

# Information Leaflet for Patients

## **WHAT SHOULD I KNOW ABOUT IMPORTANT SPECIES OF INSECTS AND ARACHNIDS**

### **The aim of this leaflet**

*This leaflet is designed to help you understand more about important species of insects and arachnids (spiders, ticks, mites, and scorpions). Additionally, to the leaflet “What should I know about bites of insects and arachnids?” it will tell you about the most important venomous species, their individual habits and will enable you to better prevent and protect against their stings or bites and the consequences.*

# WHAT SHOULD I KNOW ABOUT IMPORTANT SPECIES OF INSECTS AND ARACHNIDS

## What are and what should I know about important species of insects and arachnids?

### • Mosquitoes

Mosquitos are found nearly all over the world. Their tube-like mouthpart (*proboscis*) pierces the skin to consume blood. Mosquitos breed in still water, and depending on the species even in heavily polluted fresh water, seawater, and brackish water, as well as in discarded containers and old tires. Only female mosquitoes bite; they require a blood meal every 3 to 4 days for the protein necessary to produce eggs. In general, mosquitoes can be divided into two types, daytime and night-time biters:

#### Night time/Twilight biters

**Anopheles** transmits *Malaria* and *Filariasis*, a lymph-sickening worm-disease

**Culex** transmits *West Nile Fever*, *Chikungunya*, and *Filariasis*.

#### Daytime biters

**Aedes** transmits *Dengue*, *Yellow Fever*, *Chikungunya*, *West Nile Fever*, and *Filariasis*.

### • Flies

**Blackflies** transmit *Onchocerciasis* (river blindness) and *Filariasis (Mansonellosis)*. The bite causes a very red and itchy rash. Blackflies are very small, so they can pass through most nets. Impregnation of the net with an insecticide helps to kill them before they find their way through.

**Tsetseflies** transmit African *trypanosomiasis* ("sleeping sickness"). Bites is usually painful and causes red bumps.

**Sandflies** transmit *Leishmaniasis* and *Bartonellosis*. The bite itself is often very itchy.

### • Bugs

Some bugs feed on human blood, and others prefer animals (e.g. bats). The common bedbug (*Cimex lenticularis*) feeds exclusively on human blood. They are most common in warm areas (e.g. nearby or

inside beds, beddings, and sleeping areas), and mainly come out at night. They may bite any exposed areas of skin (usually the face, neck, hands, and arms). Bedbugs have mouth parts that saw through the skin and inject saliva, along with anticoagulants and painkillers. Therefore, a bedbug bite is painless and, in some cases, may go unnoticed. Bedbug bites may also be mistaken for flea or mosquito bites or other types of rash/skin conditions, since the signs of bedbug bites are difficult to distinguish.

Small, flat, or raised bumps on the skin are the most common signs, mostly without any reddish bite marks. Skin symptoms include generalised redness, swelling, and itching, or no skin reaction at all. A typical sign of bedbug bites is to find several bites lined up in a row. This series of bites is referred to as the "breakfast, lunch, and dinner" sign, describing the sequential feeding that occurs from site to site. In some people, signs of bites can take several days to develop. The signs may become apparent up to 14 days after the bite has occurred. Bedbugs also have glands whose secretions may leave musty odours, and they also may leave dark faecal spots on bed sheets and around places where they hide.

Typically, no treatment is required for bedbug bites. If itching is severe, steroid creams or oral antihistamines may be used.

Using bed nets can provide protection (see Leaflet: *What should I know about bites of insects and arachnids?* - "How can I avoid insect bites" above). A professional pest-control company may be required to help identify and remove bedbugs from the home.

### • Ticks

Ticks transmit African *tick-bite fever*, *Crimean-Congo haemorrhagic fever*, *Lyme disease*, *Rocky Mountain Spotted Fever*, and *Tick-borne encephalitis*. The bite itself can cause an itchy and very red, inflamed local reaction. Bites from ticks are unusual in groups of tourists staying in urban or developed tourist resorts; ticks prefer long grassy areas. Ticks normally

become attached to skin or clothing after brushing against coarse or long grass, and then migrate to warm moist areas of the body such as the groins or axillae to feed. It is important to avoid unnecessary exposure to infested areas and when possible, stay on paths.

- **Fleas**

Rat fleas transmit *plague* in humans. They mainly live on rats but can also live on other small animals and rodents. They can be found in tropical areas where sanitation is poor. Rat fleas hide in beds and bed clothing. Repellents and insecticides should be used if entering a *plague*-endemic area.

