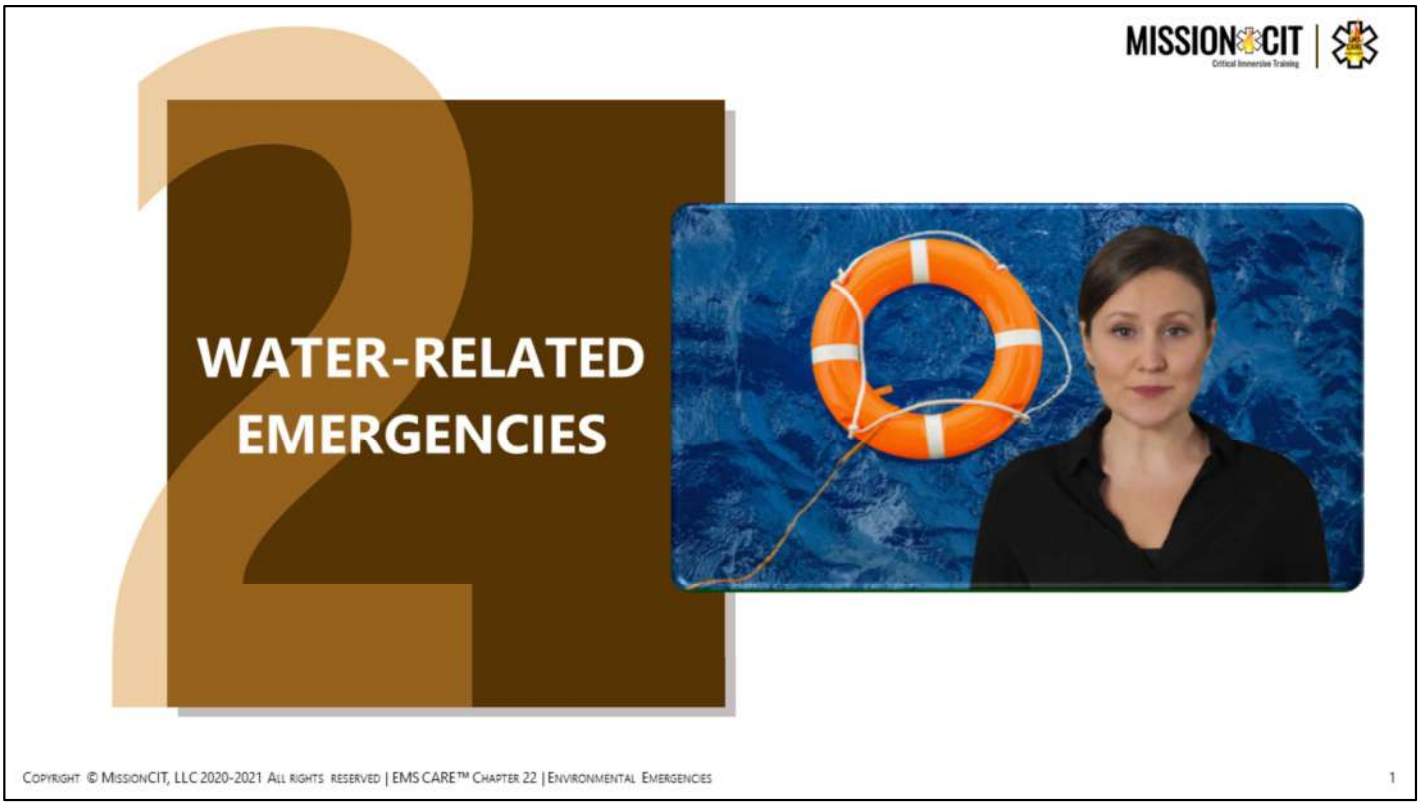
