

## Module # 1 – Component # 1



# Introduction to Medically Important Spiders

## Preface

For this online course, we've put together a host of interesting and useful facts about southern Africa's medically important spiders. We've presented the facts as we know them, included details as to the **different types of venom, symptoms of various spider bites and their treatment.**

Many people find it difficult to **differentiate between our medically important spiders and totally harmless species.** We've included those characteristics that you can use to identify these medically important spiders and included some spiders which occur around the home that are often misidentified.

**Case studies** and newspaper reports have been included to help you understand spider bites and how the media portrays these amazing creatures. Email hoaxes are also discussed as well as details regarding documented spider bites.

This course is "a must" for anyone with an interest in:

- ☼ How venom affects humans.
- ☼ Factors Influencing spider bite symptoms.
- ☼ Which southern African spiders are medically important and where they are found.
- ☼ How to identify medically important spiders.
- ☼ Understanding the symptoms of their bites.
- ☼ What to do if you or someone in the family or a guest at your lodge is bitten by a spider.
- ☼ Medical treatment.
- ☼ Hoaxes, urban legends and misconceptions.
- ☼ Understanding where these spiders are found.
- ☼ Differentiating harmless spiders from medically important spiders.

If you have ever had a spider bite, would like to know the treatment, or would like to be able to identify medically important spiders then this is the course for you. **This course will prepare you in the event of a spider bite.**

## Introduction

Spiders have **fascinated humans** for thousands of years. Often a symbol of evil and fear, spiders have sparked the public imagination for all the wrong reasons. The media portrays them as deadly venomous, we've all received the shocking emails, read the horror stories in newspapers, but how venomous are these creatures really?

All spiders except one family, the **Feather legged spiders** (Uloboridae) have a **pair of venom glands that secrete venom**. Worldwide there are about **34,000 species of spider** with only **20 to 30 species being dangerously venomous to humans**. The primary function of venom is to immobilize prey. Prey is considered to be insects although some spiders are known to target small vertebrates. Some spiders have venom that is particularly effective against certain prey.

Spiders have a pair of venom glands which secrete venom. Muscles around the venom gland squeeze venom out, **through the venom duct and out of the spider's fangs**. Large spiders such as **Baboon Spiders** do not necessarily have large venom glands. Many spiders rely on their brute strength to subdue prey until the venom takes effect. These spiders often have **spines on their legs** which provide extra grip on struggling prey.

Their venom is also **used in defence** against larger animals such as humans and would-be predators. Statistically, spider bites are less dangerous than wasp and bee stings. **Some animals** such as cows, sheep and horses are **more sensitive** to spider venom. There have been cases of fatalities in dogs from Baboon spider bites. Other animals are known to be more resistant.

There are many spiders that are found in houses and outbuildings. It's only a matter of time before they come into contact with people in some form or manner. **Most spiders are shy and reclusive and avoid physical contact**. Only when the spider is squeezed, touched or threatened do they defend themselves and bite. It must be noted that **the majority of spiders possess fangs that are too small to pierce through human skin**. Spiders have 2 types of venom either **cytotoxic** or **neurotoxic**.

Note that the length of a spider is measured from the tip of the carapace to the end of the abdomen.

## Spider Bite Records

In a study by G. Newlands and P. Atkinson in 1988, the following statistics were documented. The following represent 40 cases of spider bites over a 10 year period.

Spider	No of Bites	Locality
Sac spiders	18	Pretoria-Witwatersrand
Violin spider	11	Pretoria-Witwatersrand
Black button spider	4	Pretoria-Witwatersrand
Six eyed sand spider*	2	Limpopo Province, Northern Cape
Small baboon spider	2	Johannesburg
Rain spider	1	Pretoria
Mouse spider	1	Windhoek
Jumping spider	1	Johannesburg

\* - *These spiders were not positively identified.*

Many bites of unknown origin are often attributed to spiders. This is primarily because the culprit was not found and medical practitioners are often untrained to identify arthropods via their bite marks and symptoms. In a study of 600 suspected cases of spider bite, **80% were found to be caused** by ticks, bedbugs, fleas and other causes. Only 20% were proven spider bites.

Another interesting statistic is that **there have been no fatalities in South Africa due to spiders in the past 60 years.**

## Venom Types

Spiders have either **cytotoxic** or **neurotoxic** venom. Each kind of venom exhibits characteristic, signs and symptoms and warrants different medical treatment.

Note that spiders are venomous, **not poisonous**. Poison must be ingested in order to have any effect. **Venom needs to be injected** into tissue. Theoretically, venom can be drunk without any ill effects, unless of course you have mouth or stomach cuts, sores or ulcers.

### **Cytotoxic Venom**

Results in the death of tissue cells, causes tissue damage and blood vessel leakage.

Bites result in tissue necrosis and often go unnoticed until a lesion develops. Bite **symptoms often develop slowly** and the area becomes painful and discoloured. The spider responsible for the bite is often difficult to identify since bites usually happen at night. **Bites are painless** so the culprit is rarely captured.

In southern Africa, two genera of cytotoxic spiders are medically important - the **Sac spider** (*Cheiracanthium sp.*), the **Violin Spider** (*Loxosceles sp.*).

### **Neurotoxic Venom**

Affects the nervous system of the victim **causing acute pain**. The nervous system is affected through heart palpitations, respiratory problems, blurred vision and slurred speech. Southern African Button Spider (*Latrodectus sp*) possesses neurotoxic venom of medical importance. **Southern Africa is home to 6 species of Button spider**. These spiders are divided into two groups based on their appearance, the **Black Button** spiders and the **Brown button** spiders.

