



Snarbic-Kenya

SNABIRC-KENYA

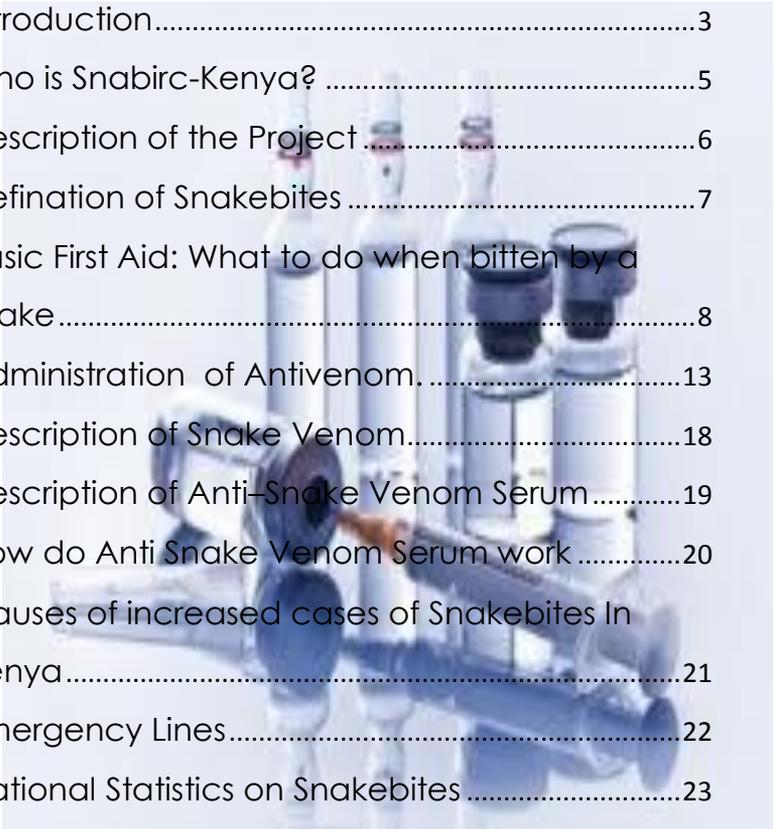
A GUIDE TO MANAGING SNAKEBITES





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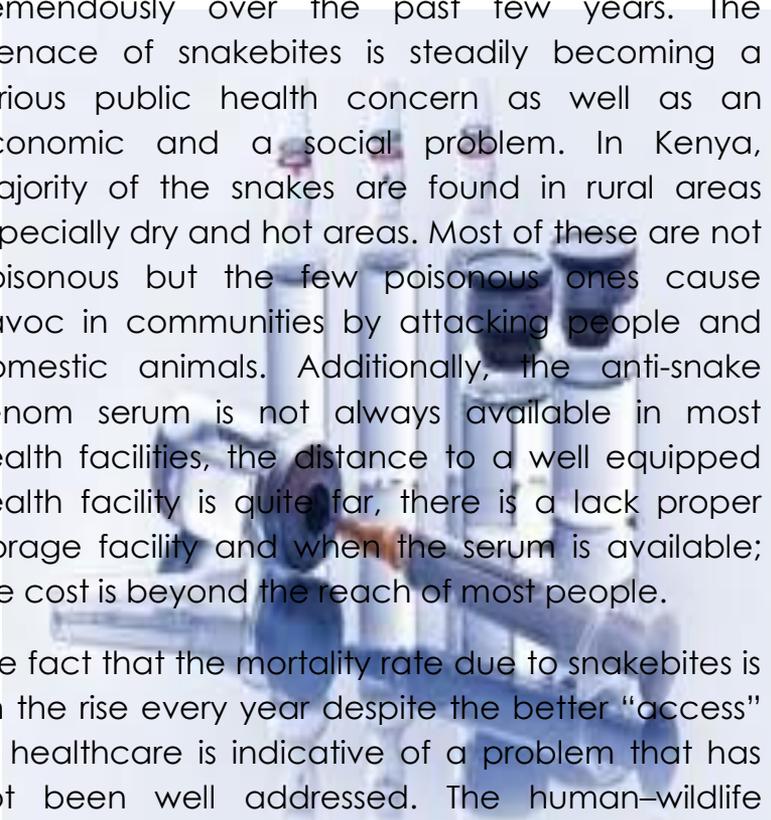
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INTRODUCTION



