What You Will Learn to Do

Determine first aid treatment for bites, stings and poisonous hazards

Linked Core Abilities

- Do your share as a good citizen in your school, community, country, and the world

Skills and Knowledge You Will Gain Along the Way

- Identify types of venoms
- Relate snakes to their bites
- Explain the effects of animal and human bites
- Identify the symptoms of insect bites and stings
- Associate the types of poisonous plants to the reactions they cause
- Determine how to treat for contact with poisonous plants
Introduction

With so many outdoor activities to participate in, such as hiking, camping, bicycle riding, skate boarding, and skiing, it is common to come across emergencies involving bites, stings, and poisonous hazards. It is estimated that one of every two Americans will be bitten at some time by an animal. Dogs are responsible for about 80 percent of all animal-bite injuries. Depending upon where you live, the type of first aid you should perform for snakebites and plants will vary. Knowing what to do when in the outdoors can mean the difference between life and death.

Snake Bites

If you spend much of your time outdoors, it may be common for you to come across snakes; however, your chances of a snake bite are remote if you remain alert and careful. There are poisonous and nonpoisonous snakes, so the severity of a snake bite depends on whether the snake is poisonous or not. Beyond that, the severity of a snake bite depends on the type of snake, location of the bite, and the amount and type of venom injected.

Types of Snake Bite Venom

There are three types of venoms: Neurotoxin, which affects the nervous system and can cause death by paralysis; Hemotoxin, which digests tissue including blood cells; and Cardiotoxin, which directly affects the heart.
Types of Snakes

There are approximately 130 different varieties of nonpoisonous snakes in the United States. They have oval-shaped heads and round pupils. Poisonous snakes exist throughout the world, primarily in tropical to moderate climates.

In the United States, there are four kinds of native poisonous snakes. Three of these four, the rattlesnake, copperhead, and cottonmouth (water moccasin), are pit vipers. Pit vipers in other parts of the world include the bushmaster and fer-de-lance in Central and South America, the tropical rattlesnake in Central America, and the Malayan pit viper in eastern Asia.

**Pit Vipers**

Pit vipers have slit-like pupils; flat, triangular-shaped heads; small, deep, heat-sensing pits between their nostrils and eyes; and in most cases, hemotoxic venom. When a pit viper bites, it injects this venom from sacs through long, hollow fangs. This produces a severe burning pain, along with discoloration and swelling around the fang marks. The hemotoxin destroys blood cells, which causes the discoloration of the skin. Blisters and numbness in the affected area follow this reaction. Pit viper bites attack the circulatory system, possibly causing weakness, rapid pulse, and shortness of breath, as well as nausea, vomiting, and shock.

**Cobras**

Corals, cobras, kraits, and mambas belong to the cobra family. The coral snake is the only one native to the United States. Rings of red, yellow, and black color encircle its body. While other nonpoisonous snakes have the same colors, only the coral snake has a red ring next to a yellow ring. The cobra, found in Africa and Asia, forms a hood with its neck when on the defensive. The krait, found in India and southeast Asia, is brightly banded, while the mamba in Africa is either almost black or green. These snakes look very different, but all four inject their venom, a neurotoxin, through short, grooved fangs leaving a characteristic bite pattern. There is minimal pain and swelling compared to a pit viper bite, but since their powerful venom affects the central nervous system, it can cause blurred vision, drooping eyelids, slurred speech, drowsiness, and increased salivation and sweating. Nausea, vomiting, shock, respiratory difficulty, paralysis, convulsions, and coma develop if the bite is not treated promptly.

**Sea Snakes**

Sea snakes are found in warm water areas of the Pacific and Indian Oceans. They have small heads, thick bodies, and tails flattened along the sides. Their fangs are only 1/4 inch long, but their venom is very poisonous.
Treating Snakebites

Snakebites are rarely fatal if treated within an hour or two, but they can cause pain and illness and may severely damage a bitten hand or foot. Although snakes do not always inject venom, all snakes may carry tetanus (lockjaw). Therefore, anyone bitten by a snake, whether poisonous or nonpoisonous, should receive immediate medical attention.

One of the most important parts of treating a snakebite is identifying the type of snake making the bite. The type of antivenin used in medical treatment of snakebites varies depending on the type of venom injected. If you can identify the type of snake causing the injury, let Emergency Medical Services know when you call for help or phone the information ahead to the hospital if you plan to transport the victim yourself. If you cannot identify the snake, try to kill it without risk to yourself or delaying first aid. Then, show it to emergency medical personnel or take it to the hospital along with the victim for identification.

To treat snakebites:

1. As soon as possible, bandage the bitten area; bandage over clothing unless it is thick or stiff.
2. Apply a second bandage, working upwards from the toes or fingers to the elbow or knee.
3. Immobilize the limb with a splint.

*The roller bandage should be tight, but not so tight as to cut off circulation.

Prevention of Snakebites

Most snakes are shy and passive. Unless they are injured or disturbed, they tend to avoid contact with humans. You can prevent a snakebite by using caution and common sense. If you are working outside clearing dense undergrowth, wear gloves, long sleeves, long pants, and boots for protection. When hiking in the wilderness, wear boots and long pants. Try to walk in open areas or stay on established paths. Look where you are stepping or placing a hand if climbing or pushing away tree limbs. Check before sitting on a rock or fallen tree. If possible, stay away from brush, rocks, and undergrowth. If you must handle a snake, even a freshly killed one, use a long tool or stick.
Human and Animal Bites

Animal bites can puncture the skin causing a high risk of infection. Animal bites also pose the threat of exposing the victim to rabies. Rabies is a potentially deadly disease that is spread through the saliva of rabid animals, which behave strangely. Rabid animals include wild animals such raccoons, bats, or skunks, and even stray pets.

