CONDITION

Anaphylaxis

Learn how to recognize anaphylaxis, use epinephrine promptly, get emergency care, identify possible triggers, and reduce the risk of another reaction.

WHAT IT IS
Severe rapidly developing allergic reaction

BODY SYSTEM
Immune system

MAIN SYMPTOMS
Breathing difficulty, throat swelling, low blood pressure, fainting

WHAT CAUSES IT
Immune overreaction, sometimes unknown

HOW IT IS DIAGNOSED
Clinical pattern and timing of symptoms

MAIN TREATMENT
Epinephrine and emergency care

CAN IT BE CURED?
Sometimes, treatment stops the current reaction

IS IT AN EMERGENCY?
Yes, suspected anaphylaxis needs immediate care

LONG-TERM OUTLOOK
Most recover promptly but reactions can recur

Overview

Anaphylaxis is a severe allergic reaction that begins quickly and can affect several parts of the body at once. It can cause breathing problems, swelling of the throat, a dangerous drop in blood pressure, or loss of consciousness.

Anaphylaxis is a medical emergency. Prompt treatment with epinephrine, also called adrenaline, can stop the reaction from getting worse. Antihistamines like cetirizine or loratadine may help itching or hives, but they cannot replace epinephrine because they do not reliably treat airway swelling, breathing difficulty, or low blood pressure.

The immune system normally protects the body from harmful substances. During many anaphylactic reactions, it overreacts to a substance that is usually harmless, such as a food or medication. Immune cells release chemicals, including histamine, that can widen blood vessels,

tighten airway muscles, and cause swelling.

Anaphylaxis does not always look the same. Some people develop hives, while others have no skin symptoms. A previous reaction may have been mild even if a later reaction is severe. It is not possible to predict severity based only on past symptoms.

Someone who may be having anaphylaxis should use their prescribed epinephrine auto-injector immediately and call emergency services. Symptoms can improve and then return, so medical assessment is needed even when epinephrine appears to work.

Symptoms

Symptoms usually begin suddenly after exposure to a trigger. They may appear within minutes, although the timing can vary. Anaphylaxis commonly affects more than one body system.

Possible symptoms include:

Skin symptoms are common, but they may be absent. A person can have anaphylaxis without hives or visible swelling.

Treat the situation as an emergency if symptoms include trouble breathing, throat or tongue swelling, fainting, collapse, or rapidly developing symptoms in more than one body system after a likely exposure. Use prescribed epinephrine without waiting for every possible symptom to appear, then call emergency services.

A small patch of hives or mild itching alone is not always anaphylaxis. However, symptoms should be watched closely because they can progress. Follow the person's allergy action plan and seek medical advice if there is uncertainty.

- Hives, flushing, itching, or swelling of the lips, face, tongue, or eyelids
- Throat tightness, a hoarse voice, trouble swallowing, or a feeling that the throat is closing
- Wheezing, coughing, shortness of breath, or noisy breathing
- Dizziness, confusion, weakness, fainting, or collapse
- A fast or weak pulse and signs of low blood pressure
- Repeated vomiting, severe stomach cramps, or diarrhea
- A sudden feeling that something is seriously wrong

Causes and risk factors

Foods are common triggers. Examples include peanuts, tree nuts, milk, eggs, fish, shellfish,

wheat, sesame, and soy. Any food can cause an allergic reaction in a susceptible person.

Other possible triggers include:

Some reactions occur without an identifiable trigger. This is called idiopathic anaphylaxis. A specialist may need to rule out hidden allergens, medication reactions, or disorders involving mast cells. Mast cells are immune cells that release many of the chemicals involved in allergic reactions.

Factors such as exercise, alcohol, infection, lack of sleep, or certain medicines may make a reaction more likely or more severe in some people. These factors are sometimes called cofactors.

People with asthma may have more serious breathing problems during anaphylaxis, particularly if their asthma is not well controlled. Mast cell disorders and some heart or lung conditions can also complicate a reaction.

Certain blood pressure or heart medicines may affect the severity or treatment of anaphylaxis. Do not stop a prescribed medicine on your own. A clinician can weigh its benefits against any allergy-related concerns.

Having one allergic condition does not mean a person will develop anaphylaxis. However, anyone with a known trigger or a previous systemic allergic reaction should discuss their future risk and emergency plan with a healthcare professional.

- Medications, such as certain antibiotics like amoxicillin or doxycycline , pain relievers, or drugs used during medical procedures
- Insect stings, especially from bees, wasps, hornets, or fire ants
- Latex
- Allergy shots and some injected or infused medicines
- Physical activity, sometimes in combination with a particular food
- Less common exposures identified through specialist evaluation

Diagnosis

Anaphylaxis is diagnosed mainly from the pattern and timing of symptoms. Emergency treatment should not be delayed while waiting for a test.

Clinicians consider whether there was sudden involvement of the skin or lining of the mouth along with breathing problems or low blood pressure. They also consider sudden symptoms affecting several systems after exposure to a likely allergen. A major drop in blood pressure

after a known trigger may be enough to support the diagnosis even without hives.

