

# **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, hypoxicischemic encephalopathy, acute respiratory distress syndrome, multiple organ systems failure.