

Allergic reactions to bites and stings

Most insect bites and stings result in a localised itch and swelling that settles within a few days. Severe allergic reactions (anaphylaxis) to insects are usually due to bees, wasps or the Australian Jack Jumper ant. Insect bites are a less common cause of anaphylaxis than insect stings. Fortunately, effective treatments are available to treat allergic reactions to bites and stings.

Stinging insects are a common cause of anaphylaxis

Allergies to venoms from stinging insects (bees, wasps and ants) are one of the most common causes of severe allergic reactions (anaphylaxis) in Australia. Symptoms include an all over rash, swelling of tongue or throat, trouble breathing, abdominal pain, diarrhoea, vomiting or a drop in blood pressure (shock).

- Although stinging insects belong to order of *hymenoptera* (which means membranous winged insects), their venoms are very different. Allergy to one type of stinging insect does not usually increase the risk of an allergic reaction to another.
- The Honey Bee is the most common cause of allergic reactions to insects in Australia.
- Paper Wasps and European Wasps can sting multiple times. Although the more familiar Paper Wasp is responsible for the majority of serious stings, the European Wasp is becoming an increasing problem in Australia. It is particularly aggressive and likes to get inside drink cans at barbeques.
- The major cause of anaphylaxis from ant stings is the Australian Jack Jumper ant (*Myrmecia pilosula*), a medium sized black bull ant most prevalent down the eastern side of Australia, Tasmania and South Australia. It can be recognised by its characteristic hopping motion when it walks. It is a very aggressive ant and its sting can cause severe local pain. Information on Jack Jumper Ant allergy is available on the ASCIA website: www.allergy.org.au/patients/insect-allergy-bites-and-stings/jack-jumper-ant-allergy
- Native Australian Bees and the Green Ant of Queensland can also cause allergic reactions.

Allergen immunotherapy can reduce the severity of allergy

- Allergen immunotherapy (desensitisation) can help to switch off allergy over time and this is effective treatment for allergies to bee and wasp stings. Rebates are available for this treatment on the PBS in Australia and by Pharmac in New Zealand.
- There is currently only limited access to Jack Jumper ant allergen immunotherapy.
- Allergen immunotherapy is not yet available for treating tick allergy or reactions triggered by other species of ants and wasps.
- Allergen immunotherapy is not helpful in patients with large local swellings alone and may not be necessary in patients with isolated rashes. For these reasons, patients should be evaluated by a clinical immunology/allergy specialist before initiation of allergen immunotherapy is considered.
- The duration of treatment is usually 3-5 years.

Diagnosing the cause of your allergy

Your doctor will normally ask a series of questions that may help to narrow down the list of likely cause of your reaction. This approach will also help to exclude conditions that can sometimes be confused with anaphylaxis. Skin testing or blood allergy testing can help confirm or exclude potential triggers.

Natural history of allergic reactions to stinging insects

Isolated local reactions:

- Individuals who have had a rash or large local swelling alone have a less than 1 in 10 chance of developing severe allergic reactions (anaphylaxis) with further stings.
- Allergen immunotherapy is not indicated.

Generalised reactions without life threatening features:

- Symptoms of generalised hives (urticaria) without difficulty breathing or a drop in blood pressure are uncomfortable but not dangerous.
- This type of allergic reactions is more common in children than adults and has less than a 1 in 10 chance of progressing to anaphylaxis.
- Allergen immunotherapy is not usually indicated in children who have reactions confined to the skin but is indicated in adults.
- Anyone with a history of a generalised allergic reaction (even without life threatening features) to an insect sting should be referred to a medical specialist (clinical immunology/allergy specialist).

Anaphylaxis:

- Individuals who are at greatest risk of anaphylaxis are those who have previously had anaphylaxis (e.g. abdominal pain, vomiting, difficulty breathing, drop in blood pressure) following a sting.
- Allergic reactions to stinging insects (particularly when severe) tend to persist, although children are more likely to improve than adults.
- Adults are at greater risk of anaphylaxis than children. Allergen immunotherapy is often indicated.
- Anyone with a history of anaphylaxis to an insect sting should be referred to a medical specialist (clinical immunology/allergy specialist).

