

# Breath of Fresh Air

Volume 6, No. 3

Information, news and advice for improving asthma well-being

Summer 2001

## “Should I Have Allergy Skin Tests?” (Part Two of Two Parts)

The results of allergy skin testing can clarify your allergic sensitivities — and they can also be confusing. Consider these two examples. On the one hand, you may have suspected that your asthma is made worse by dust based on your experience with house cleaning and with use of your forced hot air heating system in the winter. An allergic reaction (a swollen, itchy hive with surrounding redness at the prick site) to house dust mite antigen as part of your skin tests confirms your suspicion. As manifested on your skin, your immune system makes allergic-type antibodies to the droppings of dust mites. These antibodies (called Ig E antibodies) initiate the cascade of events that results in an allergic reaction. If the dust mite antigen is breathed in (such as when you stir dust into the air with a dry mop or when the furnace blows dust from the vents in your floors), the same type of allergic reaction takes place in your bronchial tubes, and you experience worsening of your asthma. That worsening may take the form of an asthma “attack,” or it may simply mean that your bronchial tubes are made more sensitive, more “twitchy,” so that the next time you exercise, breathe cold air, or encounter cigarette smoke, your bronchial tubes will react more intensely.

In this example, confirmation of your sensitivity to dust mites can lead to action. You may find other family members to help with the dusting, you may choose to wet mop or use new electrostatic cling-type mops, you may wear a dust mask when cleaning, and you may place simple porous filters over your vents to trap dust particles before they enter the room. You may make efforts around your home, and especially in the bedroom, to eliminate “dust traps,” including carpeting, upholstered furniture, children’s stuffed animals, and drapes. You may wrap your pillows, mattress, and box springs in plastic, sealed, allergy-proof wraps to keep the dust mite droppings trapped inside.

Equally helpful, if your skin tests show that you do not have dust mite allergy, you can save yourself the time and effort involved with these preventative measures, since they are unlikely to help your asthma.

### When your skin tests don’t match your experiences

On the other hand, your allergy skin test results may leave you puzzled. You may have difficult-to-control asthma and be frustrated to find that your skin tests all come out negative, that is, you do not make reactions to any of the allergens tested. In this case, the allergic skin tests may be accurate, but not helpful to you in trying to make your asthma better by adjusting your environmental exposures. Or you may make positive skin test reactions to ragweed, horse, and cockroach, but be quite certain that your asthma is not worse in ragweed season (late summer and early fall) and that you are never around horses or cockroaches. The truth is that these tests are not perfect predictors of your own asthmatic sensitivities. They cannot indicate with absolute certainty how your bronchial tubes will react when you inhale these antigens. It may be true that your body makes an

IgE antibody that recognizes ragweed (or horse or cockroach) antigen, but these antibodies do not trigger a response in your bronchial tubes. We know, for instance, that some people have allergies in their skin (eczema) or nose and eyes (hay fever) without ever having asthma (allergic reaction involving the bronchial tubes).

What sense can one make of allergy skin test reactions that do not match one’s own experiences? For one thing, they do indicate in a very general sense that you have an allergic predisposition, also called atopy (A'-toe-pea). As such, you are certainly at greater risk for someday developing allergic asthmatic reactions. Your doctor may view treatment of your asthma somewhat differently, knowing that you have allergic sensitivities and asthma or “allergic asthma.” For another thing, it is likely that you will put yourself at risk if you have new, intense exposure to things to which you are allergic. If you make a skin test reaction to dog dander and acquire a puppy, you are more likely to find yourself sneezing and wheezing than is someone without a skin test sensitivity to dog antigen. Your skin test reaction, positive or negative, is not a certain predictor, but it weighs the odds one way or the other. As a result, it may help you to make a good decision about the home or work environment over which you have influence.



## Special Commentary: Death of an Asthma Research Subject

A terrible tragedy befell a young participant in an asthma research study at Johns Hopkins University this June. Within a day or two of participating in the study, she fell ill. A cough and shortness of breath progressed to respiratory failure (dependence on a breathing machine to support her life) and then kidney failure. She died a few days later as a complication of a chemical administered to her during the experiment.

She was a young woman working as a laboratory technician at the University. She volunteered to participate in a study designed to determine why persons who have asthma develop narrowing of their bronchial tubes when they breathe in certain triggers, whereas normal persons do not. What makes asthmatic airways behave in the abnormal way that they do? She was healthy, without allergies or asthma. This particular investigation sought to determine whether her airways would behave more like those of someone with asthma if, before breathing in the trigger stimulus histamine, she received a chemical designed to block the nerve transmission that is involved in signaling the bronchial muscles to dilate. Deprived of the normal bronchodilating signals from the nervous system, the bronchial tubes of a non-asthmatic person (such as she) might show a typical asthmatic-like contraction.

Something went horribly wrong with the experiment. After breathing in the chemical designed to influence the nervous system, called hexamethonium, she suffered fatal lung injury. It was not an asthmatic attack, but damage to the walls of the tiny air sacs, leading to edema formation throughout the lungs. The body's reaction

spread beyond the lungs, involving the kidneys as well. There was no hope for recovery, and life support by various medical machines was stopped.

