

Snakebite Awareness Training

Part 2: Lesson 7 - Venomous Snakes and Venom

FOR THE TRAINER: Let's talk about the difference between venom and poison. Venoms and poisons are made from chemicals that produce a bad reaction in someone that has been bitten. In English the word we use is "toxic". Venom is a substance that produces a bad reaction when it is injected under the skin, like medicines are injected with a syringe and needle. Poisons are generally thought of as chemicals that cause a bad reaction when they are eaten or inhaled through the nose or mouth. If there is no word for "toxic" or "venom" in the language you are using, you should feel free to use the word poison so that people will understand. In this training, I will use the word "venom" but you can substitute poison if that works better for the people you are training.

Snakes use a variety of methods to capture and kill their prey. Many snakes just bite their prey and swallow it whole. Others, like pythons, wrap loops of their body around their prey after biting, and squeeze the air out - this is called **constriction**. The third way is to inject harmful chemicals called venom to kill their prey.

A venomous snake is one that generally uses hollow or grooved fangs in the front or the rear of the mouth to inject harmful chemicals into another animal - even humans. The chemicals are most often made and stored in glands located behind the eyes on the back of the head. A hollow tube called a duct connects the venom gland to the fangs. In the photo below you can see a puff adder with venom drops on the end of the fangs.



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Types of Fangs

There are three kinds of fangs that are found in venomous snakes. The first two types are found at the front of the mouth. In snakes like the **vipers**, the fangs are **large and fold up** along the top of the mouth when the jaws are closed. An example is this Gaboon viper (photo courtesy of Brian McKay licensed under the [Creative Commons Attribution 2.0 Generic](#) license with no changes).



Cobras, mambas, and their relatives have **short, fixed fangs** that cannot fold up. Here is an example of where you can find a black mamba's fangs.



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Finally, **some colubrid snakes** like the **boomslang** have fangs in the **rear of their mouths**. Because of the location of these fangs, these types of snakes usually chew the venom into their prey..



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I should mention that in some parts of Kenya, there are snakes called burrowing asps or stiletto snakes (see photo below). These snakes can be very dangerous for two reasons: (1) they can stick their fangs out of the side of their mouths and envenomate their prey or a threat, and (2) there is no antivenom for this snake's venom.



Stiletto snake photo used with permission of Stephen Spawl

What Is Venom?

Venom is used by snakes for three things:

1. To quickly stop their prey from moving and kill them
2. To start the digestion process before swallowing the prey
3. To cause pain in another animal (for defense)

The chemicals that are in the venom generally do some combination of the following things:

1. Stop the nerves in your body from working properly, which stops your muscles from functioning properly, which can cause you to stop breathing and die. ***Snakes with this kind of poison that affects your nerves and muscles are the non-spitting cobras and mambas, and potentially the tree snakes.***
2. Cause pain and tissue damage at the place where the snake bit you. ***Snakes with this kind of poison that causes cell death are the spitting cobras, the adders, and the vipers.***
3. Cause your blood to get thinner so that you bleed more easily, OR causes your blood to clot more easily which blocks blood vessels and cuts off circulation. ***Snakes with this kind of poison that affect your blood are the boomslangs.***

Snakes can, to some degree, control the amount of venom delivered when they bite:

- Venom is expensive for the snake to make and so they only use it when necessary.
- Sometimes there is no venom injected and this is called a **dry bite**.
- You should never assume that you were not injected with venom. Get to a hospital quickly if you are bitten by a venomous snake.

The only reliable and effective method for treating a venomous snakebite is antivenom. Antivenom is made by injecting small amounts of venom into an animal such as a horse or rabbit. The animal builds up defenses against the venom. Part of the blood is removed from the animal after a period of time, and it is processed and purified to make antivenom. When someone is bitten by a venomous snake, the antivenom can be injected into the victim to help the body fight against the effects of the venom. For powerful venom, like that found in black mambas, it can take a lot of antivenom to counteract the venom.

Unfortunately, antivenom is not always available in Kenya, and some of the antivenoms are not effective against the snakes found in your country. This is why it is important to learn how to prevent snakebite like you are doing in this course.

Next let's start to consider what happens if you are bitten by a venomous snake. What are the symptoms that accompany each type of venom? Let's find out ...