ORAL Abstract

Research Topic: "Aquatic specific issues"

IN-WATER RESUSCITATION – What are the highlights and pitfalls?

Dr David Szpilman, MD
Medical Staff of Drowning Resuscitation Centre and Aeromedical Helicopter - Fire Department of Rio de Janeiro (CBMERJ) – GMAR; Head of Adult Intensive Care Unit - Hospital Municipal Miguel Couto; Member of Brazilian National Resuscitation Council; Founder, Former President and Medical Director of Brazilian Life Saving Society – SOBRASA; BOD Member and Medical Committee of International Life-Saving Federation; BOD Member of Regional Sports Medical Council;

Abstract

Whenever an apparently non-breathing victim is found in the water, the rescuer is confronted with a difficult choice. Should the rescuer attempt resuscitation procedures in the water or first bring the victim to shore, and then attempt resuscitation? This question was one of those looked at by the 2005 International Consensus on Cardiopulmonary (CPR) and Emergency Cardiovascular Care (ECC) Science and Treatment Recommendations (CoSTR) organized by the International Liaison Committee on Resuscitation (ILCOR). The purpose of this presentation is to present the CoSTR evidence-based worksheet on in-water resuscitation (IWR). (1).

Material & Methods: Until 2005, there was no reliable information about in-water resuscitation supported by evidence-based medicine. The CoSTR process reviewed the available evidence and assigned a "class of recommendation" and "level of evidence (LOE)" to IWR.

Results: These recommendations are for cases where the submersion time is unknown or is known to be less than 15 minutes (LOE 4). Whenever a non-breathing victim is found in the water, the rescuer should bring the victim's face out of water and extend the neck to open the airway (Class IIa – LOE 4). In either shallow or deep water, if two or more rescuers are present, or a single rescuer is equipped with a floatation device, the victim should then be checked check for breathing. In the absence of spontaneous breathing, rescue breathing should be carried out for approximately one minute. If breathing IS restored, the victim's airway should be kept open during recovery to dry land. Only a brief stop should be made to monitor breathing and restart rescue breathing if necessary. If breathing IS NOT restored or there is no circulation, the rescuer should recover the victim to shore without further attempts at rescue breathing (2) (LOE 4). Rescuers should not check victim's pulse or start compressions while in the water. Cardiac compression in the water has been shown to be ineffective and pulse checks are both unreliable and slow the rescue process; even if CPR is necessary, this may place the victim in further danger of aspiration of water and needlessly tire the rescuer (LOE 5). After successful resuscitation the victim should be kept under observation for 5 to 10 minutes in case breathing stops (LOE 5). Even trained lifeguards cannot always accomplish IWR technique effectively, especially in deep water (LOE 4).

Discussion: The process of evidence-based medicine recommendations adopted by ILCOR for the 2005 CoSTR process allows national resuscitation councils to draw up their own guidelines according to their individual needs. The IWR worksheet was used differently by the European Resuscitation Council (ERC), the American Heart Association (AHA) and other organizations when producing practical guidelines. Lifeguards should be well trained in IWR. The decision whether to start IWR or to recover the victim as quickly as possible to the shore is a matter of judgment, which should take into account daily beach conditions, and distance from shore,

as well as lifeguard fitness, experience, skill and self-confidence. (2). An algorithm has been produced summarizing IWR (algorithm 1).

Four learning objectives

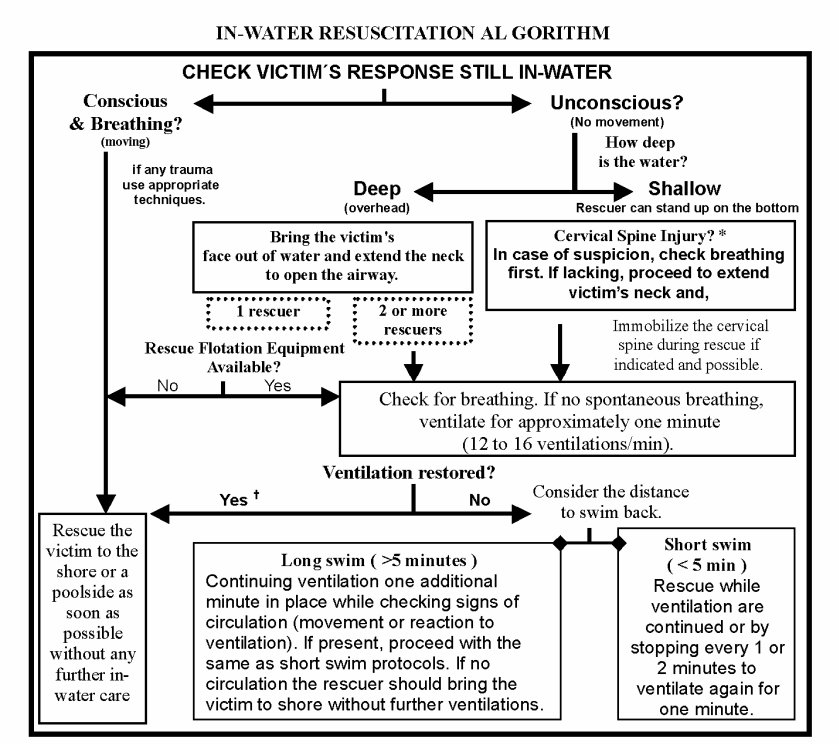
1. Why the new recommendation?
2. When to do it?
3. How to do it?
4. What are the benefits and the pitfalls?

References:

1. Szpilman D Worksheet to 2005 Guidelines - American Heart Association (AHA) & International Liaisson Comittee for Resuscitation (ILCOR), Budapest, September 2004.
http://circ.ahajournals.org/cgi/content/full/CIRCULATIONAHA.105.170522/DC266

2. Szpilman D. & Soares M., In-water resuscitation— is it worthwhile? Resuscitation 63/1 pp. 25-31 October 2004.

Algorithm 1



Algorithm 1. Recommendations for in-water resuscitation—if breathing is not restored after 1 min of ventilation in shallow water, proceed with short swim procedure. (*) In-water cervical immobilization is indicated in a victim who is highly suspected of trauma, or is in trouble in shallow water for unknown reasons. In unconscious victims the time spent on immobilizing the cervical spine could lead to a cardiopulmonary deterioration and even death. Routine cervical spine immobilization of all water rescues, without reference to whether a traumatic injury was sustained, is not recommended [19]. (†) If ventilation is restored proceed rescuing without any further care other then a quick stop to monitor breathing and restart mouth-to-mouth if necessary.

Principal Author:
Dr David Szpilman, MD
Medical Staff of Drowning Resuscitation Centre and Aeromedical Helicopter - Fire Department of Rio de Janeiro (CBMERJ) – GMAR; Head of Adult Intensive Care Unit - Hospital Municipal Miguel Couto; Member

of Brazilian National Resuscitation Council; Founder, Former President and Medical Director of Brazilian Life Saving Society – SOBRASA; BOD Member and Medical Committee of International Life-Saving Federation; BOD Member of Sports Medical Council;
Av. das Américas 3555, Bloco 2, sala 302. Barra da Tijuca - RJ - Brazil 22631-004
Phones 055 21 99983951
Phone/Fax 055 21 33262378 or 24307168
Email: <david@szpilman.com>
Internet: <www.szpilman.com>

Co-author: Dr Anthony J Handley MD FRCP - Honorary Consultant Physician & Cardiologist, Essex Rivers Healthcare Trust, Colchester, UK; Chief Medical Adviser, Royal Life Saving Society UK; Honorary Medical Officer, Irish Water Safety.