

Help! I've Been Stung!!!

Many people, beekeepers included, often have questions about what constitutes a normal reaction to honey bee or other insect stings. This collection of information concerning reactions, symptoms, and more is only meant to be a general source of information. This does ***NOT*** take the place of your doctor and medical expertise. ***ALWAYS*** call for medical assistance if needed!

Normal Reactions to Insect Stings and First Aid

"Normal" reactions to an insect sting can be broken into **two** categories.

The first type of reaction is the most common and may include:

- Redness
- Swelling
- Itching
- Soreness or tenderness at sting site and area.

The area is sore and may be itchy for a few days, but the sting reaction is not life threatening. Some areas of the body will swell and react differently than other areas. Sometimes the pain and reaction to a sting will vary with the time of the year. For instance, some beekeepers have noticed that honey bee stings in the fall seem to hurt, burn, and tingle more than honey bee stings in the spring.

The second type of normal sting reaction is **called a large local reaction.** This reaction may continue to increase in size for 2-3 days, swelling about 4 inches in diameter, and may possibly involve more than one joint area. The reaction may take 5-10 days to heal, but this is not anaphylaxis. Only one area of the body is affected. However, if in doubt, seek medical attention and aid. According to the American Academy of Allergy, Asthma, & Immunology, AAAAI, only 10% of those who have large local reactions after being stung will have a systemic reaction or anaphylaxis. Again, if concerned, seek medical guidance on this!

First Aid for "normal" sting reactions may include nothing more than removing the honey bee stinger by scraping it out and off of skin. Removing the stinger within 30 seconds may prevent the maximum amount of venom from being injected. A stinger will not be present if insect is not a honey bee. Obviously, try to reduce the risk of receiving additional stings. Clean the sting site with soap and water. Sometimes a cold compress, over-the-counter antihistamines or oral analgesics may help. The antihistamine reduces the swelling caused by the histamine in the venom. The symptoms will usually last for a few minutes to a few days.

If a person has been stung multiple times, but is not showing abnormal reactions, he or she should be observed and their condition monitored by others. If there are questions and concerns, call medical professionals for information and advice.

For a large local reaction, some doctors recommend the use of oral corticosteroids. This treatment may or may not help. Since the swelling and reaction is caused by the insects' venom, the use of antibiotics is not warranted unless a secondary infection occurs. Symptoms may last up to one week. Large local reactions occur in 10%-15% of all adults. If the person has experienced a large local reaction in the past, they are likely to have this reaction after subsequent stings.

Abnormal Reaction to Stings - *Anaphylaxis*

"Abnormal" reactions to an insect sting can be life threatening. For a relatively small number of people with venom allergies, insect stings can cause an allergic reaction called **anaphylaxis**. More than one system of the body is involved with this type of severe allergic reaction. Anaphylaxis can occur if a person is severely allergic to insect stings, food, and a few other substances, The reaction may occur very rapidly - beginning within minutes or several hours.

If this is the first time this reaction has occurred and the victim was unaware and unprepared for this extreme reaction, use an epinephrine injector if available, seek medical help/aid IMMEDIATELY. Call 911.

The victim may experience two or many more of the following symptoms:

- Itching, which may be severe, in the mouth, localized in other areas, or over entire body
- The skin tingles and/or swells
- The skin feels warm to the touch
- Hives develop and/or skin can flush red
- Swelling anywhere on the body, but is especially common to experience **swelling in the lips, throat, and tongue**
- **Difficulty breathing, shortness of breath**
- **Wheezing, hoarseness, change in voice, or trouble speaking, repetitive throat clearing**
- **Difficulty swallowing**
- Dizzy, feeling faint
- Tightness of chest
- Itchy, watery eyes
- Runny nose; stuffy nose
- Headache
- Stomach cramps
- **Nausea, vomiting, or diarrhea**
- **Rapid fall in blood pressure resulting in shock and loss of consciousness**

- Possible incontinence
- Severe anxiety
- Fast heartbeat or pulse
- Weak pulse
- Change in color
- **DEATH** - yes, it may be that serious of a reaction

Act Fast!!

