

SNAKE BITE PROTOCOL - INDIA

India has a vast diversity of snakes of which a handful are venomous and one needs to be aware of the same. In this article, I wish to highlight these venomous snakes and some precautions to be taken to reduce human snake conflicts.

Of course, there is no one specific simple single rule for identifying a venomous snake, as many non-venomous ones have evolved to look like their venomous brethren. However, some of the more medically important ones (yes that's what they are termed as) can be recognized by their shape, size, color, behavior and sound they make when they are threatened. These species are-

1. Spectacled cobra or Common Cobra- identified by its spectacled mark on the hind of the forehead and its ability to spread a hood and hiss, this snake is revered across the country and is found in all habitats.
2. Russell's Viper- identified by the dark brown chain like markings on its body coupled with a triangular head and a highly audible pressure cooker like hiss, this snake is found all across the country and enters homes in search of prey such as rodents and small birds.
3. Saw scaled viper- identified by a trident shaped mark on its head, this small species of viper also has a distinct side winding movement and is found in all parts of the state. The scales of this snake when rubbed together make a sound as that of a saw rubbed against a log of wood hence the name saw scaled viper.
4. Common Krait- identified by its metallic steel black colored body with white markings, this nocturnal snake is uncommon in urban areas but is found in rural areas in the country
5. King Cobra- identified by its characteristic hood, large length, often crossing 10 feet and a blackish grey body with bands, the King cobra cannot be mistaken for any other snake. This species is found only in India's forests and records of bites are rare.
6. Pit Vipers- identified by their triangular heads and heat sensing pits, India has over 21 species of pit vipers-of which some like

the hump nosed, the green and the Malabar pit viper are being considered as medically important. While work still continues on whether their bite could be fatal to humans, these species are venomous and found only in dense forest habitats.

Venomous snakes of medical importance have a pair of enlarged teeth, the fangs, at the front of their upper jaw. These fangs contain a venom channel (like a hypodermic needle) or groove, along which venom can be introduced deep into the tissues of their natural prey. If a human is bitten, venom is usually injected subcutaneously or intramuscularly.

There are two important groups (families) of venomous snakes found in India.

1. **Elapidae** have short permanently erect fangs. This family includes the

most important species, from a medical point of view, include the Indian Cobra (*Naja naja*), King cobra (*Ophiophagus hannah*), (*Bungarus caeruleus*), and Sea snakes (important genera include *Enhydrina*, *Lapemis* and *Hydrophis*)

2. **Viperidae** have long fangs that are normally folded up against the upper jaw but, when the snake strikes, are erected. There are two subgroups, the typical vipers (*Viperinae*) and the pit vipers (*Crotalinae*). The *Crotalinae* have a special sense organ, the pit organ, to detect their warm-blooded prey. This is situated between the nostril and the eye. The medically important species include the typical vipers i.e. Russell's viper (*Daboia russelii*) and the Saw scaled viper (*Echis carinatus*) while the pit vipers include the Bamboo pit viper (*Trimeresurus gramineus*), the Malabar Pit viper (*Trimeresurus malabaricus*) and the Hump nosed pit viper (*Hypnale hypnale*).

FIRST AID

First aid treatment is carried out immediately or very soon after the bite, before the patient reaches a dispensary or hospital.

Unfortunately, most of the traditional, popular, available and affordable first aid methods have proved to be useless or even frankly dangerous. These methods include: making local incisions or pricks/punctures at the site of the bite or in the bitten limb, attempts to suck the venom out of the wound, use of (black) snake stones, tying tight

tourniquets around the limb, electric shock and even application of chemicals, herbs or ice packs. While most of these methods/cures have been proved wrong and in fact put the patient at a greater risk than before. So please do not attempt any of these above-mentioned methods in case of a bite.

I have sadly seen many local people have great confidence in traditional (herbal) treatments, but they must not be allowed to delay medical treatment or to do harm.

Most of the snake-bites take place unknowingly when the snake is accidentally threatened; or when there is a human-reptile interaction i.e. as far as snake handlers are concerned.

Whatever be the reason, it is not unlikely that you might end up in a situation where a simple strategy and presence of mind can prove to be useful.

