Recognition and Treatment of Drowning Incidents

From rip tides to rapids, entanglement to ETOH impairment, shallow water diving to stings, children with a lack of awareness and teenagers with an excess of confidence… the outdoor adventure education environment provides a varied opportunity for immersion/submersion incidents, which like many risky activities are further exacerbated by the typically remote environments. Prevention, and the education that comes with it, are invaluable to managing these risks. Here are some resources/graphics to help.

John's Helping Hand goals for the public:

- be able to recognize the signs of a person in distress.
- know the signs of a drowning victim.
- have the confidence needed to immediately alert a lifeguard or other professional the second they think someone needs help.
- understand that seconds count to a drowning victim, and seconds can determine the difference between death, life and quality of life after the rescue.
- understand to personally intervene ONLY if they can do so without any risk to their own safety and without becoming a drowning victim themselves.[14]

Water Safety USA's Water Competency Components[16]

Water Competency Components

WATER SMARTS

- Know your limitations: respect the water and avoid unsafe behaviors
- Never swim alone, swim with lifeguards and/or water watchers present
- Swim only in a safe area, free from underwater hazards, including drop-offs, with safe entry and exit points
- Do not dive into shallow or unclear water; enter feet first.
- Wear a U.S. Coast Guard approved life jacket while boating, regardless of swimming skill
- Understand how physical fitness, medical conditions, and cold water change risk factors
- Do not swim while using alcohol or drugs
- Understand the dangers of hyperventilation and hypoxic blackout7
- Understand how currents affect swimming in a river
- Know how to recognize, avoid, and handle ocean rip currents
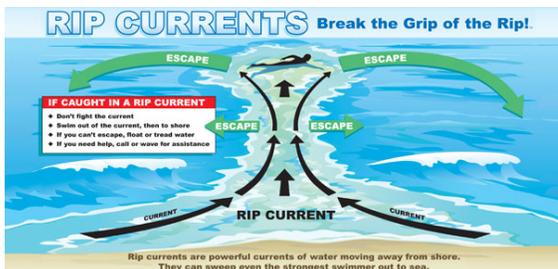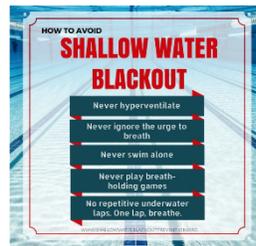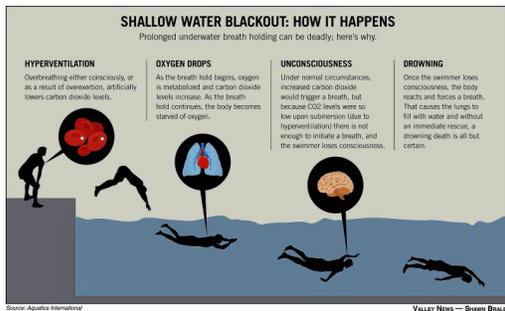- Know how to call for help

SWIMMING SKILLS

- Step or jump into water over the head and return to the surface
- Turn around and orient to safety as well as turn over
- Float or tread water
- Combine breath control with all swim skills, including forward movement in the water
  - Basic skill: swim to safety for at least 25 yards*
  - Advanced skill: Swim at least 100 yards using relaxed, restful strokes *
- Exit the water
- Perform all the skills above while clothed

*Note: Longer distances and length of times are necessary for competency in different water environments

HELPING OTHERS

- Always provide close and constant attention to anyone (children, teens, & adults) you are supervising in or near the water.
- Know how to recognize a drowning person
- Learn SAFE ways to assist others who are in trouble
- Learn CPR (both chest compressions and rescue breaths) and first aid
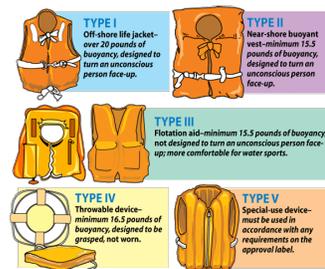

SHALLOW WATER BLACKOUT: HOW IT HAPPENS

Prolonged underwater breath holding can be deadly; here's why.

HYPERVENTILATION — Overbreathing either consciously, or as a result of overexertion, artificially lowers carbon dioxide levels.

OXYGEN DROPS — As the breath hold begins, oxygen is metabolized and carbon dioxide levels increase. As the breath hold continues, the body becomes starved of oxygen.

UNCONSCIOUSNESS — Under normal circumstances, increased carbon dioxide would trigger a breath, but because CO2 levels were so low upon submersion (due to hyperventilation) there is not enough to initiate a breath, and the swimmer loses consciousness.

DROWNING — Once the swimmer loses consciousness, the body reacts and forces a breath. That causes the lungs to fill with water and without an immediate rescue, a drowning death is all but certain.

Source: Aquatics International   VALLEY NEWS — SHAWN BRALEY

HOW TO AVOID SHALLOW WATER BLACKOUT

Never hyperventilate
Never ignore the urge to breath
Never swim alone
Never play breath-holding games
No repetitive underwater laps. One lap, breathe.

ELECTRIC SHOCK DROWNING
UNKNOWN DANGER LURKING IN THE WATER

RIP CURRENTS Break the Grip of the Rip!

IF CAUGHT IN A RIP CURRENT
- Don't fight the current
- Swim out of the current, then to shore
- If you can't escape, float or tread water
- If you need help, call or wave for assistance

Rip currents are powerful currents of water moving away from shore. They can sweep even the strongest swimmer out to sea.

