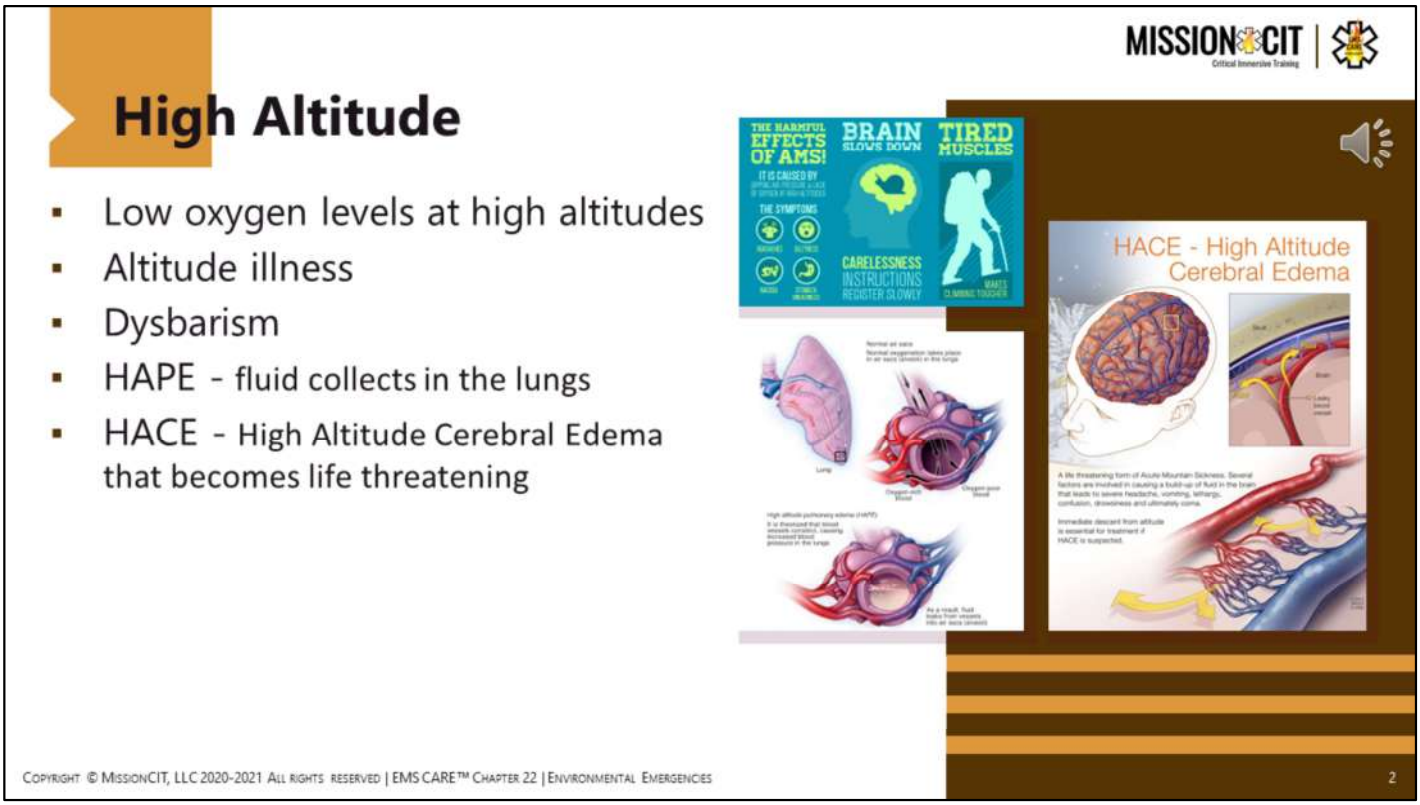


Thank you, Missah!

In this last lesson, let’s look at other emergencies related to the environment.



Altitude illness is caused by diminished oxygen in the air at high altitudes, and this affects the central nervous system and the pulmonary system.

It also leads to dysbarism that is caused by the difference between the surrounding atmospheric pressure and the total gas pressure in the body.

