



# Anaphylaxis treatment and prevention

## PATIENT EDUCATION SERIES

Anaphylaxis is a potentially deadly allergic reaction that is rapid in onset. It is most often triggered by foods, medications, latex, insect stings, and exercise. There are many other possible triggers.

Anaphylaxis is an unpredictable condition. Many people who experience it have a known allergy. Some have had one or more milder allergic reactions previously. Others, who are not even aware that they have an allergy, can suddenly experience severe anaphylaxis.

Severe allergy reactions can produce symptoms throughout the body.

### Symptoms of anaphylactic reactions may include:

- **Skin:** A sudden tingling and warm sensation, itching, flushing, urticaria (hives), and swelling.
- **Eyes:** Itching, tearing, and swelling of the tissues around the eyes.
- **Nose and mouth:** Sneezing, runny nose, nasal congestion, itching of the mouth and throat, and metallic taste.
- **Lungs and throat:** Difficulty breathing, coughing, wheezing, increased airway secretions, swelling of the upper throat, hoarseness, sounds of labored breathing, and sensation of choking.
- **Heart:** Very rapid heartbeat, arrhythmia (an irregular heart beat).
- **Digestive system:** Nausea, vomiting, abdominal cramps, diarrhea.
- **Nervous system:** Dizziness, weakness, fainting, and a sense of impending doom.

The severity of anaphylactic reactions can be minimized by recognizing the symptoms early, having proper medication available for self-treatment, and seeking emergency medical care promptly.

### Anaphylaxis Emergency Action Plan

A person who has had an anaphylactic reaction should talk with their healthcare professional and develop an Anaphylaxis Emergency Plan for responding to future reactions.

#### Epipen® – Self-treatment.

Many people find that having a plan is reassuring, even if it is never needed. A critical component of the plan is having an epinephrine autoinjector available at all times and knowing when and how to use it.

Epinephrine is the only medicine that relieves all the signs and symptoms of anaphylaxis. It is most effective when it is given promptly, before symptoms become severe. **Neither antihistamines nor asthma inhalers can treat anaphylaxis as effectively as epinephrine and these medications cannot be substituted for epinephrine.**

Your provider can provide an Epipen® prescription, which should be filled immediately. Anyone who is at risk of anaphylaxis should keep at least one epinephrine autoinjector with them at all times. It is a good idea to have an additional autoinjector at work, school, and home. Family and friends should be informed about where the home injector is stored, and it should be kept in a place that can be easily located by others in an emergency. It is also important to ensure that the injector is not expired, as it has been shown to be less effective when out of date, although an expired injector may be used if there is no alternative.

Epinephrine should be stored at normal room temperature, away from cold and heat sources. The epinephrine cartridge window should be examined periodically, to ensure that the solution is colorless and contains no floating particles. Solutions that are discolored or contain particles should be replaced.

#### You should use your Epipen® immediately if you:

- Are having trouble breathing
- Feel tightness in the throat
- Feel as if you may pass out

Or for **any other symptoms of anaphylaxis listed above**, even if you are not sure if you were exposed to an allergen.

## Epipen® – Instructions

Instructions are included with the Epipen®. Other auto injectors (such as Twinject) are also available, but instructions differ.

Lie down if possible. Stay with other people if possible. There is no need to undress, because the injector works through clothing.

1. Unscrew the cap and remove the pen from its can. Keep fingers away from both ends to avoid sticking them. **The black end contains the needle.**
2. Pull off the gray safety- release cap and form a fist around the auto-injector. **The black tip should be pointing down.**
3. Swing and quickly jab the black tip into the upper, outer thigh muscle and **hold in place for 10 seconds** to allow all the medicine to be injected. The cartridge window will show red.
4. Remove the pen.
5. Massage the injected area for 10 seconds.

The benefits of epinephrine far outweigh the risks of side effects. However, epinephrine can cause short-lived side effects in some patients, most commonly, rapid heartbeat, shakiness, headache, nausea, and dizziness.

The Epipen® is now available in packages of two, in case a second dose is needed. Large-sized adults may need to repeat the dose. A second dose may also be needed if symptoms are not improving or getting worse after five minutes, or if symptoms come back before reaching the emergency department.

A person with allergies, as well as his or her family, close friends, teachers, and co-workers, should learn to use an epinephrine autoinjector **before** it is needed. Persons suffering anaphylaxis may panic and be unable to assist with their own injection. In addition, a quick response is necessary to prevent serious complications of anaphylaxis.

**Remove the cause** – The trigger for the anaphylactic reaction should be promptly removed, whenever possible.

In the case of an insect sting, dislodge the stinger with the edge of a credit card or coin. The stinger should not be grasped directly with the fingertips because squeezing it may push more venom into the skin. If contact with latex or an allergen on skin is suspected as trigger- remove and wash.

