

Fresh Air



VOLUME 8

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The Epidemiology of Home Allergens and Asthma Study
Channing Laboratory 181 Longwood Avenue Boston, MA 02115

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 in the effort to understand what environmental exposures may reduce or increase the risk of allergy, airflow obstruction, and asthma.

In this issue of our newsletter, "Fresh Air", we bring you up-to-date on the results of our study, and the contributions that you and your children have made to public health and care of allergic and asthmatic children. If you have any questions as you read through the newsletter, do not hesitate to contact us at 617-525-0963.



What's on the horizon?

On-Line and Confidential: A New Teen Questionnaire

In order to communicate about their respiratory health, growth and activities, your children, if they have your permission, can now access a secure protected website to answer questions that we used to ask you or your children by phone or by mail. We also plan to reduce the burden on parents of answering telephone-based questions, and will appreciate feedback as we do this.

The Home Stretch: Growth and Development in the Teen Years.

All of the children whose health and growth have been followed since birth are now at least 14 years old. Some are turning 16 and are part way through high school! Some have brothers or sisters who are off to college or working! The teen years are very important times. The factors that increase or decrease allergy and asthma can change.

A Home Visit During the High School Years

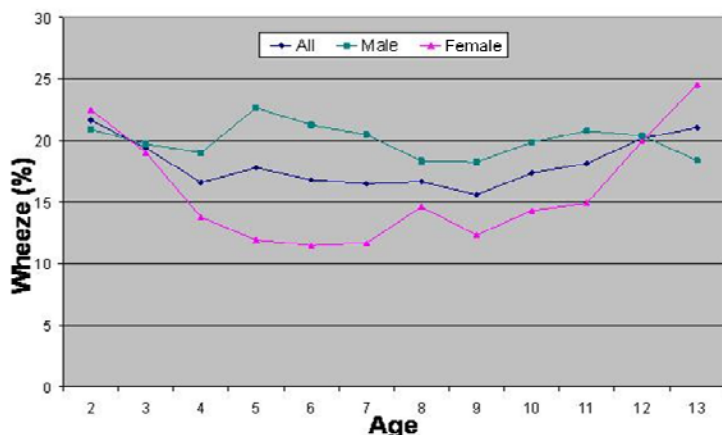
This fall we are entering the final phase of our study, revisiting New England area families in their homes while the children are in high school. At the home visits, as before, we will conduct lung function testing, allergy testing, collect dust samples, record height and weight of participating children, and ask questions about families' homes and the children's health. If we have not contacted your family about the home visit yet, we will be in touch—we look forward to meeting you soon!



BIG NEWS!

Sex and Age Differences in Wheeze Rates in this Study? Why do they occur?

Under the Recovery Act, the Home Allergens study was re-funded to evaluate why allergy and asthma patterns change as children become teenagers. Teen physical activity, weight and height changes, stress, adolescent development, 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. Between ages 4 and 11, boys had a higher risk of wheezing than girls. Now in the teen years, wheeze rates are equal between boys and girls, and there is some suggestion that girls may have more symptoms. Does the environment influence boys and girls differently? This is what we hope we can determine during our next and final data collection phase starting this fall!



RECENT FINDINGS

The 11 new Home Allergens publications from 2007-10 are available on line at our website (www.homeallergens.org), as are the articles from past years. In addition, seven newly published abstracts highlight our most recent findings. Here are some highlights:

Mold: Higher fungal exposures in early life may increase the risk of chronic rhinitis (runny nose) by age 7.ⁱ Mold coming from both inside and outside of the home may also increase infant wheeze risk. Dr. Behbod is also investigating whether early life and later life mold exposures influence long term asthma risk.

Microbes in the Home:

Endotoxin is a part of the wall of gram negative bacteria that can come from dogs and sources of dampness. Endotoxin may irritate the airways, increasing the chance of wheeze, yet it may protect against allergy.ⁱⁱ In preliminary analyses, we have identified genes involved in the handling of bacteria that may influence asthma risk in children in this cohort.ⁱⁱⁱ The wheeze and allergy responses to endotoxin may partly depend on genetic inheritance.^{iv}

The home and the body are not sterile environments. Despite the fact that some bacteria can cause infection, findings from our study, and from other Channing Laboratory studies suggest that we are also protected by the bacterial environment of the home and the body (including the intestine). Diet and vitamins may influence the body's bacterial environment.

If we can find a portion of the home or gut bacteria that protects against asthma, this may have importance for development of new therapies for asthma or allergy.

Airway inflammation: what we learned from measuring exhaled NO

Airway inflammation as measured by exhaled lung Nitric Oxide, was higher for allergic children in our study, and was highest for those who had both allergy AND high allergen exposure.^v Children did not need to have a diagnosis of asthma to have evidence for airway inflammation. As exhaled NO is being used clinically, these findings have relevance for pediatricians and for researchers designing clinical trials.

How Your Family is Contributing to Public Health

The National Institutes of Health supports clinical trials to find out what environmental changes or medications may improve shortness of breath, allergy or asthma. Our observation study, and other Boston cohort studies that have learned from our methods and experience, help guide the focus and design of these trials. Here are some examples:

Observational Studies*	Clinical Trials*
Higher dust mite levels in the baby's bed increase the risk of dust mite allergy and wheeze by age seven ^{vi}	Using a dust mite impermeable mattress cover with no other intervention may not protect the baby against asthma. ^{vii} Once asthma develops, however, in dust mite allergic asthmatic children, asthma symptoms may improve with a comprehensive environmental intervention that includes enclosing the mattress. ^{viii}
Overweight may increase the risk of wheeze ^{ix}	Trials to treat and reduce overweight as a treatment for shortness of breath, asthma and other chronic health problems are ongoing at the individual, school, and community level.
Vitamin D deficiency may increase wheeze risk ^x	Trials of vitamin D supplementation in pregnancy and in asthmatic children are ongoing.

