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KFT Recommendation for Action 3: Training on the use of resuscitation bags during CPR measures, especially in the context of the SARS-CoV-2 pandemic.

Version No. 2 / Status 02 Jan. 2021

Preamble:

In principle, it must be stated that the need for active ventilation by means of a resuscitation bag in diving accidents (decompression accidents / pulmonary hyperbaric traumas) occurs rather rarely and in most cases spontaneous breathing is maintained. The need for active ventilation is more frequent, particularly in drowning accidents. Both the KFT recommendation for action "**KFT recommendation for action 2: Use of scientific divers in the context of the SARS-CoV-2 pandemic**" and many other handouts on the topic of "cardiopulmonary resuscitation" currently recommend the use of a resuscitation bag. Unfortunately, the use of the medical product "resuscitator" is not trained in normal CPR courses, so that scientific divers are in a dilemma between recommendation and reality. The KFT has therefore developed a corresponding recommendation in close consultation with the medical expert of the Research Diving Examination Board (Dr. U. van Laak) and occupational physicians. It is intended to supplement the respective product information and operating instructions with practical information and tips for the training and use of resuscitation bags during CPR measures in the scientific diving environment.

Basic procedure for training in the use of resuscitation bags during CPR:

It is generally recommended that training on the use of resuscitators during CPR is included in the recurring CPR training courses in accordance with DGUV 101-023 section 5.5.4. Most approved providers of such courses (e.g. DRK, Malteser Hilfsdienst, etc.) are able to easily integrate a corresponding module into a conventional first aid course and usually offer specific courses on request. Ideally, the system used in the respective diving group should be used so that the use of the resuscitation bag in combination with the oxygen supply of the respective specific oxygen emergency kit can also be practised.

If such training is not available, but there is an immediate need for it (e.g. because of an upcoming scientific diving mission), experts consider demand-oriented in-house training as a possible option for the area of "scientific diving".

A suitable training manikin with lung function simulation should be available internally for this purpose, as well as a corresponding emergency case with resuscitation bag, which enables normobaric oxygen administration via the resuscitation bag. The application should be demonstrated on the manikin by a trained first aider and then be practised by the participants of the in-house training under supervision in sufficient time. The digital sources mentioned below are suitable as a basis for in-house training and practice.

Ideally, ventilation is carried out via the resuscitation bag in a two-helper system, whereby the current recommendation of the German Council for Resuscitation recommends that one person presses the sealing rim of the breathing mask onto the mouth-nose area of the person to be resuscitated with both hands (double C-grip). The second caregiver alternates between two ventilations via the resuscitator and 30 chest compressions according to current guidelines. The change between ventilation and cardiac massage should be done as quickly as possible so that the minimal circulation is maintained.

When performing the C-grip (thumb and index finger enclose the round connection of the mask, the other fingers grip under the mandibular rim of the person to be ventilated (little finger hooks under the mandibular arch)), it should be noted that the ventilation mask is not pressed onto the patient's face, but rather that the face is pulled towards the ventilation mask with the middle and ring finger while over stretching the head. In this way, optimal tightness can be achieved while at the same time slightly overstretching the throat area.

It makes sense to fix the mask in place using a head spider (if available), as this makes it much easier for the assisting person to press the mask against the face.

Basically, it is recommended that the practical application of this technique is practised in-house once a year. Training and use of a Guedel tube, which can and may also be used easily and safely by medical laypersons, is also recommended. This short tube prevents the trachea from being obstructed by the loose base of the tongue when the patient is unconscious, so that the patient's head does not have to be stretched so far during bag ventilation. It is also recommended to shrink-wrap pictures / pictograms for use and to display them clearly in the emergency case when it is open.

Online Information in German (links active on 31.12.2020)

- <http://storm4life.de/wp/lehre/tutorials/maskenbeatmung/> - Mask ventilation with C-handle (single and double)
- <http://www.san-erlangen.de/VirtuelleSanArena-Erlangen-Html5/html/Topicf3b0736de5a54c7098e4994157362387.html> - Adult ventilation with mask and C-handle resuscitator (single and double)
- <https://www.grc-org.de/arbeitsgruppen-projekte/21-1-COVID-19> - Recommendations of the German Council on Resuscitation for Cardiopulmonary Resuscitation in the COVID-19 Pandemic

Training video:

- <https://www.youtube.com/watch?v=5Zllk6VZoz4> - Mask ventilation via ventilation bag with C-handle (single and double), use of the Guedel tube

Additional Online Sources:

- https://www.grc-org.de/files/ArticleFiles/document/ERC_covid19_German_spreads_V3_20200606.pdf - Guidelines of the German Council on Resuscitation for First Aid in the COVID-19 Pandemic

This recommendation for action is a living document that is updated in parallel with the development of scientific knowledge. The current version as well as further sources of information on COVID-19 can be found on the KFT homepage at www.forschungstauchen-deutschland.de.