

When absolute certainty may not be possible: Criteria to determine death by mountain rescue teams

December 14 2020



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The International Commission for Mountain Emergency Medicine (ICAR MedCom) convened an expert medical panel to develop evidence-based criteria that allow for accurate determination of death in mountain

rescue situations. These recommendations appear in *Wilderness & Environmental Medicine*.

Activities in remote [mountain](#) areas are associated with increased risk of critical injury or fatality. Medical emergencies in the wilderness result in worse outcomes than those that occur where help is more accessible. For example, in the mountain environment, hazards such as rockfalls, avalanches, bad weather or visibility, and low oxygen levels at high altitudes limit rescue capacity and safety. In these situations, especially if close physical examination of an apparently lifeless person is prevented or examination by an authorized person cannot be accomplished, it can be difficult to be absolutely certain that [death](#) has occurred.

Guidelines for the determination of death exist, but proper use can be difficult. When mountain rescuers without specific medical knowledge, training, and experience are the first to reach the victim, many factors can be misleading. The ICAR MedCom criteria have been developed to triage decision making to prevent any mistakes during this sometimes difficult task.

"ICAR MedCom brought together a panel of physicians and a [forensic pathologist](#) to conduct an extensive literature review to arrive at criteria allowing accurate determination of death even in extreme situations," explained lead author Corinna A. Schön, MD, forensic pathologist from the Institute of Forensic Medicine in Bern, Switzerland, and ICAR MedCom member. "The resulting guidelines will guide rescue teams to differentiate between situations in which interventions like resuscitation can save lives and in which there is no hope of victim survival." The review examined 79 articles identified through PubMed searches on determination of death and related topics.

Recognition of definitive signs of death can be problematic due to the variability in time course and the possibility of mimics. The authors

caution that only clear criteria should be used to determine death from a distance or by laypersons who are not medically trained. Definitive signs of death include dependent lividity (skin discoloration of dependent body parts); rigor mortis (stiffening of the body); decomposition; decapitation and other injuries totally incompatible with life; frozen body (chest not compressible); burial/airway obstruction for more than 60 minutes in avalanche victims with asystolic cardiac arrest; observed water submersion for more than 90 minutes; and incineration of all visible body surfaces). The absence of vital signs alone is not definitive. In some situations, a person with no vital signs can be resuscitated.

Because there is international and regional variability in legal regulations, mountain rescuers should be familiar with the applicable regulations in their own areas and should implement specific procedures for determination of death and the management of the event.

Dr. Schön noted, "The safety of rescue teams must always take priority in decisions about whether to undertake a rescue." She added that an incorrect determination of death and a failure to perform resuscitation that lead to a probably avoidable death may have terrible emotional and legal consequences for both next of kin and rescuers.

More information: Corinna A. Schön et al, Determination of Death in Mountain Rescue: Recommendations of the International Commission for Mountain Emergency Medicine (ICAR MedCom), *Wilderness & Environmental Medicine* (2020). [DOI: 10.1016/j.wem.2020.06.013](https://doi.org/10.1016/j.wem.2020.06.013)

Provided by Elsevier

Citation: When absolute certainty may not be possible: Criteria to determine death by mountain rescue teams (2020, December 14) retrieved 15 May 2024 from

<https://medicalxpress.com/news/2020-12-absolute-certainty-criteria-death-mountain.html>

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