Treatment Protocol: SUBMERSION

Ref. No. 1225

Base Hospital Contact: Required for ALOC and decompression emergencies (*Ref. 518*). If decompression emergency suspected, Base Hospital shall contact the Medical Alert Center (Ref. 518).

- 1. Assess airway and initiate basic and/or advanced airway maneuvers prn (MCG 1302)
- 2. For cardiac arrest, treat per TP 1210, Cardiac Arrest 1
- Administer Oxygen prn (MCG 1302)
 For suspected decompression illness 2, provide high flow Oxygen 15 L/min and CONTACT
 BASE
- 4. Maintain supine if suspected decompression illness
- 5. Advanced airway prn (MCG 1302)
- 6. Initiate cardiac monitoring (MCG 1308)
- 7. Provide warming measures 3
- 8. Establish vascular access prn (MCG 1375)
- 9. For altered level of consciousness, treat in conjunction with *TP 1229, Altered Level of Consciousness (ALOC)*
- 10. For respiratory distress, treat in conjunction with TP 1237, Respiratory Distress 4
- 11. For poor perfusion (MCG 1355) or for suspected decompression illness:
 - Normal Saline 1L IV rapid infusion; use warm saline if available
 Reassess after each 250 mL increment for evidence of worsening respiratory distress and if
 noted <u>CONTACT BASE</u> to discuss need to continue or hold Normal Saline based on patient
 condition **4**

For persistent poor perfusion, treat in conjunction with TP 1207, Shock/Hypotension

12. Contact **Public Health 213-989-7140** for all submersion incidents involving pools or spas after transfer of patient care in the emergency department or upon termination of resuscitation in the field. §

REVISED: 07-01-24 PAGE 1 OF 2

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SPECIAL CONSIDERATIONS

- Cardiac arrest from drowning should be treated per TP 1210, Cardiac Arrest. Ventilation is particularly important as the cardiac arrest is almost always due to respiratory failure. In cases of cold water drowning follow usual protocols for resuscitation while simultaneously rewarming the patient. Patients with hypothermia due to cold water drowning, may have good neurologic outcome despite prolonged resuscitation; resuscitative efforts should continue until the patient is rewarmed. Consultation with the Base Physician is required before consideration of termination of resuscitation in patients with suspected hypothermia.
- Decompression illness includes arterial gas embolism from barotrauma and decompression sickness (aka "the bends") due to dissolved nitrogen in the blood coming out of solution. Decompression illness most frequently occurs in scuba divers after breathing compressed air at depth. While arterial gas embolism presents almost immediately after ascent, decompression sickness is often delayed and should be considered in any patient with symptoms (e.g. respiratory distress, ALOC, chest or body pain) within 24 hours of completing a dive. All patients with possible decompression illness need immediate evaluation for possible hyperbaric treatment. Per Ref. 518, contact Base immediately to discuss.
- Warming measures should include moving the patient to a warm environment as quickly as possible, removing wet clothing/items, covering with an emergency/rescue blanket or other blankets/sheets, and using warm Normal Saline if available.
- Rales may be present in patients after submersion/drowning due to direct lung injury and/or aspiration of water. This is not an indication of cardiogenic pulmonary edema (such as from congestive heart failure) and does not prohibit administration of IV fluids. IV fluids should be initiated and continued unless respiratory status worsens during administration.
- **6** EMS is assisting the Department of Public Health (DPH) in promptly investigating fatal or nonfatal drownings at public pools or spas in order to ensure safety can be verified before reopening. Contacting the on-call DPH officer will allow timely investigation of these incidents and prevent future incidents.

REVISED: 07-01-24 PAGE 2 OF 2