

## Snake Bite in Southern Africa

Dr Arthur Morgan

All outdoors people are at risk for snake bite in Southern Africa, although this occurs rarely. Be careful where you walk and put your hands. Wear long boots or long baggy trousers and thick socks to act as a barrier and to enlarge the target with air. If you see a snake, freeze, and then move away slowly without any sudden movements. Do not play with any snake, alive or (apparently) dead.

The snakes of Southern Africa can be divided into several groups. From the point of view of their venom these are:

- Adders (vipers)
- Mambas and Cobras (including sub-type Spitting Cobras)
- Back fanged snakes (including sub-type Boomslang)
- Constrictors (no venom, but can inflict a nasty wound)

Serious envenomation is not inevitable after a snake bite. The snake has to expend a lot of energy to make the venom, and will not use it wastefully – you are far too big for it to eat, and it just wants to warn you off with the least effort and risk to itself. It will inject a lot of venom only if you have made it very cross or very frightened. Treat envenomation only if it has occurred – as diagnosed by the signs and symptoms. Snake venom is a mixture of many substances with different toxic effects, but there will usually be one main effect on the victim. Treating effects of the major action will usually keep the patient alive during the acute phase of envenomation.



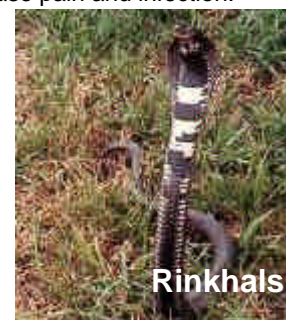
Night Adder

The snakes with venom that can kill quickly are Mambas, Cobras, including Spitting Cobras, and similar snakes. Usually these venoms act mainly as a voluntary muscle paralysing agent although occasionally a cardio-toxin is injected into a vein which may depress the heart. The patient is unable to move or breathe, and other organs are affected only afterwards by the lack of oxygen. Severe weakness or paralysis may start within minutes or be delayed for an hour or two and progress very rapidly indeed, or over several hours, and may last a few days. The only emergency treatment needed is mouth to mouth rescue breathing, and periodic

mopping up of saliva so it does not go into the lungs. If there are facilities to do so, intubate the trachea and ventilate with a self inflating bag ventilator and sedate the patient for his comfort. Sedate only if you are very well experienced in resuscitation! Pain is seldom a major problem, although a big Cobra or Mamba can cause a painful bite. Ventilation and good nursing will keep the patient alive until the venom is broken down. Nurse the patient as for any totally paralysed patient. Set up an intra-venous infusion. Keep the eyes closed so that they do not dry out since this will result in corneal ulceration. Keep the patient comfortable - cool, in the shade, off stones etc. Call for professional help early. Spitting Cobras have a venom that may cause severe, but not very extensive tissue necrosis (destruction). This will need a Surgeon's opinion.

In Australia it has been shown that, with snakes with similar venom action, wrapping the limb from end to end with a comfortably tight crepe bandage will delay the onset of envenomation. This has not yet been validated for African snakes, but will probably not do any harm provided that it is not applied too tightly, and limb swelling is allowed for by slowly releasing tension as needed. If any venom has been sprayed into the eyes by the Spitting Cobras or Rinkhals there will be immediate severe pain. Wash the eyes with as much sterile or at least clean non-damaging fluid as possible. If anti-venom is used there can be a severe immune reaction with corneal damage so dilute to very low concentration with a safe fluid. Use of a sterile ophthalmic antibiotic ointment after very generous washing of the eye will decrease pain and infection.

All Front fanged snakes have venoms at least partially neutralised by South African Institute for Medical Research Polyvalent Snake anti-venom. It can be bought but is expensive and has a short shelf life if not refrigerated. Anti-venom may be used if the user is trained to deal with severe and immediate allergic reactions. Since the anti-venom is made from horse serum any allergy to horse serum is an absolute contra-indication to its use. The serum should be given slowly as an intra-venous infusion. Adrenaline (epinephrine), anti-histamines and possibly cortico-steroids should be available for immediate use - adrenaline should be drawn up in a syringe or already diluted for infusion. After a severe envenomation by a large Cobra or Mamba the initial dose of anti-venom may be as much as 10 ampoules given over a few minutes. Stop if the patient is stable or improving. Consider more if the patient is becoming weaker. Ventilate the patient without delay if needed whether you are giving anti-venom or not.



Rinkhals



**Berg Adder**

The typical adder / viper group such as the Puff Adder or the Gaboon Viper have venom that will act more slowly, and may cause massive tissue and blood vessel damage. Blood and fluid will leak out of the blood vessels into the tissues around the bite with severe pain and gross swelling. The damage may involve the whole limb. Fluid resuscitation is the primary treatment. Anti-venom may help and should be considered with a starting dose of up to 5 ampoules for a Gaboon Viper. Take the same precautions for allergy as suggested above. Strong analgesics such as morphine given carefully may be needed. Paracetamol will give useful additional analgesia, but avoid the non-steroidal anti-inflammatories because of possible kidney damage. Immobilise the limb as if it was broken, elevate it, set up an intravenous drip, and evacuate the patient to hospital as soon as possible. Remember to adjust

the splints as the limb swells.

Berg Adders seldom bite despite provocation. Their venom has been reported as causing death, but this is either very rare or misreporting. Although they are adders their venom causes mild local tissue damage, but affects the cranial sensory nerves with sound, smell, and visual hallucinations, or even temporary blindness. Permanent blindness has been reported.

The Back fanged snakes like the Boomslang are usually timid and non-aggressive. You will have to work hard at getting bitten. Their venom affects the ability of the blood to clot, so the patient will ooze from every little hole. Death is over days so evacuate with as little trauma to the patient as possible. Even the damage done by brushing teeth will cause bleeding! Intravenous infusions should only be set up by experts. Specific and very effective Boomslang anti-venom is held by the South African Institute for Medical Research in Johannesburg and will be issued to treating doctors only after a firm diagnosis of Boomslang envenomation. The other Back fanged snakes do not have anti-venom and bites should be treated symptomatically.

Many snakes have no venom glands or venom injecting mechanism. These are large compared to their prey and kill by constricting the prey and suffocating it. There are a few reports of large Pythons eating small children. The bigger snakes (Pythons and Mole Snakes) can inflict a nasty wound with their many strong teeth. The physical damage and infection can cause severe trauma to the victim. Tetanus is a real danger and tetanus toxoid should be given as is standard for any animal bite. The wound may need surgical cleaning and antibiotics.



**Puff Adder**

Several snake venoms have unpleasant effects but are seldom lethal, and cannot be treated. Treat the symptoms.



**Take home message-** if the patient can't breathe, do mouth to mouth breathing for them.

For more information about mountain skills training contact:

**South African Mountaineering Development & Training Trust**

[www.mdt.za.org](http://www.mdt.za.org)  
[info@mdt.za.org](mailto:info@mdt.za.org)

or

Any of the trainers listed on the MDT website

Errors, corrections or suggestions for improvements for this training sheet may be forwarded to:



Andrew Friedemann  
 Wildways Adventures  
[www.wildwaysadventures.co.za](http://www.wildwaysadventures.co.za) or [info@wildwaysadventures.co.za](mailto:info@wildwaysadventures.co.za)

ver 2.1      3 July 2007