



Allergies: Nothing to Sneeze At

**Inside Contents**

**WHAT IS ALLERGY?** ..... 1  
**COMMON ALLERGIES** ..... 1  
 Hay Fever ..... 1  
 Conjunctivitis..... 1  
 Asthma ..... 2  
 Eczema..... 2  
 Urticaria, Hives - Nettle rash ..... 2  
 Contact Dermatitis..... 2  
 Food Allergy..... 2  
 Insect Allergy ..... 2  
 Occupational Allergy ..... 3  
**ALLERGIC MECHANISMS** ..... 3  
 IgE Mediated Allergy ..... 3  
 Who Becomes Allergic? ..... 3  
**DIAGNOSIS**..... 3  
 Case History ..... 3  
 Skin Tests ..... 4  
 Patch Tests ..... 4  
 Provocation and Elimination Tests ..... 4  
 Laboratory Tests ..... 4  
**TREATMENT** ..... 4  
 Hay Fever ..... 4  
 Conjunctivitis..... 5  
 Asthma ..... 5  
 Eczema..... 5  
 Urticaria, Hives - Nettle rash ..... 5  
 Contact Dermatitis..... 5  
 Food Allergy..... 5  
 Insect Anaphylaxis ..... 6  
**SPECIAL ADVICE**..... 6  
 Allergy to Animals ..... 6  
 House Dust Allergy ..... 6  
 Mold Allergy ..... 6  
 Pollen Allergy ..... 6  
 Insect Allergy ..... 7

**What is allergy?**

An allergy is an abnormal reaction or increased sensitivity to certain substances. The allergic individual produces symptoms when exposed to these substances, which are harmless to non-allergic people.

The main reason for this is that allergic people make a special type of antibody called Immunoglobulin E (IgE), which can react with environmental substances in a harmful way. These substances are called allergens.

The reaction between allergens and IgE antibodies causes the release of substances such as histamine, which produce allergic symptoms in the skin, the nose, the eyes, the chest, etc.

The most common allergens are animal danders, pollens, house dust, mites, molds, some drugs and many foodstuffs, especially fish, eggs, milk and nuts. Bee and wasp stings may cause allergic reactions, with fatal results in rare cases.

Additionally, feathers, wool, dyes, cosmetics and perfumes may act as allergens.

**Common allergies**

Allergic reactions or diseases may involve any part of the body; the most frequently involved are the nose and chest with resultant symptoms of hay fever, rhinitis or asthma, respectively. The skin and eyes also commonly show allergic symptoms. Anaphylactic shock is a severe allergy, which affects many organs at the same time causing a rapid decrease in blood pressure, fainting and, occasionally, death. Such a reaction, though, is rare.

Central Illinois Environmental Pattern:

- All year round - dust/mold
- February-March - trees
- May-July - grasses
- July until October or the first "hard" frost - weeds

**Hay fever**

If you suffer from hay fever, the pollens of grasses, weeds and trees are the main allergens, although mold spores can also cause the symptoms.

The lining of the nose becomes swollen and exudes a runny discharge. Spells of sneezing and itchiness of the throat and palate also occur and the eyes may be similarly affected.

Depending on where you live and the pollinating periods, attacks may occur in spring, summer or autumn. Contact lense-wearing time may decrease due these symptoms

In perennial allergic rhinitis, the symptoms are similar to hay fever, but appear all year round. This condition is caused by non-seasonal allergens such as house dust components and certain molds.

**Conjunctivitis**

You are more likely to suffer from this allergic condition of the eyes as an adult. Allergic conjunctivitis is often associated with allergic rhinitis. A general complaint is itchiness of the eyes, which are rubbed frequently. Other symptoms include eye redness, drainage, tearing, burning and/or sensitivity to bright lights.

## **Asthma**

If you have asthma, you can suffer from attacks that obstruct the flow of air to the lungs. Breathing becomes difficult and forced breathing becomes necessary. A wheezing sound can appear, due to the rush of air through your narrowed airways. At the same time, a troublesome cough can develop. Asthma may begin at any age and, if neglected, tends to recur and become chronic.

## **Eczema**

If you suffer from eczema, your skin can become irritated and develop rashes that can be either wet or dry and occasionally chapped. The reactions are often accompanied by severe itching. The cause is often not clear, but is frequently seen in children of families with a history of allergic diseases. The eczema may start during the first year of life, on the face. Later, it is often seen on the inside of the elbows and backs of knees, on the neck, on the ankles, on the wrists and on the back of the hands. It is possible for eczema to become secondarily infected with skin bacteria, especially if skin is broken due to scratching.

