

Drowning



DEFINITIONS:

- The World Congress on Drowning defines drowning as "the process of experiencing respiratory impairment from submersion/immersion in liquid".
- The terms: near-drowning, dry drowning and secondary drowning created confusion and led to misdiagnosis. Recommended terms are submersion injury or submersion incidents.

PEARLS:

- Once the child has arrived to ED (& cardiovascular stability is achieved); Pulmonary & Neurological assessment should guide further treatment.
- If there is an ongoing CPR : follow PALS guidelines.
- If the child is hypothermic : it should be corrected to at least 32°C to achieve hemodynamic stability. (more details can be found at the Hypothermia episode).

Pulmonary Assessment Algorithm for Drowning

Respiratory Distress? X

Observe for 6 - 12 hrs

& Discharge home if →

- CXR normal
- GCS 15
- Normal chest examination
- O2 sat $\geq 95\%$ on room air
- Stable social setting

Respiratory Distress? ✓

Place on cardiac monitor with continuous monitoring of pulse oximetry
How is the severity of the symptoms?

Symptoms Severity	MILD	MODERATE	SEVERE
CXR	Normal or mild infiltrates and/or pulmonary edema	Abnormal	Abnormal
Oxygenation & Ventilation	Supplemental O2 as needed	Consider CPAP or humidified HFNC	O2 & intubation as needed with PEEP 5-15 to maintain: SaO2 > 90% PaCO2 35-45 mm Hg
Fluids Restriction & Diuretics	Consider both as needed	Fluid restriction: ✓ Diuretics: consider	Fluid restriction: ✓ Diuretics: ✓ Antibiotics: consider
Disposition	Admit to ward	Admit to ward Consider PICU	Admit to PICU

- The American Academy of Pediatrics recommends the installation of a 4 sided fence that prevents direct access to a swimming pool.
- The fence should be at least 4 ft high, climb-resistant and the distance between the bottom of the fence and the ground should be at least 4 inches.
- The gate should be self-latching & self-closing.
- Parents and caregivers should be advised that small children should always be under direct supervision of an adult while around pools, bathtubs or other bodies of water.
- Swimming lessons; swim skill & water competency may be the most important drowning prevention measure.
- Bystander CPR and immediate resuscitation at the site is the most effective means to improve the outcomes. Recommend all caregivers and supervisors of children to be trained in CPR.

