

SNAKEBITE – PREVENTION AND FIRST AID

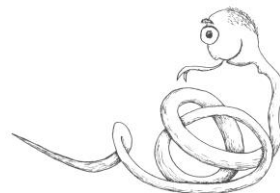
**NOT ALL SNAKES ARE VENOMOUS
NOT ALL VENOMOUS SNAKEBITES
ARE FATAL**

Written and produced by the Expert Committee on
Snakebite of the Sri Lanka Medical Association

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Introduction

Sri Lanka has one of the world's highest death rates from snakebite. Bites of venomous snakes do not always result in envenoming. The current recommendation is to give antivenom treatment only if the victim is bitten by a specified species of snake and also has evidence of envenoming. If there is no such evidence, the management is as for any animal bite injury.

Hospitals in Sri Lanka generally carry stocks of antivenom, and their staff are competent in its use. Studies conducted recently relating to snakebite and the effects of envenoming in Sri Lanka have shown an improvement in the management of snakebite, especially with the safe and effective use of antivenom.

Venomous snakes

Sri Lanka has many species of land, fresh water and sea snakes. About one hundred and five species are now recorded in the country—new species still being discovered. Most of them are harmless, a few are venomous and are considered medically important. The degree of importance depends on whether a bite can be life-threatening, whether there are reported fatalities as a result of a bite or whether a bite causes medical problems that respond to treatment and do not endanger life. Six species of land snakes are considered highly venomous as they are known to have caused human fatalities. They are:

- Cobra (*Naja naja*)
- Common krait (*Bungarus caeruleus*)
- Sri Lankan krait (*Bungarus ceylonicus*)
- Russell's viper (*Daboia russelii*)
- Merrem's hump-nosed pit-viper (*Hypnale hypnale*)
- Lowland hump-nosed pit-viper (*Hypnale zara*)

Three species are considered potentially highly venomous as they have potent venom capable of causing human fatalities but there are no deaths reported. They are:

- Millard's Hump-nosed pit-viper (*Hypnale nepa* (formerly *H. walli*))
- Saw-scaled viper (*Echis carinatus*)
- Green pit-viper (*Trimeresurus trigonocephalus*)

One species of land snake is considered moderately venomous, being able to cause envenoming but not posing a threat to life, responding to treatment. It is:

- Sri Lankan keelback, Blossom krait (*Rhabdophis ceylonensis*, formerly *Balanophis ceylonensis*)

All the sea snakes are highly venomous, but mostly non-aggressive, biting usually under provocation. Currently 15 species of true sea snakes are recognised in Sri Lankan coastal waters. Few deaths have been documented, mostly attributed to the hook-nosed sea snake (*Hydrophis schistosus*) that is known to be a particularly dangerous animal. Another dangerous sea snake is the aggressive, highly venomous viperine seasnake (*Hydrophis viperinus*) found only around the coasts of northern Sri Lanka.

A number of snakes, including one fresh water snake, have earned an unjustified reputation in Sri Lanka as being highly venomous. They are back fanged and cannot therefore efficiently deliver venom into humans. There have been no documented deaths from the bites of these snakes, which may cause only local pain and swelling. Considered snakes of low medical importance (mildly venomous), these are:

- Cat snakes (*Boiga* spp.)
- Sri Lankan coral snake (*Calliophis melanurus*)
- Whip snakes, Vine snakes (*Ahaetulla* spp.)
- Dog-faced water snake (*Cerberus rhynchops*)
- Gerard's water snake (*Gerarda prevostianus*)
- Flying snake, Gold and black tree snake (*Chrysopelea* spp.)

Prevention

Most venomous land snakes are commonly found near human habitations. Preventive measures, taken by persons likely to come in contact with snakes, will reduce the incidence of snakebite in this country. The following measures are recommended.

1. Most snakebites are on the legs, often below the ankle. Protect the legs and feet by wearing shoes or boots, and ankle length garments when walking or working in areas where snakes are likely to be found. These areas include land covered by tall grass or dense undergrowth, jungle paths, and agricultural lands particularly during harvesting and weeding.
2. When walking in snake infested areas, look carefully where you tread. Protect your feet—wear boots if possible—and thick ankle length garments such as denim trousers. At night use a torch.
3. Do not put your hand into anthills, cavities in trees and thick undergrowth and under logs. It is prudent to clear sites likely to be occupied by snakes around human habitations. Destroy anthills and fill up cavities in trees. Do not let fallen trees, logs and firewood lie around. Exercise caution if you have to move logs, rocks, etc in the course of your work, as there may be snakes under these. When moving small logs roll them towards you, not away from you. Then the log will form a barrier between you and a snake that might be underneath.
4. Dispose of garbage and junk regularly, and try to keep your dwelling and surroundings free of rats, mice, frogs, lizards, etc., which attract snakes.
5. Only knowledgeable persons should handle snakes. An apparently dead snake should be handled with great care as it may still be alive, and even when dead, may inflict a reflex bite. Rearing snakes is prohibited, except with permission of the Department of Wildlife Conservation.

First aid in snakebite

Effective first aid should always be given to snakebite victims. It will prevent or minimise spread of venom that may have been introduced into the tissues, as well as complications resulting from the bite. Incorrect first aid may cause harm.