The third kind of altitude-related sickness is acute mountain sickness that is characterized by diminished oxygen in the blood. It is often caused by ascending too high and too fast, or it can be due to acclimatization issues.

Next is High Altitude Pulmonary Edema or HAPE in short. In this injury, the fluid collects in the lungs, hindering the passage of oxygen into the bloodstream. Its symptoms are:

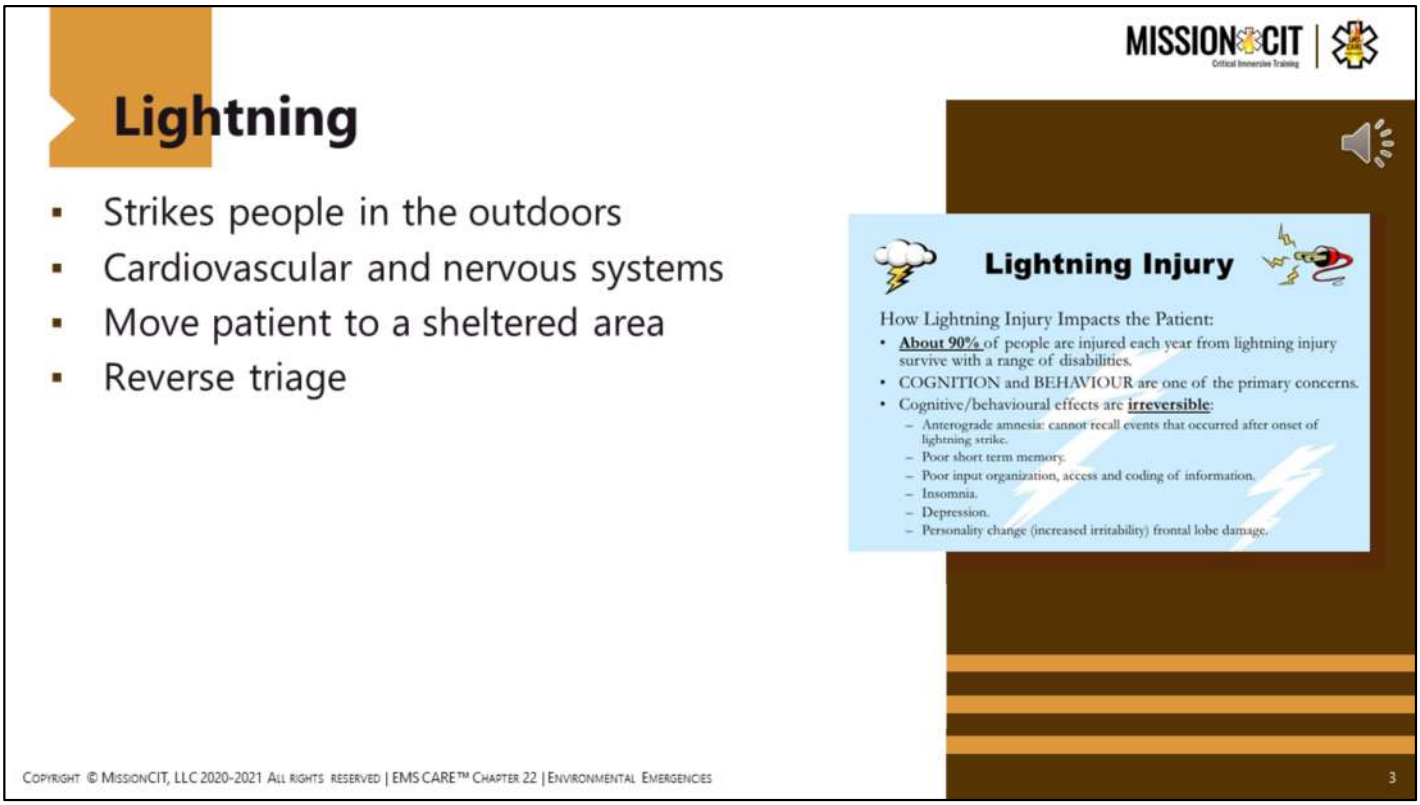
- Headache that worsens over time
- Loss of balance and coordination
- Severe fatigue
- Seizure
- Altered mental status
- Loss of consciousness

Moving on, High Altitude Cerebral Edema or HACE often accompanies HAPE and can quickly

become life-threatening. Some of the symptoms to watch out for are:

- Shortness of breath
- Dry cough that can even lead to blood coughing
- Tachypnea and tachycardia
- Mild fever
- Oxygen saturation lower than other asymptomatic people in the same environment
- Respiratory failure and arrest

In all of these injuries, arrange for immediate descent. Follow this with the administration of high oxygen and provide supportive treatment.