These allergic reactions may be fatal in a very short time, so stay calm and do what you need to do to help the victim. Most fatalities occur due to delay and delivery of needed medication which is epinephrine.

Move the victim to a safe place to prevent additional stings. Be prepared in case the victim is dizzy or loses consciousness. Not all symptoms may be present. Type and severity of symptoms can change very quickly and several may be occuring at the same time.

1. If the victim has an **epinephrine kit, use it immediately**. If they do not have a kit and you have your own epinephrine kit, ask the victim if it is ok to use it and then do so.
2. Then **call 911**.
3. Then **call the emergency contacts** if known.

Obviously any one of the reactions to anaphylaxis can be a medical emergency and some may even lead to death. Results of anaphylaxis reactions can range from mild to deadly. If you, or someone you are with, experiences any of these symptoms after being stung, **it is important to receive medical care immediately.** It is likely that this anaphylaxis will be repeated if the person is stung again. After this episode, the person should go to an allergist/immunologist to learn how to stay safe in the future.

Additional information about symptoms for normal and abnormal sting reactions:

- If the person develops a fever, contact a doctor to see if he or she should be taken for medical attention. Sometimes fevers can worsen over time.
- If vomiting occurs, the person should be taken to the hospital immediately.
- If the person has been stung multiple times, especially in a short period of time, a toxic reaction may occur in the nervous or circulatory system. This may cause heart or breathing problems, or unconsciousness and the victim should be taken to the hospital immediately.
- Some people using certain medicines or pregnant women may be at an increased risk for a bad reaction to certain insect stings.
- In case of anaphylaxis, do not rely on antihistamines or asthma inhalers in place of epinephrine. They cannot reverse cardiovascular symptoms like shock, hypotension or respiratory distress, but may be helpful after injecting epinephrine.

- Steroids may be given to help prevent a late reaction. This reaction may occur several hours after the stinging incident. Steroids do not reverse the acute symptoms of anaphylaxis and can take hours to work.

Information about Anaphylaxis

The body's immune system controls how the body defends itself. If a person has an allergy to honey bee venom, the first time that he or she is stung by a honey bee, his or her immune system will identify the venom as an invader or allergen. The immune system overreacts by producing antibodies called Immunoglobulin E or IgE. If he or she is stung again by a honey bee, the venom will interact with the specific IgE that has been produced. This will cause a release of substances that will cause an allergic reaction.

Symptoms of various allergic reactions can vary widely depending on the IgE and the allergen and can potentially affect many areas including the lungs, nose, sinuses, and skin. Each type of antibody IgE will search for a specific allergen, like cat dander or pollen. Some people produce more types of IgE antibodies and will therefore have more allergies. As of now, it is not known why some substances trigger allergies and not others. It is also not known why some people have allergies and others do not. So far, a family history that includes allergies is the most important factor in developing allergies.

About 50 million Americans suffer from one type of allergy or another and this number seems to be increasing. There are several types of allergic diseases including: allergic rhinitis ("hay fever"), allergic conjunctivitis (when eyes react to allergens), hives (itchy, red bumps), and asthma (chronic lung disease).

Anaphylaxis, however, is a much more severe allergic reaction which may be triggered by food, medications, insect stings, natural rubber latex and a few other substances. Often people do not realize they are allergic to something until they have a reaction. An allergist can conduct a number of tests to determine allergies and suggest treatment.

Epinephrine is the only medication that can reverse severe anaphylactic symptoms and is available in a kit through a prescription. Epinephrine does NOT prevent an anaphylactic reaction. Epinephrine is a chemically identical hormone to adrenaline which is produced by the body in the adrenal glands. It helps the body cope with emergencies and threats. It is the "fight or flight" hormone. This hormone increases blood flow to the muscles, opens up the airways in the lungs, increases heart rate, suppresses the action of the immune system, increases blood sugar, and restricts blood flow to certain areas of the body. This can help to reverse low blood pressure and other reactions from the anaphylaxis.

