


Section: **Adult Trauma**  
Subject: **DROWNING AND SUBMERSION INJURIES**  
Section #: **341.08**  
Issue Date: **March 21, 2011**  
Revision Date: **December 1, 2017**  
Approved By: 

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1. Basic ALS Treatments.
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
3. In order to support oxygen saturation greater than 94%, use **CPAP**
  - a. Indications: <sup>1</sup>
    - i. Moderate to severe respiratory distress
    - ii. Tachypnea (RR > 24 breaths/min)
    - iii. Accessory muscle use or abdominal breathing
  - b. Contraindications: <sup>1</sup>
    - i. Respiratory arrest
    - ii. Medically unstable
    - iii. Unable to protect airway
    - iv. Excessive secretions
    - v. Uncooperative or agitated
    - vi. Unable to fit mask
    - vii. Recent (< 30 days) upper airway or upper gastrointestinal surgery
  - c. Start at 5 cm H<sub>2</sub>O
    - i. Increase as tolerated.
  - d. Use continuous wave capnography, if available, to better monitor the clinical course.
4. If in cardiac arrest, follow **HCFR TRAUMATIC CARDIAC ARREST** protocol
5. ALS transport criteria:
  - a. ALL suspected drowning patients are ALS
  - b. This includes patients who are alert but suffered some type of submersion or immersion event.
6. QA Points
  - a. The early institution of resuscitative efforts is an important factor influencing survival after drowning.<sup>2</sup>
  - b. The terms "near-drowning," "wet/dry drowning," and "secondary drowning" are potentially confusing and these terms are no longer recommended.<sup>3</sup>

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<sup>1</sup> Adapted from Liesching T, Kwok H, Hill NS: Acute applications of noninvasive positive pressure ventilation. Chest 124:699-713, 2003.

<sup>2</sup> Matthew, J., et al. "Update on Drowning." South African Medical Journal, no. 7, 2017, p. 562.

<sup>3</sup> Main, Alison B and Andrew J Hooper. "Trauma: Drowning and Immersion Injury." Anaesthesia & Intensive Care Medicine, vol. 18, 01 Aug. 2017, pp. 401-3