

# Bites

Animal and human bites

## Introduction

Animal bites (such as dog bites) and human bites are a relatively common type of injury.

In most cases, the wound that results from an animal bite is minor and can be treated with simple first aid.

This includes:

cleaning the wound immediately and thoroughly by running it under warm water for a couple of minutes

encouraging the wound to bleed by gently squeezing it, unless it is already bleeding freely

using painkillers, such as ibuprofen or paracetamol, to help relieve the pain and inflammation

More severe bites will require hospital treatment to clean out the wound and remove any damaged tissue.

See your DOCTOR for advice even if the bite is minor, as there is a risk of animal and human bites becoming infected

## Complications

The most common complication of an animal or human bite is the bite becoming infected by bacteria.

The saliva of any mammal contains hundreds of million bacteria from many different species, many of which can cause an infection.

Signs that a bite has become infected include the following:

redness and swelling around the wound

the wound becomes more painful

fluid or pus is leaking from the wound

Read about the symptoms of an infected dog bite.

If you think a bite has become infected, seek immediate medical advice.

Although uncommon, infected animal and human bites can lead to more serious secondary infections. These can include the following:

blood poisoning (sepsis)

infection of the outer layers of the brain (meningitis)

infection of the inner lining of the heart (endocarditis)

### Causes

The three most common causes of bites are:

dog bites, which account for around four out of five cases (80%)

cat bites, which account for around one-in-seven cases (15%)

human bites, which account for around one-in-20 cases (5%)

Bites from other animals such as mice, rats or hamsters are much rarer, occurring in around one-in-50 cases.

### Dog bites

Dog bites are most common in young children, particularly boys, between five to nine years of age. It is estimated that around half of all children will be bitten by a dog at some point during their life, usually by either a family dog or a dog that belongs to a friend or neighbour.

Bites from stray dogs are rarer as they tend to be wary of humans and usually keep their distance.

## Cat bites

It is estimated that the majority of cat bites involve stray, female cats.

All cats are predators, so they can react unpredictably, and this is particularly true of cats that are not used to living with people (undomesticated).

Only one-in-five cat bites are caused by a pet cat.

## Human bites

Most human bites occur during a fight, usually when one person punches someone else in the teeth. This often occurs when one or both protagonists is under the influence of alcohol.

These are known as closed-fist bites or "fight bites". Men aged 16-25 years old are most likely to experience these bites as they are most likely to get into fights.

## Avoiding bites

Never leave a child unsupervised with a dog, regardless of what type of dog it is, or its previous behaviour.

Many of the more serious cases of dog bites happen when a child is left alone with a dog. Other ways to avoid being bitten, include:

Respect a dog's boundaries because, like many animals, dogs have a strong sense of personal space.

Never approach a strange cat; the cat could be a stray and react aggressively.

Avoid binge drinking; most people who end up in fights were previously drinking heavily.

## Symptoms of bites

### Dog bites

Dog bites typically cause a narrow and deep hole in the skin (puncture wound). They can also cause a jagged wound or cut (laceration) and a scraped area of skin (abrasion).

This is because dogs use their front teeth to "pin" their victim, and their other teeth to bite and pull at the surrounding skin.

In adults, most animal bites are to their hands, arms, legs or feet. Due to children's smaller size, most bites are to their face and usually involve their lips, nose or cheek.

### Cat bites

A cat bite is not as strong as a dog's, but their teeth are sharper and often cause very deep puncture wounds. A cat bite is capable of penetrating bones and joints. Lacerations and abrasions are less common, occurring in one-in-five cases.

In adults, most cat bites are to their upper limbs, particularly the fingers and hands. In children, as well as the upper limbs, the face and neck can also be bitten.

### Human bites

Most human bites are the result of a closed-fist injury, where one person punches another person in the teeth and cuts their hand. Typical symptoms include small cuts to the hand, and red, swollen and painful skin.

Toddlers often bite each other when playing together, but the resulting injuries are usually minor and do not usually pose a serious risk to their health.

## Infection

The signs and symptoms that suggest that a bite wound has become infected include:

redness and swelling around the wound

the wound becomes more painful

liquid or pus leaks from wound

swollen lymph glands (nodes)

a high temperature (fever) of 38C (100.4F) or above

shivers

## When to seek medical advice

Seek immediate medical attention for all but minor dog bites. Even some minor-looking cat bites can penetrate deeply and become infected.

Human bites have a much higher chance of causing infection, so always seek immediate medical attention before waiting for any symptoms of infection to appear.

Always seek immediate medical attention if you or your child receives a bite to the following areas:

the hands

the feet

a joint, tendon, or ligament

the scalp or face

the genitals

the ears or nose

It's also important to seek immediate medical attention if you have a pre-existing condition that increases your chances of infection, such as diabetes, liver disease or HIV, or you are undergoing medical treatment that is known to weaken the immune system, such as chemotherapy.

For most bites, you should be able to receive treatment from your DOCTOR, walk-in centre or your local minor injuries unit.

However, if the bite wound is more severe or involves bones, joints or tendons, you should visit your local accident and emergency (A&E) department.

### Causes of bites

#### Dog bites

The majority of dog bites are unprovoked, usually by a family dog or a dog that belongs to a friend or neighbour.

Dogs are territorial creatures. Many innocent actions will be perceived by a dog as an invasion of its territory, and may be interpreted as a hostile act, resulting in a bite. This can include:

disturbing a dog when it is sleeping

disturbing a dog when it is eating

disturbing a dog when it is caring for its puppies

people running, screaming, or shouting in the presence of a dog

being petted by somebody they do not know (always let a dog smell your hand before you stroke it)

Some dogs, particularly young ones, can get over-excited when playing, and they may accidentally give a friendly nip. Dogs that are sick or in pain can also react unpredictably.

