






# Rescue of a submerged unresponsive diver

15 juin 2019



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## Objectives



Determine and explain the most effective, safe, and feasible first aid/rescue techniques and procedures, and to formulate valid recommendations for training

« Plan the Dive and Dive the Plan »




## Introduction






## What we know....

ERC 2015 - section 9 – First Aid

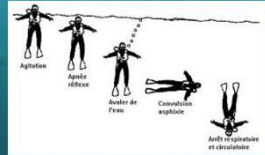
- ✓ First Aid is defined as the helping behaviours and initial care provided for an acute illness or injury.
- ✓ First Aid can be initiated by anyone in any situation.
- ✓ A First Aid Provider is defined as someone trained in First Aid who should:
  - recognise, assess and prioritise the need for first aid;
  - provide care using appropriate competencies;
  - recognise limitations and seek additional care when needed.
- ✓ The goals of First Aid are to preserve life, alleviate suffering, prevent further illness or injury, and promote recovery.
- ✓ Always make personal safety your first priority

## What we know....

ERC 2015 - section 4 – cardiac arrest in special circumstances


Water rescue & drowning




**What we know....**



ERC 2015 - section 4 – cardiac arrest in special circumstances

**Water rescue & drowning**



- Whenever possible, bystanders should attempt to save the drowning victim **without entry into the water**.
- If entry into the water is essential, take a **buoyant rescue aid, flotation device or boat**.
- It is safer to enter the water with **two rescuers** than alone.
- Never dive head first in the water when attempting a rescue... You may lose visual contact with the victim
- Remove them from the water as quickly as possible **BUT**
- **Keep the victim in a horizontal position during and after retrieval from the water while attempting to limit neck flexion and extension**


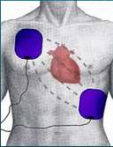
**In-water resuscitation**

- The BLS sequence in drowning reflects the critical importance of rapid alleviation of hypoxia. (5 rescue Breaths)
- Trained individuals may **undertake in water ventilation** ideally with the support of a buoyant rescue aid
- compressions are ineffective in the water
- If a rescuer, finds a non-responding drowning victim in deep open water, **the rescuer may start ventilation when trained to do so before moving the victim to dry land** or rescue craft
- One Study suggests that continue on the spot with **in-water ventilation** has a higher survival rate
- give high-flow oxygen

**Bilan primaire**

- **A**ccès - **A**irways (libération voies aériennes)
- **B**reathing (Respiration)
- **C**ompressions & **C**all
- **D**é fibrillation Semi-Automatique
- **E**vacuation
- **D**rugs (oxygène.....)

**Recommendations**

UHMS 2012, Vol. 39, No. 6 – Mitchell & co

Introduction

- Any diver who becomes unresponsive underwater is in a **perilous situation**.
- All divers must understand that even a textbook rescue will frequently **not achieve a good outcome**.
- It is not claimed that the answers will invariably be correct in all situations.

**Recommendations**


UHMS 2012, Vol. 39, No. 6 – Mitchell & co

**Phase 1 preparation for ascent**

1.If the regulator is out of the mouth, should it be replaced?

⇒ **no attempt should be made to replace a dislodged regulator even in a witnessed loss of consciousness in open water**

Manipulating the airway risks the entry of water, and any advantage is uncertain.



**Recommendations**

UHMS 2012, Vol. 39, No. 6 – Mitchell & co

**Phase 1 preparation for ascent**

2.If the diver is in the tonic or clonic phase of a seizure, should the ascent be delayed until the clonic phase has subsided?

⇒ **If clonic phase and the regulator is not in the mouth the diver should be retrieved to the surface without delay.**

⇒ **If the regulator is in the mouth, then every attempt should be made to hold it in place while sealing the lips around the mouthpiece; surfacing should be delayed until the seizure has resolved.**

Glottal obstruction in this condition is partial, obstruction was primarily Inspiratory the end of the clonic phase may be marked by resumption of deep breathing



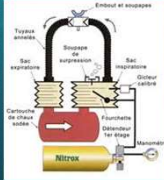
**Recommendations**  
 UHMS 2012, Vol. 39, No. 6 – Mitchell & co

**Phase 1 preparation for ascent**

3. Are there any special considerations for rescuing rebreather divers?

⇒ If the mouthpiece is out of the mouth : No attempt should be made to replace the mouthpiece, and ascent should be initiated immediately

• If the mouthpiece is in place : algorithm specific to the devices – is rescuer familiar with the victim's unit ? pO2 management ?




**Recommendations**  
 UHMS 2012, Vol. 39, No. 6 – Mitchell & co

**Phase 2 retrieval to the surface**

4. What is a "safe" ascent rate?

⇒ rate is likely to be "as fast as possible" in many cases and will almost invariably be faster than a safe rate for the rescuer

⇒ a rescuer would be doing well just to maintain a reasonably controlled ascent



**Recommendations**  
 UHMS 2012, Vol. 39, No. 6 – Mitchell & co

**Phase 2 retrieval to the surface**

5. If the rescuer has a decompression obligation, should they take the victim to the surface?

⇒ first responders should not put themselves at unreasonable risk in order to effect a rescue

⇒ a direct ascent could certainly be construed as unreasonable risk

⇒ risk acceptance is a personal matter for the rescuer

⇒ In the event that a rescuer elects not to bring a victim to the surface, there is little choice other than to make the victim positively buoyant and let that person go. (successful strategy when the surface support is vigilant...)

**Recommendations**  
 UHMS 2012, Vol. 39, No. 6 – Mitchell & co

**Phase 2 retrieval to the surface**


6. Is it necessary to hold the victim's head in a particular position?

⇒ any position that tends to close the airway, such as extreme flexion of the neck, should be avoided

⇒ the neck should be held in a neutral to slightly extended position

to facilitate the escape of expanding gas from the victim's lungs in order to avoid pulmonary barotrauma

⇒ for rebreather divers : not attempt to manipulate the gas composition of the loop to control the ascent



**Recommendations**  
 UHMS 2012, Vol. 39, No. 6 – Mitchell & co


**Phase 3 procedure at the surface**

1. Is it possible to make an assessment of breathing in the water? Can effective rescue breaths be delivered in the water?

⇒ the rescuer should not hesitate to deliver rescue breaths as recommended below if there is any suspicion that the victim is not breathing.

⇒ effective rescue breaths can be delivered in deep water. (during tow – on 50m duration > 70")

⇒ successful delivery is dependent on prior training (and preferably regular practice)




**Recommendations**  
 UHMS 2012, Vol. 39, No. 6 – Mitchell & co

**Phase 3 procedure at the surface**

2. What rules should guide the relative priority of in-water rescue breaths over accessing surface support where definitive CPR can be started?

⇒ commencement of expired air resuscitation may prevent progression to full cardiac arrest.

⇒ Even when surfacing immediately adjacent to surface support, a trained rescuer should consider positioning the victim on the back, establishing positive buoyancy, opening the airway, and delivering two rescue breaths before initiating attempts to remove the victim from the water. (if > 1')



**Recommendations**  
 UHMS 2012, Vol. 39, No. 6 – Mitchell & co

At surface turn face up and establish positive buoyancy.

Is immediate assisted removal from water possible?

YES: Remove victim from water and initiate CPR if indicated.

NO: Give 2 rescue breaths and assess surface support availability.

Surface support < 5 minutes away?

YES: Tow victim or wait whilst administering intermittent rescue breaths.

NO: Remain in place giving rescue breaths for approximately 1 minute, then tow (without breaths) to nearest surface support.

**SNSM**

En Hommage à nos camarades Des Sablès d'Olonne

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**Thank you for your attention**

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