CONDITION

Insect bites and stings

Insect bites and stings are skin injuries caused by insect saliva or venom.

WHAT IT IS
Skin reactions caused by insect bites or stings

BODY SYSTEM
Skin and immune system

MAIN SYMPTOMS
Itching, redness, pain, swelling

WHAT CAUSES IT
Saliva from bites or venom from stings

HOW IT IS DIAGNOSED
Skin examination; allergy tests after whole-body reactions

MAIN TREATMENT
Symptom relief; adrenaline for anaphylaxis

CAN IT BE CURED?
Yes - most reactions heal within days

IS IT AN EMERGENCY?
Sometimes - breathing trouble or throat swelling

LONG-TERM OUTLOOK
Full recovery is usual after mild reactions

Overview

Insect bites and stings injure the skin in different ways. Biting insects pierce the skin to feed and may leave saliva behind. Stinging insects inject venom through a stinger.

Mosquitoes, midges, fleas, bedbugs and some flies commonly bite. Bees, wasps, hornets and some ants can sting. Ticks and mites are not insects, but their bites are often discussed alongside insect bites because they cause similar skin symptoms.

Most bites and stings cause a small, temporary reaction. The area may become itchy, painful, red or swollen. These symptoms often improve with simple care over several days.

Some people develop a large local reaction, with swelling extending well beyond the bite or sting. A smaller number have anaphylaxis, a serious allergic reaction affecting breathing or circulation. Bites can also become infected, especially when scratched.

The appearance of a bite does not always identify the insect. Several insects, skin conditions and minor infections can produce similar marks.

Symptoms

A bite often causes one or more small, raised, itchy bumps. A sting is more likely to cause immediate sharp or burning pain, followed by redness and swelling.

On brown or black skin, redness may be less obvious. The area may instead look darker, purple or grey, or feel warmer and more swollen than the surrounding skin.

Common symptoms include:

A normal local reaction remains close to the bite or sting. It may become more noticeable during the first day before gradually settling.

A large local reaction can cause swelling across much of a hand, foot, arm or leg. It can look concerning but is not the same as anaphylaxis when there are no symptoms elsewhere in the body. The swelling may take several days to improve.

Anaphylaxis usually begins soon after a sting or bite, although timing is not always predictable. Possible symptoms include throat or tongue swelling, difficulty breathing, wheezing, faintness, confusion, or widespread raised, itchy welts called hives. Vomiting or severe abdominal pain can also occur as part of a serious allergic reaction.

- Itching, tenderness or burning
- A raised bump, blister or small puncture mark
- Swelling around the affected area
- Several bites in a cluster or line
- A small amount of clear fluid from irritated skin

Causes and risk factors

Symptoms develop because the body reacts to substances in insect saliva or venom. This immune response causes inflammation, which leads to itching, warmth and swelling.

Some insects are more active at particular times or in particular places. Mosquito exposure is more likely around standing water. Fleas may be associated with pets or other animals. Bedbugs hide in furniture, mattresses and luggage and usually bite exposed skin while a person is resting.

Bees often leave a barbed stinger in the skin. Wasps and hornets can usually sting more than once. Disturbing a nest increases the chance of multiple stings.

Anyone can have a local reaction. The chance of a serious allergic reaction is higher after a previous whole-body reaction to an insect sting. A large local reaction does not automatically mean that the next sting will cause anaphylaxis.

Scratching damages the skin barrier and increases the chance of bacterial infection. Outdoor work, travel, uncovered skin and activities near nests or flowering plants can increase exposure.

Diagnosis

Most bites and stings are diagnosed from the skin's appearance, the symptoms and what happened before they began. A specific test is usually not needed.

Useful details include when the mark appeared, whether a sting was felt, where you were, and whether other people in the same home have similar marks. A retained bee stinger or an attached tick may also help explain the reaction.

It can be difficult to identify an insect from the skin mark alone. Bedbug, flea and mosquito bites can overlap in appearance. Hives, eczema, scabies and some skin infections may also resemble bites.

If infection is suspected, a healthcare professional usually examines the skin. Tests are not routinely required, although fluid or blood tests may sometimes be used when an infection is severe or unusual.

After a serious reaction to a sting, an allergy specialist may use skin tests or blood tests to look for immune antibodies to particular insect venoms. These tests are interpreted alongside the history because a positive result alone does not show how severe a future reaction might be.

Treatment and management

For a mild reaction, move away from the insect or nest to avoid further stings. Wash the skin with soap and water. A cold pack wrapped in cloth can reduce pain and swelling. Raising a swollen arm or leg may also help.

If a stinger is visible, remove it as soon as you safely can. Avoid squeezing the attached venom sac if one is clearly present, but do not delay removal while trying to use a particular technique.

Try not to scratch. Keeping fingernails short and covering broken skin can reduce further

irritation. A pharmacist can advise whether an oral antihistamine, mild corticosteroid cream or non-prescription pain reliever is suitable for you. Follow the product instructions, particularly when treating children, during pregnancy, or if you take other medicines.

Large local reactions may need medical assessment if swelling is extensive, painful or interfering with movement. Treatment focuses on controlling inflammation and discomfort. Antibiotics like amoxicillin or doxycycline do not treat an ordinary allergic or inflammatory reaction.

An infected bite may require antibiotics after assessment. Increasing redness alone does not always mean infection because normal inflammation can expand during the first day. Pus, worsening pain, marked warmth, red streaks or feeling unwell make infection more likely.

Anaphylaxis requires immediate treatment with adrenaline, also called epinephrine. If you have been prescribed an adrenaline auto-injector, use it promptly according to your emergency plan and call emergency services. Further observation and treatment are still needed even if symptoms improve.