The number of snakebites in Kenya today has risen tremendously over the past few years. The menace of snakebites is steadily becoming a serious public health concern as well as an economic and a social problem. In Kenya, majority of the snakes are found in rural areas especially dry and hot areas. Most of these are not poisonous but the few poisonous ones cause havoc in communities by attacking people and domestic animals. Additionally, the anti-snake venom serum is not always available in most health facilities, the distance to a well equipped health facility is quite far, there is a lack proper storage facility and when the serum is available; the cost is beyond the reach of most people.

The fact that the mortality rate due to snakebites is on the rise every year despite the better “access” to healthcare is indicative of a problem that has not been well addressed. The human-wildlife conflict has compounded the problem because humans have encroached into areas traditionally inhabited by wild life only. The ever increasing



human population, lack of employment as well as limited resources for domestic animals has forced people to look for alternative sources of livelihood resulting in frequent encounters with the snakes. People have also turned to killing the traditional predators which are used by snakes as food. By killing these predators, the natural ecosystem balance is grossly interrupted and the snakes push their hunting boundaries further into human inhabited areas and in the process, cause bites and attacks which have resulted in death, disability or loss of sight.

Secondly, most victims of envenomation, especially those that have lost a limb, are subjected to a life of poverty since they depend on others for survival. They are viewed with stigma as a result of their snake afflicted disability. Many children drop out of school and adults become unproductive in the community. For the children, some may be subjected to sexual exploitation and child labor. All these compound an already poor economic status. By providing anti venom serum, we hope to save lives and hopefully restore health.



This guide gives important information on the management of snakebites in the hope that the number of deaths and disabilities will be reduced.

WHO ARE SNABIRC-KENYA?



SNABIRC-KENYA is a non-profit organization that assists victims of snakebites by providing anti-snake venom serum, rehabilitation of those that become disabled or those that lose eyesight, as well as undertaking research into snake related matters. We are also involved in sensitizing the community as well as the health workers in prevention and treatment of snakebites. Snabirc-kenya stands for SNAKE BITE RESCUE, REHABILITATION AND RESEARCH CENTRE-KENYA. We work with and within the community to assist people bitten by snakes. Snabirc-kenya was recently registered to operate in five (5) counties in Kenya.



Our Mission

To transform the lives of the people in the community, especially the ones who have been victims through loss of life, limbs, sense of sight as well as loss of livelihood.

Our Vision: To create a harmonious co-existence between people and reduce mortality due to snakebites.

DESCRIPTION OF THE PROJECT

Snake Bite Rescue and Rehabilitation, (SNABIRC-KENYA), is a project that is proposed to assist victims of envenomation to get free anti- snake venom serum, as well as the rehabilitation of those who have lost a limb or the ability to see. By availing the anti- snake venom serum to the local and nearest health facility, many lives will be saved.

SNABIRC-KENYA and other stake holders have realized the extent of this problem and have come