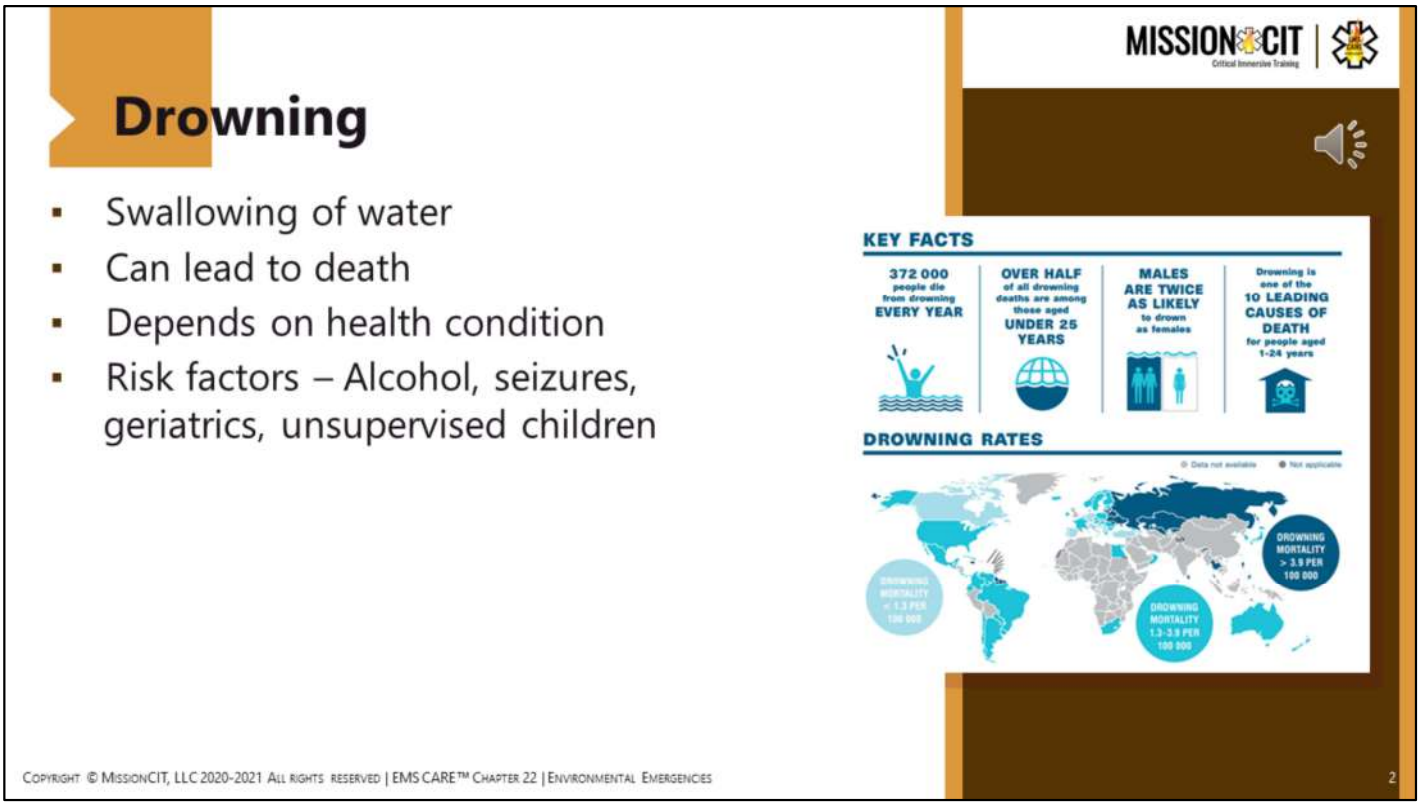


