CONDITION

Allergic reactions

Learn how allergic reactions happen, what symptoms to watch for, how anaphylaxis is treated, and when to seek medical care.

WHAT IT IS
Immune reaction to a usually harmless substance

BODY SYSTEM
Immune system

MAIN SYMPTOMS
Hives, itching, swelling, breathing difficulty

WHAT CAUSES IT
Immune response to an allergen

HOW IT IS DIAGNOSED
History-guided skin, blood, patch or supervised challenge testing

MAIN TREATMENT
Allergen avoidance, medicines and immunotherapy

CAN IT BE CURED?
No, treatments manage symptoms and risk

IS IT AN EMERGENCY?
Sometimes, with trouble breathing or throat swelling

LONG-TERM OUTLOOK
Often manageable, but future severity is unpredictable

Overview

An allergic reaction happens when the immune system responds to a substance that is usually harmless. That substance is called an allergen . Common allergens include certain foods, medicines, insect venom, latex, pollen, dust mites, mold, and animal dander.

During some reactions, the immune system releases chemicals such as histamine. These chemicals can cause itching, swelling, hives, sneezing, wheezing, or digestive symptoms. Reactions may affect one small area or several parts of the body.

Many immediate allergic reactions involve an antibody called immunoglobulin E , or IgE. Antibodies are proteins the immune system uses to recognize specific substances. Other allergic reactions develop through different immune pathways and may take hours or days to appear. Allergic contact dermatitis, such as a rash from poison ivy or nickel, is one example of a

delayed reaction.

Allergic reactions range from mild to life-threatening. Anaphylaxis is a severe allergic reaction that can quickly affect breathing, blood pressure, or several body systems. It requires immediate treatment with epinephrine.

An allergy is not the same as an intolerance or medication side effect. For example, lactose intolerance can cause digestive symptoms but does not involve the same immune response as a milk allergy. A careful diagnosis matters because an incorrect allergy label may lead to unnecessary avoidance or limit useful treatment choices.

Symptoms

Symptoms depend on the allergen, the type of immune response, and how the person was exposed. They may begin within minutes, several hours later, or after repeated contact.

Symptoms affecting the skin may include:

Nose, eye, and breathing symptoms can include sneezing, a runny or blocked nose, itchy or watery eyes, coughing, wheezing, chest tightness, or shortness of breath. Food and medication reactions may also cause nausea, vomiting, stomach pain, or diarrhea.

Local swelling after an insect sting can be uncomfortable but is not always an allergy. A large local reaction may spread beyond the immediate sting area and last several days. This is different from a reaction that affects distant areas of the body.

Emergency symptoms

Call emergency services for signs of anaphylaxis. These can include:

Anaphylaxis can occur without hives or other skin symptoms. If epinephrine has been prescribed, use it promptly according to the emergency plan and device instructions, then call emergency services. Antihistamines like cetirizine or loratadine do not reverse airway swelling or low blood pressure and should not replace epinephrine.

A person with suspected anaphylaxis should not stand or walk suddenly. Unless breathing is harder when lying down, they are generally kept flat with their legs raised. A person who is vomiting or unconscious should be placed on their side if this can be done safely.

- Hives, which are raised, itchy welts
- Itching, warmth, or redness
- Swelling of the lips, eyelids, face, hands, or feet
- An eczema-like rash with dry, cracked, or blistered skin

- Trouble breathing, noisy breathing, or severe wheezing
- Throat tightness, trouble swallowing, or a hoarse voice
- Swelling of the tongue or throat
- Fainting, collapse, confusion, or signs of very low blood pressure
- Sudden severe vomiting or abdominal symptoms with other allergy symptoms
- Symptoms affecting more than one body system after a likely allergen exposure, such as hives together with breathing trouble

Causes and risk factors

Almost any substance can cause an allergy, but some triggers are more common than others.

Frequent food allergens include peanuts, tree nuts, milk, egg, wheat, soy, fish, shellfish, and sesame. A person can also be allergic to other foods. Even a small amount may cause symptoms in someone with an established food allergy.

Medicines that may cause allergic reactions include antibiotics and some pain medicines. However, many symptoms reported as medication allergies are actually expected side effects, symptoms of the underlying illness, or unrelated rashes. This is especially important with penicillin allergy labels, which may remain in a medical record long after the original event.

Bees, wasps, hornets, yellow jackets, and fire ants can cause allergic reactions through venom. Latex exposure may occur through gloves, balloons, or some medical products. Skin reactions can result from nickel, fragrances, preservatives, hair dyes, adhesives, plants, and personal-care products.

Pollen, dust mites, mold, and animal allergens more often cause allergic rhinitis or asthma symptoms than anaphylaxis.

Exercise, alcohol, infection, heat, and certain medicines can sometimes make a reaction more likely or more severe when combined with an allergen. In uncommon cases, exercise contributes to anaphylaxis after eating a particular food.

A personal or family history of allergic conditions may increase the chance of developing some allergies. Asthma, especially when poorly controlled, can increase the danger of a severe reaction involving the airways. Mast cell disorders may also raise the risk of severe anaphylaxis. Mast cells are immune cells that release histamine and other chemicals during allergic reactions.