One of the most commonly prescribed epinephrine kits contains spring loaded autoinjectors known as EpiPens or EpiPenJr. EpiPens and EpiPenJr usually come as a two pack. Each injector contains one dose. EpiPens contain 0.30 mg of epinephrine and the EpiPenJr contains 0.15mg of epinephrine. This is the easiest way for most people to apply epinephrine.

Other epinephrine kits include a preloaded syringe called Ana-Kit. The syringe has a locking notched plunger which is turned to allow each of the two doses (0.3 mg each) to be self-administered.

There are other brands of kits available as well like Adrenaclick (0.15 or 0.3 mg), Auvi-Q (0.15 or 0.3 mg), and generic forms.

Various reports have indicated that adequate warning signs are not always seen prior to a serious reaction, but the epinephrine should be injected if the victim is known to have an anaphylaxis reaction to the sting or other allergen. Sometimes the victim cannot self-administer the epinephrine and others may step in to assist.

Epinephrine is **injected into the muscle of the thigh**. **It can be injected through clothing**. Some kits come with a practice trainer pen. Before injecting for anaphylaxis, make sure you have a medicated pen. When injecting epinephrine, hole the autoinjector or syringe in place for 10 seconds after activation. Remove the auto injector or syringe and massage area gently. Take the used re-capped tube to the emergency room with the victim. The autoinjector may only be used one time. Do not reinsert the autoinjector if the needle has come out prior to completing dosage. If the full dose was not administered, use the second autoinjector after re-capping the first one. Usually epinephrine autoinjectors and syringes come with enough epinephrine to administer two doses, just in case a second dose is needed or if something goes wrong with the first epinephrine injection. Patients and those who may need to administer the epinephrine autoinjectors or syringes should be trained in both the proper methods to apply and how to know the correct circumstances that the medicine should be administered.

Epinephrine's effects may wear off in 15-20 minutes. A second dose may be required if the victim is not responding to the first dose or if the symptoms are beginning again. Studies have shown that 20% of acute anaphylaxis requires more than one dose of epinephrine. The victim should go to the emergency room even if he or she is feeling better. In 29% of the cases, late phase anaphylaxis can occur and it is difficult to treat.

The victim should ALWAYS go to the hospital after injecting epinephrine to be examined and observed until the danger of the old and new reactions has passed.

Epinephrine may not work as well if injected into a vein. If injected into the feet or hands, there may be a loss or reduction of blood flow to the area causing numbness. When epinephrine is injected, the amount is greater than the amount of adrenaline the body produces. Epinephrine is used only in medical emergencies due to potential side effects which can hurt the heart. Overdoses of epinephrine may cause a worsening of breathing trouble, sudden numbness or weakness on one side of the body, slurred speech, balance or vision problems, very high blood pressure, and more.

Anyone who may need to administer an epinephrine injection should discuss potential side effects from epinephrine with his or her doctor. The label for EpiPens lists the most common possible side effects as increase in heart rate, stronger or irregular heartbeat, sweating, nausea and vomiting, difficulty breathing, paleness, dizziness, weakness or shakiness, headache, apprehension, nervousness or anxiety. The label says that these side effects usually go away quickly, especially with rest.

Patients who have cardiovascular disease, and suffer from anaphylaxis, should discuss these issues with their doctors. Usually he or she will be given a prescription for an EpiPen or EpiPenJr which he or she should carry for use in case of an anaphylaxis reaction. While there is concern about epinephrine's cardiac effect, due to the potentially profound effects of the anaphylaxis, **the EpiPen or EpiPenJr should be used if necessary.** The patient should discuss these issues with their doctor because sometimes certain other existing conditions may get worse or the side effects may be worse.

If epinephrine auto injector has been previously used, looks cloudy or colored instead of clear, has particles floating in it, or has an expired "use by date", call a physician or pharmacy and replace immediately. Do not store or leave the epinephrine auto injector in the vehicle. The person with the severe allergy should keep the kit with them when circumstances demand. Ideally it should be stored at room temperature. It should not be frozen or refrigerated. One should read all the paperwork coming with their epinephrine kit to know how to use it properly. These individuals should be on a management plan with medical personnel. It may be a good idea to have and wear a medical identification bracelet or necklace.