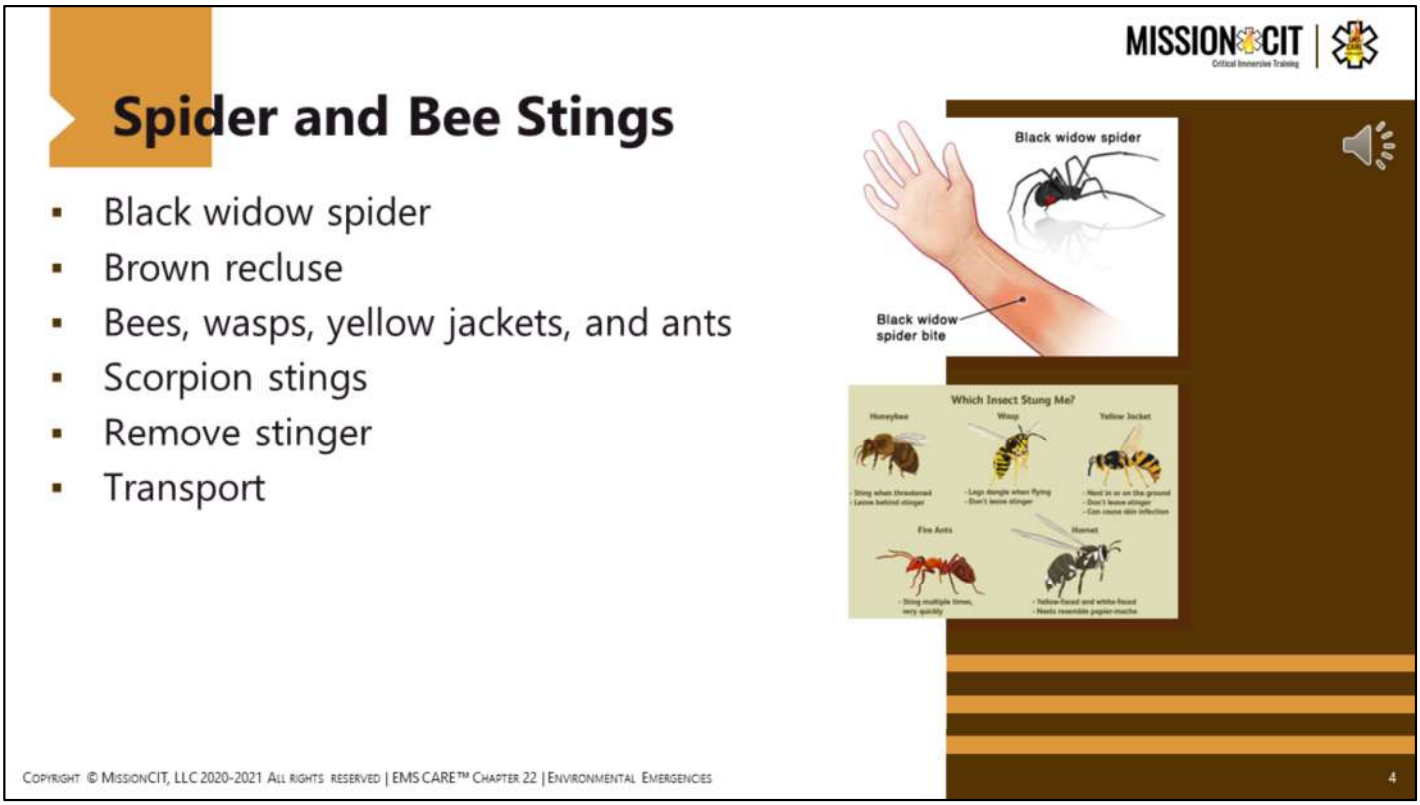
Lightning is an underrated environmental injury as many people are not aware of its potential impact. It mostly strikes people engaged in outdoor activities such as swimming, boating, and golfing. It can also impact anyone in a large and open area.