Human bites, like animal bites, can cause infections. This usually happens in fights for example, when one person’s hand may come in contact with another person’s mouth. When human bites puncture the skin, they have a high risk of infection and also pose a risk of injury to tendons and joints.

Possible symptoms include:
- Break or major cuts in the skin with or without bleeding
- Bruising
- Crushing injuries
- Puncture-type wound

Infection

Courtesy of Army JROTC
Treating Animal Bites

Treat a victim of an animal bite as follows:

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<thead>
<tr>
<th>#1</th>
<th>Wash your hands thoroughly before AND after with soap, or use sterile gloves</th>
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<tbody>
<tr>
<td>#2</td>
<td>Bite IS NOT bleeding severely - Wash thoroughly with mild soap and running water for 3 to 5 minutes, then apply antibiotic ointment and a clean dressing</td>
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<tr>
<td>#3</td>
<td>Bite IS actively bleeding - Apply direct pressure with a clean, dry cloth until bleeding stops; raise the area of the bite</td>
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<tr>
<td>#4</td>
<td>Carefully monitor for 24 to 48 hours for signs of infection (Increasing skin redness, swelling, and pain)</td>
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* Bite on hand or fingers - Seek medical attention immediately

* Seek medical attention if the bite becomes infected

Courtesy of Army JROTC

Insect Bites and Stings

In the outdoors, you may come in contact with various types of biting and stinging insects — bees, mosquitoes, ticks, fleas, spiders, etc. Most of these insect bites and stings result in minor reactions, such as itching, redness, swelling, and irritation. However, scorpions and certain spiders can inject powerful poisons when they bite, and some people may have an allergic reaction to an insect bite or sting, particularly made by bees or wasps. In these cases, seek medical treatment immediately.

The black widow and brown recluse spiders, tarantulas, and scorpions are some of the more harmful insects you may encounter. Venom from the black widow is neurotoxic and may cause stomach and muscle cramps, breathing difficulties, nausea, sweating, vomiting, and convulsions. Tarantula venom is basically neurotoxic and may produce symptoms like that of a black widow bite, but in some cases can affect the heart and may digest tissue producing a severe local wound. The brown recluse spider can produce severe tissue damage around the bite, possibly leading to gangrene; and while stings from certain types of scorpions are painful but not dangerous, some can cause nausea, fever, stomach cramps, and possible convulsions and shock.

In most cases, bee and wasp stings produce minimal swelling, pain, redness, itching, and burning at the site of the sting. Multiple stings may cause headaches, fever, muscle cramps, and drowsiness. Symptoms from an allergic reaction may include:
Treating Insect Bites and Stings

Take the following basic first aid measures regardless of what caused the bite or sting:

1. Move to a safe area
2. For a sting - Scrape or brush off the stinger with a straight-edged object
3. Apply a cold pack
4. Apply hydrocortisone cream
5. Take an antihistamine
Prevention of Insect Bites and Stings

Wear insect repellent when outside in areas where biting insects are present. Re-apply repellent every few hours when participating in activities that cause heavy perspiration. Wear appropriate protective clothing when hiking or camping in the wilderness or working in a yard, garden, or other woodsy or overgrown area.

Poisonous Plants

Most plants are harmless, but a few can cause allergic reactions upon contact. For example, plants of the poison ivy group, including poison oak and poison sumac, produce an oily substance that irritates the skin of many people. Reactions to this substance include a rash characterized by redness, blisters, swelling, and intense burning and itching, as well as headaches and fever. Although the rash usually begins within a few hours after contact, it may appear 24 to 48 hours later.

Treat more serious allergic reactions as you would a snakebite.

a. Apply constricting bands above and below the site.

b. Be prepared to perform basic life-support measures.

c. To positively identify the insect, attempt to capture it without putting yourself at risk.

d. Seek medical aid right away.

If signs of infection like pus, red streaks leading away from the bite, swollen glands, or fever occur within hours or several days after an insect bite, seek medical attention.
Treatment for Poisonous Plant Contact

In general, treat someone who has come in contact with a poisonous plant by washing the area and treating with an oral antihistamine and calamine lotion.

Prevention of Exposure to Poisonous Plants

Become familiar with what poison ivy and other poisonous plants look like, so you can recognize a poisonous plant and avoid contacting it.

The following are other precautions you should take to limit your exposure to poisonous plants:

- Dress appropriately when participating in outdoor activities.
- Avoid areas where you aware that poisonous plants grow.
- Do not eat plants or parts of plants that you do not recognize.
- Do not put grass, twigs, stems, or leaves in your mouth.
Conclusion

Being able to adjust to new environments and protect yourself from harmful conditions is very important when participating in outdoor activities. Factors in nature such as extreme temperatures and humidity; animal, snake, and insect bites; and poisonous plants can pose a threat to you if you do not take precautions to guard against the possibility of injury. By being aware of potential hazards, knowing how to treat outdoor-related injuries, and exercising common sense, you can cope successfully with the environment and enjoy your time in the great outdoors.

Lesson Check-up

1. Why is it important to try and determine what kind of snake caused a bite?

2. How would you treat someone who had an allergic reaction to an insect bite or sting?

3. How would you treat someone who has come into contact with a poisonous plant?