Thank you, Justin!

In this lesson, we will talk about all water-related emergencies and the care you must provide for such patients.

These emergencies are likely while boating, water-skiing, wind-surfing, jet-skiing, diving, and scuba diving.

So, let's get started!



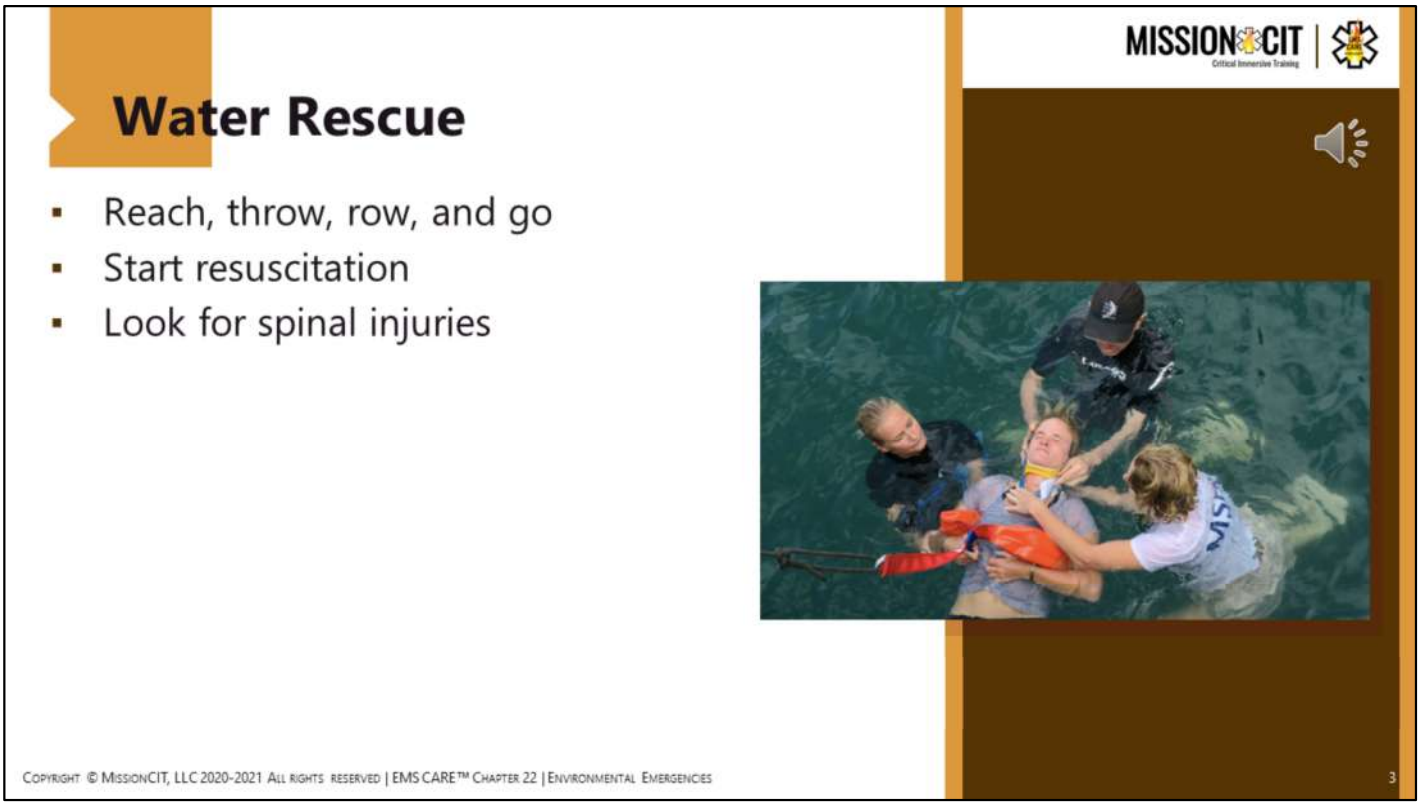
The World Health Organization defines drowning as the process of experiencing respiratory impairment from submersion or immersion in any volume, usually of large volume. The outcomes of drowning are death, morbidity, and no morbidity.

It begins as the person tries to stay afloat in water. When they start to submerge, they try to take more than one deep breath as a result of which the water can enter the airway. This is followed by coughing and swallowing, thereby leading to the triggering of the larynx spasm. In turn, this seals the airway and leads to unconsciousness and hypoxia. Most times, the final breath causes water to enter the lungs.

The risk factors that can exacerbate the possibility of drowning are:

- Alcohol consumption
- Preexisting seizures
- Geriatric patients with cardiovascular disease
- Children who are left unsupervised in water

It's important to note that not all drowning leads to death. The impact depends on the person's health condition, duration of exposure, volume or depth of water, and more. But submersion injuries can be spinal fractures and spinal cord injuries.



The adage to remember in water rescues is reach, throw, row, and then go.

