Pollen Allergy

Pollen is one of the most common triggers of seasonal allergies. Many people know pollen allergy as “hay fever,” but health experts usually refer to it as “seasonal allergic rhinitis.” Pollen allergy affects approximately 7 percent of adults and 9 percent of children in the United States.

An allergic reaction is a specific response of the body’s immune system to a normally harmless substance called an allergen. People who have allergies often are sensitive to more than one allergen. In addition to pollen, other airborne allergens that can cause allergic reactions include materials from house dust mites, animal dander, and cockroaches.

**Pollen Overview**

Each spring, summer, and fall, plants release tiny pollen grains to fertilize other plants of the same species. Most of the pollens that cause allergic reactions come from trees, weeds, and grasses. These plants make small, light, and dry pollen grains that are carried by the wind. Among North American plants, grasses are the most common cause of allergy. Ragweed is a main culprit among the weeds, but other major sources of weed pollen include sagebrush, pigweed, lamb’s quarters, and tumbleweed. Certain species of trees, including birch, cedar, and oak, also produce highly allergenic pollen. Plants that are pollinated with the help of insects, such as roses and ornamental flowering trees like cherry and pear trees, usually do not cause allergic rhinitis.

People with pollen allergy only have symptoms for the period or season when the pollen grains to which they are allergic are in the air. For example, in most parts of the United States, grass pollen is present during the spring.

**What Is a Pollen Count?**

A pollen count, which is often reported by local weather broadcasts or allergy websites, is a measure of how much pollen is in the air. Pollen counts tend to be highest early in the morning on warm, dry, breezy days and lowest during chilly, wet periods. Although pollen counts reflect the last 24 hours, they are useful as a general guide for when it may be wise to stay indoors with windows closed to avoid contact with a certain pollen.
Symptoms

Pollen allergy can cause symptoms such as a runny nose and watery eyes. Reactions to allergens often also play an important role in asthma. Common symptoms of allergic rhinitis and asthma include:

- Runny nose and mucus production
- Sneezing
- Itchy nose, eyes, ears, and mouth
- Stuffy nose
- Red and watery eyes
- Swelling around the eyes
- Coughing
- Wheezing
- Chest tightness
- Shortness of breath

However, not all of these seasonal symptoms are due to pollen. Rhinovirus, the cause of the common cold, also can cause runny noses in the fall and spring. It is not always easy to figure out whether an allergy or a common cold is the cause of these symptoms, although some clues can help distinguish between the two. For example, a fever suggests a cold rather than an allergy, and symptoms lasting more than 2 weeks suggest allergies rather than a cold.

Diagnosis

Skin Tests

A skin prick test can detect if a person is sensitive to a specific allergen. Being “sensitive” means that the immune system produces a type of antibody called immunoglobulin E (IgE) that recognizes that allergen. IgE attaches to specialized cells called mast cells. This happens throughout the body, including the skin.

During a skin prick test, a health care provider uses a piece of plastic to prick the skin on a person’s arm or back and places a tiny amount of allergen extract just below the skin’s surface. In sensitive people, the allergen binds to IgE on mast cells in the skin and causes them to release histamine and other chemicals that produce itching, redness, and minor swelling.

A positive skin prick test to a particular pollen allergen does not necessarily indicate that a person has allergic rhinitis caused by that allergen. Therefore, health care providers must compare the skin test results with the time and place of a person’s symptoms to see if they match.

Blood Tests

Instead of performing a skin test, doctors may take a blood sample to measure levels of allergen-specific IgE antibodies. Most people who are sensitive to a particular allergen will have IgE antibodies...
detectable by both skin and blood tests. As with skin testing, a positive blood test to an allergen does not necessarily mean that a person’s symptoms are caused by that allergen.

One reason why a positive skin or blood test does not always indicate that a person’s symptoms are caused by a particular allergen is that allergens include many different components, some of which are more likely to cause symptoms than others. For example, birch tree pollen contains proteins, sugars, and fats. IgE antibodies to birch pollen proteins are likely to cause allergic reactions, but IgE antibodies to the sugars in birch pollen, although common, are less likely to cause allergic reactions.