Sometimes, individuals also get struck when they are standing near an object such as a tree that has been struck by lightning.

In this injury, the brunt is borne by the cardiovascular and nervous systems, and hence, respiratory or cardiac arrest is the most common outcome.

But not all lightning injuries lead to death, as it depends on their severity.

While caring for such patients, protect yourself first. Then, move the patient to a sheltered area and use reverse triage.



Animal stings, especially from spiders, are a common emergency, given that spiders are numerous and spread across the United States. It merits to note that only the female black widow spider and the brown recluse spider deliver serious and possibly even life-threatening bites.

The Black widow spider is a large one measuring about two inches and is mostly black with a bright red orange hourglass marking on its abdomen. It lives in dry and dim places and their bites cause localized pain including agonizing muscle spasms. However, the main danger is in its venom that is neurotoxic. Most times, the symptoms subside in 48 hours.

Emergency treatment consists of BLS treatment for those in respiratory distress. Transport these patients at the earliest and if possible, bring a photo of the spider to the hospital for better care.

The other spider capable of causing serious injuries is the brown recluse spider which is about an inch long and has dull brown skin. It has a violin shaped mark on its back and lives in the southern and central parts of the country. This spider too tends to live in dark areas.

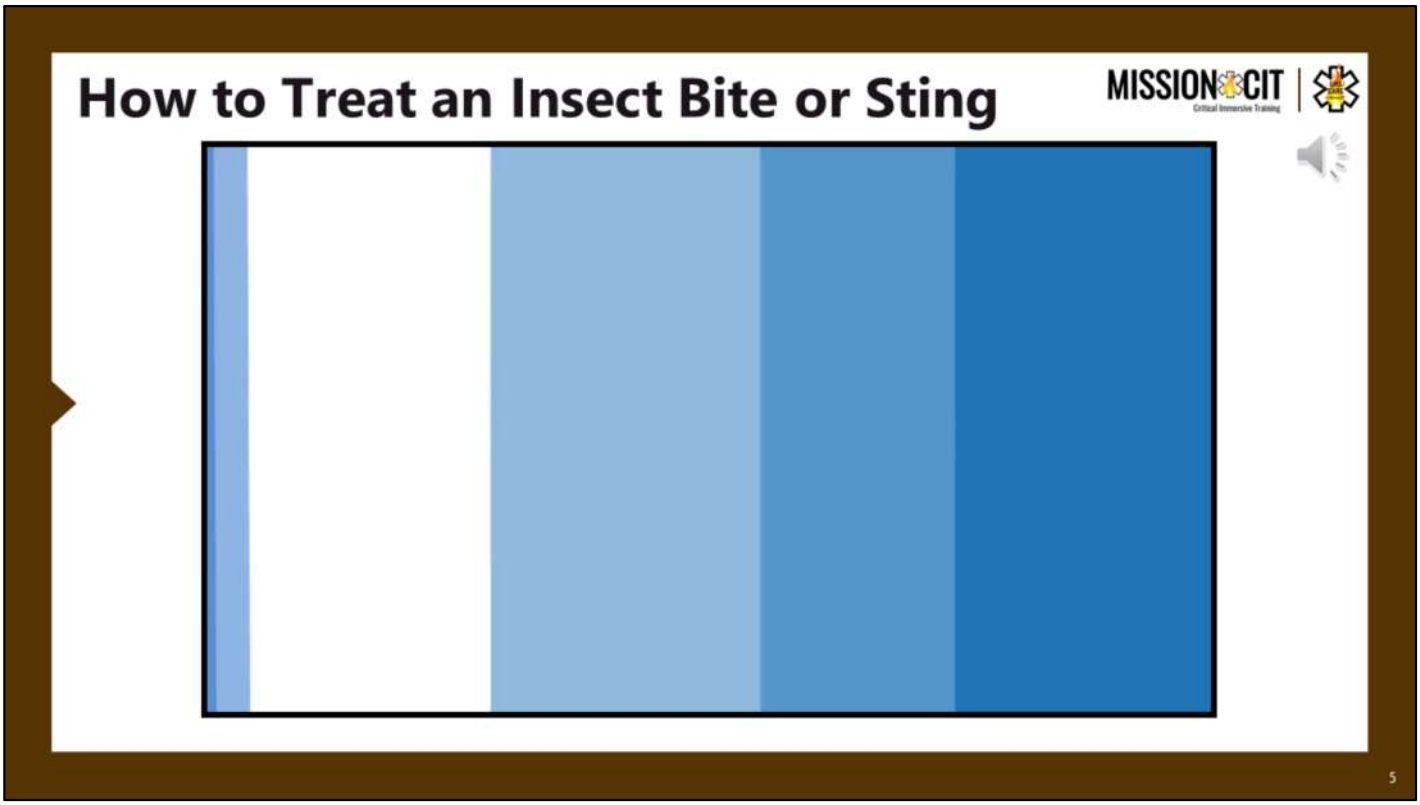
Its venom is cytotoxic and causes severe local tissue damage. The bite is not painful the first time and is often left unnoticed, but the pain starts only a few hours later. The entire area becomes swollen and tender, thereby developing a pale, mottled, and cyanotic center.