- **Beetles**

Blister beetles or oil beetles represent a large family of 2500 different species distributed over all 5 continents. Blister beetles like *pederus sabeus* are completely harmless, as long as they move undisturbed on the skin. It is important to **not squeeze** them while trying to catch or to chase them off. Their toxic *haemolymph* leads to an extraordinary contact reaction on the affected skin, with blistering and deep infiltrating inflammation.

- **Caterpillars**

Caterpillars often fall from the trees and induce a typical *urticarial contact dermatitis*, which is itchy, burning, or even painful, caused by the extremely fragile, venom-containing hair their body is covered with. Symptoms typically increase within a week after the attack, and diminish slowly.

- **Bees/Wasps**

#### Honey bee

The domesticated *European honey bee* stings only for self-defence in rare cases. The *East African Highland* bee, in comparison, is aggressive, so be careful and protect yourself properly when spending holidays in East Africa. Bees can only sting once. Contrary to the smooth surface of a wasp's or bumblebee's stinger, a bee's stinger is serrated like a barb and attached firmly to

a venom gland. This venom gland will rip off during a sting attack, and the bee will not survive.

People who are **allergic** to honey bees' venom should provide themselves with an Allergy Emergency Kit (see leaflet "*What should I know about bites of insects and arachnids?*" - "When should I see a clinician?") and keep away from the bee's environment. Allergies against bees' and wasps' venom is the most dangerous allergy against natural toxins, and fatal in numerous cases every year.

- **Wasps**

There are various wasps all over the world, with size differing according to species, and more or less aggressive. In contrast to bees, wasps can sting repeatedly. Wasps are relatives of ants. The venom of *myrmicine* ants in particular contains some toxic components that are the same as those of wasps. This is the reason why some possible but very rare cross-allergies exist between both species. Allergies against wasps are as life-threatening as against bees' venom. This requires the same precautions as well as treatment.

- **Bumblebee ("Dumbledores")**

A bumblebee's stinger is very small, and stings are less frequent compared with bees or wasps and the venom is less toxic. Bumblebees are relatives of bees, but there is no allergy known against bumblebees' venom.

- **Ants**

Most ants are too small to bite humans effectively, and their sting is mild, except some species like *fire ants*. However, an ant attack starts with an ant bite. The ant uses its jaws and mouth to pinch human skin. Bite differs from sting; *myrmicines* (like *fire ants*) grasp your skin with their fangs and bite into it to position themselves. After that, they inject the venom with their stinger. The sting is immediately painful and causes a red spot, followed by a tender, itchy *pustule* a few hours later that can last several days to weeks.

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The venom of all *myrmicines* contains some components that are exactly the same as those found in wasps. This induces a *cross-reactivity* (allergy to members of the same group) between *myrmicines* and wasps, which may lead to severe allergic reaction.

*Formicines*, like *horse ants* (*red wood ant* and *southern red wood ant*) and *weaver ants*, neither bite nor sting. They spray formic acid out of their stingless gland at the bottom.

## • Spiders

The majority of spiders are not harmful to humans. Similar to ants, the spiders' fangs are too small or weak to puncture human skin. In very rare cases, for instance with bites in dry, *atopic skin*, even a harmless spider may leave a small itchy wound after biting which may become inflamed (due to scratching and triggered by a warm climate).

Only few spider species manage to bite through skin and insert toxic venom that can cause serious health complications:

**Brown recluse spiders** are about an inch long and usually nonaggressive. The brown recluse typically hides in dark, secluded spaces. It only bites if it is trapped against your skin. It is also called the "violin" spider because of the dark marking on its back.

The brown recluse is usually found in the South of the USA. The initial bite may be painless, but within eight hours it will begin to itch, hurt, and turn red. A red or purple ring resembling a target or bull's-eye will develop around the bite. This bite can blister, grow progressively worse without treatment, and develop wound healing disorders, like *necrosis*. On very rare occasions, systemic reactions may occur. There is no antidote for a brown recluse bite. Larger *necrotic* areas and systemic reactions generally need hospitalization.

**Black widow spiders** are shiny and black with a distinct, reddish, hourglass-shaped mark on its belly. Found mainly in the warm southern and western states of the USA, the black widow stays in secluded places like piles or fallen leaves, woodpiles, and

boxes in the attic. Subspecies of widow spiders are found worldwide. In southern Italy, the region all around Taranto is the habitat of the **European black widow**. This spider is covered with 13 small red dots. Bites may lead to the neurological symptoms of tarantism, a disease for centuries the original "tarantula," a local wolf spider, was blamed for. Only the female black widow is toxic. Black widow bites can feel like a small pinprick or nothing at all, but your skin's reaction will be immediate and you will be able to see two puncture marks on your skin. Symptoms of a black widow bite include pain and burning at the puncture site, muscle cramping, increased saliva and sweating, nausea and vomiting, numbness, restlessness, headache, and high blood pressure. There is an *antivenom* available that is given in some rare cases by specialists.