The recommended First Aid protocol for Snake bite as practiced today follows the below mentioned points

- Reassure the victim who may be very anxious and scared.
- Immobilize the bitten limb with a splint or sling (any movement or muscular contraction increases absorption of venom into the bloodstream.
- Consider Pressure immobilization for bites by elapid snakes only like the Indian Cobra and the Indian krait including sea snakes but should not be used for viper bites because of the danger of increasing the local effects of the necrotic venom. There is considerable debate of which technique to be used and I have personally found the use of a local compression pad applied over the wound pressure bandaging of the entire limb to be very effective.
- Avoid any interference with the bite wound as this may introduce infection, increase absorption of the venom and increase local bleeding.
 - The patient must be transported to a place where they can receive medical care (dispensary or hospital) as quickly, but as safely and comfortably as possible. Any movement, especially of the bitten limb, must be reduced to an absolute minimum to avoid increasing the systemic absorption of venom.
 - This medical facility must have a ventilator system and a dialysis machine system with required technicians.

- Remove watches/rings/other jewelry from the site of the bite and do note the time of the bite and sequence of symptoms.
- If possible the patient should not be allowed to walk and carried with the help of a stretcher or bed or sitting on a chair, etc.
- The best possible First Aid for a venomous snake bite victim would be to rush him/her to the nearest Hospital in the least possible time.

Some of the acts that one should not do are listed below as these are activities that either **do not work** or are **extremely dangerous** to perform. In fact, they will do more harm than good.

Suck out venom

Make incision to bleed out venom

Go to traditional healers or anything similar

Try out home remedies

Apply tight tourniquets

Apply ice or potassium permanganate.

Clean out the bitten part with dettol, etc.

Try and catch/kill the snake

Some suggestions to reduce Snakebite accidents and conflicts-

1. Be aware of the snakes found in your locality, their general habits and learn to identify the venomous ones from the non-venomous ones.
2. When confronted and need an id, please take images with your cellphone from a safe distance. Do not take a video, as it invariably shakes. An image is better for identification.
3. Be vigilant and alert during specific times of snake activity- at dawn and dusk, during heavy showers and flooding, at harvest and winnowing times.
4. Always use a torch while walking at night and wear proper footwear if you are walking through vegetation or thick undergrowth.

5. Avoid sleeping on the ground and near dark humid corners. Avoid cradles and beds that are closer to the ground for children.
6. Do not go very close to a snake, as far as possible observe from a distance. Never threaten, handle or attack a snake with sticks, insect sprays, fire or any such improvised device or weapon.
7. If a snake is unintentionally trapped or cornered in any part of your home, keep an eye on the snake and call for assistance from the Wildlife Rescue squad or local snake rescue volunteers who will rescue and release them in safe habitats.
8. Avoid hoarding rubble, rubbish and unwanted items in or around your homes. These provide hiding places for rodents and are then inhabited by snakes.
9. Do not attempt to pick up or handle a dead snake on the road or elsewhere. Many times the snake is still not brain dead and can inflict a bite. Do not touch or pick up sea snakes that have been washed or stranded on the beach. They are venomous too.
10. Avoid disturbance to forest patches and green areas that are potential snake habitats. This way the snakes get their niche habitats and we get our safety too. Co existence is the key in today's world of nature conservation.
11. Be aware of the nearest Health center or hospital that treats snakebites and keep their phone numbers handy.

If your neighborhood has a high density of snakes, it is advisable to prepare a snake-bite protocol (plan of action in case of an emergency) best suited to you. This can simply be important contact people and numbers who should be informed first, name / address of nearest hospital treating snake-bites, best mode of transport and related details, name / contact number of doctor, etc. Make sure all family/neighborhood members understand their role in an emergency.

Remember, snakes and their kind are an integral part of our urban as well as rural landscapes and a vital component of any healthy ecosystem. The issues of conflict arise due to disturbance in habitat or loss of prey, both of which sadly are factors that are created by humans. We thus need to be tolerant and understand that straying of

snakes is part of a larger impact that we as humans are causing on our immediate landscapes and take steps to minimize such negative impacts. And well, it is equally important to be safe than sorry, and I hope that the above suggestions will come handy in reducing human reptile conflicts in the country.

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