Besides spiders, bees, wasps, yellow jackets, and ants sting humans, but they are not a

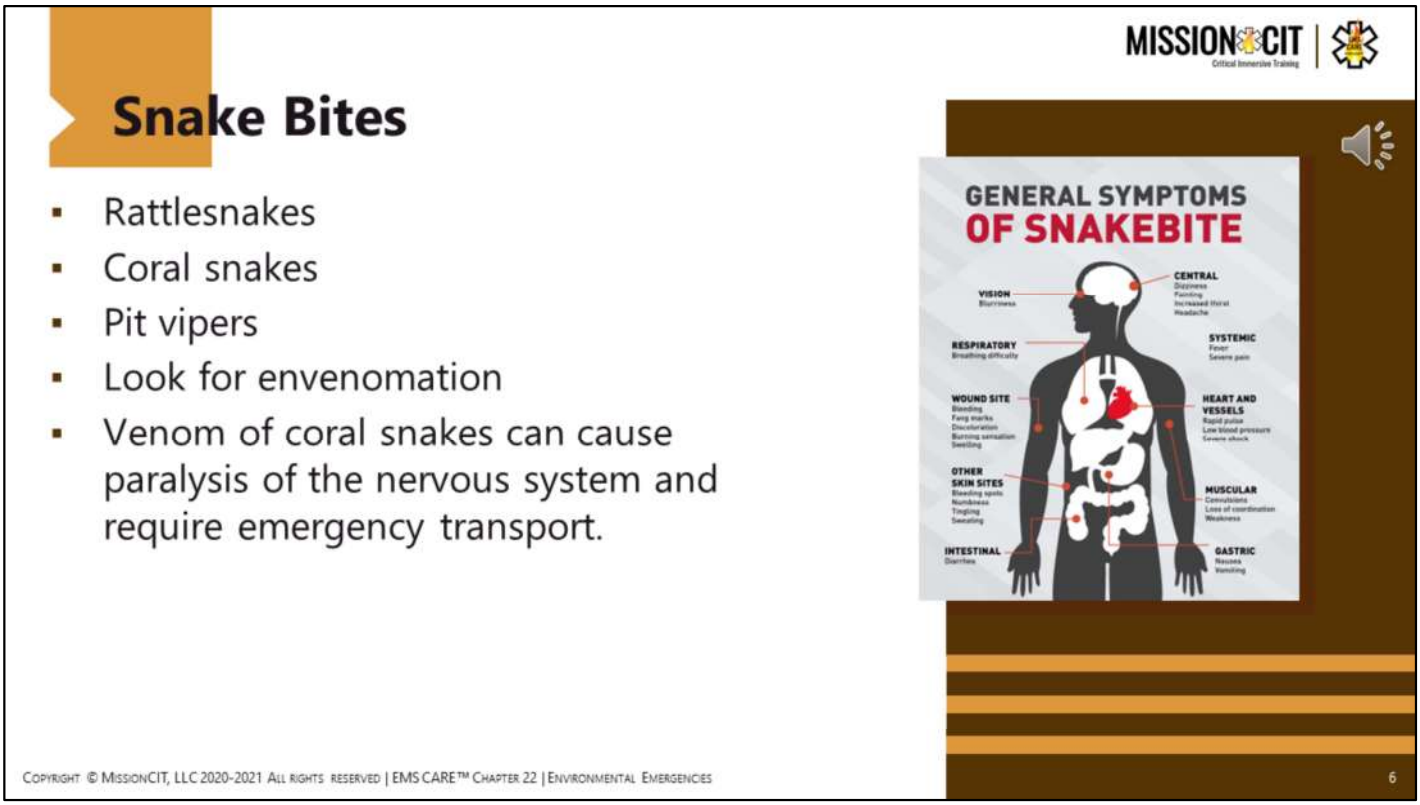
medical emergency.