**Hobo spiders** (*Tegenaria species*) are common in Central Europe and were accidentally introduced in the Pacific Northwest of the USA in the 1980's. They sit up high on long legs and run fast. Watch out if you are cleaning window sills or sweeping out the garage, as they may attack when provoked. Hobo spiders lurk behind furniture, under baseboards, and in closets. A bite from a hobo spider may be unnoticeable at first, but it will cause pain and numbness within 15 minutes. After one hour, the site will start to turn red. In eight hours, it will become hardened and swollen. After 24–26 hours, the wound may discharge fluids and eventually turn black. Other signs and symptoms may include: a red or purple blister at the puncture site, visual or aural disruption, weakness, joint pain, low red blood cell count, headaches, nausea, and sweating. Hobo spider bites are slow to heal.

## SEEK IMMEDIATE MEDICAL

**TREATMENT** if you suspect that you have been bitten by a hobo spider. The treatment is similar to that of brown recluse spider bites, and may involve corticosteroids, antibiotics, or surgery. It also works best if administered within 24 hours after the bite.

**Tarantulas** of various species exist throughout the Americas, variously throughout Africa, much of Asia, and all of Australia. In Europe, some species are found in Spain, Portugal, Turkey, Italy, and Cyprus. Tarantulas tend to hide under logs or stones, tree trunks, and in tunnels or burrows. You can usually identify them by their size (from 3 to 5 inches long), hairy texture, and visible fangs that hang down. Tarantulas are not aggressive, and their venom is not considered fatal for humans. Their bite will feel like a bee sting, and the area will become warm and red.

Other potential symptoms include rash, swelling, itching, rapid heart rate, eyelid puffiness, trouble breathing, and low blood pressure.

**SEEK IMMEDIATE MEDICAL TREATMENT.**

**Brazilian wandering spiders** are native to Central and South America and move quickly and aggressively. They can grow up to 5 inches long, and are considered to be one of the most poisonous spiders in the world. The bite of a Brazilian wandering spider is extremely painful and can quickly result in heavy sweating and drooling. The skin around the bite will usually swell, turn red, and get hot.

In severe cases, the bite can result in dead tissue or death.

**SEEK EMERGENCY TREATMENT IMMEDIATELY.** An anti-venom is available for this spider's bite.

**Wolf spiders** are common over the 5 continents, measure 3 to 4 inches long, and look similar to tarantulas. They like to stalk their prey by hunting on the ground, and you will find them in sand and gravel, around the bases of doors and windows, or in houseplants. Look for two large eyes in the middle of their faces, accompanied by six smaller eyes. A wolf spider's bite may tear the skin and cause pain, redness, and swelling. You may also experience swollen lymph glands as a result of the bite. For

some people, healing can take up to 10 days. In rare cases, the bite can cause tissue damage and even *necrosis*.

**Camel spiders** can be found in desert climates, the sand-coloured camel spider has a powerful pincer on its head. A camel spider will always seek the coolest place around, which may just be your shadow. A fast runner (up to 10 mph), it may be only 2 to 3 inches long, but in some locations, it grows up to 6 to 8 inches in length. Because of its large jaws, a camel spider can leave a significant wound in human skin. These spiders do not produce venom, but you may get an infection due to the open wound. You may also experience swelling around the bite wound and mild to intense bleeding.

**Jumping spiders** are one of the most common household spiders, distributed worldwide with about 2,300 species. Usually only a half-inch long, it has a stout, hairy body. The most common type is black with white spots on top. It moves erratically in a manner that resembles jumping. You are likely to find it outside in gardens and near other vegetation. The jumping spider's bite is usually no worse than a wasp sting. It can be poisonous if you are allergic to spider venom. Serious symptoms include pain, itching, redness, swelling, and headaches. They will attack if threatened, so use gloves when gardening.

• **Scorpions**

Scorpions also belong to the arachnid family. There are about 2,500 scorpions all over the world. Most scorpion bites have the same effect on humans as a bee sting. Only 25 scorpion species worldwide, can do harm to humans. If, in very rare cases, a scorpion bite develops pain, itching, redness and swelling and general symptoms occur like rapid heart rate, eyelid puffiness, trouble breathing, and low blood pressure

**SEEK IMMEDIATE MEDICAL TREATMENT. ■**

*While every effort has been made to ensure that the information given in this leaflet is accurate, not every treatment will be suitable or effective for every person. Your own clinician will be able to advise in greater detail.*

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