People with a confirmed serious allergy to bee or wasp venom may be offered venom immunotherapy. This specialist treatment uses carefully controlled venom exposure over time to reduce the risk of another severe allergic reaction.

Complications

A bacterial skin infection can develop when scratching creates breaks in the skin. Infection may spread into deeper skin, causing cellulitis. This usually causes increasing warmth, pain and swelling rather than itch alone.

A sting close to the eye may cause significant swelling. A sting inside the mouth or throat can obstruct breathing because even local swelling occurs in a narrow space.

Multiple stings can deliver a larger amount of venom. This may cause illness even without an allergy, particularly in a child or a person with other health problems.

Some insects can carry infections. The risk depends on the insect and geographic location. Mosquito-borne illnesses are uncommon in some regions but important in others. Ticks can transmit infections such as Lyme disease, although ticks are arachnids rather than insects. A spreading circular rash, fever or flu-like illness after a tick bite needs medical advice.

A previous serious allergic reaction may also lead to anxiety about outdoor activities. An allergy assessment and a clear emergency plan can help make this risk more manageable.

Prevention

Not every bite or sting can be prevented. Practical steps can reduce exposure without requiring you to avoid ordinary outdoor activity.

Use an approved insect repellent according to its label. Wear shoes outdoors and consider long sleeves and trousers where biting insects are common. Screens, mosquito nets and air conditioning can reduce indoor exposure in higher-risk areas.

Avoid swatting at bees or wasps. Move away slowly. Keep outdoor food covered, check open drink containers before drinking, and keep rubbish bins closed. Do not attempt to remove an active nest yourself.

Regularly check pets for fleas and use veterinary flea control when advised. Bedbug infestations usually need thorough cleaning and professional pest management; bites cannot be prevented reliably by treating the skin alone.

Before travel, check official advice about insect-borne infections at your destination. Recommended measures may include particular repellents, mosquito nets, vaccines or preventive medicines.

If you have had anaphylaxis from a sting, prevention also includes carrying prescribed adrenaline, checking its expiry date and following your allergy action plan. Medical identification jewellery can communicate the allergy during an emergency. Venom immunotherapy may reduce future risk for suitable people, but it does not replace emergency preparation.

Living with it and what to expect

Most uncomplicated bites and stings improve over several days. Itching may continue after pain and redness start to settle. A small mark or temporary change in skin colour can remain for longer, especially after scratching.

Large local reactions can take longer to resolve and may temporarily limit movement if they affect a hand, foot or joint. They usually settle without lasting damage, but future stings may cause another large reaction.

Repeated unexplained bites at home will continue until the source is addressed. The pattern may improve after treating pets for fleas, removing bedbugs or preventing mosquitoes from entering the home.

After anaphylaxis, follow-up with an allergy specialist can clarify the likely trigger and future precautions. You may need to carry adrenaline long term. Some people are offered venom

immunotherapy over several years. The aim is to lower the risk of another severe reaction, although no treatment can promise complete protection.

Most people continue work, travel and outdoor activities normally. Planning matters more when there is a known venom allergy or travel to an area with insect-borne disease.

When to get medical help

Call emergency services now if a bite or sting is followed by:

Use a prescribed adrenaline auto-injector without delay if your emergency plan says to do so. Do not wait to see whether anaphylaxis settles by itself.

Seek prompt medical advice for worsening pain, spreading warmth, pus, red streaks, fever or feeling generally unwell. Also get advice for severe swelling, a sting near the eye, symptoms that are not improving, or a bite acquired where insect-borne infection is a concern.

Routine follow-up is appropriate if bites keep appearing, the cause is unclear, or reactions repeatedly disrupt sleep or daily activities. A non-urgent allergy assessment may be appropriate after a large reaction or any previous whole-body reaction to a sting.

- Difficulty breathing, wheezing or a tight throat
- Swelling of the tongue, lips or throat
- Faintness, collapse, confusion or marked weakness
- Widespread hives with breathing or circulation symptoms
- A sting inside the mouth or throat
- Many stings followed by significant symptoms

Common questions

How long do insect bites and stings last?

Mild pain and swelling often improve within a few days. Itching or a small mark can last longer. Large local reactions may take several days to settle. Symptoms that keep worsening rather than gradually improving should be assessed.

How can I tell what bit me?

The mark alone is rarely enough to identify an insect. Location, timing and exposure provide better clues. Bites appearing after sleep may suggest bedbugs or mosquitoes, while ankle bites can occur with fleas, but these patterns do not confirm the cause.

Why is my insect bite getting bigger?

Inflammation can increase during the first day and does not always mean infection. A large local allergic reaction can spread well beyond the original mark. Increasing pain, heat, pus, red streaks or illness is more concerning for infection.

Should I pop a blister from an insect bite?

It is usually best to leave the blister intact because its surface protects the skin beneath it. Keep it clean and covered if clothing rubs against it. Seek advice if it becomes very painful, cloudy, hot or increasingly red.

Does a large swelling mean I will have anaphylaxis next time?

Not necessarily. A large local reaction is different from a reaction affecting breathing, circulation or several parts of the body. An allergy specialist can assess future risk when reactions are severe or extend beyond the sting area.

When do insect bites need antibiotics?

Antibiotics are used for bacterial infection, not ordinary itching, redness or allergic swelling. They may be considered when there is worsening pain, spreading warmth, pus, fever or another sign of infection after assessment.

Sources

- NHS: Insect bites and stings
- NICE Clinical Knowledge Summaries: Insect bites and stings
- Centers for Disease Control and Prevention: Preventing mosquito bites
- Centers for Disease Control and Prevention: About bed bugs
- Resuscitation Council UK: Emergency treatment of anaphylaxis
- Golden DBK and colleagues: Stinging insect hypersensitivity-A practice parameter update 2016, Annals of Allergy, Asthma & Immunology