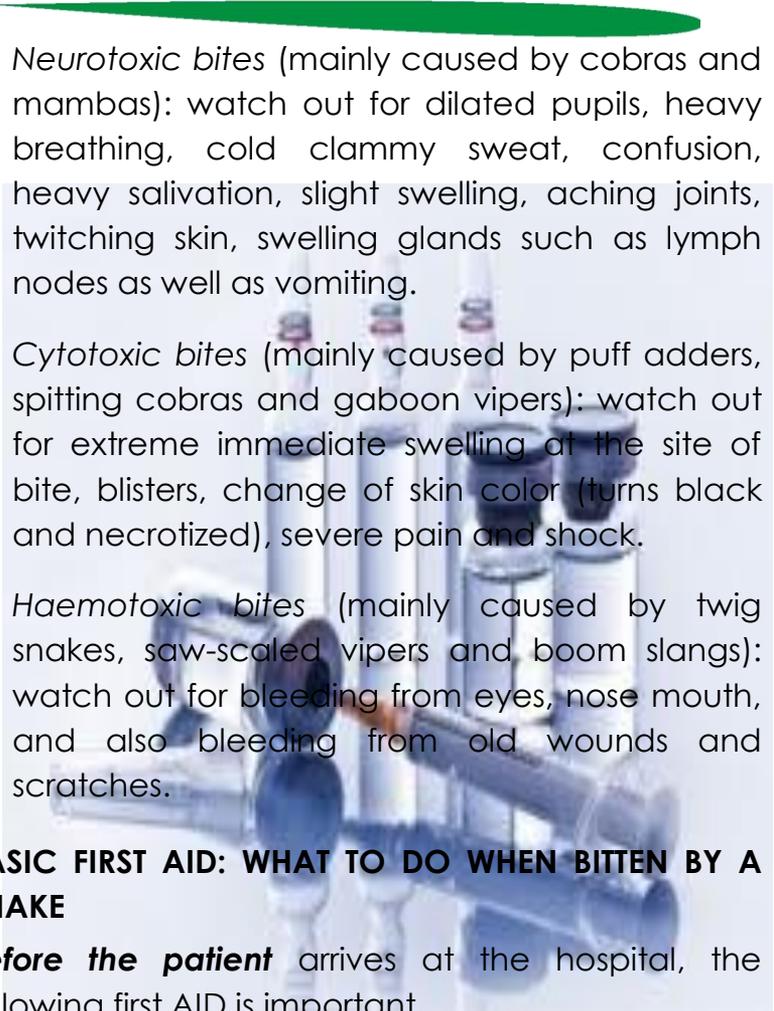
on board, together with the county government to address this problem and hopefully help save lives.

DEFINATION OF SNAKEBITES

Snakebite is defined as an incision made through the skin by a snake's fang (teeth). There are two types of snake bites. The first type is known as a dry bite where an incision is made through the skin but there is no injection of venom. The other type is whereby envenomation occurs (the snake bites and injects/releases venom into the victim).

Depending on the type of snake, there are different symptoms that result from different type of snakes. For example, cobras and mambas mainly cause neurotoxic poisoning after a bite; puff adders, spitting cobras and gaboon vipers cause cytotoxic poisoning while boomslangs, twig snakes and saw- scaled vipers cause hematologic poisoning.

Specific/obvious symptoms to watch out for resulting from different types snake bites are as follows:

- 
- *Neurotoxic bites* (mainly caused by cobras and mambas): watch out for dilated pupils, heavy breathing, cold clammy sweat, confusion, heavy salivation, slight swelling, aching joints, twitching skin, swelling glands such as lymph nodes as well as vomiting.
 - *Cytotoxic bites* (mainly caused by puff adders, spitting cobras and gaboon vipers): watch out for extreme immediate swelling at the site of bite, blisters, change of skin color (turns black and necrotized), severe pain and shock.
 - *Haemotoxic bites* (mainly caused by twig snakes, saw-scaled vipers and boom slangs): watch out for bleeding from eyes, nose mouth, and also bleeding from old wounds and scratches.

BASIC FIRST AID: WHAT TO DO WHEN BITEN BY A SNAKE

Before the patient arrives at the hospital, the following first AID is important.

Snake-bite should be treated immediately. The



measures to meet the emergency should be quick and positive. The following first-aid measures have definitely proved their value:

1. Remove the patient to a well-ventilated and quiet place. Assure the patient that there is no reason to be nervous or frightened. Try to gain his confidence. Institute measures to combat shock which has a major psychological element in it.
2. Ligation: A ligature of some type should be bound/ tied at moderate distance above the bitten part, to prevent the venom being absorbed into the upper part of the limb. The ligature may consist of a strip of cloth a large handkerchief, or even a piece of heavy cord.