## **Urticaria, Hives (Nettlerash)**

This reaction appears very suddenly. Your skin becomes warm, reddish and itching. The symptoms may last either for a couple of hours or up to a whole day. Blotches may appear as raised wheals and vary in size from smaller than a mosquito bite to several inches in diameter. In 95% of hives, the cause is unknown.

## **Contact dermatitis**

With contact dermatitis, your symptoms will be similar to those of the eczema previously described, but this reaction is of another type. The cause is direct contact with different substances, such as:

- nickel (in coins, stainless steel, clasps, jewelry)
- rubber products (in gloves, boots, waistbands)
- chromium (in cement, leather)
- latex
- preservatives (in creams, ointments and cosmetics)

This condition, unlike those listed above, is not due to the production of IgE antibodies, but is due to a different kind of immune reaction. It is usually due to increased sensitivity to a substance that a particular body part comes in contact with.

## **Food allergy**

The stomach and the digestive system are also frequent targets for allergic disease. Your symptoms are caused by allergy to foods, which can result in vomiting, stomach pains, diarrhea or constipation. Frequently, eczema and hives may be produced after ingesting food to which you are allergic. Food allergy may also trigger asthmatic attacks and, rarely, generalized anaphylaxis. Food anaphylaxis is most commonly seen with ingestion of tree nuts, peanuts, fish and iodinated shellfish (lobster, shrimp). Allergic reactions to some vegetables can result in severe breathing problems, such as an allergy to celery or carrots. New food allergies can develop as adults. Some reaction to foods may only occur when they are accompanied with exertion like exercising. People with asthma and food allergies have a higher risk of having a more severe reaction.

## **Insect allergy**

Severe allergic reactions to bee and wasp stings are not uncommon. The local toxic reaction and discomfort that usually occur, following an insect sting are not generally considered to be allergic.

IgE mediated (allergic) reactions induce symptoms such as nettlerash (urticaria, hives), running nose and eyes, swelling of the throat, attacks of asthma and, in severe cases, fainting.

Swelling of an entire extremity is called a "large local reaction." Although indicative of hypersensitivity, this type of reaction does not, generally, proceed to anaphylaxis with future stings.

If you have had a severe insect sting or allergic reaction, your clinician may provide you with an adrenaline containing kit for use if you are stung. Should you be highly sensitive to bee or wasp stings, you may become unconscious within a short space of time, or have a significant problem breathing or a sensation that your throat is closing off. Immediate action should be taken to get you expert medical treatment, preferably at the nearest hospital. If you have an adrenaline kit and you use it, you still need to activate the Emergency Response System for transfer to a local Emergency Department (9-911 from campus phone). This is needed because the adrenaline may only last for a short time and you may require more aggressive treatment to stop the reaction process.

## **Occupational allergy**

The term occupational allergy is generally used to describe episodes of allergic reactions occurring after working with industrial dusts, vapors, gases or fumes.

Furthermore, substances like nickel (in coins), chromium (in cement), rubber, different dyes, formaldehyde and glues may result in eczema that occurs at the site of contact with the skin. Inhalants such as grain dust may affect farmers.

The degree of eczema depends on the length of exposure and sensitivity to the substance. Symptoms may show within some weeks - but it can often take months, years, sometimes decades, before eczema develops. Any part of the skin may become affected, but the most frequent sites are the hands, arms and the face, because these tend to be the least protected parts of the body. Occupational allergy may also present with pulmonary or upper respiratory treatments. Workers will often get better over the weekend, on business trips, or vacation, and symptoms will often recur after return to the same work environment.

## **Allergic mechanisms**

Allergy is an unusual reaction or sensitivity to substances that do not bother most people.

### **IgE mediated allergy**

Following exposure to common environmental allergens, the allergic individual produces a special type of antibody, called Immunoglobulin E, or IgE. The healthy individual has a very low level of IgE in the blood, while those with certain allergic conditions such as hay fever, allergic asthma and some forms of eczema have high IgE levels. People with eczema have especially high blood levels of IgE.

In the human body, certain cells called mast cells and basophils are involved in allergic reactions. IgE, produced as a result of repeated allergenic stimulation, attaches to the surface of these cells and subsequent binding of the allergen punctures the cell wall, leading to the release of different substances including histamine.

These substances cause a build-up of fluid in the tissue, and contraction of the smooth muscles. Depending on the route of entry of the allergen and where the reaction takes place, different symptoms will occur. If the reaction takes place in the nose and eyes, hay fever will result - while asthma is the result if the chest is affected. Eczema appears when the skin is affected.