## Cat bites

It is estimated that the majority of cat bites come from stray, female cats. All cats are predators, so they can react unpredictably, and this is particularly true of cats that are not used to living in a house with people (undomesticated).

Around one-in-five cat bites are from a person's own cat. There are four key reasons why your pet cat might bite:

Your cat mistakes a sudden action for an aggressive act.

Like dogs, cats or kittens can get excited when they are playing, and can jump at and bite any moving object, such as your hand.

If your cat cannot attack its intended target, such as another cat, it may lash out at the nearest target.

For reasons that are unclear, an apparently content cat can suddenly bite their owner after being petted for a few minutes.

## Human bites

The majority of human bites happen when one person punches another person in the teeth (fight-bites). This is usually in young men who have been drinking alcohol.

Intentional bites can be common in very young children and in people with severe learning difficulties, as they are often unaware that such behaviour is socially unacceptable.

Accidental bites can happen during contact sports, such as rugby and football, when a person accidentally knocks into another person's teeth.

Accidental bites can also occur during vigorous sexual activity, particularly oral sex. Although you may feel embarrassed, always seek medical treatment for an accidental bite that has happened in this way, because this type of bite has a high risk of becoming infected.

Other causes of human bites include:

domestic violence or sexual assault

accidentally biting your tongue during a seizure (fit)

self-inflicted biting, which can sometimes occur in people who are emotionally disturbed or are mentally disabled

### Other types of animal bites

Though far less common, pets such as hamsters, rabbits and guinea pigs can bite people. Usually when children stick their fingers through the bars of the pet's cage.

Bites from animals other than pets are less common in England but are more of a concern for certain occupations.

For example, people who work with pigs are sometimes bitten while monkeys and apes can be a problem for zoo and laboratory workers.

### Treating bites

If you have been bitten by an animal or human, it's important to clean the wound immediately.

Remove anything from the bite, such as teeth, and clean the wound thoroughly by running warm tap water over it for a couple of minutes.

Encourage the wound to bleed by gently squeezing it, unless it is already bleeding freely. If you require pain relief, take over-the-counter (OTC) painkillers such as ibuprofen or paracetamol.

Children under 16 should not take aspirin.

If the bite is serious, or a body part such as a finger or ear has been bitten off, wash the body part with tap water and place it in a plastic bag or a sealed container. Put the container into a tub of iced water (but not frozen) to keep it cool, so that it can be transported to hospital. It may be possible to re-attach the body part using reconstructive surgery.

### Medical treatment

Severe bites needing medical treatment will be cleaned and any damaged or dead tissue will be removed (debridement).

If there is a risk of infection, the wound will be left open. This makes it easy to keep the wound clean. If the risk of infection is thought to be low, the wound can be stitched up.

To prevent blood loss, wounds that bleed excessively are closed, despite the risk of infection.

### Antibiotics

Antibiotics are given as a precaution when it is thought that there is an increased risk of infection.

Antibiotics are usually recommended for:

all cases of cat bites

all cases of human bites

animal bites to the hands, feet, or face

any bites that have caused puncture wounds

wounds that required closure due to excessive bleeding

wounds that required debridement

wounds that involve joints, ligaments or tendons

people with prosthetic (artificial) joints or valves

people with a weakened immune system (immunosuppression) due to a health condition such as diabetes or HIV, or as a side effect of treatments such as chemotherapy

In most cases, a seven-day course of an antibiotic called co-amoxiclav is recommended as this type of medication is effective against a wide range of different bacteria (a broad-spectrum antibiotic). Co-amoxiclav is available in tablet form or as a liquid you can drink.

Side effects of co-amoxiclav include:

being sick

feeling sick

diarrhoea

Co-amoxiclav belongs to the penicillin family of antibiotics, so it will not be suitable for you if you have a previous history of penicillin allergy (which affects around 1 in 15 people).

If this is the case, you should tell the doctor in charge of your care as alternative antibiotics are available, such as metronidazole.

### Additional treatment

Additional treatment may be required if:

You received a deep puncture wound that may have damaged bones, joints, muscles, tendons or nerves.

You received a facial wound.

You received a bite where a foreign body, such as a tooth, may be embedded in the wound.

You received a wound to areas of your body that have a reduced blood supply, such your nose or ears (wounds to these areas could take longer to heal and have a higher risk of infection).

You have an infected wound that does not respond to treatment.

Further reconstructive surgery may be required for serious or complex wounds. Serious infections, or infections that do not respond to oral antibiotics, can be treated with injections of antibiotics (intravenous antibiotics).

Blood tests and X-rays

If you have been bitten by a human, you will be asked if you know if either you or they could have a blood-borne virus, such as hepatitis B, hepatitis C or HIV, which could have been spread by the bite.

If this information is uncertain and it is thought that there may be a high risk of infection, you may be referred for blood tests.

For example, you may need to have blood tests if you were bitten by a person who is known to inject illegal drugs, as this increases your risk of contracting a blood-borne virus.

Although cases have been reported, the risk of spreading hepatitis B, hepatitis C or HIV during a bite is thought to be low.

If you have a closed-fist bite (a bite to your hand from contact with someone else's teeth), you may be referred for an X-ray. This is because it is not uncommon for a small fragment of tooth to end up embedded in your fist.

Complications of bites

Infection is the main complication that arises from animal bites and bites from humans. Infected bites rarely cause serious problems, as long as they are promptly treated using antibiotics.

