Pediatric Submersion/Drowning

For any submersion injury, including drowning and dive (decompression) emergencies

History
- Age
- Duration of submersion
- Water temperature
- Type of water (salt, fresh, pool, etc.)
- SCUBA Diving
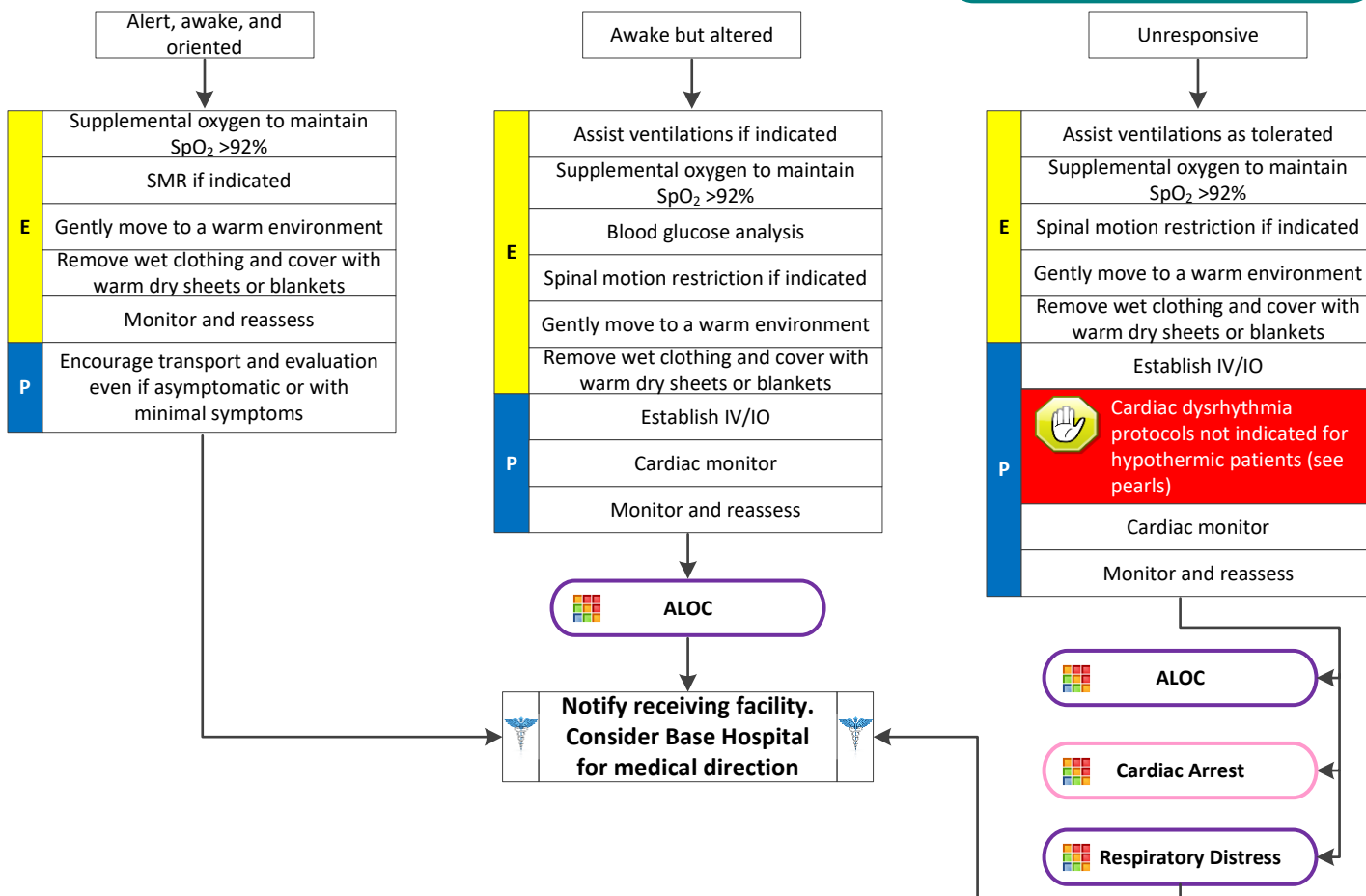- Trauma possible? (Diving into pool)

Signs and Symptoms
- Airway – Clear vs. Foam vs. water/vomit
- Spontaneous Breathing
- AMS
- Cold/Shivering
- Motor neuro exam/priapism
- Bradycardia

Differential
- Hypothermia
- Hypoglycemia
- CNS dysfunction
  - Seizure
  - Head injury
  - Spinal cord injury

Emergency Hyperbaric Chambers
John Muir Medical Center – Walnut Creek

Alert, awake, and oriented

E
- Supplemental oxygen to maintain SpO$_2$ >92%
- SMR if indicated
- Gently move to a warm environment
- Remove wet clothing and cover with warm dry sheets or blankets
- Monitor and reassess

P
- Encourage transport and evaluation even if asymptomatic or with minimal symptoms

Awake but altered

E
- Assist ventilations if indicated
- Supplemental oxygen to maintain SpO$_2$ >92%
- Blood glucose analysis
- Spinal motion restriction if indicated
- Gently move to a warm environment
- Remove wet clothing and cover with warm dry sheets or blankets

P
- Establish IV/IO
- Cardiac monitor
- Monitor and reassess

→ **ALOC**

Unresponsive

E
- Assist ventilations as tolerated
- Supplemental oxygen to maintain SpO$_2$ >92%
- Spinal motion restriction if indicated
- Gently move to a warm environment
- Remove wet clothing and cover with warm dry sheets or blankets

P
- Establish IV/IO
- **Cardiac dysrhythmia protocols not indicated for hypothermic patients (see pearls)**
- Cardiac monitor
- Monitor and reassess

→ **ALOC**
→ **Cardiac Arrest**
→ **Respiratory Distress**

Notify receiving facility. Consider Base Hospital for medical direction

Pediatric Respiratory Distress Treatment Protocols

Pearls
- Check for pulselessness for 30-45 seconds to avoid unnecessary chest compressions.
- Defer ACLS medications in hypothermic patients until patient is warmed. Patients with hypothermia may have good neurologic outcome despite prolonged resuscitation; resuscitative efforts should continue until the patient is rewarmed.
- If V-Fib or pulseless V-Tach is present, shock x1, and defer further shocks.
- Extremes of age, malnutrition, alcohol, and other drug use are contributing factors to hypothermia.
- Patients with prolonged hypoglycemia often become hypothermic; blood glucose analysis is essential.
- If a temperature is unable to be measured, treat the patient based on the suspected temperature.
- Warm packs can be placed in the armpit and groin areas. Care should be taken not to place directly on skin.