### **Who becomes allergic?**

Anyone can develop an allergy, but the probability is increased if one or both parents suffer from some kind of allergic condition. Indeed, the presence of another allergic individual in the family is the strongest factor for predicting allergy in a child. It must be noted, though, that even when both parents are affected, a child may not be. Conversely, allergic children are born to normal parents and in such cases other factors, such as infection, may be responsible for the development of the allergy. Repeated exposure to a substance is required before the body can recognize it as foreign and mount an allergic response.

## **Diagnosis**

It is essential for successful treatment that the allergens responsible for the symptoms are accurately identified. There are different ways to arrive at a diagnosis. The case history is extremely important in all allergy investigations. Based on what the patient tells about his/her symptoms, the health care provider decides what tests, if any, should be carried out.

### **Case history**

The case history should form the basis for all allergy investigations. In order to give the health care provider an idea of the mechanisms and allergens causing the trouble, the health care provider will question the patient or ask him/her to fill in a questionnaire. Frequently with the first allergic response the cause may not be found. It may be beneficial for you to write down everything you have eaten or came in contact with in the 36 hours prior to the reaction onset so you may compare the list the next time your reaction occurs.

It is important to know when and how the symptoms developed. Also important is the relationship to seasons, damp weather, physical activity, certain foods, etc. Knowledge of personal habits such as smoking, occupation, hobbies, etc., will be necessary and some information about the home can be important (e.g., whether there are pets, or fitted carpets in the house or if cleaning aggravates symptoms). A favorite cologne or perfume can be the cause of allergic conjunctivitis, while soap may be the cause of chronic eczema. Fingernail polish may cause eczema of the upper eyelids.

In nasal allergies, the case history alone may give enough information to settle the diagnosis and the health care provider can then decide which measures to take to help the patient. In more complicated cases, however, further investigations may be performed to get a final diagnosis.

## **Skin tests**

Skin test procedures are used by many health care providers to identify allergens responsible for the symptoms. There are several methods of skin testing. The most significant skin tests are those which correlate with the patient's history (i.e., a positive skin test for ragweed is not significant if ragweed never causes allergy symptoms).

Drops of the suspected allergens are put on the skin of the forearm and the skin is either pricked or scratched (prick or scratch test) through the drops. Suspected allergens can also be injected into the skin of the back (intradermal skin test). After 15-20 minutes, if there is an allergy to one or more of the substances, a round wheal with a flare forms on the spots where the substances were injected. This may identify and confirm the allergy.

However, besides causing the patient some trouble, the intradermal skin tests may not be very reliable. Drug treatment for the allergic symptoms in the 72 hours prior to the skin test may invalidate the results, and skin testing in small children is both inconvenient and unreliable.

## **Patch tests**

Patch testing is used in the investigation of allergic contact dermatitis. The test is performed by using a small piece of blotting paper, moistened with the suspected substance, or a prepared strip containing various standard allergens. The paper or strip is taped to an area of healthy skin for 24 or 48 hours. If you are allergic to the substance tested, eczema will be seen where the test substance has been in contact with your skin.

## **Provocation and elimination tests**

These tests are performed in the eyes and nose in hay fever sufferers. A highly diluted allergen extract is dropped into the nose or eyes or is inhaled. The test is continued in this way, using more concentrated allergens until the allergic symptoms are provoked. This shows that the tested allergen is responsible for the patient's symptoms.

When allergy to food is suspected, different foods (usually those most commonly associated with allergy) are eliminated to see if the symptoms disappear. They are re-introduced into the diet, one by one, to see if any of them causes a return of the symptoms. The most common food sensitivities are to cow's milk, corn, wheat, eggs and soy.

The skin and provocation tests, apart from being inconvenient to the patient, have other disadvantages.

## **Laboratory tests**

IgE plays an important role in allergic rhinitis, allergic asthma and in some forms of eczema. Detecting and accurately measuring the amount of IgE may be of great importance when diagnosing allergies.

Because of the limitations and disadvantages associated with skin and provocation tests, there has been a need for more convenient and reliable methods. Today, there are laboratory tests available that accurately measure IgE, and a small blood sample is sufficient for allergy testing. These tests measure either the total amount of IgE in the blood, which indicates if your symptoms are of allergic origin or specific IgE, which tells the health care provider which allergens are causing the trouble. Another allergy blood test is called RAST (radioimmunoabsorbent test). These blood tests are significant primarily if the identified substances cause patient symptoms. RAST is especially helpful in very young children. (Neither the IgE nor the RAST test are covered under the McKinley fees. These types of test are completed typically by allergy specialist).

