



## Allergic Reaction to Stinging Insects

Each year, insects sting many Americans. For most people this means a few hours of pain and discomfort; however, for others a sting can be a life-threatening event called an anaphylactic reaction. The majority of people will experience a local reaction to the sting consisting of redness, swelling, tenderness and pain at the site of the sting that is self-limited and resolves within hours. Occasionally, persons will have large, local reactions to the sting that involves swelling and may persist for up to a week. These reactions are not life threatening unless they involve the air tubes leading to the lungs.

Forty deaths occur annually in the United States due to an anaphylactic reaction to the insect stings. Insects of the order Hymenoptera, which includes ants, bees, hornets, wasps, and yellow jackets, are largely responsible for the anaphylactic reaction. Symptoms of anaphylaxis may include itching and hives over large areas of the body, swelling in the throat or tongue, difficulty breathing, dizziness, stomach cramps, nausea or diarrhea. In severe cases, a rapid fall in blood pressure may result in shock and loss of consciousness. Initial symptoms may progress rapidly to life threatening cardiopulmonary collapse. Immediate treatment with epinephrine is required with transport to the emergency room. If this reaction occurs evaluation by The Asthma & Allergy Center clinicians is required.

### How are stings treated?

Local reactions are best treated symptomatically with nonsteroidal anti-inflammatories (ibuprofen, Aleve, Tylenol), antihistamines (Benadryl, Allegra, Clarinex, Zyrtec), and cold compresses. If a stinger, typically left by a Honeybee, is present it should be removed within 30 seconds with a quick scrape of the fingernail. Avoid squeezing the attached venom sac. Try to remain calm, and brush these insects from the skin promptly with deliberate movements to prevent additional stings. Then, quietly and immediately leave the area. If a blister, caused by a Fire Ant, is present it should not be broken. Taking the following steps can help in treating local reactions to insect stings:

- Elevate the affected arm or leg and apply ice or a cold compress to reduce swelling and pain.
- Gently clean blisters with soap and water to prevent secondary infections; do not break blisters.
- Use topical steroid ointments or oral antihistamines to relieve itching.

If you have a history of an anaphylactic reaction to stings epinephrine should be administered immediately. An auto-injectable form of epinephrine, Epi-pen, should be available to all people with a history of allergy to venom. Epinephrine is a rescue medication only and transport to an emergency room for further treatment is needed. Antihistamines, supplemental oxygen, beta-agonists for bronchospasms, and steroids may be administered in the emergency room. Follow up with your Asthma & Allergy Center clinician is recommended. Those with severe allergies may want to consider

wearing a special bracelet or necklace that identifies the wearer as having severe allergies and supplies other important medical information.

### **How do you determine if you are allergic to venoms?**

After a large, local reaction or possible anaphylaxis from a sting an evaluation by your Asthma & Allergy Center clinician is warranted for review of the history of stings and reactions. Skin testing to venoms from Honeybees, Yellow Jackets, Wasps, Yellow Hornet, and White-faced Hornet, is available at our office. If you know what insect stung you, skin testing to one insect may be possible; however, if you are unaware of which insect stung you skin testing may be completed to all the venoms. A prick skin test to the venom is completed first. If the result is negative, intradermal testing with sequentially increasing doses of venom is next. The evaluation is stopped when skin testing is positive or the maximum intradermal dose is reached and the result is negative. A blood test to venom is available for patients who cannot be skin tested or suspicion for a positive test was high and skin testing is negative.

Your reaction to a sting will usually repeat itself without a progressive worsening of symptoms with future stings. A child with just skin reactions such as hives or swelling is at little risk for a more life threatening reaction in the event of another sting. However, adults with more than a local reaction should be evaluated for venom sensitivity by The Asthma & Allergy Center clinicians.

### **Can anaphylactic reactions be prevented in venom sensitive people?**

If you tested positive to venom skin testing, venom immunotherapy is an option. Venom immunotherapy consists of a series of injections of increasing doses of venom that stimulates the immune system to become resistant to the allergic reaction triggered by a sting. Initially, three injections 30 minutes apart are given weekly at our office for a one-month period. The number of injections will then decrease to two then eventually to one injection per visit with time intervals between shots eventually increasing until a maintenance dose is reached. After 15 weeks injections are given monthly and each year the frequency of injections is decreased until immunotherapy is completed at five years. You will be required to remain in the office for up to 60 minutes after an immunotherapy injection is given. Immunotherapy is effective within a few months; however, an Epi-pen should always be available to you. Protection from a course of immunotherapy appears to last 10-20 years according to recent studies. It is shown to be 97% effective in preventing future systemic allergic reactions. Rush venom immunotherapy may also be available if needed. Risks to immunotherapy are minimal and include local reactions at the site of the injection and systemic reactions that require epinephrine.

Avoidance is the best way to prevent an insect sting. Stay out of the "territory" of the stinging insects nests. A trained exterminator should be hired to remove all nests and hives visible around your home. Remain calm and quiet when you encounter flying stinging insects and slowly move away. Avoid looking or smelling like a flower by not wearing brightly colored clothing and heavy scented perfumes when outdoors. Be careful when cooking, eating, and drinking sweet drinks outside because the smell of food attracts insects. Keep food covered until eaten. Keep trash areas clean and at a distance away from you. Avoid wearing loose-fitting garments, open-toed shoes, or going barefoot outside.

## Identifying stinging insects

To avoid stinging insects, it is important to learn what they look like and where they live. Most sting reactions are caused by five types of insects: *yellow jackets*, *honeybees*, *paper wasps*, *hornets*, and *fire ants*.

*Yellow jackets* are black with yellow markings, and are found in various climates. Their nests, which are made of a papier-mache material, are usually located underground, but can sometimes be found in the walls of frame buildings, cracks in masonry or woodpiles.

*Honeybees* have a rounded, “fuzzy” body with dark brown coloring and yellow markings. Upon stinging, the honeybee usually leaves its barbed stinger in its victim; the bee dies as a result. Honeybees are nonaggressive and will only sting when provoked. However, Africanized honeybees, or so-called “killer bees” found in the southwestern United States and South and Central America, are more aggressive and may sting in swarms. Domesticated honeybees live in man-made hives, while wild honeybees live in colonies or “honeycombs” in hollow trees or cavities of buildings. Africanized honeybees may nest in holes in house frames, between fence posts, in old tires or holes in the ground, or other partially protected sites.

*Paper wasps’* slender, elongated bodies are black, brown, or red with yellow markings. Their nests are also made of paper-like material that forms a circular comb of cells which opens downward. The nest are often located under eaves, behind shutters, or in shrubs or woodpiles.

*Hornets* are black or brown with white, orange or yellow markings and are usually larger than yellow jackets. Their nest are gray or brown, football-shaped, and made of a paper material similar to that of yellow jackets’ nests. Hornets’ nests are usually found high above ground on branches of trees, in shrubbery, on gables or in tree hollows.

*Fire ants* are reddish brown to black stinging insects related to bees and wasps. They build nests of dirt in the ground that may be quite tall (18 inches) in the right kinds of soil. Fire ants may attack with little warning: after firmly grasping the victim’s skin with its jaws, the fire ant arches its back as it inserts its rear stinger into the skin. It then pivots at the head and may inflict multiple stings in a circular pattern. Fire ant venom often causes an immediate burning sensation.