**Medications**

Certain over-the-counter and prescription medications may help reduce the severity of pollen allergy symptoms.

**Antihistamines**

Antihistamines, which are taken by mouth or as a nasal spray, can relieve sneezing and itching in the nose and eyes. They also reduce runny nose and, to a lesser extent, nasal stuffiness. Some older antihistamines can cause side effects such as drowsiness and loss of alertness and coordination. Effective, newer antihistamines cause fewer or no side effects.

**Nasal Corticosteroids**

Nasal corticosteroid sprays are anti-inflammatory medicines that help block allergic reactions. They are widely considered to be the most effective medication type for allergic rhinitis and can reduce all symptoms, including nasal congestion. Unlike corticosteroids taken by mouth or as an injection, nasal corticosteroids have few side effects. Combining a nasal antihistamine with a nasal corticosteroid appears to be more effective than using either of the sprays alone. However, it is not clear if taking an oral antihistamine with a nasal corticosteroid is helpful.

**Decongestants**

Oral and nasal decongestants help shrink the lining of the nasal passages, relieving nasal stuffiness. Decongestant nose drops and sprays are intended for short-term use. When used for more than a few days, these medicines may lead to even more congestion and swelling inside the nose. Doctors may recommend using decongestants along with an antihistamine because antihistamines do not have a strong decongestant effect.

**Leukotriene Receptor Antagonists**

Leukotriene receptor antagonists, such as the prescription drug montelukast, block the action of important chemical messengers other than histamine that are involved in allergic reactions.

**Cromolyn Sodium**

Cromolyn sodium is a nasal spray that blocks the release of chemicals that cause allergy symptoms, including histamine and leukotrienes. The drug causes few side effects but must be taken four times a day.
Allergen Immunotherapy

Many people with pollen allergy do not get complete relief from medications and may be candidates for immunotherapy. Immunotherapy is a long-term treatment that can help prevent or reduce the severity of allergic reactions and change the course of allergic disease by modifying the body’s immune response to allergens.

**Allergy Shots (Subcutaneous Immunotherapy)**

Allergy shots, also known as subcutaneous immunotherapy (SCIT), have been used for more than 100 years and can provide long-lasting symptom relief. SCIT involves a series of shots containing small amounts of allergen into the fat under the skin.

SCIT includes two phases: a buildup phase and a maintenance phase. During the buildup phase, doctors administer injections containing gradually increasing amounts of allergen once or twice per week. This phase generally lasts from 3 to 6 months, depending on how often the shots are given and the body’s response. The aim is to reach a target dose that has been shown to be effective. Once the target dose is reached, the maintenance phase begins. Shots are given less frequently during the maintenance phase, typically every 2 to 4 weeks. Some people begin experiencing a decrease in symptoms during the buildup phase, but others may not notice an improvement until the maintenance phase. Maintenance therapy generally lasts 3 to 5 years. The decision about how long to continue SCIT is based on how well it is working and how well a person tolerates the shots. Many people continue to experience benefits for several years after the shots are stopped.

Side effects from SCIT are usually minor and may include swelling or redness at the injection site. However, there is a small risk of serious allergic reactions such as anaphylaxis, a potentially life-threatening reaction that can develop very rapidly. Because most severe reactions occur shortly after injection, it is recommended that patients remain under medical supervision for at least 30 minutes after receiving a shot.

**Sublingual Immunotherapy**

In 2014, the U.S. Food and Drug Administration approved three types of under-the-tongue tablets to treat allergies to grass and ragweed. The treatments, called sublingual immunotherapy (SLIT), offer people with these allergies a potential alternative to allergy shots. People taking SLIT place a tablet containing allergen under the tongue for 1 to 2 minutes and then swallow it. SLIT tablets are taken daily before and during grass or ragweed season.

Studies show that there are fewer allergic reactions to SLIT compared with SCIT. After the first SLIT dose is given at the doctor’s office, patients can take subsequent doses at home. Side effects of SLIT are usually minor and may include itching of the mouth, lips, or throat. Although severe allergic reactions to SLIT are extremely rare, because SLIT treatment takes place at home, doctors usually prescribe an epinephrine auto-injector (EpiPen) for use in the event of a serious reaction.