

## Pamphlet #9: ALLERGY TESTING IN ASTHMA

Many people with asthma are allergic to things that they breathe in. These tiny particles that can cause allergic reactions are called "allergens" (pronounced **al-er-genz**). Examples of airborne allergens are the pollens of grasses, trees, and weeds, spores of molds, danders of cats and dogs and other furry animals, debris from cockroaches, and house dust mites. People with a tendency to allergies will usually be allergic to some but not all such allergens; different people are allergic to different ones.

### **Breathing in Allergens Can Make Your Asthma Worse and Can Cause Asthma Attacks**

Day to day inhalation of allergens to which you are sensitive can worsen the inflammation of the bronchial tubes in asthma (see pamphlet entitled, [What is Meant by "Inflammation" in Asthma](#), prepared by the Mass General Brigham Asthma Center). It can make your asthma more active (meaning that you are more likely to be troubled by cough, wheeze, shortness of breath, chest tightness, or nighttime awakenings from asthma symptoms) and put you at greater risk for having a flare-up of your asthma. In addition, heavy exposure to an allergen to which you are sensitive can rapidly bring on an attack of asthma or an attack that develops a few hours after the exposure.

### **It May Be Helpful to Determine the Allergens to Which You Are Sensitive**

You and your medical provider may decide that it would be helpful to know with greater certainty to which allergens you are sensitive. This information can be used to help you reduce your exposure to those things that may specifically worsen your asthma and sometimes for the purpose of initiating "allergy shots" (also called allergen desensitization injections). As an example of the former (allergen avoidance), if you are strongly allergic to house dust mites, simple actions can be taken in the home, and especially in the bedroom, that will decrease the amount of allergen from dust mites that you breathe in, and potentially improve your asthma.

### **Reviewing Your Own Experiences with Allergic Exposures**

The process of determining your specific allergies to inhaled allergens begins by considering those exposures that have caused you to have asthmatic reactions in the past: Is your asthma worse in the Spring or Fall? Does it come on when you dust or vacuum? Does a damp, mildewy room cause you to have symptoms of asthma? Does your breathing worsen around cats or dogs? These and similar questions are important in determining your asthmatic allergies and in

interpreting the results of allergy testing. Your own detective work goes a long way in figuring out your allergic sensitivities.

## Tests for Allergic Sensitivity

Besides reviewing your own past experiences, there are two principal methods to assess your sensitivity to various allergens. One involves a blood test to analyze for antibody proteins that your body may be making in reaction to particular allergens; the other involves testing for reactions in your skin to the same allergens that you might breathe in.

### Allergy Blood Tests

Allergy blood tests have been called RAST tests, because of the chemical process used in the past to analyze the blood (radioallergosorbent test). The test seeks to measure in your blood the amount of an antibody – the immunoglobulin E antibody or IgE – that you are producing against a specific allergen. Currently, the blood test, using modern laboratory techniques, is more properly called an “allergen-specific IgE blood test.” In general, the greater the amount of IgE antibody that you produce in response to a specific allergen, the more allergic you are to it. Your medical provider can order blood tests to measure allergen-specific IgE to one or multiple allergens of interest. In general, blood testing for allergic sensitivity is more accurate in identifying important allergens that may make your asthma worse (inhaled allergens) than it is in identifying specific food allergies.

### Allergy skin tests

Allergy skin testing makes the logical assumption that if you have asthma and make an allergic reaction in your skin to an allergen applied superficially into the surface of your skin, you will likely make an allergic (asthmatic) reaction in your bronchial tubes when you inhale that same allergen. It would be difficult and dangerous to test your allergic sensitivities by having you breathe in a variety of allergens, one at a time. It is far easier and safer to test for these allergic reactions in your skin.

In general, allergy skin testing is a more sensitive test than allergy blood testing, meaning that it is less likely to miss (fail to identify) something to which you are allergic. It also gives you immediate results that you can see for yourself if your skin swells up in reaction to the allergen. On the other hand, blood testing does not need special expertise to perform and interpret the testing and does not require that you stop certain anti-allergy medications before performing the test. Details of allergy skin testing are described next.

### How Allergy Skin Testing is Done

To test your reaction to an allergen, a drop of liquid containing the allergen is placed on your skin. Generally, the inside of your forearms is used; in children the skin on the back is preferred. A small lance shaped with a pinpoint is poked through the liquid into the top layer of skin. This

type of skin test is called a "*prick test*." If you are allergic to the allergen, after about 2 minutes the skin begins to form a reaction. It becomes red, slightly swollen, and itchy: it makes a hive. The size of the hive and the surrounding redness are measured and recorded. The larger the hive, the more likely it is that you are allergic to the allergen tested.

## Different Types of Allergy Skin Tests

Sometimes, if a very intense allergic sensitivity is suspected, then only a light scratch is made through the liquid that contains the allergen ("*scratch test*"). This way only a very little bit of the allergen is introduced into the skin. Other times, when it is particularly important to investigate sensitivity to a specific allergen but the initial prick test is negative, a small amount of the liquid is injected slightly deeper under the surface of the skin with a skinny needle ("*intradermal test*"). This method puts a little greater amount of the allergen into the skin.

The usual practice in allergy skin testing is to test all at once a group of common allergens to which one might be sensitive. This approach generally involves 25-30 prick tests at one time. The 25-30 drops of liquid containing the various allergens are lined up in two rows on each forearm, then a prick is made through each one. Within about 5 minutes the results of the test are known.

## What Are Some Possible Bad Reactions to Allergy Skin Tests?

Bad reactions to allergy skin tests are rare, but they can happen. In particular, it is possible for the small amount of allergen in the skin to set off an attack of asthma, and, even more rarely, a period of dangerously low blood pressure, called an anaphylactic reaction. Because allergy skin testing involves these risks, although very small, you will be asked to give written permission on a "consent form" prior to the testing, and you will be asked to stay under medical observation for 30-60 minutes after testing to ensure that no delayed reactions occur.

## Medications to Avoid Before Your Allergy Skin Testing

Certain medications may interfere with allergy skin testing and give false results (that is, your skin won't react to the allergen even though you are allergic to it). You will be provided with a list of medications to avoid prior to skin testing and information about how long prior to testing you should not take these medications. Most important are the antihistamines, both those used to treat stomach acid, such as cimetidine (*Tagamet*®), famotidine (*Pepcid*®), and ranitidine (*Zantac*®), and especially those used to treat allergy, such as cetirizine (*Zyrtec*®), diphenhydramine (*Benadryl*®), fexofenadine (*Allegra*®), and loratadine (*Claritin*®).

## Interpreting the Results of Your Allergy Skin Tests

Interpretation of the results of the allergy skin tests will involve your allergy doctor. He or she will use the information discovered by allergy skin testing, together with your own experiences on exposure to the world around you, to assess the role that allergy and allergic exposures are

playing in your asthma. You may find that your suspicions are confirmed (for instance, yes, you are intensely allergic to the dander of rabbits!). Alternatively, you may be reassured (for instance, no, dust mites in the mattress and carpeting in your bedroom are not contributing to your nighttime symptoms of asthma). One final word of caution: if you are thinking of getting a pet cat or dog, remember that in persons with a tendency to allergies, your specific allergic sensitivities can change over time. A negative allergy test to cat or dog dander today does not guarantee against the development of allergy to cats or dogs in the future (and it is harder to find a new home for a beloved pet animal than it is not to acquire one in the first place).