According to the AAAAI, serious anaphylactic reactions to insect stings result in at least 40 deaths each year in the United States. They estimate that potentially life threatening systemic reactions to insect stings occur in 3% of adults and 0.4%-0.8% of children.

In the AAAAI's guide titled "Stinging insect hypersensitivity: A Practice Parameter Update" these quoted guidelines appear:

"...Patients who have a history of a systemic reaction to an insect sting should (1) be educated in avoidance of stinging insects, (2) carry epinephrine for emergency self-administration, (3) undergo testing for specific IgE antibodies to stinging insects, (4) be considered for venom immunotherapy (VIT) if test results for specific IgE antibodies are positive, and (5) consider obtaining medical identification of stinging insect hypersensitivity." There are also cards one can print and place in their wallet and/or in their home or car. These are available on their website: http://www.aaaai.org/home.aspx.

When headed to get medical help, if possible, bring the dead insect that caused the reaction. If a barbed stinger is present, it is probably a honey bee. People may be allergic to many or only one type of stinging insect.

Frequently Asked Questions

Should all beekeepers carry an EpiPen or other epinephrine kit when in the bee yard?

If the beekeeper has anaphylactic reactions - YES and carry the kit at **all** times!

If the beekeeper has a large local reaction - Yes, because of the small risk of systemic (anaphylactic) reaction. Discuss this with your doctor or allergist.

If the beekeeper has a “normal” reaction - maybe yes and maybe no. The views are divided on this subject. Carrying a set of EpiPens has helped beekeepers help other beekeepers who have gone into unexpected anaphylactic reactions on several occasions. Please remember - ONLY inject epinephrine to someone else IF they give permission and/or 911 gives the OK.

If someone is highly allergic to one stinging insect, does this mean he or she is highly allergic to all stinging insects?

No, but insect venom may contain shared antigenic components. Cross-reactivity and sensitization has often been seen between hornets and yellow jacket venom. It is fairly common to be allergic to the venom of wasps, yellow jackets, and hornets. It is NOT very common to be allergic to the venom of honey bees and yellow jackets, hornets, and wasps.

Are allergy shots always effective?

Venom immunotherapy (VIT) or “allergy shots” are usually administered weekly, with the dosage increasing, based on the patient’s tolerance. The patient will reach a maintenance dose. VIT may be discontinued after 3-5 years, but this will vary with patients and their doctor’s recommendation with some patients, those with extreme reactions, may continue indefinitely.

These shots are USUALLY effective, but NOTHING is always 100% guaranteed.

If a person has one systemic (anaphylactic) reaction, are they likely to have another severe, life-threatening reaction?

YES! But, the risk is significantly reduced with VIT (allergy shots). With the VIT, less than 5% of patients will have an anaphylactic reaction to the same allergen.

What about children under the age of 17?

If a child is stung, adults should monitor reactions and the same first aid treatments should be followed.

There are some different treatments and theories about long term treatment of children for these allergies. Contact your allergist or physician for additional information.

Are the symptoms for anaphylaxis the same for people affected by severe allergies to insect stings and other things?

Yes! More people are allergic to foods - especially peanuts, tree nuts, seafood, milk or eggs than insect stings. Others may have severe allergic reactions to natural rubber latex or medications. The reactions can include all or some of those which were listed earlier.

What are the side effects from using epinephrine?

There are minor side effects from using epinephrine, which may include nausea, light-headedness, fast or pounding heartbeat, pale skin, sweating, vomiting, weakness, tremors, headache, anxious feelings, and irritation at the injection site. There are some drugs which will interact with epinephrine.

One should always discuss any medical concerns with one's doctor.

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This information is believed to be correct, but it is only an informational summary. ALWAYS consult with your doctor for medical advice. November 2014.