

Risk Management Update to Drowning and Submersion Injuries

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Introduction

What: Providing an update about drowning and submersion injuries to those practicing risk management in wilderness aquatic environments

Why: While the medical community has generally achieved consensus about the prevention and treatment of drowning, there exists misinformation about what drowning is, its prevalence, and what preferred treatment methods are.

Current & Updated Terminology

Drowning: the process of experiencing primary respiratory impairment from submersion/immersion in a liquid medium

There are **3** possible outcomes:

- 1) Survival without neurological damage
- 2) Survival with neurological damage
- 3) Death

Terms such as "near drowning" and "secondary drowning" are misleading and inaccurate.

Immersion means the body is covered in water; generally, the face and/or airway must be immersed for drowning to occur

Submersion means that the entire body is under water

Source: Schmidt, Bledsoe, Sempsrott, & Hawkins (June 2012)

Prevalence of Drowning

- Drowning is the 3rd leading cause of unintentional injury death in the world, accounting for over **350,000** deaths each year.
- In the United States, drowning is the 2nd leading case of unintentional injury death among children ages 1 to 14 – a major demographic of wilderness and outdoor programs
- It is estimated that **45%** of drowning deaths in the United States are among the most economically active segment of the population

Source: World Health Organization (April 2014)

The Drowning Process



The 2002 World Congress on Drowning was the first to emphasize one important principle:

Drowning is a process!

Submersion/Immersion leads to...



Struggle, water entering the lungs, and hypoxia.

Hypoxia will eventually lead to unconsciousness (4-6 min), followed by respiratory and cardiac arrest.

Source: Schmidt, Bledsoe, Sempsrott, & Hawkins (June 2012)

Drowning Treatment Priorities

Safety! Recognizing a drowning person is essential, but one should not risk their own safety.

Positioning! Place patient on level ground.

Airway! Maintain an open airway. There may be foam present, but that should not delay your treatment of...

Breathing! Death and serious injury from drowning are caused by lack of oxygen to the brain. Aggressive ventilation and oxygen therapy is important. Ventilating the foam back into the patient is accepted medical treatment, as it may contain surfactant from the patient's lungs.

Initiating this while the patient is still in the water may be viable.

Evacuate! Any symptomatic drowning patient should be evaluated by a physician, even if they are awake and conscious.



Risk Management and Training

No matter the aquatic environment, drowning will always present as a real risk. Wilderness risk managers, guides, instructors, and outdoor educators should realize the need for prevention and specialized training.

Site Assessment: Identifying and addressing specific hazards, including currents and weather patterns, that may contribute to drowning are essential. This will help create a system for monitoring individuals in the water.

Training: In addition to standard CPR and first aid training (ideally through a recognized wilderness medicine provider), get appropriate training for the appropriate setting.

Wilderness StarGuard

This program, through the Starfish Aquatics Institute, is designed to teach participants how evaluate site safety, screen swimmers, and improvise rescues and equipment in the backcountry.



Swiftwater Rescue

Obtaining training in moving water or swiftwater rescue greatly enhances one's ability to assess a site, protect themselves, and access drowning patients. The American Canoe Association provides multiple levels of such programs.

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