**Get emergency help** - Because anaphylaxis can be life-threatening, it should be treated as an emergency. Anyone who is experiencing a sudden allergic reaction that might be anaphylaxis should use an Epipen® immediately and then call 911 or 863-4111 on campus (or have someone else call on their behalf). If at home alone, make sure that the door is unlocked so that the emergency team can enter. The person in anaphylaxis should not be left alone if possible.

**Go to the hospital** – After injecting epinephrine, it is important for the person with anaphylaxis to be evaluated and treated in a hospital emergency department. Up to 20 percent of people with anaphylaxis have a late-phase reaction, without further exposure to the trigger, and might require additional treatment. There is no good way to predict whether a late-phase reaction will occur. Second reactions can occur hours after or up to four days later, although most second reactions happen within eight hours.

In the emergency department, healthcare providers can monitor the person until the reaction resolves. When needed, additional doses of epinephrine, intravenous (IV) fluids, and other medications and treatment can also be given.

In most cases, a healthcare provider will advise taking antihistamines regularly for several days after the allergic reaction and in some cases oral steroid medication too.

## Prevention

Anaphylaxis is a frightening experience. A person who has had one anaphylactic reaction is at increased risk for another. It is normal to be anxious about this. The following steps can help to reduce the risk of a future anaphylactic reaction.

**Allergist evaluation** – Anyone who has experienced an anaphylactic reaction should be evaluated by a doctor with specific training and experience in the diagnosis and treatment of anaphylaxis and in long-term risk reduction in anaphylaxis. Board-certified allergists have such training and experience. Your Health Services provider can help with a referral.

**Testing to determine the trigger** – It is important to try to confirm the allergen that caused the anaphylactic reaction. Allergists can perform and interpret skin tests to confirm the person's specific allergen triggers. For the most reliable results, skin tests should be performed at least three to four

weeks after an episode of anaphylaxis, because if done too soon after the event, such tests may give negative results when the person truly does have an allergy. Antihistamines and certain other medications need to be stopped for at least four days before these tests are performed. Blood tests are sometimes used to confirm the presence of IgE antibodies to an anaphylaxis trigger as well.

In some cases, allergy tests do not identify any specific trigger. This condition is called idiopathic anaphylaxis. It is more common in adults than in children. An allergist can provide the best advice about how to manage this condition.

**Avoiding triggers** – When a trigger has been identified, it should be avoided. However, avoiding some triggers, such as common foods can be difficult.

**Foods** – A person who has experienced anaphylaxis due to a food should eliminate that food from their diet. This requires that they read and understand food labels and ask about the preparation and content of all foods eaten when away from home. This recommendation applies to everything that they plan to eat, not just the foods that are most likely to contain the trigger.

The United States Food Allergen Labeling and Consumer Protection Act (for foods labeled on or after January 2006) requires that the nutrition labels on food packages clearly identify eight common food triggers. These include cow's milk, eggs, fish, crustaceans (shellfish such as shrimp), tree nuts, peanuts, wheat, and soy.

Unfamiliar names are sometimes used to describe potential food allergy triggers (eg, lactoglobulin or casein for cow's milk; ovalbumin for hen's egg). Ingredients that are used to lower the fat content or replace other components of food do not necessarily remove the allergenic proteins. As an example, some low-cholesterol egg substitutes still contain egg white proteins, which are a major cause of anaphylactic reactions to eggs.

An Allergist can provide strategies for identifying allergens in processed foods and when dining out. In addition, practical information is available online from the Food Allergy and Anaphylaxis Network ([www.foodallergy.org](http://www.foodallergy.org)).

**Insect stings** – When outdoors, people with an allergy to a stinging insect (bees, yellow jackets, wasps, hornets, or fire ants) should wear protective clothing, including shoes, and should avoid wearing brightly colored clothes or applying scented products (perfume, cologne, aftershave, lotion) to the skin. Eating outdoors carries risk for people allergic to yellow jackets, because these insects are attracted to human food. A course of allergy shots is recommended for anyone who has had anaphylaxis after an insect sting. The injections are given over several years. They dramatically reduce the person's risk of another episode of anaphylaxis.

**Medications** - People with an allergy to a medication should learn all the names of that medication and the settings in which they are likely to encounter it. The allergy should be noted in their medical record and on their medical identification device (see below).

**Wear medical identification** – People who have experienced an anaphylactic reaction should wear a medical identification bracelet or similar medical identification tag at all times. If another reaction occurs and the person is too ill to explain their condition, the words “anaphylaxis” or anaphylactic reaction” will help emergency responders provide prompt and proper care for the person.

The tag should include a list of known allergies, as well as the names and phone numbers of emergency contacts. One device, Medic Alert® ([www.medicalert.org](http://www.medicalert.org)), provides a toll-free number that emergency medical workers can call to find out a person's medical history, list of medications, emergency contact numbers, and health care provider names and numbers.