

Allergies

What is an allergy?

An allergy is an abnormal reaction to ordinarily harmless substance or substances. While there are many symptoms of allergy, watery, itchy eyes, sneezing, and a constant runny nose are some common symptoms.

What does the word "allergy" mean?

The word allergy is defined in medical dictionaries as "a hypersensitive state". Allergy is derived from the Greek *allos*, meaning other, and *ergon* which means work. If a person has an allergic reaction to something, what they are really experiencing is an altered, or exaggerated reaction. Thus, the allergy patient lives in an altered state of hypersensitivity.

The word **allergy** is not prejudiced with regard to its causes. So, allergy type reactions can be induced by either immune mechanisms (too much allergy antibody IgE) or by a direct hypersensitivity to an irritating fume, vapor or medication (as occurs with codeine and strong perfumes).

What are the most common allergic diseases?

Allergies are generally the body's effort to eliminate something it considers unsuitable.

The most common diseases caused by allergy mechanisms are those of hay fever (allergic rhinitis), asthma, eczema (allergic dermatitis), contact dermatitis, food allergy, digestive disturbances, coeliac disease, conjunctivitis, urticaria (hives), drowsiness, hyperactivity in children, and tinnitus. When hives are accompanied by swelling (angioedema) of the eyelids, tongue, mouth, hands or feet, difficulty in breathing or swallowing can occur. In a few people the histamine (anaphylactic) reaction can cause muscle cramps, disorientation, unconsciousness and death from shock or suffocation.

Asthma, a very serious disease, results in wheezing and shortness of breath due to a narrowing of the bronchial tubes. Asthma is caused by a sensitivity to certain allergens, and may be irritated or aggravated by respiratory tract infections. Emotional stress can also trigger attacks. However, stress is really only a secondary factor of a disease that is primarily allergic in nature.

Allergy really has different names depending upon where in your body the reaction is occurring. If an allergic reaction occurs in your nose, eyes and sinuses physicians will call it allergic rhinitis. If the allergic explosion is occurring in the lungs, we call it asthma. All of these allergic diseases are inflammatory in nature. That is to say, there is inflammation characteristic of allergy immune mechanisms occurring in those parts of your body when we give the condition the above scientific names. An Allergy is not the same as an intolerance. Allergies always involve the immune system, whereas an intolerance, eg. lactose intolerance, is caused by a lack of lactase, the enzyme that converts lactose into glucose.

What causes allergy?

There are different types of Allergies, the most common being type1. Allergic reactions are caused by the interaction of a person's immune system with the outside world. Any substance which is able to induce a person to make an allergy antibody type of immune reaction is referred to as an allergen. Foreign proteins, especially small proteins from pollens, molds and dust mites can cause an immune reaction in an individual. When an allergen encounters cells capable of antibody formation, they then form IgE antibodies which bind to the surface of other cells, called mast cells and basophils. If the immune reaction induced by these allergens involves IgE antibodies then the possibility exists for an allergic reaction to occur. In response to the attachment those cells release chemicals, called mediators of anaphylaxis, among them histamine. Those chemicals cause allergic reactions such as swelling or the secretion of mucus.

Antigens and Antibodies

Antigens are substances that stimulate immune reactions, since the immune system reacts as a defense mechanism against foreign materials. It operates through the action of cells, called cell-mediated immunity, and through proteins in the blood known as antibodies, which is defined as humoral immunity.

In cell-mediated immunity, white blood cells processed by the thymus are involved and attack the antigen directly. These T-lymphocytes, or T-cells, also produce chemical mediators that play a role in activating other parts of the immune system.

The antibodies belong to the immunoglobulin family of proteins and are designated into five major types; Immunoglobulin A, D, G, M, and E. IgA antibodies are found in saliva and tears and serve to protect the respiratory and gastrointestinal systems. The role of IgD is uncertain. IgG, often called the "blocking antibody," protects people from an allergy attack and is also responsible for protecting newborns during the first months of life. Both IgE and IgM activate the complement system, a group of blood enzymes.

But it is the IgE antibody, discovered by Kimishige and Teruko Ishizaka in 1966 at the Children's Asthma Research Institute in Denver, that is responsible for the majority of allergic reactions. Researchers have also found that allergy sufferers have 10 times as much IgE in their blood as people unaffected by allergies.

What are the most common allergens?

The most common causes of allergy and asthma symptoms are allergens derived from pollens, molds, house dust mites, animal danders, cosmetics and insects. Many people also experience symptoms of allergy due to altered reactions to foods, especially milk, wheat, eggs and food additives, and medications.

How are allergies diagnosed?