A rubber ligature is by far the best. It is necessary to make the ligature sufficiently tight to cause a stoppage of venom circulation. Ligation should not continue for over half an hour and even then should always be slackened/ loosened at regular intervals of ten minutes during this time. Ligation should not be applied if an hour or more has elapsed after the bite.



3. Treat the wound in the usual surgical way. Clean the bitten part and apply antiseptic dressings without rubbing. Immobilize the bitten part as in fracture cases.

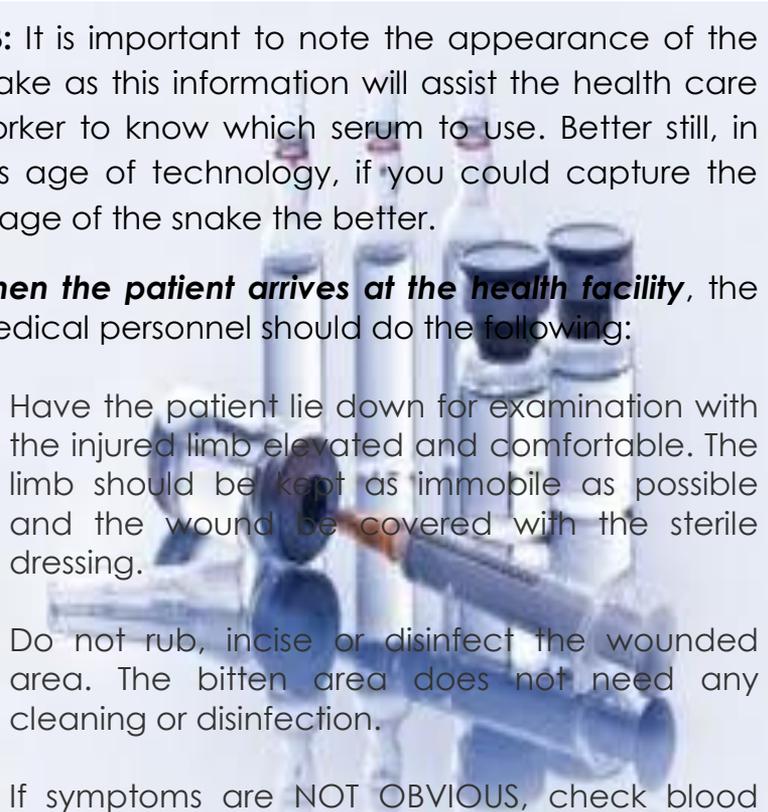
Also remember the following

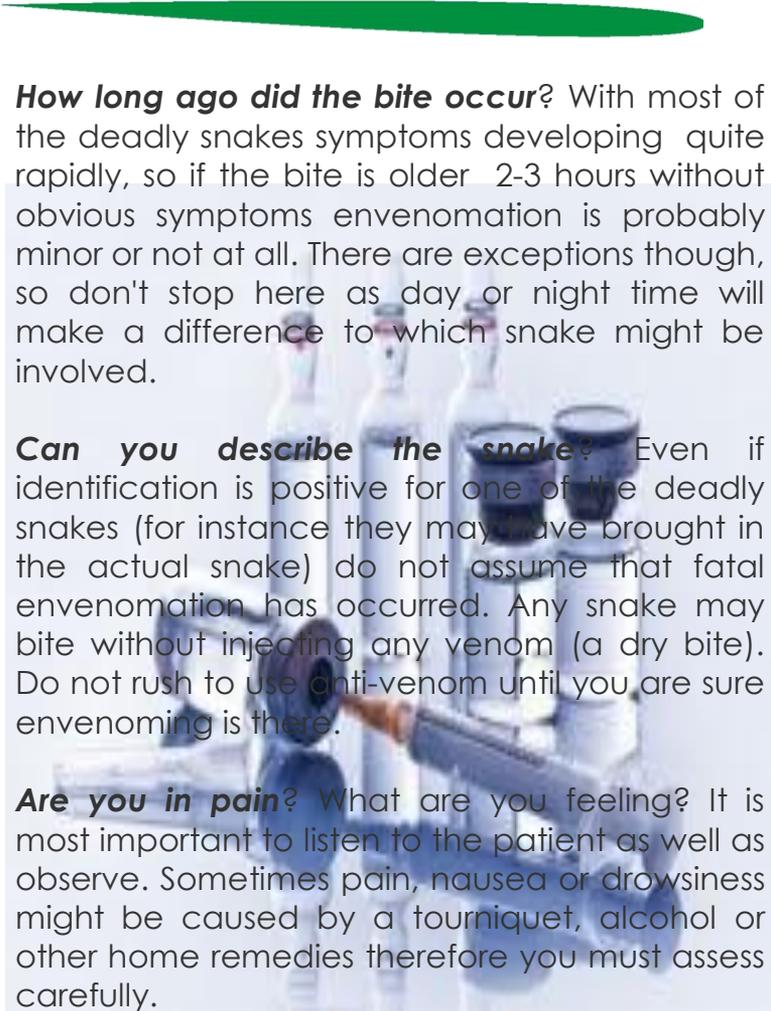
- Start tying the bitten area and apply a splint to immobilize the leg or arm.
 - Stay calm, do not panic or run
 - Move away from the snake to avoid being bitten again
 - The bitten area should be placed in such a way it is raised above the heart (draw a picture)
 - Do not take anything such as soda, alcohol, traditional medicine etc
 - Do not take any painkiller especially anything with Aspirin
 - Do not use a wet cloth or bandage
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- Do not waste much time, rush the patient to a nearby health facility for anti -snake venom serum and further treatment.

NB: It is important to note the appearance of the snake as this information will assist the health care worker to know which serum to use. Better still, in this age of technology, if you could capture the image of the snake the better.

When the patient arrives at the health facility, the medical personnel should do the following:

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- Have the patient lie down for examination with the injured limb elevated and comfortable. The limb should be kept as immobile as possible and the wound be covered with the sterile dressing.
 - Do not rub, incise or disinfect the wounded area. The bitten area does not need any cleaning or disinfection.
 - If symptoms are NOT OBVIOUS, check blood pressure and heartbeat (pulse), pupil responses and lymph glands. Ask the patient, or the person who was with her/him at the time of the bite the following:

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- **How long ago did the bite occur?** With most of the deadly snakes symptoms developing quite rapidly, so if the bite is older 2-3 hours without obvious symptoms envenomation is probably minor or not at all. There are exceptions though, so don't stop here as day or night time will make a difference to which snake might be involved.
 - **Can you describe the snake?** Even if identification is positive for one of the deadly snakes (for instance they may have brought in the actual snake) do not assume that fatal envenomation has occurred. Any snake may bite without injecting any venom (a dry bite). Do not rush to use anti-venom until you are sure envenoming is there.
 - **Are you in pain?** What are you feeling? It is most important to listen to the patient as well as observe. Sometimes pain, nausea or drowsiness might be caused by a tourniquet, alcohol or other home remedies therefore you must assess carefully.
 - If you are not very sure whether or not envenoming has occurred, take a blood



