Drowning/Submersion Injury

Drowning is defined as**, "**A process resulting in primary respiratory impairment from submersion or immersion in a liquid medium." (American Heart Association, 2010).

For patients who have been submerged and in cardiac arrest:

1. In cold water (water temperature less than 70° F/21° C)
    A. Initiate resuscitative efforts if submersion time is less than 90 minutes.
        i. Contact Medical Control for instructions on transport timing and destination for in-hospital rewarming.
    B. For submersion time greater than 90 minutes see **Dead on Scene/Termination of Resuscitation-Procedure Protocol**
2. In warm water (temperature is greater than 70° F/21° C)
    A. Initiate resuscitative efforts if submersion time is less than 30 minutes.
        i. Contact Medical Control for futher direction, which may include instructions on transport timing, destination, or termination of resuscitation.
    B. For submersion time greater than 30 minutes see **Dead on Scene/Termination of Resuscitation-Procedure Protocol**
3. It may be impractical to determine water temperature; subsurface water temperatures may be considerably colder than surface temperature. When in doubt, consider water to be cold.
4. Time estimation begins when the patient is presumed to be submersed.

For patients who have been submerged and NOT in cardiac arrest

1. If SCUBA incident with rapid ascent, the maintain the patient in a supine position.
2. Follow **General Pre-hospital Care-Treatment Protocol**.
    A. Administer high flow oxygen.
    B. Primary survey should include proactive airway management and restoration of adequate oxygenation and ventilation.
    C. Exam should include consideration of possible c-spine injury.
    D. Assess for other associated injury such as injury to the head or dive-related emergency.
    E. Assess patient's temperature.
    F. If patient is hypothermic, go to **Hypothermia/Frostbite-Treatment Protocol,** handle patients gently. Excessive/aggressive movement can precipitate cardiac arrest.
    G. Prevent further heat loss by transport in a warm environment.
    H. Patient should be dry and/or wrapped in vapor barrier, as available.
    I. Patients may develop subacute respiratory difficulty after drowning and therefore all victims of drowning should be transported for observation.
        i. Consider transport to facility with hyperbaric oxygen therapy capability.
    J. Consider CPAP (Per MCA selection, may be a BLS procedure) follow **CPAP-Procedure Protocol**.
    K. Contact Medical Control if no transport is considered or no transport is requested.

*Note: For SCUBA incident with rapid ascent, contact Medical Control. Medical Control may consider contacting the Divers Alert Network (DAN) @ 919-684-9111 to arrange evacuation and hyperbaric re-compression at a properly equipped and staffed chamber.

Protocol Source/References: AHA, National Association of State EMS Officials; cold water temp - https://www.coldwatersafety.org/why-did-we-pick-70f-21c