The diagnosis of an allergy disease is made on the basis of a detailed medical history and physical examination usually by a certified allergy/immunology specialist. Most often, this will also involve a number of allergy skin tests, which are used to detect the real causes of the allergic reactions and consequent symptoms.

How do I know if I am experiencing an allergy, or a common cold?

Allergies vs. Colds

	Allergies	Colds
Symptoms	Runny or stuffed nose, sneezing, wheezing, watery and itchy eyes.	Can include fever and aches and pains along with allergy

		symptoms.
Warning Time	Symptoms begin almost immediately after exposure to allergen(s).	Usually take a few days to hit full force.
Duration	Symptoms last as long as you are exposed to the allergen, and beyond, until the reaction triggered by the allergen ends. If the allergen is present year-round, symptoms may be chronic.	Symptoms should clear up within several days to a week.

Can allergies be diagnosed by a blood test?

The diagnosis of an allergic disease cannot be made by a blood test alone. Serum testing is commonly done as a screening test to determine increased risks of developing allergy-like symptoms. The blood tests for allergy, however, do not tell your doctor with certainty whether or not the allergens being tested for are causing your symptoms.

How are allergies treated?

Allergy treatments involve 3 fundamental principles. First, **avoidance** of the known irritant or allergen responsible for inducing the state of hypersensitivity. Second, when avoidance of a specific allergen source such as house dust or certain pollens is impossible, then **drug therapy** is used. Finally, when avoidance and drug therapy fail to adequately control the inflammation involved in a person's allergic disease, specific **allergen immunotherapy** (otherwise known as allergy injections) are used to help prevent the progression of the allergic disease.

It is important to point out that allergen immunotherapy is the only treatment available today that can actually change a patient's immune system back toward normal.

Also, it is most important to remember that all allergic diseases, such as hay fever and asthma, are chronic long-standing diseases which require long-term management to better control and prevent the inflammatory mechanisms.

Medications

Antihistamines are used to prevent or relieve the symptoms of allergic rhinitis and other allergies. They work by preventing histamine—a substance produced by the body during an allergic reaction. Antihistamines, which come in tablet, capsule, liquid or injection form, are available both over-the-counter and by prescription. Most antihistamines may cause drowsiness, but newer antihistamines (terfenadine, astemizole, loratadine, ceterizine, and fexofenadine) rarely cause this side effect. Other common side effects include dry mouth, difficult urination, constipation, and confusion. Some children may experience nightmares, restlessness, or irritability.

Decongestants are used to treat nasal congestion and other symptoms associated with colds and allergies. They work by narrowing blood vessels, leading to the clearing of nasal congestion. Decongestants are available both over-the-counter and by prescription. The commonly used forms are liquid and tablet. Nose sprays or drops may be used for acute situations but for no more than two to three days in a row or as prescribed by a physician. Over-the-counter nasal sprays, if used for a prolonged period of time, can cause "rebound rhinitis" or nasal congestion symptoms. Decongestants can cause nervousness, sleeplessness or elevation in blood pressure.

Bronchodilators are used to relieve coughing, wheezing, shortness of breath and difficulty in breathing. They work by opening up the bronchial tubes so that more air can flow through. Bronchodilators include beta-agonists, theophylline and anticholinergics. They come in inhaled, tablet, capsule, liquid, or injectable forms. Bronchodilators may cause nausea, vomiting, headache, nervousness, restlessness, and insomnia, especially in elderly patients and children, who are more sensitive to the effects of medication.

Anti-inflammatory agents, such as cromolyn, nedocromil and corticosteroids, reduce the inflammation in the airways. Inflammation causes the bronchi (main branches leading from the throat to the lungs) to become "twitchy." A "twitchy" airway is more sensitive to various asthma triggers such as exercise, cold air, smoke, cold viruses, and allergens. Anti-inflammatory medications usually are prescribed in the inhaled form. Corticosteroids, in some cases, are prescribed in oral form. However, long-term use of corticosteroids, particularly oral steroids, is

not recommended, except in cases of uncontrolled asthma. Long-term use may cause side effects such as weight gain, cataracts, weakening bones, high blood pressure, elevated blood sugar, and easy bruising. Possible side effects from inhaled anti-inflammatory medications include coughing and hoarseness.

What is a sensitizer? How does it work ?

A sensitizer, or allergen, is usually a smaller protein or at times a carbohydrate (sugar substance) which is capable at very small concentrations of inducing excessive immune responses in a genetically predisposed individual. Allergy is in this way a heritable trait. Not everyone has the genetic predisposition toward the development of allergy antibody immune responses to sensitizing agents, or allergens.