The severity of a previous reaction does not reliably predict the severity of a future one. A

person who previously had only skin symptoms may have a different response during another exposure.

Diagnosis

Diagnosis begins with a detailed medical history. A clinician may ask what the person ate, touched, inhaled, or took before symptoms began. The timing, symptom pattern, amount of exposure, treatment used, and response to treatment are important.

Photographs of a rash or swelling can be useful if symptoms have cleared before the appointment. Medicine packages, ingredient lists, restaurant information, and insect descriptions may also help.

Testing is selected based on the history. It should not be used as broad screening without a suspected trigger.

A skin-prick test places a small amount of an allergen on the skin and gently pricks the surface. A raised bump may indicate allergic sensitization. A blood test can measure IgE antibodies to specific allergens. A positive skin or blood test does not always mean that exposure will cause symptoms. Results must be interpreted with the person's history.

A supervised oral food challenge may be used when the diagnosis remains uncertain. The person eats gradually increasing amounts of a food under medical observation. Because a reaction can occur, this test should only be performed in an appropriately equipped clinical setting.

Patch testing may help identify delayed contact allergies. Small amounts of possible allergens are placed on the back for a set period, and the skin is checked over several days.

For a suspected medicine allergy, an allergy specialist may recommend skin testing, a supervised test dose, or another form of drug challenge. The method depends on the medicine and the original reaction. People should not test a suspected allergen themselves at home.

Treatment and management

Treatment depends on the type and severity of the reaction.

For mild symptoms limited to the skin or nose, a clinician may recommend an antihistamine or another symptom-relief medicine. Some antihistamines can cause sleepiness and affect driving or other tasks. A pharmacist or clinician can explain the differences between products.

Epinephrine is the first-line treatment for anaphylaxis. It works by opening the airways,

supporting blood pressure, and reducing swelling. It is usually given into the outer thigh with an auto-injector or another approved delivery device. It should not be delayed while waiting to see whether antihistamines will work.

People at risk of anaphylaxis may be advised to carry epinephrine and have a written emergency action plan. Family members, caregivers, schools, and coworkers may need to know where the medicine is kept and how to use it. Whether more than one device should be available depends on the person's history, access to emergency care, and clinician's advice.

Emergency medical care may include additional epinephrine, oxygen, intravenous fluids, and treatment for persistent breathing or circulation problems. Observation time is based on the reaction's severity, response to treatment, and other risk factors.

Long-term management starts with identifying the allergen accurately. Practical steps may include reading food labels, checking restaurant ingredients, avoiding cross-contact, reviewing medicines with healthcare professionals, or reducing exposure to a contact allergen.

Avoidance should be specific rather than overly broad. Removing unnecessary foods can affect nutrition, growth, cost, and quality of life. A dietitian familiar with food allergy can help plan a balanced diet when major foods must be excluded.

Allergen immunotherapy, sometimes called allergy shots, can reduce symptoms from certain environmental allergies. Venom immunotherapy can lower the risk of future systemic reactions in appropriately selected people with insect-venom allergy. Oral immunotherapy is available for some food allergies, but it is not a cure and still requires ongoing precautions. These treatments require assessment and monitoring by trained clinicians.

When an essential medicine caused an allergic reaction, a specialist may sometimes use desensitization . This involves giving carefully controlled, increasing amounts of the medicine to create temporary tolerance. It must be done in a medical setting and does not permanently remove the allergy.

Complications

The most serious complication is anaphylaxis. Airway swelling, severe breathing difficulty, or a sudden fall in blood pressure can become life-threatening without prompt treatment.

Some people have a second wave of symptoms after initially improving. This is called a biphasic reaction . It is one reason medical assessment and an appropriate period of observation may be needed after anaphylaxis.

Other complications depend on the reaction. Severe swelling can affect breathing or swallowing. Scratching an itchy rash can damage the skin and contribute to infection.

Repeated exposure to a workplace allergen can worsen skin or breathing symptoms.

Allergies can also affect daily life. Fear of accidental exposure may lead to anxiety, social limits, or overly restrictive diets. An inaccurate medication-allergy label can result in the use of less suitable medicines. Specialist review can sometimes confirm that an allergy label should be kept, updated, or removed.

Follow up

Arrange routine follow-up after a suspected allergic reaction, even if symptoms have resolved. The visit can clarify the likely trigger, determine whether testing is useful, and update the medical record.

After anaphylaxis, follow-up with a clinician or allergy specialist is particularly important. The visit may include reviewing epinephrine technique, replacing used or expired devices, creating an action plan, and discussing ways to reduce future exposure.

Seek routine medical advice if reactions keep happening, the trigger is unclear, a rash persists, or allergy symptoms interfere with sleep, school, work, diet, or asthma control. Medication allergies should be documented with the specific medicine, symptoms, timing, and date rather than simply listing "allergy" without details.

Seek urgent medical advice for rapidly increasing swelling, repeated vomiting after a likely allergen exposure, worsening wheezing, or symptoms that return after initial improvement.

Call emergency services immediately for trouble breathing, throat or tongue swelling, fainting, collapse, or other signs of anaphylaxis. Use prescribed epinephrine without delay according to the person's emergency plan.

Sources

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