## **Treatment**

It is necessary for successful treatment that the allergens are accurately identified. There are three main objectives in the management of allergic disease:

- To eliminate causative factors from the immediate environment, where possible.
- To reduce irritation in the tissue (i.e., to treat the symptoms with different drugs).
- To decrease immunological reactivity by vaccination (specific hyposensitization).

## **Hay fever**

In this disease, the primary concern should be to avoid the responsible allergens. (See special advice for patients with allergy to animals, dust, molds and pollens.)

Drugs frequently used in the treatment of hay fever are the antihistamine preparations. These reduce the swelling of the lining of the nose and conjunctiva of the eyes. However, a common side effect is drowsiness and it is advisable not to drive a car or operate machinery during this treatment.

There are also antihistamines in the form of eye drops, which decrease the swelling of the conjunctiva. Newer, relative non-sedating antihistamines are now available, but by prescription only in the United States.

In very severe cases of hay fever, injections of long-acting corticosteroids are used during the symptomatic season. If the allergens cannot be avoided, and drug treatment for some reason is not indicated, then allergy vaccination (specific hyposensitization) may be of value. In the treatment, the specific allergen or allergens to which you are allergic are injected. The first injections are very diluted and are carried out at short intervals. The concentration of the allergen is then increased gradually until a maintenance dosage level is reached. Treatment may continue for years (five year average) and benefits may continue for a period of time after desensitization has ceased.

Side effects, such as itching and swelling at the injection site, can occur if the dose of the allergen is too high. Occasionally, more severe reactions may occur, which is the reason why the patient should be kept under observation for at least 15 minutes after each injection.

It is important to let the health care provider know if a skin reaction greater in size than a 50 cent piece appears during the first 24 hours following any injection.

The effect of hyposensitization is to increase resistance to the allergen. Usually, this will mean that the number of allergic attacks will be reduced or that they will disappear completely. Hyposensitization produces a special antibody (specific IgG for each allergen used) that blocks IgE.

### **Conjunctivitis**

Most patients with conjunctivitis have hay fever symptoms and the guidelines given above apply.

### **Asthma**

The treatment varies, depending on the kind of disease. If a correct diagnosis is made, where the cause is identified as being some type of allergen, avoidance of the allergen or allergens is the first step.

When the cause of the symptoms cannot be found, or if the disease cannot be controlled by the aforementioned ways, drug treatment may be necessary.

A "rescue" inhaler can be used during attacks, with almost immediate effect. Side effects could appear as an increase in pulse rate and trembling. It is important that you follow your health care provider's advice and do not use the spray too often. Any persistent asthma should be treated with inhaled corticosteroids (ICS). ICS should be used everyday as a "controller" even in the absence of symptoms.

These drugs relieve symptoms in both allergic and non-allergic asthma. Isodium chromoglycate blocks the allergic reaction. Side effects are rare.

It must be remembered that the action of this drug is to prevent attacks, not cure them. It is of little value during acute episodes and it is important to maintain your regular dosage, even though you may be feeling well and suffering no symptoms.

### **Eczema**

The treatment consists of steroid ointments or creams (cortisone) in periods of flareup, and bland ointments in periods when symptoms are at a minimum. Well moisturized skin helps control eczema, especially when aggravated by dry skin and cold weather.

### **Urticaria, Hives – Nettle rash**

There is no need to use ointments to treat nettle rash (urticaria, hives). The best treatment is to use antihistamines as needed for itch. If symptoms persist, a clinician should be consulted. Avoid scratching the area to decrease the chance of creating a secondary infection to the skin from skin breakdown.

### **Contact dermatitis**

If possible, it is best to avoid the agent responsible. Avoid contact with irritating substances like organic solvents, polishes, cleaning materials, etc. Drug treatment is similar to that of eczema. In general try to avoid contact with allergens to which you seem to be allergic (e.g., dust, pollens, molds and animal danders). Again try not to scratch the area to prevent a local infection.

### **Food allergy**

The essence of treatment is to avoid particular foods responsible for symptoms. Antihistamines may be beneficial in stalling the reaction if avoidance is not followed. At all times, though, the adequacy of any diet should be discussed with your health care provider to ensure a sufficient intake of essential nutrients.

## **Insect anaphylaxis**

Skin tests with subsequent desensitization are indicated if the specific venom/s can be identified. The patient is treated with injections of bee and wasp venom, administered in increasing doses, to stimulate the body's protective mechanism against the effects of further stings.

Strength of the initial dose is determined by a series of skin tests, since different allergic individuals can show varying levels of sensitivity to the sting. This procedure is generally carried out, initially, by a specialist - an allergist, it can be continued by your local general practitioner, once the maintenance level has been reached.

