

Drowning/Submersion Injuries

(April 2024)

Rationale

Drowning is defined as the process of experiencing a respiratory impairment resulting from being in or submerged in liquid. The term *drowning* includes both death and nonfatal submersion injury. Drowning is a common cause of death, especially in children younger than 10 years. Men and members of some racial or ethnic groups are at increased risk of drowning.

Causal Conditions

(list not exhaustive)

- Inability to swim effectively
- Missing or inadequate fencing of pools and bodies of water
- Improper or absent use of approved personal flotation devices
- Risk-taking behavior
- Alcohol and substance use
- Use of prescription medication (e.g., those that cause drowsiness)
- Inadequate supervision
- Acute medical issues (e.g., seizures)
- Occupational and recreational water-related activities

Key Objectives

Given a patient with a history of recent submersion, the candidate will make the appropriate diagnosis of submersion injury, assess the severity and complications, initiate an appropriate management plan, and provide education about preventive strategies.

Enabling Objectives

Given circumstances where there is risk of a drowning/submersion injury, the candidate will recommend effective risk reduction measures.

Given a patient who has experienced a submersion or drowning the candidate will

- conduct an effective initial management plan, including
 - a. evaluate airway, breathing, and circulation while initiating cardiopulmonary resuscitation using basic or advanced life support measures as appropriate;
 - b. activate emergency medical and/or critical care services; and
 - c. continue cardiopulmonary resuscitation and other treatment to support organ perfusion while concomitantly treating hypothermia;
- concurrently list and interpret critical clinical findings, including
 - a. a history of the event and relevant medical history; and
 - b. coexisting trauma, including spinal cord injury;
- list and interpret critical investigations (e.g., electrocardiography, chest radiography, complete blood count, renal function, toxicology screening, arterial blood gases, electrolyte levels, lactate level, ethanol level); and
- recognize potential complications of submersion injury, including cerebral edema, hypoxic-ischemic encephalopathy, acute respiratory distress syndrome, multiple organ systems failure.