

Allergic reactions to insect stings



Getting stung by an insect is an inevitable consequence of interacting with the environment. Regardless of age or geographic location, whether you work in an office or out on site, spend your free time worshipping the sun or hiding in the shade, wasps and bees are one of the few invertebrates we encounter in Europe which pose a risk of harm.

For most people, a sting from a bee or wasp is a short-term inconvenience. A few hours of significant pain, which can be alleviated with nothing more than a rude word, some cold water and perhaps a mild painkiller. For other people, however, bees and wasps pose a significant danger. Allergic reactions or anaphylaxis can develop from a sting, which are potentially life-threatening.

This article, written by Dr. Aarn Huissoon (MB, PhD, FRCP, FRCPath) for BALI, has been possible thanks to a financial grant from ALK-Abello, a global, research-driven pharmaceutical company which focusses on allergy diagnosis and treatment. It has been written specifically for landscape professionals, and explores the types of reactions, the symptoms and treatment.

ALK-Abello would like to hear from readers who may be affected by insect sting anaphylaxis. If you are prepared to share your story with them, please get in touch with me at: owen.baker@bali.org.uk

Who is at risk of allergic reactions to insect stings?



Everyone gets some pain and swelling when they are stung by a bee or a wasp. While allergic reactions to these stings are uncommon in the general public, anyone can develop an allergy to insect stings. Even if you have been stung before without any reaction, you could react differently to the next sting. Someone who has already had an allergic reaction to a sting will probably react again when they are stung again, but the reaction can be milder or more severe than the last time. Outdoor occupations and hobbies, especially in horticultural environments do increase the risk of being stung and of developing an allergy to

insect stings¹. Wasp sting allergies are more common than those caused by bee stings², and it is unusual to be allergic to both.

Are there different types of allergic reactions?

Doctors distinguish between 2 main types of allergic reaction; local reactions and systemic "whole body" reactions. In both reactions the immune system over-reacts to the venom in the sting. However the effects, treatments and diagnostic tests are different. Bee or wasp stings can cause both types of reaction.

Local reactions

This occurs when a swelling develops in the area that was stung. For instance, a sting on the finger can cause anything from a swollen finger to a hot, swollen arm; these are all local reactions. They typically take hours to develop and they settle down over several days. Local reactions are common, and while they can be very uncomfortable they are not life-threatening. However if you are stung in the mouth, this can cause swelling that blocks breathing. There are no tests to help confirm the cause of local reactions.

Systemic allergic reactions

These are immediate reactions which can develop into anaphylaxis or allergic shock; a life-threatening emergency. Symptoms develop soon after the sting (usually within minutes) and progress quickly (see table 1). Allergy blood and skin tests can help with diagnosis, but they can't tell you what will happen the next time you are stung.

Table 1. Symptoms and Signs of Anaphylaxis due to Insect Sting (Adapted From Bilo 2016³)

Skin	
Early	feeling of warmth; itching [may occur in areas such as ears, palms, soles, or groin]; "hair standing on end"
Late	flushing; hives; swelling
Mouth	
Early	itching or tingling of lips, tongue, or palate; metallic taste
Late	swelling of lips, tongue, throat
Airways	
Early	itchy, runny or blocked nose; sneezing; hoarse voice; short of breath; chest tightness; cough
Late	Noisy, difficult breathing; wheezing; "turning blue"
Blood pressure	
Early	Feeling dizzy; sense of "impending doom"
Late	Collapse, loss of consciousness, convulsion, cardiac arrest

Treatment of local reactions

These reactions usually don't need medical attention. A cold compresses or painkillers such as paracetamol or ibuprofen can help. Keeping a swollen limb elevated (e.g. in a sling) can also make it more comfortable. Antihistamines may slightly reduce the itching and swelling, and certainly don't do any harm. Sometimes antibiotics are prescribed in the belief that the swelling and heat are caused by an infection. While any skin wound, including a sting, can become infected, this usually takes a day or two to build up. If in doubt, do get medical advice.

Only steroids can speed up the healing of a large local reaction. The earlier these are used the better they work. So if you know that your stings always end up with large swellings, make sure you get to the doctors quickly to nip it in the bud. Steroids could make an infected sting worse, so it is important that a doctor or nurse looks at it first to decide.

Treatment of Systemic Allergic Reactions^{2,3}

Any symptoms other than local reactions could need urgent medical attention. They may be the first signs of anaphylactic shock, a life-threatening emergency. Most people recognise that itchy rashes or swelling lips are signs of allergy. But some people's symptoms may be much less obvious. They may feel dizzy, or feel their heart racing. They could feel short of breath or wheezy. Some people having anaphylaxis just describe a sense of "something seriously wrong inside", without being able to pinpoint specific symptoms.

If any of these symptoms occur after a sting, then

- dial 999 for a paramedic without delay, using the word “anaphylaxis” (anna-fill-axis).
- if the victim is known to be allergic to bee or wasp stings they should have an adrenaline injector device available. Use this as soon as it is clear that they are having a reaction. If there is none available, then the paramedics will have this. Adrenaline is more likely to be effective if given early.
- if antihistamines are available, and the victim is conscious and able to swallow safely, then give a double dose.
- if the victim is breathless, they should sit up. If they are dizzy or losing consciousness they should lie down with their legs raised. If they are unconscious, use the recovery position.

Which insect caused the reaction?

Not everyone can confidently tell the difference between a bee and a wasp, or you may not even see the insect that stings you. Wasp stings are more common, and they may sting more than once. Bees often leave the stinger in the skin with the venom sack attached: don't pinch this when removing the stinger, but flick the stinger out with a finger-nail. It could help your treatment if you know for sure which insect caused the reaction.

Preventing systemic allergic reactions

People who have had a severe allergic reaction have at least a 50/50 chance of having another if they are stung again². So it makes sense to avoid the trigger (i.e. stings)². All such people should be referred by their GP to a specialist allergy clinic – see www.bsaci.org for where to find one.

When you are referred to a specialist clinic they will discuss the full range of treatment options including avoidance of stinging insects, adrenaline pens and oral steroids.

See your GP for a referral to a hospital-based allergy clinic for specialist diagnosis and treatment.

For more information about insect sting allergies visit beeresistant.co.uk

Dr Aarn Huissoon MB, PhD, FRCP, FRCPATH

Consultant Immunologist at Allergy and Immunology West Midlands, Birmingham Heartlands Hospital. Dr Huissoon trained in Immunology at Birmingham and Nottingham, and has led the clinical and laboratory Immunology services for 17 years. He has published many articles about allergy and immunodeficiency, and is a big fan of patient involvement in their care.

1. Hymenoptera venom allergy in outdoor workers. *Human Vaccine Immunotherapy. Human vaccine and Immunotherapeutics* 2017. Vol 13, No 2, 477-483.
2. Krishna et al. Diagnosis and management of hymenoptera venom allergy: British Society for Allergy and Clinical Immunology (BSACI) guidelines. *Clinical and Experimental Allergy* 2013; doi: 10.1111/j.1365-2222.2011.03788.x
3. MB Biló et al., Self-medication of anaphylactic reactions due to Hymenoptera stings – An EAACI Task Force Consensus Statement. *Allergy* 2016; DOI: 10.1111/all.12908.
4. www.nice.org.uk/guidance/ta246