## **Special advice**

### **Allergy to animals**

If you are allergic to animal hair or fur, keep contact with them to a minimum. Symptoms may lessen or abate at least for a while, following removal of hair and fur from the environment. Removal of household pets is the only solution as a last resort. It is most important to control the bedroom environment. A pet may be tolerated more easily if not allowed in the bedroom at all.

It follows that any patient allergic to animals should not have furred or feathered house pets (warm blooded animals) or foam in the bedroom. Carpets, fabrics, etc., made from animal hair should be avoided if possible.

Contact with animals outside the home should be avoided if possible (e.g., if you are allergic to horses, you should not ride). A problem can arise when allergic individuals visit the homes of pet owners and the best solution is to take a symptom-preventing drug prior to the visit. Remember, also, that symptoms can be provoked at circuses and zoological gardens.

### **House dust allergy**

If you are allergic to house dust, your home should be vacuum-cleaned daily, especially the bedroom; this cleaning should be done by someone who is not allergic, if possible. Remember to change the vacuum bags frequently.

Fitted carpets and dust-collecting furniture should be avoided. Bedrooms should be kept as dust free as possible. Mattresses and pillows are best made of synthetic material. Feather pillows and down comforters should be avoided. Allergy to house dust might be similar to or the same as allergy to house dust mites, which are microscopic creatures living in bedding and carpets.

### **Mold allergy**

Molds live in moist environments. If you are allergic to molds, you should avoid moist rooms such as basements. House dust may contain large amounts of mold spores. Humidifiers should be cleaned/wiped with dilute chlorine bleach one to two times a week.

In some patients, an allergic reaction may be brought on by different foods containing or contaminated with molds (e.g., cheese, dried fruit, mushrooms, soy sauce, wine and beer).

You should avoid areas where molds thrive (e.g., piles of leaves, wood logs, and areas of deep shade or heavy vegetation). Your lawn should be kept mown and old leaves collected by someone else.

Traveling in the countryside during the harvest season should be avoided, as should walks in the woods. A summer cabin closed up all winter should be aired and cleaned before a mold-allergic person stays there.

### **Pollen allergy**

In theory, one way to avoid an allergen is to move to another location where the plant responsible does not grow. This is not always practical, however, since there might be a need to change jobs, school, friends, etc.; and besides, the person with a pollen allergy may very well become allergic to different pollens in his/her new location.

Partial avoidance can be achieved without moving. Many people take their vacations during the pollinating period and choose a place that is free from the specific pollen. Direct contact with the pollen (picking flowers and twigs, having flowers indoors) should be avoided.

It is useful to keep bedroom windows closed to prevent the wind bringing in pollens. It is also advisable to air bed linen in the morning when the pollen count is at its lowest. When there is a lot of pollen in the air (e.g., hot, windy, dry day), it may be necessary to stay indoors with the doors and windows closed.

### **Insect allergy**

You can help prevent being stung by avoiding places that might attract bees or wasps. The same can be said for not wearing clothes that might also attract these insects. Other tips are:

- Keep an insecticide spray, specific for stinging insects such as bees, wasps, hornets, yellow jackets, handy in the home, car, or at work.
- Do not use perfumes, hairsprays, scented lotions, etc., out of doors.
- Do not walk barefoot outdoors.
- Avoid black or bright colors.
- Wear gloves and a head covering when gardening.
- Check areas around your home that might have a stinging insect's nest and have it removed, if possible.
- Avoid orchards and other places that attract bees and wasps.
- Do not eat outdoors.
- If bees or wasps hover near you, do not blow or strike at them but, instead, turn or walk away slowly keeping your head down.
- **Always carry an emergency treatment kit if your health care provider prescribes one.**
- Consult your provider if you have any questions about treatment or prevention of allergies to stinging insects.
- It is advisable to carry an identity card that states you are allergic to bees or wasps in case you are found unconscious after being stung.

## References

Cecil's Textbook of Medicine, 21st Edition, (2000)

Clinician's Guide to Holistic Medicine, R. Anderson, M.D. (2001)

Maw, R., & Dana M., R. (2006). Allergic eye disease. From [www.utdol.com](http://www.utdol.com)

O'Dowd, L., C. & Zweiman, B., (2006) Anaphylaxis in adults. From [www.utdol.com](http://www.utdol.com)

If you are a registered University of Illinois student and you have questions or concerns, or need to make an appointment, please call: **Dial-A-Nurse at 333-2700**

If you are concerned about any difference in your treatment plan and the information in this handout, you are advised to contact your health care provider.

Visit the McKinley Health Center Web site at: <http://www.mckinley.uiuc.edu>