

## NEWS RELEASE FOR IMMEDIATE RELEASE

**Media contact:**

Theresa Monturano

Elsevier

+1 215 239 3711

[hmsmedia@elsevier.com](mailto:hmsmedia@elsevier.com)

### **When absolute certainty may not be possible: Criteria for determination of death by mountain rescue teams**

*Evidence-based best practices for making life and death medical decisions in less than ideal circumstances, developed by an international panel and published in Wilderness & Environmental Medicine*

**Philadelphia, December 14, 2020** – 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](#), published by Elsevier.

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.



Caption: To present criteria that allow for accurate determination of death in mountain rescue situations, the International Commission for Mountain Emergency Medicine convened a panel of mountain rescue doctors and a forensic pathologist (Credit: iStock.com/ MichaelSvoboda).

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.

---

### **Notes for editors**

The article is "Determination of Death in Mountain Rescue: Recommendations of the International Commission for Mountain Emergency Medicine (ICAR MedCom)," by Corinna A. Schön, MD; Les Gordon, MD; Natalie Hölzl, MD; Mario Milani, MD; Peter Paal, MD, MBA; and Ken Zafren, MD (<https://doi.org/10.1016/j.wem.2020.06.013>). It appears in *Wilderness & Environmental Medicine*, volume 31, issue 4 (December 2020), published by [Elsevier](#).

The article is openly available at [https://www.wemjournal.org/article/S1080-6032\(20\)30123-X/fulltext](https://www.wemjournal.org/article/S1080-6032(20)30123-X/fulltext).

Full text of the article is also available to credentialed journalists upon request. Contact Theresa Monturano at +1 215 239 3711 or [hmsmedia@elsevier.com](mailto:hmsmedia@elsevier.com) to obtain copies. Journalists wishing to interview the authors should contact Corinna A. Schön, MD, at [corinna.schoen@irm.unibe.ch](mailto:corinna.schoen@irm.unibe.ch).

### **About *Wilderness & Environmental Medicine***

*Wilderness & Environmental Medicine* (WEM), the official journal of the Wilderness Medical Society, is a peer-reviewed international journal for physicians practicing medicine in austere environments. It is devoted to original scientific and technical contributions on the practice of medicine defined by isolation, extreme natural environments, and limited access to medical help and equipment. Examples of topics covered include high altitude and climbing; hypothermia and cold-induced injuries; diving; drowning; hazardous plants, reptiles, insects, and marine animals; animal attacks; search and rescue. [www.wemjournal.org](http://www.wemjournal.org)

### **About the Wilderness Medical Society**

Founded in 1983, the Wilderness Medical Society (WMS) is the world's leading organization devoted to wilderness medical challenges. Wilderness medicine topics include expedition and disaster

medicine, dive medicine, search and rescue, altitude illness, cold- and heat-related illness, wilderness trauma, and wild animal attacks. WMS explores health risks and safety issues in extreme situations such as mountains, jungles, deserts, caves, marine environments, and space. For more information on the WMS, please visit us at [www.wms.org](http://www.wms.org).

### **About Elsevier**

[Elsevier](http://www.elsevier.com) is a global information analytics business that helps scientists and clinicians to find new answers, reshape human knowledge, and tackle the most urgent human crises. For 140 years, we have partnered with the research world to curate and verify scientific knowledge. Today, we're committed to bringing that rigor to a new generation of platforms. Elsevier provides digital solutions and tools in the areas of strategic research management, R&D performance, clinical decision support, and professional education; including [ScienceDirect](#), [Scopus](#), [SciVal](#), [ClinicalKey](#) and [Sherpath](#). Elsevier publishes over 2,500 digitized journals, including [The Lancet](#) and [Cell](#), 39,000 e-book titles and many iconic reference works, including [Gray's Anatomy](#). Elsevier is part of [RELX](#), a global provider of information-based analytics and decision tools for professional and business customers. [www.elsevier.com](http://www.elsevier.com)