BEACH WARNING FLAGS

- **WATER CLOSED TO PUBLIC**
- **HIGH HAZARD** — High surf and/or strong current
- **MEDIUM HAZARD** — Moderate surf and/or currents
- **LOW HAZARD** — Calm conditions, exercise caution
- **DANGEROUS MARINE LIFE**

Absence of flags does not assure safe waters.

TYPE I Off-shore life jacket–over 20 pounds of buoyancy, designed to turn an unconscious person face-up.

TYPE II Near-shore buoyant vest–minimum 15.5 pounds of buoyancy, designed to turn an unconscious person face-up.

TYPE III Flotation aid–minimum 15.5 pounds of buoyancy, not designed to turn an unconscious person face-up; more comfortable for water sports.

TYPE IV Throwable device–minimum 16.5 pounds of buoyancy, designed to be grasped, not worn.

TYPE V Special-use device–must be used in accordance with any requirements on the approval label.

Is my life jacket correct?

SAFE KIDS   Altru

Unresponsive and not breathing normally?
→ Shout for help and call emergency services
→ Open airway
→ Give 5 rescue breaths / ventilations supplemented with oxygen if possible
→ Signs of life?
→ Start CPR 30:2
→ Attach AED and follow instructions

Fig. 4.6. Drowning treatment algorithm for rescuers with a duty to respond.

Revised Utstein Drowning Data Form

Patient ID: Gender: ❑ M ❑ F ❑ U Age: _____ or date of birth: ___/___/___ DD/MM/YY Date of event: ___/___/___ DD/MM/YY Times: Call received: _____ EMS resus: _____

Location of drowning: ❑ Bucket ❑ Toilet ❑ Bathtub ❑ Lake ❑ Ocean ❑ Pool ❑ River/flowing water ❑ Other

Event witnessed? ❑ Yes ❑ No If yes, time of event: _____ Witnessed/monitored by: _____ ❑ Layperson ❑ Healthcare personnel

Precipitating event known? ❑ Yes ❑ No If yes: ❑ Intoxication ❑ Trauma Pre-existing medical: List: _____ Drugs: _____ Other: _____

At scene: Loss of consciousness: ❑ Yes ❑ No CPR before EMS: ❑ Yes ❑ No ❑ By layperson ❑ Healthcare personnel Techniques used: ❑ Rescue breathing ❑ Chest compression

EMS assessment/management: Spont breathing: ❑ Yes ❑ No ❑ U Signs of circulation: ❑ Yes ❑ No ❑ U Airway interventions: ❑ Yes ❑ No ❑ U Initial neuro state: E ___ V ___ M ___ or: ❑ A ❑ V ❑ P ❑ U or: ❑ A ❑ B ❑ C

ED assessment/management: Spont breathing: ❑ Yes ❑ No ❑ U Palpable pulse: ❑ Yes ❑ No ❑ U Tracheal tube/ventilation: ❑ Yes ❑ No ❑ U Initial: temp ___ BP ___ RR ___ SpO₂ ___ FiO₂ ___ Initial neuro state: GCS: E ___ V ___ M ___ Or: ❑ A ❑ V ❑ P ❑ U Or: ❑ A ❑ B ❑ C

Outcome: ROSC: Any: ❑ Yes ❑ No ❑ U > 20 min: ❑ Yes ❑ No ❑ U DNAR order: ❑ Yes ❑ No ❑ U Date of discharge or death: ___/___/___ DD/MM/YY

Survived to: ICU/ED: ❑ Yes ❑ No ❑ U Hospital admission: ❑ Yes ❑ No ❑ U Hospital discharge: ❑ Yes ❑ No ❑ U If discharged alive: ❑ CPC ❑ U

Conn Drowning Coma Scale: A = alert; B = blunted; C = comatose.
GCS: E = eye opening; V = verbal response; M = motor response.
AVPU scale: A = alert or awake; V = response to voice; P = response to pain only; U = unarousable.

Sources

1. https://www.islasurf.org/dry-drowning-secondary-drowning-near-drowning/
2. https://www.cdc.gov/homeandrecreationalsafety/water-safety/waterinjuries-factsheet.html
3. http://www.who.int/news-room/fact-sheets/detail/drowning
4. https://www.aafp.org/afp/2016/0401/p576.html
5. http://www.guinnessworldrecords.com/world-records/longest-time-breath-held-voluntarily-(male)
6. https://en.wikipedia.org/wiki/Static_apnea
7. https://www.webmd.com/fitness-exercise/features/water-intoxication#1
8. http://aquaticsafetygroup.com/ShallowWaterBlackout.html
9. http://thesurvivaldoctor.com/2014/06/23/someone-drowning/
10. https://www.aafp.org/afp/2016/0401/p576.html
11. https://www.cdc.gov/HomeandRecreationalSafety/pubs/LifeguardReport-a.pdf
12. http://mariovittone.com/2010/05/154/
13. https://www.cookchildrens.org/SiteCollectionDocuments/resources/Safety-water-drowning-prevention.pdf
14. http://www.swimsafe4life.com/drowning-risk-prevention/
15. http://www.slate.com/articles/health_and_science/explainer/2013/11/nicholas_mevoli_freediving_death_what_happens_to_people_who_practice_holding.html
16. https://www.watersafetyusa.org/water-competency.html#components