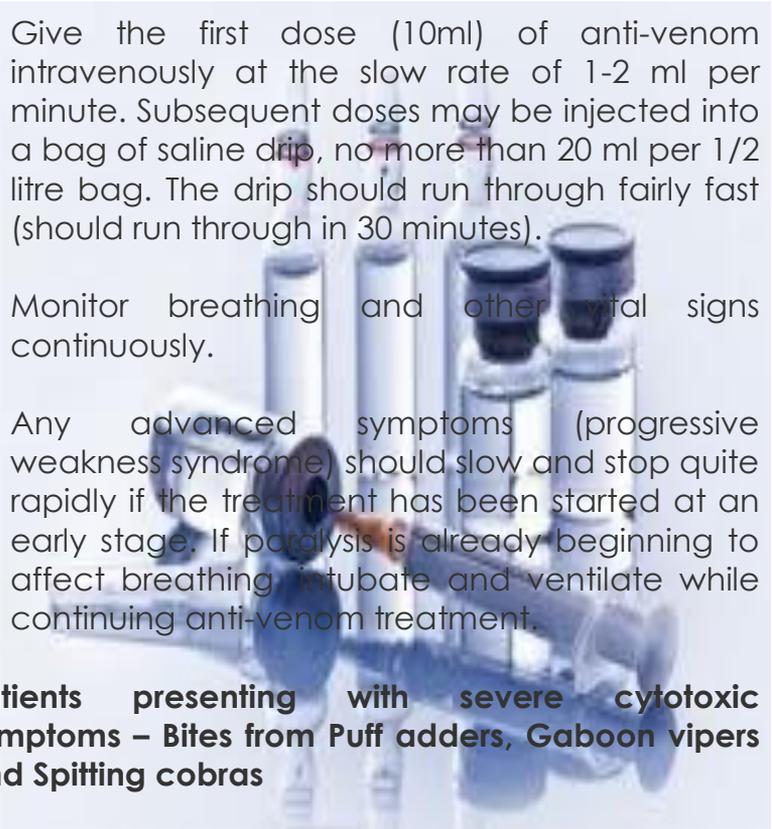
sample, put it in the new, dry, clean glass test tube and note the clotting period. If, after 20 minutes, the blood is still fluid, you can assume haemotoxic envenomation has taken place

ADMINISTRATION OF ANTIVENOM.

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- Children should get the same dose as adults.
 - Administration of anti-venom should always, where possible, be undertaken by a qualified person in the nearest hospital, clinic or surgery. In some instances qualified community worker can administer the anti-venom especially in very emergency situations.
 - Remember to have adrenaline at the bedside in case of anaphylaxis. If the patient has known allergies, such as Asthmatic attacks, draw up the adrenaline (0.3 - 0.5 ml for adults and 0.1 - 0.3 for children) and have antihistamine available in case allergic symptoms are overwhelming.
 - Note that Antihistamines are not recommended for routine treatment for snake-bites.
 - Do not infiltrate the bite area with anti-venom.



Patients presenting with severe neurotoxic symptoms – Mostly from Cobras and Mambas

- 
- Give the first dose (10ml) of anti-venom intravenously at the slow rate of 1-2 ml per minute. Subsequent doses may be injected into a bag of saline drip, no more than 20 ml per 1/2 litre bag. The drip should run through fairly fast (should run through in 30 minutes).
 - Monitor breathing and other vital signs continuously.
 - Any advanced symptoms (progressive weakness syndrome) should slow and stop quite rapidly if the treatment has been started at an early stage. If paralysis is already beginning to affect breathing, intubate and ventilate while continuing anti-venom treatment.

Patients presenting with severe cytotoxic symptoms – Bites from Puff adders, Gaboon vipers and Spitting cobras

- Inject the anti-venom into a bag of saline drip (not more than 20 ml per bag).

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- Remember not to have the drip running directly into the wounded limb which is already in danger of swelling and should be kept elevated and well protected.
 - If swelling and tissue damage has already advanced before the commencement of treatment and especially if the bite was in the hand or foot, be aware that later surges of active venom can occur, perhaps requiring more anti-venom.

Note that a patient with badly damaged tissue will need more specialized long term treatment, therefore arrange for referral once patient is stable.

Patients presenting with severe haemotoxic symptoms - Bites Saw-scaled Viper, Boom slang and Twig Snakes.

- **Saw-scaled Viper:** For bites from this snake, use the polyvalent not SAVP serum.