Who makes up the Asthma Study?

Diane Gold, MD MPH (Principal Investigator)

While she took pre-med courses in college in the late 1960's and early 70's, Dr. Gold was also interested in oral history, and collected stories about the working lives of women in the North of England. She went on to study medicine, and became interested in how work and the environment might influence lung health. That led her to train further in Pulmonary Medicine, as well as in Environmental and Occupational Health at Harvard School of Public Health. Dr. Gold has cared for children, teenagers and adults with lung problems, working in clinics as well as in intensive care units. But now (at work), she focuses entirely on research and teaching. She knows the importance of having good teammates, and loves working with each member of the team! Like many children in the Epidemiology of Home Allergens Study, her youngest child Gabe was born at the Brigham in 1996 and is just about to start high school

Joanne Sordillo, ScD (Post-Doctoral Fellow)

Dr. Sordillo began her post-doctoral fellowship with Diane after working in an aerobiology lab. While earning her Doctor of Science in Epidemiology at UMASS Lowell, Dr. Sordillo learned to measure allergen, molds and bacteria. She now analyzes how the characteristics of your homes can influence levels of mold or bacteria in dust or air. She then evaluates how these microbes may influence immune responses, allergy-related gene expression, allergy and asthma. Dr. Sordillo wants to understand how inheritance (genes) might modify protection or risk related to microbial or allergen exposures.

Elaine Hoffman, PhD (Biostatistician)

Dr. Hoffman is the biostatistician for the Asthma Study. She uses the data that you provide through health evaluations and questionnaires. She then runs statistical models on a computer to identify significant relationships between variables, such as asthma and dust. Dr. Hoffman went to college and received a Bachelor of Science in Mathematics and Statics, as well as a Master of Science in Biostatistics and continued her education to earn a Doctor of Science in Biostatistics. A lot of education is involved, but it is a very exciting and rewarding profession.

Soma Datta, MBA (Computer Programmer)

Soma who has been working at the Brigham and Women's Hospital for more than 15 years, is in charge of a team of SAS programmers, as a Database Manager and programmer.. She works with more than 30 investigators and fellows to make sure that their data is accurate and complete before proceeding to develop analysis and reports. She has a MBA degree from Simmons College and Master of Science from India.

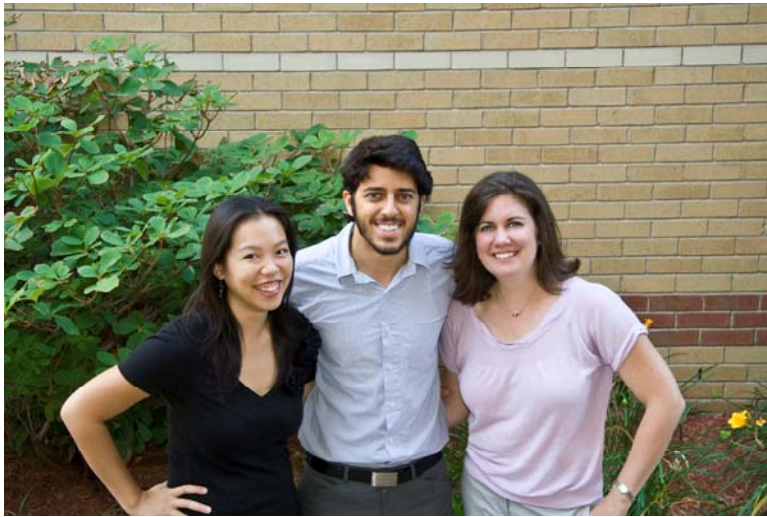
Behrooz Behbod, MD (Doctoral Student)

Dr. Behbod is a doctoral student at Harvard School of Public Health, who trained as a medical doctor in England and got a Masters in Environmental Health in Cyprus. He is interested in how mold, bacteria and traffic influence childhood asthma and allergies. His recent work with the Centers for Disease Control added to his commitment to Preventative Medicine; to the development and assessment of environmental or dietary interventions that might prevent or reduce asthma and allergy symptoms.



From left to right: Joanne Sordillo ScD, Diane Gold MD MPH, Elaine Hoffman PhD, Soma Data MBA (Behrooz Behbod not pictured)

For references cited throughout this newsletter, please visit our website at: www.homeallergens.org



OUR RESEARCH TEAM:
Doris, Jimmy, and Tara

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

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Meet the Research Team!

All of the research assistants would like to thank you for the time you take out of your busy schedules to continue to answer our questions! Doris and Tara continue to be part of the research team. As many of you already know, our third Research Assistant Michaela, is no longer with us; she went back to school for a Masters in Public Health, and is currently working for the Department of Public Health. Our newest RA, Jimmy, has been with the study for 3 years and is a welcomed addition.

Tara Webb has now been with the study for 5 years. Since the last newsletter, Tara has gotten married and has gone back to school to pursue a degree in nursing. She looks forward to graduating December 2011. Tara still enjoys spending time with her two dogs, Simon and Jackson, and has also added a cat, Grace to the family.

Doris Kwan has now been with The Asthma Study for the past four years. In working towards her goal of a career in medicine, Doris is taking courses in preparation for applying to physician assistant programs next fall. Although Doris still has a place in her heart for her home state of Texas, she has grown to love Boston and is proud to call it home.

Jimmy Kamel graduated from Brandeis University with a degree in Health Sciences in 2007. He has been working with the Asthma study ever since, and hopes to continue working in the healthcare field in the future. In his spare time, he enjoys playing the piano and traveling.



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