However, infected animal bites can lead to more serious secondary infections, including:

blood poisoning (sepsis)

meningitis (infection of the outer layers of the brain)

endocarditis (infection of the inner lining of the heart)

Signs of a serious secondary infection include having a high temperature (fever) of or above 38C (100.4F) or feeling unwell.

### Post-traumatic stress disorder (PTSD)

It is estimated that around one-in-four children who require hospital treatment for a severe dog bite (and one-in-10 who require treatment for a moderate dog bite) will develop post-traumatic stress disorder (PTSD).

PTSD is a psychological condition where a person relives a past traumatic event. In children, this usually takes the form of repeated nightmares and becoming very nervous and frightened around dogs.

Other symptoms of PTSD in children may include:

refusing to go outside unless accompanied

becoming unusually shy with friends and family or becoming unusually aggressive

a lack of interest in games or school activities

fear of the dark

fear of being left alone

PTSD may resolve within a couple of months. However, if the symptoms persist or worsen, your child may require treatment.

Treatment options for PTSD in children include cognitive behavioural therapy (CBT), a type of talking therapy that aims to change patterns of negative thinking or behaviours.

CBT for PTSD often focuses on helping the child realise that while fear and distress are very real and upsetting emotions, it is possible to take control of fear and distress.

Never force your child to be in close contact with a dog in an attempt to overcome their fears if they are in obvious distress. This could make their symptoms worse and prolong treatment.

## Tetanus

It is possible to catch tetanus from an animal or human bite. Tetanus is a potentially fatal infection of the muscles and nervous system.

The bite itself does not cause tetanus but it allows a break into the skin that can provide the tetanus bacteria ("Clostridium tetani") with a way to enter the body.

The most common symptom of tetanus is stiffness in your jaw muscles. This is sometimes known as lockjaw. It can make it difficult for you to open your mouth. Muscle stiffness and spasms can then spread to other parts of your body.

The symptoms of tetanus can develop from four to 21 days after the infection has taken place.

If you do have a bite that has a risk of being infected by tetanus then you can be given tetanus immunoglobulin (TIG).

TIG is a medication that contains antibodies that kill the tetanus bacteria. Antibodies are infection-fighting cells. TIG is given as an injection into a muscle and gives immediate, short-term protection against tetanus.

Immunisation is the best way to prevent tetanus. The complete course of the tetanus vaccination consists of five doses. In the UK, all children are routinely offered the tetanus vaccination as part of the NHS childhood immunisation programme.

As an adult, if you are unsure about whether or not you have been fully immunised against tetanus, speak to your DOCTOR or practice nurse. They will be able to advise you about having a booster injection.

## Rabies

Rabies is a potentially fatal infection of the nervous system. It is possible to catch rabies from an animal bite and, in rare cases, the disease can be caught if you have a scratch or an abrasion, or from licking open wounds.

Most cases of rabies occur in Africa, Asia (particularly India) and central and southern America. Some cases have been reported in Europe – mostly in Eastern Europe.

You may need immunisation for rabies if you are visiting these areas or you have a job that involves coming into contact with animals that have been imported from abroad.

See preventing rabies for more details on the rabies vaccinations and who should have it.

Treatment to prevent rabies developing is known as post-exposure prophylaxis. You will be given one dose of rabies immunoglobulin (a blood product that contains antibodies against rabies) and five doses of the rabies vaccine. If exposure to rabies is uncertain, the vaccination on its own may be considered.

## Preventing bites

## Dog bites

Never leave a child unsupervised with a dog, regardless of what type of dog it is, or its previous behaviour.

Dogs with no previous history of biting can sometimes bite. A dog breed's reputation, or appearance, is also no guarantee of a dog's behaviour. Family dogs such as labradors, collies and terriers are all known to have been involved in fatal attacks.

The advice outlined below will help you and your children to prevent dog bites.

Avoid making your dog too important within the family. Don't let them sleep on the furniture or beg for food. This can sometimes confuse a dog, making it think that it has a higher status within the family group. If someone, for example a young child, challenges that status, the dog may react aggressively.

Dogs love to chase things so you and your children should avoid running or screaming in the presence of a dog.

Respect a dog's boundaries because, like many animals, dogs have a sense of personal space. If you suddenly approach a dog, they can react unpredictably. Do not greet a dog with an outstretched hand. Do not suddenly interrupt a dog when it is eating, sleeping or playing with a toy. And do not pet a dog without letting it sniff you first.

Socialise your dog by allowing it to experience many different kinds of people, situations and environments. This will help stop your dog becoming frightened or nervous if it finds itself in unfamiliar circumstances or when meeting new people.

Signs that a dog is becoming aggressive and may be about to bite include:

the hairs on the dog's back rising up

the dog baring their teeth

the dog's ears moving either forward or back against their head

the dog staring directly at you

the dog's legs stiffening

If you are presented with an aggressive dog, you should stand still, with your feet together, your arms placed against your chest, and your fists folded below your neck. Avoid direct eye contact because the dog may interpret it as an aggressive act.

Don't attempt to run away from the dog. By standing still the dog should lose interest, allowing you to back away slowly.

If a dog jumps on you and knocks you to the ground, you should try to lie still, face down, with your legs together and your fists behind your neck with your forearms covering your ears. Once the dog realises that you are not moving, it should lose interest and move away.

### Cat bites

As many cat bites are from strays, avoid disturbing or stroking a cat that you do not know.

If your cat is attempting to bite or jump at your hands and feet while it is playing (playful aggression), do not attempt to push them away with your hands as this can reinforce the pattern of behaviour. Instead, use a water spray to discourage them.

Using a sock or small felt toy on an end of a string that you can drag around the room is a good way of letting your cat play without encouraging bad behaviour.