If bleeding is present and presenting as the major symptom, give first dose by push method intravenously at a slow rate of 1-2ml per minute



and the next dose in a saline drip at a rate of 1/2 litre in 30 minutes.

If clinical symptoms are not yet presenting, do a blood clotting test to establish the presence or absence of envenomation. If the blood fails to coagulate in 20 minutes administer anti venom in a saline drip and repeat test after a while, at least one hour later.

- **Boom slang:** Note that bites from this snake are NOT INCLUDED in any polyvalent anti-venom. They are only treated with specific monovalent anti-venom. Bites from these snakes are rare, but be certain of its identity. Test blood clotting time. If blood fails to coagulate, transfer patient as quickly as possible to a referral hospital and advise the hospital to contact immediately SNABIRC-KENYA on 0736 863 089.
- **Twig Snake:** Currently there is no anti-venom made for this type of venom.

Bites from this snake are extremely rare. When you are certain of identification, do a blood clotting test. If blood fails to coagulate in 20 minutes, transfer patient as quickly as possible to a referral hospital. The patient can benefit

can from continuous blood transfusion but it may take days before coagulation occurs. Do not use any anti-venom.

How to reconstitute Ampoule containing diluent



1) Hold the flat diluent ampoule top between fingers.



2) Twist flat ampoule top in clockwise direction.



3) Separate flat ampoule top to expose 'LUER LOCK' opening.

Reconstitution of lyophilised vials



1) Draw the diluent from the ampoule into a syringe, pierce the bung of the vial with the needle and gently inject the diluent into the vial.



2) Detach the syringe, leaving the needle in vial bung. After 15 seconds remove the needle.



3) Rotate the vial gently between your palms till the material dissolves. Avoid shaking the vial as this would cause frothing



4) Withdraw the re-constituted solution into the syringe, now ready for administration.



DESCRIPTION OF SNAKE VENOM

Snake venoms are used in the production of snake anti-venom as hyperimmunizing [antigens](#). Snake venoms are complex substances that, depending on the species, can contain a variety of toxins. Toxin components can include proteases, nucleases, phosphodiesterases, and other enzymes which disrupt physiological processes and cellular integrity. The venom toxins are largely classified as neurotoxins, cytotoxins, myotoxins, and cardiotoxins. Venomous snake bites may cause a variety of symptoms, including pain, swelling, tissue necrosis, and hypotension, and neuromuscular collapse, blood clotting dysfunction, respiratory paralysis, kidney failure, coma and death.

DESCRIPTION OF ANTI –SNAKE VENOM SERUM

Anti-snake venom serum is a drug that is used to reverse the effects of snake poisons in the body. **Snake anti-venom**, (snake antivenin, snake antivenene) is a biological product that typically consists of venom neutralizing [antibodies](#) derived from a host animal, such as a horse or sheep. The



host animal is hyper immunized to one or more snake venoms, a process which creates an immunological response that produces large numbers of neutralizing antibodies against various components (toxins) of the venom. The antibodies are then collected from the host animal, and further processed into snake anti-venom for the treatment of [envenomation](#). Internationally, snake anti-venoms must conform to the standards of [Pharmacopoeia](#) and the [World Health Organization](#) (WHO).