#### **Note**

Another spider, the **Six eyed sand spider** is also reputed to be highly venomous. This spider has cytotoxic venom. Although research indicates that these spiders are highly venomous **there are no authenticated records of bites from this spider in southern Africa**. This spider has been included due to its potential for being medically important.

## Factors Influencing Spider Bite Symptoms

Different individuals can have different reactions to spider bites. Spider envenomations are influenced by the following factors:

- 🕷 Health and age of the victim. Venom will affect someone with a small body mass more than a person with a large body mass as well as the aged.
- 🕷 Some people are sensitive to spider venom. In these people, bite symptoms develop at a faster rate and are more extensive. Note that there are no records of anyone being allergic to spider venom.
- 🕷 Amount of venom injected during the bite is related to the size of the spider. Spiders may also give a *dry bite*.
- 🕷 Species of spider responsible for the bite. Many spiders are harmless. In the case of a serious spider bite, collecting the culprit may help in giving the correct treatment and a speedy recovery.

The symptoms in these course notes describe the average person's reaction to spider bites. The case studies highlight how different people react to spider venoms. Use these symptoms as guidelines and be aware of pre-existing conditions that may complicate or add to the normal symptoms.

### **Dry Bites**

As with many venomous creatures, **spiders can bite but inject no venom** whatsoever. Venom is the only defence that a spider may have towards predators. They would never just waste their venom because of the **time required to produce new venom and fill up their venom glands**. Therefore spiders only bite and inject venom as a last resort.

They can **regulate the amount of venom injected**. In some instances, a bite from a spider may have very little or no effect. In such cases the spider injected very little venom. In other cases however, the spider may inject a full dose. This occurs when the spider feels threatened.

## When to Seek Medical Intervention

The majority of spider bites are not of medical importance and can be easily treated at home. However, there is a time when we all ask ourselves if we should be contacting a professional medical doctor for advice about treatment or even hospitalisation? It must be noted that **most doctors are not experienced in spider bites** and often misidentify spider bites and their treatment.

If you have been bitten by a **Button Spider** (either Brown button spider or Black button Spider) then you should **get help immediately**. Signs and symptoms from Button spider bite present within 15-60 minutes and may be particularly debilitating. Luckily, **Button spider bites are painful**, so the culprit is usually **collected and identified**.

In other kinds of spiders, the bite can be managed at home if you have the knowledge. If you are consider yourself capable of medically treating a spider bite, you need only call a doctor if the situation deteriorates. If you feel you are not capable of treating a spider bite yourself then as a first line measure, seek medical help at the first sign of a spider bite or spider bite like symptoms.

If the bite becomes infected, or you suspect that the bite is infected then go get medical advice. If you have any pre-existing medical conditions that you think may be amplified by a spider bite then get medical help. If symptoms are more than localised and consist of muscle cramps, headaches, rashes or any other symptom that causes discomfort, then get medical help.

### **Poison Information Hotline**

The **Tygerberg Hospital in Cape Town** offers advice on all types of poisonings and venomation. This hot line is manned by trained staff **7 days a week, 24 hours a day**. You will be able to get information on any kind of poison from pesticides to prescription drug overdoses. They also cover all venomous and poisonous animals including sea urchins, scorpion fish, bees, wasps as well as spiders and scorpions.

Make use of the helpline if you are at all concerned about a spider bite or scorpion sting. The phone number is (021) 931-6129.

## Medically Important Spiders

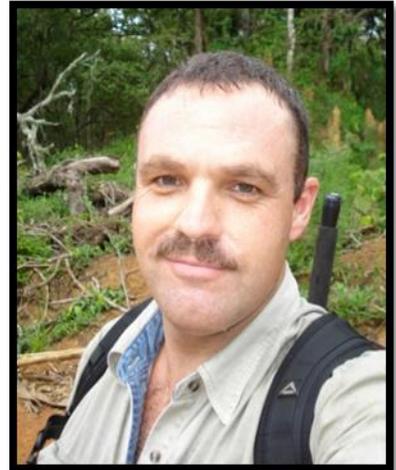
There are about **1,900 described species of spider in South Africa**, the majority of which are completely harmless to humans. Below are the spiders considered of medical importance due to the bite symptoms present. Note that these spiders are not distinct species but actually groups of spiders that share common characteristics such as appearance, behavior and venomosity.

- 🕷️ Button spider
- 🕷️ Sac spider
- 🕷️ Violin spider
- 🕷️ Six eyed sand spider

## About the Author

### Jonathan Leeming

- 🕷️ Born in England, Jonathan immigrated to South Africa in 1984. Fascinated by the smaller things in nature he started a lifelong exploration into the more misunderstood creatures.
- 🕷️ Author of *Scorpions of southern Africa*, Co-author of *The Bushveld – a comprehensive field guide to the Waterberg*, and the *Sasol First Field Guide to Spiders and Scorpions*. Jonathan is also a free lance writer who has published many articles in mainstream publications.
- 🕷️ Jonathan spends his time giving lectures, training field guides, writing about his beloved creepy crawlies and professional guiding.
- 🕷️ Jonathan is an accomplished professional speaker, photographer, travel and nature writer. In this course, he shares his intimate knowledge and enthusiasm of southern African spiders in a unique and refreshing way.



## **Course Synopsis**

### **Module # 1 – Medically Important Spiders**

- 1) Component # 1 – Introduction to Medically Important Spiders

### **Module # 2 – Medically Important Species**

- 2) Component # 1 – Button (Widow) Spiders
- 3) Component # 2 – Sac Spiders
- 4) Component # 3 – Violin Spiders
- 5) Component # 4 – Six Eyed Desert Sand Spider

### **Module # 3 – Other Spider Species**

- 6) Component # 1 – Commonly misidentified Species