austin. She recently moved to Boston from Houston, Texas and misses the warm weather and crawfish. Doris enjoys working with children and plans ultimately to pursue a career in medicine. Tara Saegaert graduated from the University of Massachusetts Dartmouth with a Bachelor's in Biology. She enjoys working with people and has done so since graduating in several different jobs including the American Red Cross where she worked as a phlebotomist at blood drives across Connecticut. In her spare time she spends lots of time hiking with her two dogs Simon and Jackson. Michaela Vine graduated from Tufts University in 2003 with a Bachelor's Degree in Biology. Previously, she worked at McLean Hospital in Belmont, MA, and is currently applying to graduate school for a Masters degree in Public Health. She enjoys soccer, hiking and reading.



OUR RESEARCH TEAM:
Tara, Michaela and Doris

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

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