### Human bites

Most human bites are the result of alcohol-related violence and disorder. Therefore, the most effective way to avoid taking part in this type of

incident is to moderate your alcohol consumption and avoid binge drinking.

Read more about alcohol misuse including the risks that are associated with heavy drinking and how to avoid them.

### **Insect bites and stings**

Insect bites and stings are common and usually cause only minor irritation. However, some stings can be painful and trigger a serious allergic reaction.

In the UK, insects that bite include midges, mosquitoes, fleas, bedbugs and – although not strictly insects – spiders, mites and ticks, which are arachnids

In the UK, insects that sting include bees, wasps and hornets.

An insect bites you by making a hole in your skin to feed. Most insects sting as a defence by injecting venom into your skin.

### **Symptoms of an insect bite or sting**

When an insect bites, it releases saliva that can cause skin around the bite to become red, swollen and itchy. The venom from a sting often also causes a swollen, itchy, red mark (a weal) to form on the skin. This can be painful, but is harmless in most cases. The affected area will usually remain painful and itchy for a few days.

The severity of bites and stings varies depending on the type of insect and sensitivity of the person.

In rare cases, some people can have a serious allergic reaction (anaphylaxis) to a bite or sting that requires immediate medical treatment.

## Should I see a doctor?

See your DOCTOR if you have a lot of swelling and blistering, or if there is pus, which indicates an infection.

wheezing or difficulty breathing

nausea, vomiting or diarrhoea

a fast heart rate

dizziness or feeling faint

difficulty swallowing (dysphagia)

confusion, anxiety or agitation

## Treating insect bites and stings

Most bites and stings are treated by:

washing the affected area with soap and water

placing a cold compress (a flannel or cloth soaked in cold water) over the area to reduce swelling

Try not to scratch the affected area to avoid infection and if you are in pain or the area is swollen, take painkillers, such as paracetamol or ibuprofen.

If you have a more serious reaction, your DOCTOR may prescribe other medication or refer you to an allergy clinic for immunotherapy.

## Preventing insect bites and stings

You are more likely to be bitten or stung if you work outdoors or regularly take part in outdoor activities, such as camping or hiking.

Wearing insect repellent and keeping your skin covered will help avoid a bite or a sting.

Try not to panic if you encounter wasps, hornets or bees and back away slowly (do not wave your arms around or swat at them).

### Travelling abroad

There is a risk of catching diseases from insect bites, such as malaria, in other parts of the world such as:

Africa

Asia

South America

It is important to be aware of any risks before travelling and get any necessary medication or vaccination.

### Symptoms of insect bites and stings

An insect bite or sting often causes a small lump to develop, which is usually very itchy.

A small hole, or the sting itself, may also be visible. The lump may have an inflamed (red and swollen) area around it that may be filled with fluid. This is called a weal.

Insect bites and stings usually clear up within several hours and can be safely treated at home.

### Types of insect bite

The symptoms that can occur from different types of insect bites are listed below.

### Mosquitoes

Bites from midges, mosquitoes and gnats often cause small papules (lumps) to form on your skin that are usually very itchy. If you are particularly sensitive to insect bites, you may develop:

bullae (fluid-filled blisters)

weals (circular, fluid-filled areas surrounding the bite)

Mosquito bites in certain areas of tropical countries can cause malaria.

### Fleas

Flea bites can be grouped in lines or clusters. If you are particularly sensitive to flea bites, they can lead to a condition called papular urticaria (where a number of itchy red lumps form). Bullae may also develop.

Fleas from cats and dogs can often bite below the knee, commonly around the ankles. They may also affect the forearms if you have been stroking or holding your pet.

### Horseflies

A bite from a horsefly can be very painful. As well as the formation of a weal around the bite, you may experience:

urticaria – a rash of weals (also called hives, welts or nettle rash)

dizziness

weakness

wheezing

angio-oedema – itchy, pale pink or red swellings that often occur around the eyes and lips for short periods of time

Horseflies cut the skin when they bite, rather than piercing it, so horsefly bites can take a long time to heal and can cause an infection.

### Bedbugs

Bites from bedbugs are not usually painful, and if you have not been bitten by bedbugs before, you may not have any symptoms. If you have been bitten before, you may develop intensely irritating weals or lumps.

Bedbug bites often occur on your:

face

neck

hands

arms

Read more information about bedbugs.

Types of arachnid bites

### Ticks

Tick bites are not usually painful and sometimes only cause a red lump to develop where you were bitten. However, in some cases they may cause:

swelling

itchiness

blistering

bruising

Ticks can carry a bacterial infection called *Borrelia burgdorferi*, which causes Lyme disease. If Lyme disease is not treated, it can be serious.

## Mites

Mites cause very itchy lumps to appear on the skin and can also cause blisters. If the mites are from pets, you may be bitten on your abdomen (tummy) and thighs where the pet has been sitting on your lap. Otherwise, mites will bite any uncovered skin.

## Spiders

Spider bites leaves small puncture marks on the skin and can cause:

pain

redness

swelling

In severe cases a spider bite may cause nausea, vomiting, sweating and dizziness. Very rarely, a spider bite may cause a severe allergic reaction.

## Types of insect stings

### Wasps and hornets

A wasp or hornet sting causes a sharp pain in the area you are stung and usually lasts just a few seconds.

A swollen, red mark will often then form on the skin, which can be itchy and painful.

### Bees

At first, a bee sting feels similar to a wasp sting.

However, if you are stung by a bee, it will leave its sting and a venomous sac in the wound. You should remove this immediately by scraping it out using something with a hard edge, such as a bank card.