Other medical problems can resemble anaphylaxis. These include an asthma attack, fainting, a panic attack, choking, a heart problem, or swelling caused by a non-allergic condition. Emergency clinicians assess breathing, circulation, skin findings, possible exposures, and the response to treatment.

A blood test for tryptase may be collected after some reactions. Tryptase is a substance released by mast cells. An elevated result can support the diagnosis, but a normal result does not rule out anaphylaxis, especially after food-related reactions. The test must not delay epinephrine.

After recovery, an allergy specialist may review the event in detail. The evaluation may include skin-prick testing or blood tests for allergen-specific immunoglobulin E, often shortened to specific IgE. A positive test shows allergic sensitization but does not always prove that an exposure caused the reaction. Results must be interpreted together with the person's history.

Broad, unsupervised allergy panels may produce misleading results. Testing is most useful when it targets realistic triggers based on what happened before the reaction.

Treatment and management

Epinephrine is the first-line treatment for suspected anaphylaxis. It helps relax tightened airway muscles, reduce swelling, support blood pressure, and limit further release of allergic chemicals.

A prescribed auto-injector is generally pressed against the outer middle thigh according to the device instructions. Some devices can be used through clothing. Because products work differently, patients and caregivers should practice with a trainer device and review the instructions for their specific product.

After giving epinephrine:

Pregnant patients are generally positioned on their left side when practical. Cardiopulmonary resuscitation, or CPR, should be started if the person is unresponsive and not breathing normally.

There is no absolute contraindication to epinephrine when anaphylaxis is suspected. It can cause temporary effects such as shakiness, anxiety, headache, or a fast heartbeat. In an emergency, delaying epinephrine is more concerning than these expected effects.

Antihistamines may reduce hives and itching, but they work too slowly to treat the most dangerous features of anaphylaxis. They should never delay epinephrine. Asthma inhalers can

help wheezing but do not treat throat swelling or low blood pressure.

In the emergency department, treatment may include additional epinephrine, oxygen, intravenous fluids, breathing medicines, and close monitoring. Corticosteroids like prednisone or hydrocortisone are sometimes used in selected circumstances, but they do not act quickly and have not been shown to reliably prevent a second phase of anaphylaxis.

The length of observation depends on factors such as reaction severity, response to treatment, need for repeated epinephrine, other health conditions, and access to emergency care. Some people require hospital admission.

Long-term management focuses on avoiding confirmed triggers without creating unnecessary restrictions. This may involve reading food labels, checking medication ingredients, preventing insect stings, or planning around known cofactors. Venom immunotherapy can greatly reduce the risk from future insect stings for appropriate patients. Medication desensitization or food allergy treatment should be undertaken only through experienced clinical teams.

- Call emergency services and report suspected anaphylaxis.
- Keep the person lying flat with the legs raised if possible.
- If breathing is very difficult, the person may need to sit up with the legs extended.
- If the person is vomiting or unconscious but breathing, place them on their side.
- Do not allow the person to stand or walk suddenly.
- Use another prescribed device if directed by the emergency plan or emergency professionals and symptoms persist or return.

Complications

Severe anaphylaxis can block airflow or cause shock, meaning the organs are not receiving enough blood and oxygen. Without prompt treatment, this can lead to heart rhythm problems, cardiac arrest, brain injury, or death.

A biphasic reaction is a return of symptoms after the first reaction has improved, without another exposure. It may occur hours later. This is one reason to call emergency services after using epinephrine and to follow the observation advice given by the treating team.

Falls or injuries can occur if a person faints. Vomiting can also create a choking risk in someone who is drowsy or unconscious.

Most people recover when anaphylaxis is recognized and treated promptly. Recovery may still include tiredness, anxiety, or concern about another exposure.

Follow up

Follow-up should address both the possible trigger and readiness for another emergency. A clinician may refer the patient to an allergy specialist, especially if the trigger is uncertain, the reaction was severe, or an insect sting or medication was involved.

A written emergency action plan should explain how to recognize symptoms, when to use epinephrine, and when to call for help. Family members, caregivers, school staff, and coworkers may need to know where the device is kept and how to use it.

Epinephrine devices should be easy to reach rather than stored in a car or another location with extreme temperatures. Check the expiration date and the product's storage instructions. Ask a pharmacist about replacement if the device is expired, damaged, or has been used.

Some people are advised to carry more than one device because symptoms may persist or return. The number and type of devices should be discussed with the prescribing clinician, along with insurance coverage and access at school, work, or during travel.

Routine follow-up should also review asthma control, suspected cofactors, label reading, and whether a medical identification bracelet would be useful. Avoiding foods or medicines without evidence can affect nutrition or medical care, so restrictions should be reviewed with a qualified professional.

A new episode of breathing difficulty, throat swelling, faintness, collapse, or rapidly spreading symptoms is not a routine follow-up issue. Use prescribed epinephrine and seek emergency help immediately.

Sources

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