In such patients, remove the stinger and venom sac using a firm-edged item such as a credit card to scrape them off the skin. Keep in mind that anaphylaxis is a possibility if the patient is allergic to the venom.

Scorpion stings are also likely, but rare, as they mostly live in deserts in the Southwestern USA. They are very painful, but not dangerous.



Most insect bites and stings clear up on their own in a few hours or 2 to 3 days. Tick bites can be more serious than other insect bites and the first aid treatment for them is different. Watch this video from NHS to know how to treat an insect bite or sting.



Snakebites are another common occurrence, but out of the 115 different species of snakes in the U.S, only 19 are venomous. Some of the snakes to watch out for are rattle snakes, copperheads, cottonmouths, water moccasins, and coral snakes. Out of these, rattlesnakes, copperheads, and cottonmouths are pit vipers with a triangular shaped flat head. Their poison is located in a sac that sits just behind each nostril and in front of each eye.

Rattlesnakes are the most common type of viper and can come in different colors and patterns. They grow up to six feet in length. Copperheads, on the other hand, are just two to three feet long and have red-colored copper bands crossed with brown bands. Though the bite of these copperheads is not poisonous, they can still cause extensive damage to the tissues.

Coral snakes have bright red, yellow, and black bands around their body and they live mostly in the southern states. They inject venom with their teeth and tiny fangs through a chewing motion. This leaves puncture wounds, usually on the victim's finger or toe.