Do not pinch the sting out with your fingers or tweezers because you may spread the venom.

### Allergic reaction

Most people will not have severe symptoms after an insect bite or sting but some people can react badly to them. You are more likely to have an allergic reaction if you are stung by an insect.

The reaction can be classed as:

a minor localised reaction – this is normal and does not require allergy testing, although the affected area will often be painful for a few days

a large localised reaction (LLR) – this can cause other symptoms such as swelling, itching and a rash

a systemic reaction (SR) – this often requires immediate medical attention as it can cause a potentially life-threatening allergic reaction (anaphylaxis)

Although insect bites and stings are a common cause of anaphylaxis, it is rare to experience anaphylaxis after an insect sting, and it is rarely fatal.

Large localised reactions and systemic reactions are described in more detail below.

#### Large localised reaction (LLR)

If you have an LLR after being bitten or stung by an insect, a large area around the bite or sting will swell up. The area may measure up to 30cm (12in) across, or your entire arm or leg could swell up.

The swelling will usually last longer than 48 hours but should start to go down after a few days. This can be painful but the swelling will not be dangerous unless it affects your airways.

If you are bitten or stung many times by one or more insects, your symptoms will be more severe because a larger amount of venom will have been injected.

You may have an LLR several hours after being bitten or stung. This could include:

a rash

nausea

painful or swollen joints

Systemic reaction (SR)

It is more likely that someone will have an SR if they have been bitten or stung before (sensitised), especially if it was recently. People who have been sensitised to bee stings are more likely to have an SR than people who are stung by wasps.

wheezing, hoarseness or difficulty breathing

nausea, vomiting or diarrhoea

a fast heart rate

dizziness or feeling faint

difficulty swallowing (dysphagia)

a swollen face or mouth

confusion, anxiety or agitation

It is rare for an SR to be fatal, especially in children, although someone with an existing heart or breathing problem is at increased risk.

Infected bites

Sometimes, insect bites can become infected. Symptoms of an infected insect bite may include:

pus in or around the bite

swollen glands

increasing redness, swelling and pain in and around the bite

Some bites will naturally be red and swollen, but for other types of bites these symptoms may not be normal and could indicate an infection.

### Treating insect bites and stings

Most insect bites and stings cause small reactions that are confined to the area of the bite (localised reactions). They can usually be treated at home.

However, if your symptoms are severe, see your DOCTOR as soon as possible.

### Removing a sting

As soon as you have been stung by a bee, remove the sting and the venomous sac if it has been left in the skin. Do this by scraping it out, either with your fingernails or using something with a hard edge, such as a bank card.

When removing the sting, be careful not to spread the venom further under your skin and do not puncture the venomous sac.

Do not pinch the sting out with your fingers or a pair of tweezers because you may spread the venom. If a child has been stung, an adult should remove the sting.

Wasps and hornets do not usually leave the sting behind, so could sting you again. If you have been stung and the wasp or hornet is still in the area, walk away calmly to avoid being stung again.

## Basic treatment

Most insect bites and stings cause itching and swelling that usually clears up within several hours.

Minor bites and stings can be treated by:

washing the affected area with soap and water

placing a cold compress (a flannel or cloth cooled with cold water) over the affected area to reduce swelling

not scratching the area because it can become infected (keep children's fingernails short and clean)

See your DOCTOR if the redness and itching gets worse or does not clear up after a few days.

## Additional treatment

If the bite or sting is painful or swollen, you can also:

wrap an ice pack (such as a bag of frozen peas) in a towel and place it on the swelling

take painkillers, such as paracetamol or ibuprofen (children under 16 years old should not be given aspirin)

use a spray or cream that contains local anaesthetic, antihistamine or mild hydrocortisone (1%) on the affected area to prevent itching and swelling

take an antihistamine tablet to help reduce swelling (antihistamine tablets are available on prescription or from pharmacies)

If local swelling is severe, your DOCTOR may prescribe a short course of oral corticosteroids, such as prednisolone, to take for three to five days.

If you have an allergic reaction after a bite or sting, even if it is just a skin rash (hives), you may be prescribed an adrenaline pen (called an auto-injector) by your DOCTOR and shown how to use it. You will also be referred to an allergy clinic to see an immunologist for further tests and treatment.

### Blisters

If you develop blisters after being bitten by an insect, do not burst them because they may become infected. Blisters do not often cause pain unless they rupture (burst), exposing the new skin underneath. If possible, use an adhesive bandage (plaster) to protect the blistered area.

### Infected bites

See your DOCTOR if the bite or sting fills with pus and feels tender to touch, your glands swell up and you feel unwell with flu-like symptoms.

Your DOCTOR may prescribe oral antibiotics (medicines to treat infections caused by bacteria). You will need to take these as instructed, usually two or four times a day for seven days.

### Allergic reaction

If you have swelling or itching anywhere else on your body after being bitten or stung, or if you are wheezing or have difficulty swallowing, you will need emergency medical treatment. Call immediately and ask for an ambulance.

If you have the symptoms of a systemic reaction (SR), it could lead to anaphylactic shock. If you experience anaphylaxis, you may need to have an adrenaline injection, antihistamines, oxygen or an intravenous drip (a drip directly into a vein).

### Allergy clinics

If previous insect bites or stings have caused a large skin reaction, such as redness and swelling of over 10cm (4 inches) in diameter, your DOCTOR may refer you to an allergy clinic. The criteria for referring someone to an allergy clinic may vary depending on what is available in your local area.

Immunotherapy (desensitisation or hyposensitisation) is a possible treatment option if you are allergic to insect bites or stings, although it is more commonly used for wasp or bee stings. It involves being injected with small doses of venom every week and being observed to check for an allergic reaction.