The following simple, practical, effective and safe measures are recommended:

1. The commonest reaction following snakebite is fear — the victim thinks of death. Reassurance is vital and should be done in a positive and authoritative manner and continued for as long as necessary. The following points should be emphasised —
 - Most snakes are not venomous.
 - Even if a biting snake is venomous, it may not inject venom.
 - The presence of fang marks alone does not mean that venom has entered the body.
 - If envenoming has taken place, affective treatment is available in hospitals and full recovery is likely.
2. The snakebite victim, and especially the bitten limb, must be kept still because —
 - a) Movement of the bitten part and of the victim hastens absorption of venom, which may have been introduced into the body by the bite. Therefore, keep the victim still. It is better to carry rather than to let him/her walk.
 - b) In addition to retarding absorption of venom, immobilisation also reduces pain. The bitten limb could be immobilised by splinting it with a piece of wood.
3. To remove venom, which may lie on the surface of the skin, the bitten area should be washed gently with soap and water, or wiped with a wet cloth.
4. Swelling of the bitten limb is a common feature after venomous snakebite. Prevent complications by removing, as early as possible, rings, bangles, anklets, cords or clothing,

which could cause constriction if swelling were to occur.

5. If pain relief is necessary, give Paracetamol.
6. Take the victim to hospital as early as possible. An accurate description of the circumstances of the bite will facilitate the identification of the snake. Photographs taken with a phone will be very helpful to identify the snake. Accurate identification will influence the management of the patient. It is no longer necessary to bring the biting snake to hospital for proper management. Live snakes, as well as dead ones, should be handled carefully.
7. If the victim has difficulty in breathing, particularly after krait bite, provision of artificial breathing on the way to hospital either by mouth to mouth or bag and mask ventilation, if you have the capability to do so, is a lifesaving first aid intervention.

A few don'ts

1. Incision of or application of suction to the bite wound is not advisable. Snakes usually inject venom too deeply for suction to be of any use. Inexpert incisions may damage tendons, blood vessels and nerves; bleeding from these wounds and infection may create added problems.
2. Do not apply tourniquets in the first aid treatment of snakebite. Applications of “pressure bandages”, as recommended in some guidelines, is also not recommended. The effectiveness of pressure bandages for bites of Sri Lankan snakes has not been proven.
3. Chemicals such as Condy's crystals (potassium permanganate) should not be applied on the bite as they may cause tissue damage.
4. Medication administered by the nasal instillation of liquids such as oil ('nasna'), is dangerous and should not be permitted. It can result in lung infections or permanent

deafness.

5. Alcohol hastens circulation of venom and should not be given.
6. Thambili and kurumba water and fruit juices should not be given. They contain potassium, which can cause problems if kidney damage occurs following snakebite.
7. Aspirin may produce persistent bleeding from the stomach, especially following Russell's viper bite and should not be given.
8. Do not panic and be tempted to do anything detrimental to the victim.

Table 1: The highly venomous land snakes of Sri Lanka

Scientific name	English name	Sinhala names	Tamil names
<i>Naja naja</i>	Cobra	Naya Nagaya	Naga pambu Nalla pambu
<i>Bungarus caeruleus</i>	Common krait	Thel karawala Magamaruwa Habaralaya Mavilla	Yennai pambu Yennai viriyan Yettadi viriyan Kandangkaruvalai Karuvelan Pambu
<i>Bungarus ceylonicus</i>	Sri Lankan krait	Dunu karawala Polon karawala Mudu karawala	Yennai viriyan Yettadi viriyan Kattuviriyan
<i>Daboia russelii</i> (<i>Vipera russelli</i>)	Russell's viper	Tith polonga Dhara polonga	Kannardi viriyan Muththirai pudaiyan
<i>Hypnale hypnale</i>	Merrem's hump-nosed viper	Polonthelissa Kunakatuwa	Konal mooku- pudayan
<i>Hypnale zara</i>	Lowland hump-nosed viper	Zarage mukalan thelissa	

Table 2: The potentially highly venomous land snakes of Sri Lanka

Scientific name	English name	Sinhala names	Tamil names
<i>Hypnale nepa</i> (= <i>H. walli</i>)	Millard's hump-nosed viper	Millardge mukalan thelissa	
<i>Echis carinatus</i>	Saw-scaled viper	Weli polonga	Surattai pambu, Pal surattai
<i>Trimeresurus trionocephalus</i>	Green pit-viper	Pala polonga	Pachai viriyan Kopi viriyan

Table 3: A mildly venomous land snake of Sri Lanka

Scientific name	English name	Sinhala names	Tamil names
<i>Rhabdophis ceylonensis</i> (= <i>Balanophis ceylonensis</i>)	Blossom krait	Nihaluwa Mal karawala	

Table 4: Some land snakes of low medical importance in Sri Lanka

Scientific name	English name	Sinhala names	Tamil names
<i>Boiga spp.</i>	Cat snakes	Mapila	Kolipudaiyan Poonai Pambu
<i>Calliophis melanurus</i>	Sri Lankan coral snake	Depath-kaluwa	
<i>Ahaetulla spp.</i>	Whip snakes Vine snakes	Ahaetulla Asgulla Henakadaya	Pachchilai pampu Kankoththi pampu
<i>Cerberus rhynchops</i>	Dog-faced water snake	Kunudiya kaluwa Diyabariya	Tanni pambu Kanna pampu Uppu-Ar- Pambu
<i>Gerarda prevostianus</i>	Gerard's water snake	Gerardge diyabariya	
<i>Chrysopelea spp.</i>	Flying snake Gold and black tree snake	Polmal karawala	Parrakum pambu Para nagam

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