Aeroallergens are allergens present within the air. The aeroallergen contacts the human immune system by entering through the mucus membranes of the eyes, nose, throat and lung. When this aeroallergen interacts with the allergic arm of the immune system, there is set into motion a cascade of biochemical reactions resulting in immediate symptoms. When we say immediate we mean within 15-20 minutes there will be sneezing, wheezing, itchy, etc.

Some sensitizing agents can directly cause release of histamine from allergy cells even without allergy antibodies. These substances are referred to as irritants or nonspecific reacting materials.

What are allergy shots?

Allergy shots, also known as immunotherapy, is a process by which allergic material is administered in increasing concentrations, over a period of time, in order to decrease symptoms that would follow exposure to an allergen.

How many people have allergies?

The most common cause of allergy on planet earth is the house dust mite. The house dust mite produces allergenic proteins primarily in its droppings, or fecal pellets. The incidence of allergic diseases overall in the country's population ranges

from between 23-30% of individuals. This tendency to become allergic to allergens is predetermined by the individual genetic makeup of a person. About 15 million Americans currently experience asthma symptoms.

Is there a time of year when allergies are more of a problem?

The allergy season really never ends. Springtime is the tree pollen season. Summertime is the grass and weed pollen season. In the fall, people can experience both a ragweed and mold allergy season, and finally in the wintertime, people who suffer from allergies will go into the "indoor allergy season". The most common indoor aeroallergens which can produce hay fever, sinus and asthma symptoms are those of the house dust mite, cockroach droppings, indoor mold spores and pet animals.

Can a person outgrow an allergy?

Most people grow into allergy, not out of it. One can, however, lose a sensitivity to certain foods if one totally avoids the offending food allergen. This occurs in most children who have the unfortunate experience of having hives due to cow's milk. Later in life that same person who had hives early in infancy can tolerate milk and other cow proteins.

Unfortunately, one cannot totally avoid exposure to certain pollens, molds and dust and thus, year after year having been repeatedly exposed to these airborne proteins allergic individuals continue to have allergic diseases due to their continuous or repeated exposure to these aeroallergens.

Can allergies develop later in life?

Allergy does not discriminate on the basis of age. Allergic reactions can develop at any time in life whether it be age one day, one year, 20 years, 40 years or 60 years. The peak age at which allergy develops, however, is in the late teens. For reasons yet unexplained, the immune system of a 19 year old is most able to produce IgE allergy antibody responses.

Are there any long-term effects from allergic reactions?

Allergic reactions which occur in the sinuses or the lungs repeatedly year after year may actually result in a change in the anatomy of the body part being

affected. For example, if asthma symptoms are allowed to occur without adequate control, then the inflammation involved in the disease will cause the lungs to misbehave forever regardless of continued therapy. In the past it was believed that asthma did not result in emphysema. However, recent research has indicated that a patient suffering from asthma which is out of control may develop a form of emphysema, or fixed airways disease, which is not reversible.

Asthma by its very definition, means a reversible airway obstruction which is accompanied by allergic inflammation in 90% of the cases.

What allergies cause fatal reactions?

The most common causes of fatal allergic reactions include severe reactions to foods such as shellfish, peanuts and cod, or to stinging insects such as yellow jackets and imported fire ants.

Should people wear ID bracelets for their allergic conditions?

Patients with life-threatening allergic reactions to antibiotics or bee sting reactions should definitely wear ID bracelets and should carry with them an emergency kit containing epinephrine. Contact your physician for a prescription for an Epi Pen. If you have had a severe allergic reaction in the past, you should have available in your home at all times an adrenaline kit for self-administration should it become necessary.

What is the best treatment for allergic disease?

The most important thing in treating any human disease is receiving an exact and accurate diagnosis of the problem. For most all patients suffering from allergic diseases such as hay fever, sinus headaches, asthma and food allergy this means a visit to a Board Certified specialist in allergy and asthma.

Educated victims of allergy and asthma do much better in life than those patients who are under-diagnosed and under-treated. When patients die from asthma attacks, it's primarily because of under-treatment by the patient and/or under-diagnosis on the part of their physician.

Are there particular food allergens to be aware of?

The most frequent foods responsible for causing allergic reactions are nuts, peanuts, milk, egg, wheat and soybean proteins. Unfortunately there are food preservatives which may also induce allergy symptoms. These preservatives include metabisulfite and monosodium glutamate. Metabisulfites are present in most wines which need preserving.

The diagnosis of food allergy can be difficult. Consult with your doctor to determine if you do in fact have a food allergy.