Your body soon becomes used to the venom (desensitised) and will start to make antibodies to prevent further reactions.

When a high enough dose has been reached, the injections will be given monthly and could last for a further two or three years.

Your immunologist will decide how much venom is injected and how long the injections need to continue for. This will depend on your initial allergic reaction and your response to the treatment.

## Ticks

If you have been bitten by a tick (a small arachnid), remove it as soon as possible to reduce the risk of getting a tick-borne infection, such as Lyme disease (a bacterial infection that causes a rash).

To remove the tick:

Use tweezers, wear gloves or cover your fingers with tissue to avoid touching the tick.

Grab the tick as close to the skin as you can, and gently pull straight up until all parts are removed.

Do not twist or jerk the tick as you are removing it because this may cause the mouthparts to break off and remain in your skin once the tick has been removed.

Wash your hands with soap and water.

Using petroleum jelly, alcohol or a lit match to remove a tick does not work.

After the tick has been removed, clean the tick bite with soap and water or an antiseptic, such as an iodine scrub.

Do not scratch the bite because this will cause further swelling and increase the chance of infection. Most tick bites will heal within three weeks. See your DOCTOR if you develop:

a rash

a temperature of 38C (100.4F) or over (fever)

You may need antibiotics to prevent Lyme disease.

### Complications of insect bites and stings

A number of complications can develop after you are bitten or stung by an insect.

#### Infection

Secondary bacterial infections are a common complication of insect bites and stings. They include:

impetigo – a highly contagious bacterial infection that causes sores or blisters

cellulitis – an infection that makes your skin red, swollen and painful

folliculitis – inflammation (redness and swelling) of one or more hair follicles (the small hole in your skin that an individual hair grows out of)

lymphangitis – an infection that causes red streaks in your armpit or groin and swollen lymph nodes (small glands that are part of the immune system)

An infection may occur if you scratch an insect bite or sting, or it may be introduced at the time you are bitten.

Infections are usually treated with antibiotics.

Lyme disease

Lyme disease is an infection caused by a species of tick known as *Ixodes ricinus*. Ticks are not strictly insects, but small arachnids.

Lyme disease is uncommon, there are between 1,000 and 2,000 cases in England and Wales every year. The initial infection is characterised by a red rash that gradually expands outwards from the site of the bite. Antibiotics are usually used to treat the infection.

If untreated, the long-term effects of Lyme disease include problems with the nervous system such as:

meningitis

facial palsy – weakness of the facial muscles that causes drooping of one or both sides of the face

encephalitis

The condition can also damage the joints, which can lead to arthritis and heart problems (occasionally), such as inflammation of the heart muscle (myocarditis) and inflammation of the thin, two-layered, sac-like tissue that surrounds the heart (pericarditis).

West Nile virus

West Nile virus is an infection with flu-like symptoms spread by mosquitoes.

## **Malaria**

Malaria is a tropical disease caused by an infection of the red blood cells. It can be transmitted to humans by the bite of an infected mosquito.

### Preventing insect bites and stings

There are a number of precautions that you can take to avoid being bitten or stung by insects. It is particularly important to follow this advice if you have had a bad reaction to an insect bite or sting in the past.

Some of the precautions that you can take to minimise your risk of being bitten or stung by an insect are listed below.

Move away slowly without panicking if you encounter wasps, hornets or bees. Do not wave your arms around or swat at them.

Cover exposed skin. If you are outside at a time of day when insects are particularly active, such as sunrise or sunset, cover your skin by wearing long sleeves and trousers.

Wear shoes when outdoors.

Apply insect repellent, particularly in summer or early autumn when stings are most likely to occur. This should be applied to exposed areas of skin. Repellents that contain diethyltoluamide (DEET) are considered most effective.

Avoid using products with strong perfumes such as soaps, shampoos and deodorants, because they can attract insects.

Avoid flowering plants, outdoor areas where food is served, rubbish and compost areas. Regularly and carefully remove any fallen fruit in your garden, and keep a well-fitting lid on any dustbins.

Avoid camping near water, such as ponds and swamps, because mosquitoes and horseflies are commonly found near water.

Keep food and drink covered when eating or drinking outside, particularly sweet things. Wasps or bees can also get into open drink bottles or cans you are drinking from.

Keep doors and windows closed or put thin netting or door beads over them to prevent insects getting inside the house. Also keep the windows of your car closed to stop insects getting inside.

### Avoiding ticks

Ticks are small arachnids mainly found in woodland areas. They attach to your skin, suck your blood and can be responsible for Lyme disease.

The best ways to avoid ticks include:

being aware of ticks and the areas where they usually live

wearing appropriate clothing in tick-infested areas (a long-sleeve shirt and trousers tucked into your socks)

wearing light-coloured fabrics that may help you spot a tick on your clothes

using insect repellents

inspecting your skin for ticks, particularly at the end of the day, including your head, neck and skin folds (armpits, groin, and waistband)

checking your children's head and neck areas, including their scalp

making sure ticks are not brought home on your clothes

checking pets do not bring ticks indoors in their fur

It is also important to remove any ticks you find as soon as possible. Read more about treating insect bites and stings for information on the safest way to remove a tick.

## Infestation

If you are bitten by fleas, mites or bedbugs, you may have an infestation in your home. Try to find the source of the infestation and then take steps to eliminate it.

### Signs of an infestation

The following are signs of an infestation:

fleas or flea faeces (stools) in your animal's fur or bedding are a sign of fleas

crusting on your dog's fur is a sign of fleas

excessive scratching and grooming are a sign of fleas in your cat

dandruff (flakes of skin) on your cat or dog is a sign of mites

spots of blood on your bed sheets are a sign of bedbugs

an unpleasant almond smell is a sign of bedbugs

If you are unsure whether your pet has fleas, speak to your veterinary surgeon.