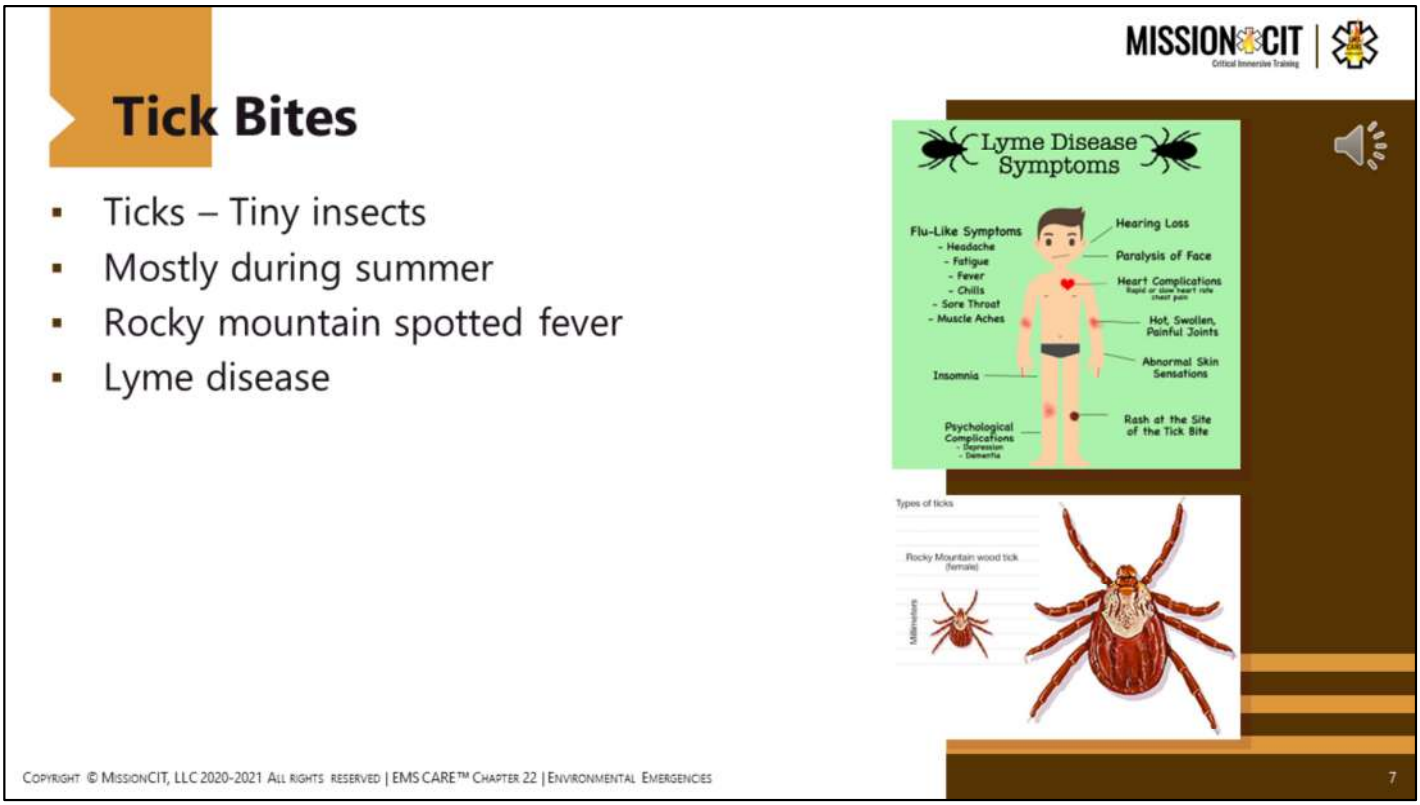
Finally, cottonmouths are olive or brown in color with a yellow under-surface and black cross-bands. These are water snakes with aggressive behavior and the tissue destruction from these bites can be severe.

Snakes are docile creatures and don't bite unless provoked, angered, or accidentally injured. The classic appearance of snakebites is the presence of two small puncture wounds that lead to discoloration, swelling, and pain. Signs of envenomation include severe burning pain at the

site of injury followed by swelling and bluish discoloration.

While handling snakebites, wear PPE and protect yourself from the snake. If the patient does not experience any pain within the first hour after the bite, conclude that envenomation didn’t take place.

The venom of coral snakes can cause paralysis of the nervous system and require emergency transport. A patient bitten by this snake will exhibit bizarre behavior within a few hours after being bitten and this is followed by progressive paralysis of eye movements and respiration. Check If antivenom is available, though most hospitals are unlikely to stock it.



Ticks are tiny insects that attach themselves directly to the skin. They are often found in bushes, shrubs, trees, sand dunes, and on other animals. Though its bite is not painful, it can spread pathogens and infectious diseases through its saliva.