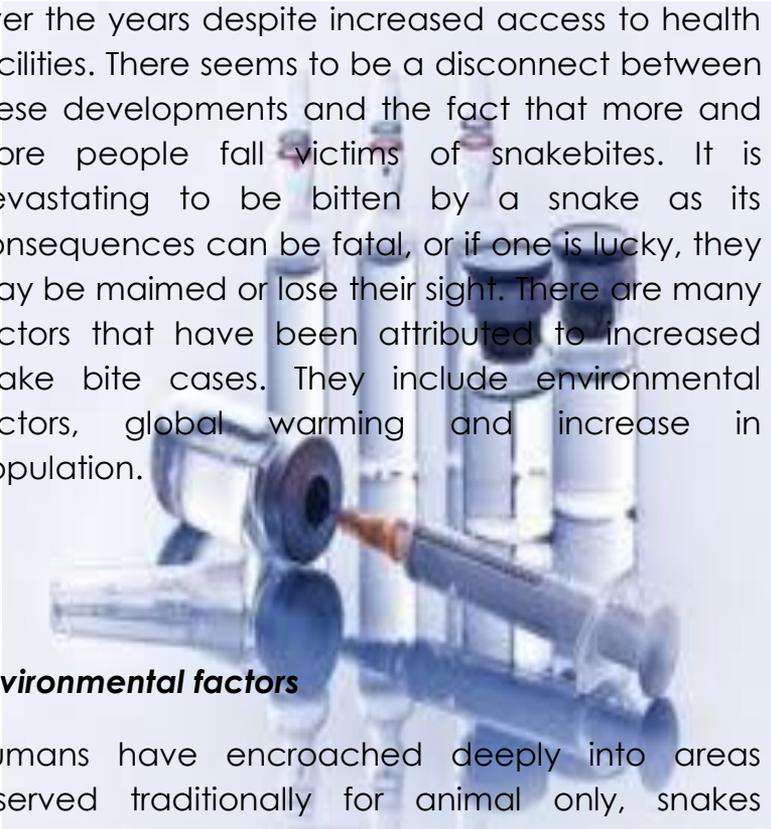
HOW DO ANTI SNAKE VENOM SERUM WORK

Anti-venom acts to neutralize the poisonous venom of the cobra and causes the venom to be released from the receptor site. Thus, the receptor sites that were previously blocked by venom are now free to interact with the acetylcholine molecule and normal respiration resumes. The spent anti-venom and the neutralized venom are then excreted from the body. Venom composition (and its corresponding toxicity) can vary among cobras from the same species and even from the same litter.



CAUSES OF INCREASED CASES OF SNAKEBITES IN KENYA

The number of snakebites has been on the rise over the years despite increased access to health facilities. There seems to be a disconnect between these developments and the fact that more and more people fall victims of snakebites. It is devastating to be bitten by a snake as its consequences can be fatal, or if one is lucky, they may be maimed or lose their sight. There are many factors that have been attributed to increased snake bite cases. They include environmental factors, global warming and increase in population.

A background image showing several medical syringes and vials, some with needles inserted, arranged on a reflective surface. The image is slightly blurred and has a light blue tint.

Environmental factors

Humans have encroached deeply into areas reserved traditionally for animal only, snakes included. There is a lot of deforestation as well as soil erosion which have put a lot of pressure on the ecosystem. All these factors have played a role in



increasing the human- wildlife conflict resulting in high number of snakebites.

Global warming

Global warming upsets seasons, climates as well as affect normal ecosystem balance. This has resulted in wild life such as snakes moving away to other areas to look for favorable conditions, in the process encountering humans, hence the increase in cases of snakebites.

Increase in population

As the population of people increase, resources such as food and water become scarce. As a result people start hunting for wild animals such as mongoose, rats and other small mammals. These smaller mammals are the traditional predators of snakes, so by reducing the population of these predators, the number of snakes increase and hence the increase in number of snakebites.

EMERGENCY LINES

Emergency lines – 0736 836 089



NATIONAL STATISTICS ON SNAKEBITES

So far there is no official number of snakebites in Kenya. There is no documented national data on the mortalities and injuries caused by snakebites. SNABIRC-KENYA hopes to work on this and bring out the true picture.

RESEARCH

SNABIRC-KENYA in conjunction with other stakeholders will set a research centre that will be used to gain more information that will assist the community and the world at large in understanding snake related information.



ACKNOWLEDGEMENTS

Snabirc-Kenya

Friends of wildlife, Kenya



Bio-Ken

Kenyatta National Hospital

The National Museums of Kenya

Kenya Wildlife Services

Baringo County

Kenya Forestry services

Safaricom Foundation









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