### Eliminating an infestation

Once you have identified the cause of the infestation, you will need to eliminate it.

For flea infestations:

treat the animal, its bedding, household carpets and soft furnishings with an insecticide

thoroughly vacuum your carpets and soft furnishings

For mite infestations, seek advice from your vet as aggressive treatment is required.

## Travelling abroad

Seek medical advice before travelling to a tropical area where there is a risk of catching malaria. You may need to take antimalarial tablets to avoid becoming infected.

When you reach your destination, make sure your accommodation has insect-proof screen doors and windows that close properly. Sleeping under a mosquito net and spraying rooms with insecticide will also help stop you being bitten.

## Snake bites

### Introduction

A snake will sometimes bite in self-defence if disturbed or provoked.

Some snakes are venomous and can inject venom (toxin) as they bite. A bite from a venomous snake is a medical emergency as they can be deadly if not treated quickly.

Exotic snakes have been known to bite while being handled carelessly, or when they escape from their cages.

There is also a risk of being bitten while travelling abroad to tropical countries.

### Symptoms of snake bites

If an adder injects venom when it bites, it can cause serious symptoms including:

redness and swelling in the area of the bite

nausea (feeling sick)

vomiting

dizziness

A foreign snake that injects venom when it bites can also cause:

shock

muscle paralysis (an inability to move one or more muscles of the body)

Sometimes, venomous snakes can bite without injecting venom. This is called a 'dry bite' and may cause:

mild pain (from the snake's teeth puncturing the skin)

anxiety

### What to do after a snake bite

Immediately after being bitten by a snake you should:

visit a hospital immediately

remain calm and don't panic

try to remember the shape, size and colour of the snake

keep the part of your body that has been bitten as still as possible to prevent the venom spreading around your body

remove jewellery and watches from the bitten limb because they could cut into your skin if the limb swells

do not attempt to remove any clothing, such as trousers

You should give healthcare professionals a description of the snake to help identify it.

You may be admitted to hospital so the bite can be assessed and your condition closely monitored.

### Treating snake bites

In most cases of adder bites, the only treatment required is observation in hospital. As a precaution, you may be asked to stay in hospital for 24 hours to be monitored.

Anti-venom medication is an effective antidote to snake venom and can be used to treat more severe snake bites.

In most cases, children bitten by an adder will make a full recovery in about 1-3 weeks. Adults usually require more than three weeks to recover fully, and a quarter of adults will take between 1-9 months.

### Why do snakes bite?

When a snake bites, it injects venom to immobilise its prey. As humans are too large for a snake to eat, most snakes bite in self defence.

Snake bites often occur when a person accidentally steps on a snake while out walking. However, sometimes people are bitten when they deliberately provoke a snake by striking it or trying to pick it up.

### Preventing snake bites

Follow the advice listed below if you are in an area where venomous snakes are found.

Look out for warning notices

Wear boots and long trousers

Never pick up a snake, even if you think it is harmless or appears dead

Never put your hand in a hole or crevice – for example, between rocks. If you need to retrieve something, stand well back and use a stick to reach it

If you find yourself very close to a snake, stand completely still. Most snakes only strike at moving targets. If you remain calm and still, the snake will escape without harming you

### Symptoms of snake bites

#### Adder bites

Adder bites can be painful but are not usually serious.

About 7 out of 10 adder bites only cause pain and swelling in the area that has been bitten.

There are two types of snake bite:

dry bites – where the snake releases no venom (toxins produced by the snake)

venomous bites – where the snake releases venom

The effects of venomous bites may be more severe in children because they are smaller.

#### Dry bites

Typical symptoms of a dry bite include:

mild pain at the site of the bite caused by the snake's fangs

anxiety

If there are no other symptoms, such as swelling, it is probably a dry bite. This is because signs that venom has been injected might not appear until later, up to two hours or more after the bite.

#### Venomous snake bites (adder and foreign)

Symptoms of snake bite where venom is injected include:

severe pain at the location of the bite

swelling, redness and bruising at the location of the bite

nausea (feeling sick)

vomiting

diarrhoea

itchy lumps on the skin (hives or nettle rash)

swelling of the lips, tongue and gums

breathing difficulties with wheezing, similar to asthma

mental confusion, dizziness or fainting

irregular heartbeat

For foreign snake bites, symptoms may also include:

dizziness, mental confusion, faintness, collapse and shock

bleeding from the mouth, nose and wounds

vomiting blood or passing blood in urine or stools

muscle paralysis, which can lead to breathing difficulties

In the most severe cases, a venomous snake bite may cause:

paralysis, starting with drooping of the upper eyelids and progressing to an inability to breathe or move

shock and loss of consciousness

kidney failure with little or no urine being passed

massive blood loss, due to bleeding from the mouth, nose and wounds, vomiting blood and passing blood in urine or stools

death

## Anaphylaxis

In a small number of people a snake bite can trigger a severe allergic reaction, known as anaphylaxis or anaphylactic shock. This can occur immediately after a bite or several hours later.

Anaphylaxis should always be treated as a medical emergency. Left untreated, anaphylaxis can be life-threatening.

Symptoms of anaphylaxis include:

swollen face, lips, tongue and throat

swelling in the throat that can cause breathing difficulties

rapid heartbeat

itchy skin

Anaphylaxis can also cause a drop in blood pressure, which can lead to shock and cause symptoms such as:

dizziness or mental confusion

faintness, loss of consciousness or collapsing

cold and clammy skin

blindness

### What to do after a snake bite

You should go to your nearest hospital, if you are bitten by a snake, even if your symptoms are mild.