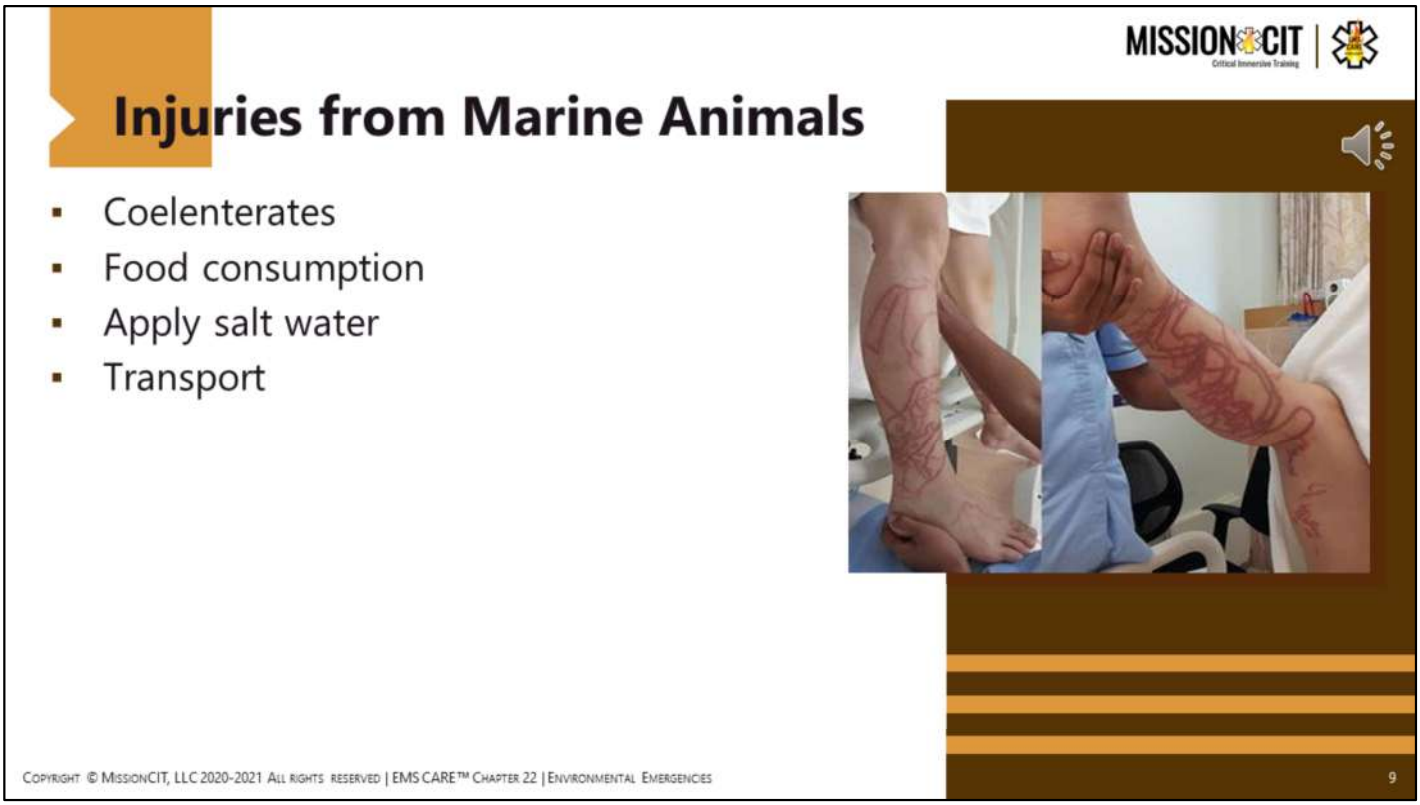
Rocky mountain spotted fever is a disease that occurs through tick bites and they often occur within seven to ten days of the bite.

Another one is Lyme disease that can cause painful swelling of the joints accompanied by fever, flu-like symptoms, and a bull's-eye rash that can quickly spread to other parts of the body.

Note that tick bites are common mostly during the summer months. As a first step, remove the tick from the skin with a tweezer, cleanse the area with antiseptic, and store the tick for identification. Transport the patient.



The Rocky Mountain spotted fever training video discusses the clinical signs and symptoms, diagnosis, and treatment of this disease. The video from CDC provides information to help frontline healthcare providers recognize and treat this rapidly progressive, fatal disease. RMSF is the most severe rickettsiosis in the United States, with mortality rates as high as 25 percent in untreated cases.



Coelenterates are responsible for most envenomation among marine animals and this includes fire coral, Portuguese man of war, sea wasp, sea nettles, true jellyfish, sea anemones, true coral, and soft coral.

Poisoning from marine life can occur in a variety of ways including eating improperly prepared seafood or poisonous organisms, besides stings and punctures.

Freshwater activates toxins on the skin, increasing pain, so use salt water to rinse the affected area before transporting the patient.

With this, we come to the end of this lesson, and in the next one, Missah will review all that we have learned so far.