Emergency Medical Responder

WATER EMERGENCIES

Drowning

"Death from suffocation due to submersion."

Drowning can result from

- Cold
- Fatigue
- Injury
- Disorientation
- Intoxication
- Limited swimming ability

Drowning

"Death from suffocation due to submersion."

Drowning: the process

- The drowning victim struggles to inhale air as long as possible
- Water is inhaled or laryngeal spasm closes the airway
- Loss of consciousness
- Convulsions
- Cardiac arrest and death

Drowning

Drowning can be the result of cold, fatigue, injury, disorientation, intoxication, or limited swimming abilities.

The drowning victim struggles to inhale air as long as possible. Eventually the victim inhales water or a muscle spasm of the larynx closes the airway.

Loss of consciousness, convulsions, cardiac arrest, and death may follow.

Figure 32-1 Drowning.

Freshwater vs. Saltwater Drowning

- Freshwater – water passes through lungs into the bloodstream, causing hemodilution and red blood cell destruction.
- Saltwater – aspirated water is saltier than body fluids. Water leaves blood and enters lungs to help dilute the salt. Air in the lungs mixes with fluids, forming frothy foam. This provides barrier to oxygen exchange.

Warm Water vs. Cold Water Drowning

Warm water – diving reflex not activated, tissues not as well preserved

Cold Water – drowning in water less than 20 degrees Celsius can more often result in successful resuscitation

- When dealing with a water emergency, take the following into account:

1. **Patient condition** – consciousness, injuries, location
2. **Water condition** – visibility, temperature, moving water, depth of water, other hazards
3. **Resources on hand** – rescuers, special resources

- **Never try a water rescue unless you meet all of the following criteria:**

– You are a good swimmer
– You are specially trained in water rescue
– You are wearing a personal flotation device
– You are accompanied by other rescuers

To attempt a rescue close to shore

1) Reach
2) Throw
3) Row
4) Go

Patient Assessment

Remember – It is more difficult to detect and treat injuries in water.

- Bleeding that occurs in water may immediately dilute and disperse.
- Murky water can conceal broken bones.
- Suspect spinal injury if the emergency is a result of a diving accident or if patient has been struck by a boat, water skier, surfboard, etc.

If the patient is conscious and you are certain there is no spinal injury…

1) Remove the patient from the water ASAP
2) Complete the primary assessment
3) Conserve the patient's body heat
4) Perform a secondary assessment while waiting for the ambulance

To remove an unconscious patient from the water use either the

Head-Splint Technique

or the

Head-Chin Support Technique

As described on pages 468-471 of the text.

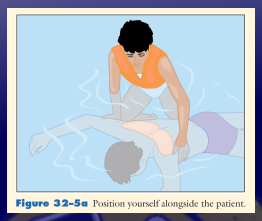

Figure 32-5a Position yourself alongside the patient.

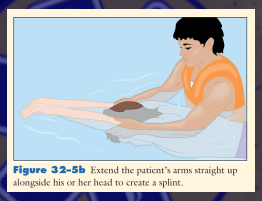

Figure 32-5b Extend the patient's arms straight up alongside his or her head to create a splint.

Fast moving water is dangerous. Certain river features make it even more so

1) Strainers
2) Obstructions
3) Holes
4) Low-head dams
5) Extremity traps

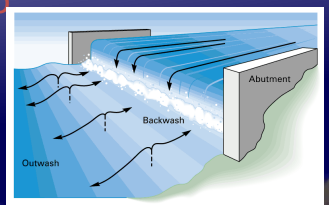

Figure 32-7a A low-head dam.

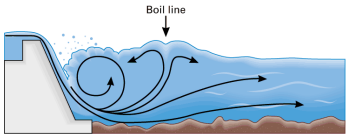

Figure 32-7b A hole formed by the waters flowing over a low-head dam.

Ice Rescue

1. **Reach and throw** – inflated fire hose
2. **Row** – small inflatable craft (air boat/hovercraft) with ropes to pull it from shore
3. **Go** – Use dry neoprene ice rescue suit tethered to shore


Figure 32-9 An ice rescue.

Barotrauma

Can occur when divers experience increasing underwater pressure

or

when they ascend from deep water improperly

Air Embolism

- Signs and Symptoms may have a *rapid onset*

1) Difficulty breathing
2) Blotching or itching skin
3) Frothy blood in the nose and mouth
4) Pain in the muscles and joints
5) Chest pain or pain in the abdomen
6) Swelling and grating sound in the neck
7) Numbness or tingling in the extremities
8) General weakness paralysis
9) Possible convulsions (continued)

Air Embolism

- Signs and Symptoms may have a *rapid onset*

10) Dizziness
11) Vomiting
12) Blurred or distorted vision
13) Loss or distortion of memory
14) Slurred speech, lack of coordination
15) Unconsciousness
16) Cardiac or respiratory arrest
17) Behavioural changes

Decompression Sickness

- Signs and Symptoms are *gradual* in *onset*, usually occurring 12-24 hours post dive.

1) Difficulty breathing
2) Chest pain
3) Itchy, mottled skin with a minor skin rash
4) Swelling of tissues, with pits in swelling
5) Severe, deep pain in the joints and muscles
6) Nausea and vomiting with abdominal pain
7) Fatigue, dizziness, collapse sometimes leading to unconsciousness

(continued)

Decompression Sickness

- **Signs and Symptoms are *gradual* in *onset*, usually occurring 12-24 hours post dive.**

8) Headache
9) Blurred vision
10) Hallucinations
11) Ringing of the ears or partial deafness
12) Staggering gait
13) Numbness, paralysis
14) Inability to urinate

The Squeeze

- Occurs when diver descends or ascends while proper pressure in the body's air cavities is not maintained. Injury to the tissues of air cavities results.

Signs and Symptoms

- Mild to severe pain in the affected area
- Blood or fluid discharge from the nose or ears
- Bleeding from the tiny blood vessels in the eyes
- Extreme dizziness, disorientation
- Nausea
- Ear pain (most common), ringing in the ears, possible deafness