### **"Who is to blame?"**

Perhaps one's first response is to blame the doctor and his team conducting the research. The doctor involved is an experienced asthma researcher who for many years has conducted

*A tragedy like this gives everyone pause ... but only careful experiments can give progress in our efforts to reduce suffering and death from disease.*

experiments that have uncovered new understandings about asthma. He performed this experiment in good faith, hoping to

shed light on the causes of asthma and to contribute someday to a cure for asthma. Often, medical experiments are conducted with normal, healthy volunteers. Often these volunteers are asked to inhale (or ingest or receive intravenously) substances with the intent of comparing their responses to those of persons with disease. Thousands of times each day research subjects safely participate in such experiments. Some are eager for the financial reward, many are driven by a desire to advance our medical understanding of disease. It is safe to say that virtually all of our current knowledge about asthma and all of our highly effective treatments for asthma were born of experiments involving volunteer human subjects.

Still, this devastating outcome deserves explanation: what went wrong, could this

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## **Breath of Fresh Air**

Editor-in-chief

Christopher H. Fanta, M. D.

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Requests for permission to reprint should be addressed to the above.

Telephone: (617) 732-7420

Fax: (617) 732-7421

Internet: <http://www.asthma.partners.org>

E-mail: [asthma@partners.org](mailto:asthma@partners.org)

## News About Asthma

### New Long-Acting Bronchodilator

In years past, only slow-release preparations of theophylline (such as Theodur<sup>®</sup>, SloBid<sup>®</sup>, Slophylline<sup>®</sup>, and Uniphyll<sup>®</sup>) could provide bronchodilation (relaxation of bronchial tube muscles with resulting opening of the airways) for 12 or more hours. Theophylline taken once- or twice-daily is effective preventative treatment for some people with asthma, but for many it is associated with intolerable side effects, including jitteriness, insomnia, heart racing, and stomach upset.

Six years ago salmeterol (Serevent<sup>®</sup>) became the first (and until now, the only) long-acting bronchodilator for use by inhalation. It is as strong or stronger than theophylline in causing opening of the breathing tubes and has fewer side effects. After inhalation, it begins to act after about 10-15 minutes and continues to exert its effect for more than 12 hours. For most people it has few if any side effects. Occasionally, salmeterol may cause headaches, muscle cramps, or mild jitteriness. A major advantage over theophylline is that it does not interact with other medications, such as antibiotics. The dose of theophylline that you take may need to be adjusted when you begin other medications, so that you and your pharmacist and physician need to be attentive to potential drug interactions. This same caution is not needed with inhaled medications.

This spring a second, long-acting inhaled bronchodilator has become available, called formoterol (Foradil<sup>®</sup>). Like salmeterol, it works for at least 12 hours after being

inhaled. Different than salmeterol, it begins to work quickly, within 1-3 minutes after inhalation (similar in its onset of effect to albuterol). It is delivered by dry-powder inhaler, taken as one inhalation twice-a-day. The inhaler, called an Aerolizer<sup>®</sup>, accepts one capsule of medication at a time. Like salmeterol, formoterol should be used in combination with an anti-inflammatory medication (such as an inhaled steroid) and not alone.



*An Aerolizer<sup>®</sup> Inhaler*

### New Physicians at Partners Asthma Center

Drs. Aidan Long and Benjamin Medoff have joined the Partners Asthma Center at Massachusetts General Hospital. Dr. Long is an allergist and Clinical Director of the

Allergy and Clinical Immunology Unit there. Dr. Medoff is a pulmonologist who served as Chief Medical Resident at the MGH and now is a member of the Pulmonary and Critical Care Division there. Both bring a dedication to patient care and asthma research to their practices at Partners Asthma Center.

Dr. Harold Picken has joined the Partners Asthma Center at the Center for Chest Diseases at Brigham and Women's Hospital. Dr. Picken previously practiced pulmonary medicine at the Good Samaritan Hospital in Brockton and now serves as a Medical Director at Blue Cross-Blue Shield of Massachusetts. We are delighted to add his experience and expertise to our practice.



**Death of a research subject . . . continued from page 2**

death have been prevented, and how? One hopes for a step-by-step, careful scrutiny of all of the circumstances surrounding this experiment. Was this an unpredictable reaction to the chemical, hexamethonium, unique to this one person, that could not have been foreseen any more than the freak accident of being struck by lightning? Or were there errors in the design of the experiment, in its safeguards, or in the oversight provided to ensure its safety.

Every hospital has a committee charged with reviewing all medical experiments and giving approval only to those deemed safe (or with risks justified by the potential benefit to the individual). Without the approval of this committee, the research cannot be conducted. Members of the committee include medical scientists, medical ethicists, and lay persons from the community. At the Brigham and Women's and Massachusetts General Hospitals, the name of this committee is: Committee for the Protection of Human Subjects. Their work is directed by strict federal guidelines designed to ensure the safety

(and privacy) of all research participants. Is it possible that the committee with this same responsibility at Johns Hopkins University Medical Center could have identified an unacceptable risk built into the design of this particular medical experiment?