Hospital staff will check for signs of whether venom has been injected through the bite.

Why snakes bite and how venom works

When a snake bites and injects venom, usually its aim is to immobilise its prey.

As humans are far too large for a venomous snake to eat, most snake bites occur when the snake is provoked into acting in self-defence.

In many cases, the snake is provoked by accident – for example, when a person accidentally steps on a snake while out walking. However, sometimes a snake bites after being deliberately angered by someone:

kicking it

striking it

trying to pick it up

Snake bites that involve foreign (exotic) snakes kept as pets usually occur when someone handles or 'plays' with them.

### Snake venom

Snake venom contains toxins (poisons) designed to kill or immobilise the snake's prey. There are four main types of snake venom toxins:

haemotoxins – attack the circulatory system (heart and blood)

neurotoxins – attack the nervous system where nerves connect to muscles

cytotoxins – cause blood and plasma (the clear fluid in blood) to leak into the tissue near the bite, and eventually destroy it

myotoxins – destroy muscle tissue both at the site of the bite and generally throughout the body

The four types of toxins are discussed in more detail below.

Haemotoxins

Haemotoxins destroy red, oxygen-carrying blood cells, and disrupt the blood's ability to clot.

They can also cause a drop in blood pressure, which can result in tissue and organ damage, loss of consciousness and death.

### Neurotoxins

Neurotoxins block or damage nerves where they connect to muscles, preventing the nerve signals getting through.

This causes paralysis and symptoms such as muscle weakness throughout the body and swallowing and breathing difficulties that can lead to loss of normal lung function (respiratory failure) and death.

### Cytotoxins

Cytotoxins cause swelling, bruising, blistering and gangrene (death of tissue cells) near the location of the snake bite. This may require plastic surgery or, in severe cases, amputation.

### Myotoxins

Myotoxins can cause permanent damage by destroying muscle cells and causing pain and muscle weakness.

They may also damage your kidneys, which filter waste products from your blood, causing your urine to be very dark.

### Treating snake bites

There are a number of misconceptions about what to do immediately after being bitten by a snake. For example, you should never try to suck or cut the venom out.

Follow the advice below if you or a companion is bitten by a snake.

## Immediate action

Try to remember the snake's shape, size and colour

Keep the part of your body that has been bitten as still as possible to prevent the venom spreading around your body. You may want to secure the bitten body part with a sling (a supportive bandage) or a splint (a rigid support that helps keep the body part stable). However, do not make the sling or splint so tight that it restricts your blood flow

Remove any jewellery or watches from the bitten limb because they could cut into your skin if the limb swells

Do not attempt to remove any clothing, such as trousers

Seek immediate medical attention (see below)

## What you should not do

If you or someone you are with is bitten by a snake you should not:

try to suck the venom out of the bite

try to cut the venom out of the bite

rub anything into the wound

put anything around the bitten limb to stop the spread of venom, such as a tourniquet or ligature – it will not help and can cause swelling, even if no venom has been released by the snake; it could also damage the limb, leading to the need for amputation

try to catch or kill the snake

Medical attention

If you are bitten by a snake you should visit your hospital.

If a snake bites you while you are abroad, you should assume it is a medical emergency and contact the relevant emergency medical services.

In most cases, following a bite, you will need to stay in hospital for a short period. This is so that staff can keep you under observation in case you develop symptoms that suggest venom has been injected.

As a precaution, you may be asked to stay in hospital for at least 24 hours so your blood pressure and general health can be monitored.

Anti-venom medications are antidotes to snake venom and can be used to treat more severe snake bites.

### Anti-venoms

Anti-venoms are produced by injecting a small, non-life-threatening amount of snake venom into a large animal, usually a horse.

The animal's immune system (natural defence system) produces antibodies. Antibodies are proteins that stick onto toxins and are capable of neutralising their effects. The antibodies are then taken from the animal, purified and stored until needed.

In some people, anti-venoms can trigger a severe allergic reaction called anaphylaxis, so it is important you are closely monitored after receiving your first dose.

Due to the risk of anaphylaxis, anti-venom should only be given by a qualified healthcare professional.

In cases where a snake bite is severe, and your blood pressure has fallen significantly, you may need intravenous fluids (into a vein in your arm). You may also need a blood transfusion if you have lost a lot of blood.

### Recovery

Recovery times for snake bites can vary depending on the species of snake involved.

In most cases, children bitten by an adder will make a full recovery in 1-3 weeks. Adults usually take more than three weeks to recover fully, with a quarter taking between 1-9 months.

During the recovery period, you may experience episodes of pain and swelling in the area of your body that has been bitten. These symptoms can usually be controlled by taking over-the-counter painkillers, such as paracetamol.

### First aid abroad

If you are travelling to an area where there is a risk of being bitten by a snake, make sure you know how to contact emergency medical services in that country.

When travelling abroad, carry a first aid kit that contains medications, such as painkillers, antacids (for indigestion) and rehydration sachets (for diarrhoea). It should also include plasters, non-adherent dressings and bandages, insect repellent and sun cream.

### Shock

Someone who has been bitten by a snake may go into shock. Shock is a life-threatening condition that occurs when there is an insufficient supply of oxygen to the body.

Symptoms of shock include:

faintness or collapsing

pale, cold, clammy skin

sweating

rapid, shallow breathing

weakness and dizziness

blindness

feeling sick and possibly vomiting

After calling an ambulance, lie the person down and raise and support their legs. Use a coat or blanket to keep them warm.