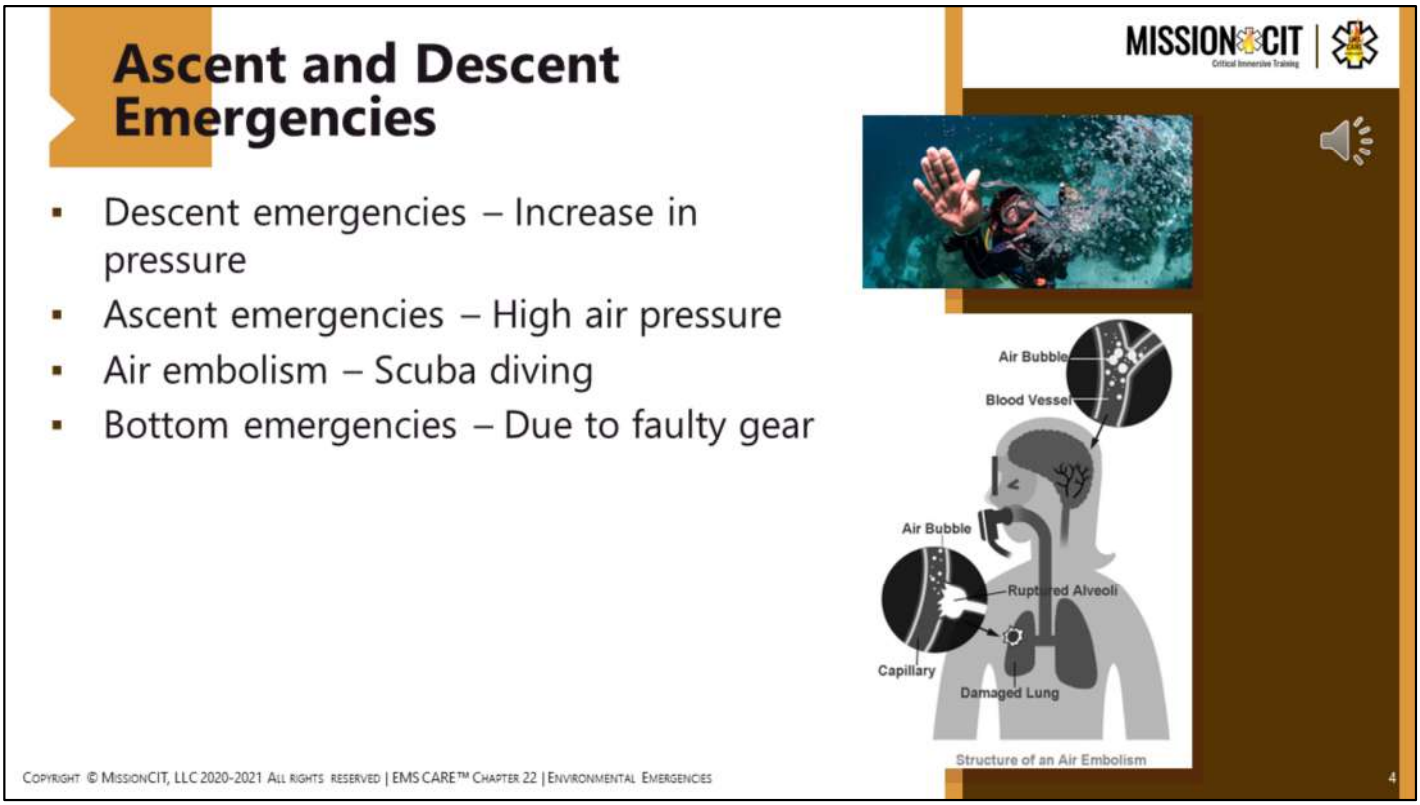
As it suggests, try to reach the person with a firm footing on dry land and try to pull the patient towards you. If that doesn't work, throw a rope, encourage the patient to latch to it, and pull. Finally, take a boat and try to rescue, and if nothing works, then jump in and swim to rescue the patient. Never attempt to swim unless you're trained in it. Also, remember, specialized equipment like snorkel, mask, and scuba gear is needed if you can't see the patient floating.

Once you rescue, start resuscitation, especially if the waters were cold, as the person can be suffering from hypothermia. Also, submersion in cold water can cause the heart rate to slow down, so watch for that as well.

Start the resuscitation right away and be ready to forcefully ventilate if needed, especially if there's airway resistance. If you reach a non-breathing patient in water, support the patient in a semi-supine position and provide ventilations.

Always assume spinal injuries when handling water rescues. Assume unconscious patient or patient with head injuries has neck and spinal injuries as well. Resuscitation should be started before you immobilize the neck and spine and be aware that it may not be possible to complete an assessment for spinal injuries while the patient is in the water. Take care to avoid aggravating spinal injuries, but do not delay basic life support. When possible, keep the patient's neck supported and in a straight line with the body's midline. Remember, the

information supplied to the dispatcher or hospital from the scene and during transport is critical.



Descent emergencies are caused due to an increase in pressure when a person suddenly dives into the water. This pain forces the diver to return to the surface to equalize this pressure. However, the pain can continue, especially in the ears, and if this continues, the diver must be transported.

