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PULMONARY DISEASE BOARD REVIEW MANUAL

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Pulmonary Environmental Emergencies: Near-Drowning, Dysbarism, and Smoke Inhalation

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I. NEAR-DROWNING

CASE 1 PRESENTATION

Five 16-year-old boys are at the beach on a hot summer day. The teenagers are freely drinking alcoholic beverages and decide to race to a small island offshore. One of the teens drops behind his friends, and is subsequently found after 5 minutes of submersion in lake water. He is unresponsive, apneic, and pulseless. One of the teens initiates cardiopulmonary resuscitation (CPR) while his friends call for help.

The lifeguard station and rescue team respond to the accident area in approximately 10 minutes. When they arrive, the victim is still unresponsive. He has regained a spontaneous pulse but is not breathing spontaneously. An endotracheal tube is placed and bag-valve ventilation is initiated. The victim is then transported to the nearest hospital for evaluation and treatment.

- **What age groups are at highest risk for submersion injury?**

- **What pathophysiologic processes occur in drowning?**

DISCUSSION

Incidence

Drowning and near-drowning are types of submersion injury. Drowning has been defined as death secondary to suffocation in a liquid medium. Near-drowning is survival, at least temporarily, from such an event. Near-drowning occurs in people of all ages but is particularly common in children. Approximately 40% of all drowning deaths occur in children younger than 4 years. In the United States, drowning is the fourth-leading cause of accidental death. Among adolescents, drowning is second only to motor vehicle accidents as a cause of death.

There are several peaks in the incidence of submersion injuries. The first peak is in children younger than 4 years. These children usually are improperly supervised in pools, lakes or open waters, and bathtubs. A second peak is noted in males between the ages of 15 and 24 years. These incidents are frequently associated with alcohol or illegal drug use or trauma. Seizure disorders may also pose a risk to this and other populations who happen to be in water when a seizure occurs.