Drowning

**History**
- Submersion in water regardless of depth
- Possible history of trauma
- Slammed into shore wave break
- Duration of submersion / immersion
- Temperature of water or possibility of hypothermia

**Signs and Symptoms**
- Unresponsive
- Mental status changes
- Decreased or absent vital signs
- Foaming / Vomiting
- Coughing, Wheezing, Rales, Rhonchi, Stridor, Apnea

**Differential**
- Trauma
- Pre-existing medical problem: Hypoglycemia, Cardiac Dysrhythmia
- Pressure injury (SCUBA diving): Barotrauma, Decompression sickness
- Post-immersion syndrome

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**Call for appropriate additional rescue resources**

**DO NOT ENTER Swift/Flood waters**

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**Remove victim from water**

ONLY if equipped to do so SAFELY

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**Patient still in water**

- Yes
  - Awake and Alert
    - **S** Supplemental Oxygen as tolerated
    - Spinal Motion Restriction Protocol TB - 8 if indicated
    - Remove wet clothing Dry / Warm Patient
    - Monitor and Reassess
      - Encourage transport and evaluation even if asymptomatic or with minimal symptoms
      - Asymptomatic drowning patients (refusing transport) should be instructed to seek medical care/call 911 if they develop any symptoms within 6 hours
    - **S** IV / IO Procedure if indicated
    - **P** Cardiac Monitor as indicated

- No
  - Altered Mentation
    - **S** Airway Protocol(s) 1-8 as indicated
    - Spinal Motion Restriction Protocol TB - 8 if indicated
    - Altered Mental Status Protocol UP - 4 as indicated
    - **S** Remove wet clothing Dry / Warm Patient
    - **A** IV / IO Procedure if indicated
    - **P** Cardiac Monitor

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**Unresponsive**

- **S** 5 Breaths via BVM as tolerated
  - Supplemental Oxygen as tolerated
  - Airway Protocol(s) 1-8 as indicated
  - Spinal Motion Restriction Protocol TB - 8 if indicated
  - Altered Mental Status Protocol UP - 4 as indicated

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**Pulse**

- Yes
  - **S** Age Appropriate Cardiac Arrest Protocol(s)
  - Spinal Motion Restriction Protocol TB – 8 if indicated
  - Contact Destination or Medical Control

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**For Dive Accident / Barotrauma: contact DAN**

Divers Alert Network 1-919-684-9111

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This protocol has been altered from the original NCCEP Protocol by the Durham County EMS Medical Director

Revised 12/2019

Clinical Operating Guidelines TE-3
Pearls

- Ensure scene safety. Drowning is a leading cause of death among would-be rescuers. **DO NOT ATTEMPT** to rescue victims without appropriate equipment and training.

- Recommended Exam: Respiratory, Mental status, Trauma Survey, Skin, Neuro
- Drowning is the process of experiencing respiratory impairment (any respiratory symptom) from submersion / immersion in a liquid.
- Begin with BVM ventilations, if patient does not tolerate then apply appropriate mode of supplemental oxygen.
- When feasible, only appropriately trained and certified rescuers should remove patients from areas of danger.
- Regardless of water temperature – resuscitate all patients with known submersion time of ≤ 25 minutes.
- Regardless of water temperature – If submersion time ≥ 1 hour consider moving to recovery phase instead of rescue.
- Foam is usually present in airway and may be copious, DO NOT waste time attempting to suction. Ventilate with BVM through foam (suction water and vomit only when present).
- Cardiac arrest in drowning is caused by hypoxia, airway and ventilation are equally important to high-quality CPR.
- Encourage transport of all symptomatic patients (cough, foam, dyspnea, abnormal lung sounds, hypoxia) due to potential worsening over the next 6 hours.
- Predicting prognosis in prehospital setting is difficult and does not correlate with mental status. Unless obvious death, transport.
- Hypothermia is often associated with drowning and submersion injuries even with warm ambient conditions.
- Drowning patient typically has <1 – 3 mL/kg of water in lungs (does not require suction) Primary treatment is reversal of hypoxia.
- Spinal motion restriction is usually unnecessary. When indicated it should not interrupt ventilation, oxygenation and / or CPR.