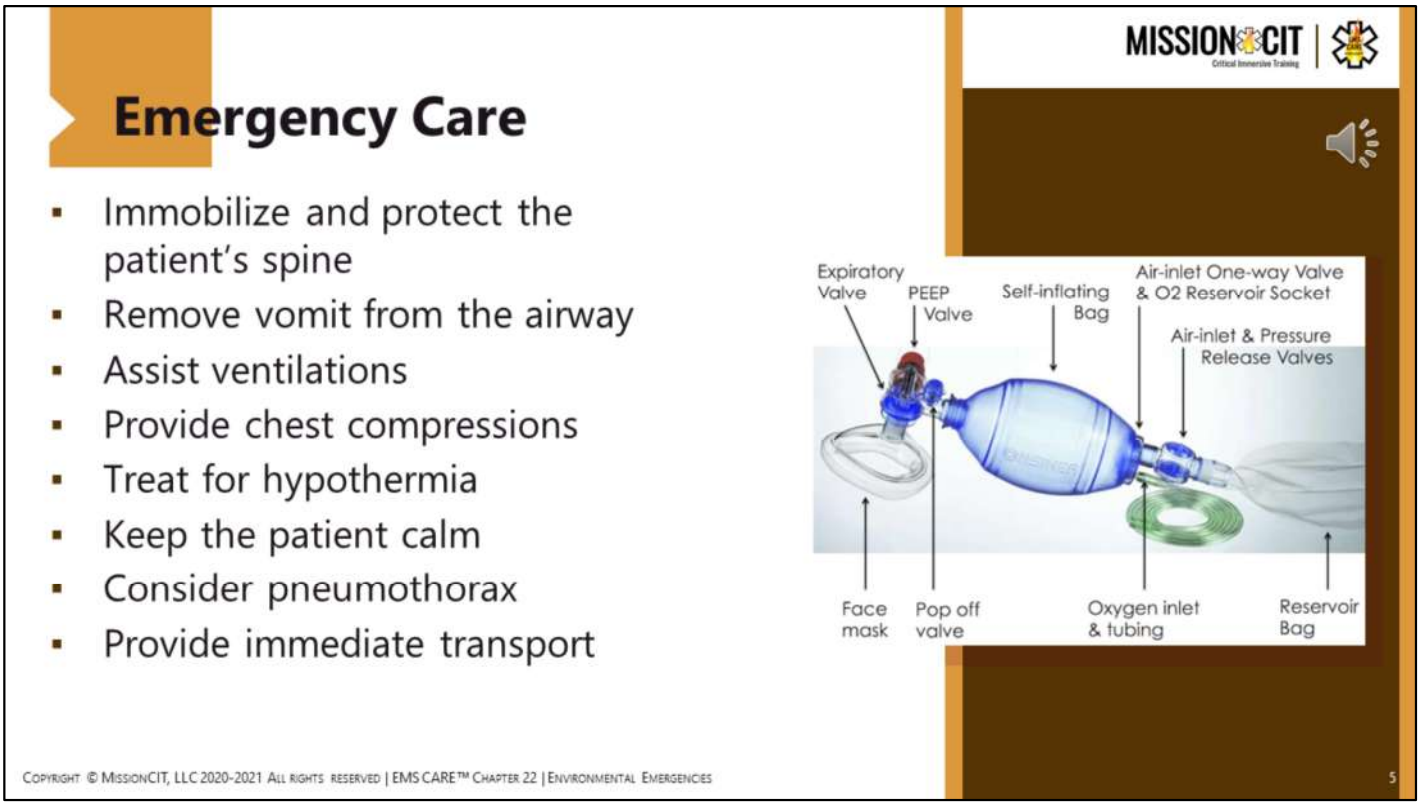
Ascent emergencies, on the other hand, are far more dangerous and requires aggressive resuscitation. It can also result in air embolism where bubbles of air enter the blood vessels. Also, the air pressure in the lungs remains at a high level while the pressure on the chest decreases. Further, the nitrogen present in the air bubbles can obstruct the blood vessels. This leads to a condition called bends or decompression sickness.

Air embolism is the most common injury during scuba diving. As an EMT, you might find it hard to distinguish between air embolism and decompression sickness. One way to distinguish them is that air embolism occurs as soon as a patient returns to the surface while decompression sickness occurs much later.

The treatment for both requires BLS and recompression in a hyperbaric chamber. So, transport immediately.

Besides these two, there's a possibility for the diver to stay at the bottom. This is extremely rare and is often the result of faulty connections in the diving gear. This is a dangerous situation as there can be an inadequate mixing of oxygen and carbon dioxide. As a result, this can lead to an accidental feeding of poisonous carbon monoxide into the breathing

apparatus.



Here are some of the emergency care aspects you can provide.

- Immobilize and protect the patient's spine if possible
- Remove vomit from the airway
- Assist ventilations with a BVM or a pocket mask
- Provide chest compressions and use the AED if required
- Treat for hypothermia
- Keep the patient calm
- Consider the possibility of pneumothorax and monitor the patient for breath sounds
- Provide immediate transport
- Consider recommending precautions to prevent the occurrence of similar events in the future

This concludes the water-related injuries and next, Justin will take you through other environmental emergencies.