Severe allergic reactions (anaphylaxis) can be fatal

Anaphylaxis from stinging insect allergy results in an average of three deaths per year in Australia. Older individuals and those with difficult breathing are at greatest risk and should be seen by a medical specialist (clinical immunology/allergy specialist) to develop a strategy for managing subsequent stings.

Effective emergency treatment for anaphylaxis is available

Patients at risk of anaphylaxis are usually advised to:

1. Have an ASCIA Action Plan for Anaphylaxis and adrenaline autoinjector (e.g. EpiPen) readily available to treat anaphylaxis.
2. Wear medical identification jewellery, which will increase the likelihood that adrenaline will be administered in an emergency.
3. Avoid medication (where possible) that may increase the severity of anaphylaxis or complicate its treatment. Beta blockers (and perhaps ACE inhibitors) fall into this group.
4. Seek urgent medical assistance if stung or bitten.

First aid is adequate for the treatment of minor allergic reactions to bees

Bees usually leave their barbed sting in the skin and die. Flicking the sting out as soon as possible (preferably within 30 seconds) will reduce the amount of venom injected. Use the edge of your fingernail, a car key or credit card. If possible try not to squeeze the venom sac, as this may increase the amount of venom injected. By contrast, wasps and bull ants rarely leave their sting in the skin. Cold packs and soothing creams often help for minor reactions. Oral antihistamines can be useful for treating itch. Very large and uncomfortable local reactions may sometimes need cortisone tablets to settle the swelling.

Bites are a less common cause of anaphylaxis than insect stings

- Local allergic reactions to biting insects (such as itchy bites to mosquitoes, midges and March flies) tend to become less severe with time.
- Anaphylaxis to biting insects is very rare, even when the swellings are very large and uncomfortable.
- Caterpillars can cause severe irritation from touching their spines, which are attached to venom sacs underneath the skin. In rare cases they can trigger anaphylaxis.
- Ticks (which are arachnids rather than insects) also bite. Sometimes large local swelling and inflammation can arise at the site of a bite and last several days. Such reactions are usually due to mild allergy to the tick. Anaphylaxis can occur to the Australian paralysis tick, *Ixodes holocyclus* when the tick is disturbed, so ticks should be freeze dried before they are removed. Further information on tick allergy is available on the ASCIA website: www.allergy.org.au/patients/insect-allergy-bites-and-stings/tick-allergy
- Anaphylaxis following snake bites has also been reported, although these are very rare.
- Common bull ants can cause anaphylaxis.

Prevention of bites and stings

- Bites from midges and mosquitoes are best avoided by covering up as much as possible. Avoid being outdoors in the early morning or at dusk, and use an insect repellent containing DEET.
- After being outdoors, check for ticks if living in an endemic area. Ticks should NOT be removed from allergic individuals until the individual is in an emergency medical facility. This is because allergic reactions often occur when the tick is removed.
- Honey Bees normally only sting in self defence. The best protection is light coloured clothing, covering much of the body, including wearing shoes and avoiding perfumes.
- Wasps tend to nest in logs, walls or underground. They are generally more aggressive than bees and attracted to food and drink. Therefore, it is important that you don't drink blindly from open drink cans when outdoors.
- Stings and bites often occur on bare feet, so people with allergies to bites or stings should always wear shoes when outdoors.
- When gardening, wear long sleeves, long pants and gloves. Tuck shirt into pants and pants into socks to prevent tick bites.
- Avoid provoking bees and wasps.
- Where possible, drive with the windows up.
- Have nearby ant, bee or wasp nests removed by professionals. This is also relevant to schools and childcare services, particularly if they have children enrolled with stinging insect allergy.

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The Australasian Society of Clinical Immunology and Allergy (ASCIA) is the peak professional body of clinical immunology and allergy specialists in Australia and New Zealand.

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Content last updated June 2015