A tragedy like this gives everyone pause: those who conduct medical research and those who volunteer to participate in research studies. We should pause long enough to grieve the untimely death, to uncover any systematic errors in the process of medical experimentation, and to put into place still stricter safeguards for research subjects. And then medical experimentation involving human subjects, including normal, healthy volunteers, must continue, because in no other way can we progress in our efforts to reduce suffering and death from disease.



## **Asthma Support Group**

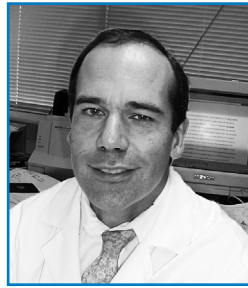
The Partners Asthma Center Support Group will travel to different practice sites this Fall. We will continue to meet on **the last Tuesday of every month but at a new time from: 6:30 to 8:00 p.m.** Each session will begin with a brief informative presentation followed by an open discussion and sharing of ideas and experiences about asthma. Please note the new locations for the upcoming Support Group sessions.

<b>Date</b>	<b>Location</b>	<b>Topic</b>
<b>Oct. 30:</b>	<b>Brigham and Women's at Newton Corner 272 Centre St. Newton Corner</b>	<b>Is Asthma Different in Women?</b>
<b>Nov. 27:</b>	<b>Faulkner Hospital 1153 Centre Street Jamaica Plain Suite 4930</b>	<b>Gastroesophageal Reflux and Asthma</b>



## Spotlight

*Dr. Joshua Boyce* won two awards upon his graduation from college (Skidmore College): one as the outstanding senior student in Biology, the other as the outstanding senior student in Chemistry. His fate as a medical researcher was written early, as was, perhaps, his comfort in dual related and complementary fields of medicine (Allergy and Pulmonary Medicine). Today Dr. Boyce is a basic science researcher and a caring clinician. He is an allergist and a pediatric pulmonologist. He is a faculty member at the MassGeneral Hospital for Children and the Brigham and Women's Hospital. He embodies the multitiered, multifaceted physician who greatly enriches Partners Asthma Center and the lives of our patients.



*Dr. Boyce is both a respected basic science researcher and a caring clinician and care giver, as many readers know from personal experience.*

After college, Dr. Boyce attended medical school at the University of Massachusetts. He decided to pursue a career in pediatric medicine, and completed his residency training in Pediatrics at the University of Massachusetts. There he served as Chief Medical Resident in Pediatrics and for one year thereafter as Chief of Pediatrics at the Worcester City Hospital. Then, in a redirection of his career path, he sought specialty training in Pediatric Pulmonology at the Massachusetts General Hospital. Afterwards, his research interests brought him to the laboratory of Dr. K. Frank Austen (of Partners Asthma Center) and to research and clinical fellowship training (pediatric and adult) in Allergy, Rheumatology, and Immunology at the Brigham and Women's Hospital. In 1996, after 15 years of medical training (including medical school), Dr. Boyce joined the staffs of the Brigham and Mass General Hospitals.

Dr. Boyce has continued his scientific pursuits by creating a research laboratory of his own, supported by funding from the National Institutes of Health. Now graduate students and physicians in training come to his laboratory to learn the skills of medical research. His particular interest is in the biology of the eosinophil (ee-oh-SIN-oh-phil), one of the blood cells of the body critically important in asthma and other allergic diseases. He is

invited to academic centers and scientific meetings around the nation to share his knowledge and research observations about

eosinophils and asthma. He is the recipient of numerous awards for his research accomplishments, including the Charles P. Hood Foundation Award for Research in Diseases of Childhood and the Glaxo Wellcome Clinical/Basic Investigator Award.

As many of the readers of *Breath of Fresh Air* already know, he is also a superb and very devoted care giver. He provides patient care at the Newton-Wellesley Hospital/MassGeneral Hospital for Children site of Partners Asthma Center, aided there by Elaine Carter, R.N., Asthma Nurse, and at the Massachusetts General Hospital. He also directs the Allergy Unit in Pediatrics at the MGH. He is enormously respected by his patients (and their families) and by his colleagues at Partners Asthma Center. His college awards in science foretold well his outstanding career as a clinician-scientist and as a specialist in the treatment of asthma and of other allergic and pediatric pulmonary diseases.



**Partners Asthma Center**

in collaboration with

Asthma and Allergy Foundation of America/New England Chapter,  
American Lung Association/Boston Chapter, and  
Community Asthma Program

presents its

***Seventh Annual Autumn Asthma Fair***

at Roxbury Community College's

Reggie Lewis Track and Athletic Center

1350 Tremont Street

Boston

(note new location)

**Saturday, October 20**

**10:00 a.m. to 2:00 p.m.**

including free food, door prizes, and asthma books  
and lots of useful information about asthma and allergic diseases  
at informal asthma booths in a friendly and fun atmosphere.

Open to the general public.



***Breath of Fresh Air***

Partners Asthma Center  
Brigham and Women's Hospital  
Massachusetts General Hospital  
Faulkner Hospital  
75 Francis Street  
Boston, MA 02115  
1-800-9PARTNERS

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