

The ICAR MEDCOM

Commission for Mountain Medicine
of the International Commission for Alpine Rescue

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ICAR MEDCOM RECOMMENDATION

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Version	1.0
Title	Management of Multi-Casualty Incidents in Mountain Rescue: Evidence-Based Guidelines of the International Commission for Mountain Emergency Medicine (ICAR MEDCOM)
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1. Background

Multi-Casualty Incidents (MCI) occur in mountain areas. Little is known about the incidence and character of such events, and the kind of rescue response. Therefore, the International Commission for Mountain Emergency Medicine (ICAR MEDCOM) set out to provide recommendations for the management of MCI in mountain areas.

2. Recommendations

Nr.	Recommendation	Grade
1	Identifying a MCI. An MCI should be recognised and the appropriate rescue organizations and hospitals alerted as soon as possible	1C
2	Assessing Safety. Safety of the rescuers is the highest priority	1C
3	Initial response. Initial responses should focus on setting up a command and control structure, triage and rapid life or limb saving interventions	1C
4	Leadership and command. The Medical Commander should be trained in disaster medicine and in mountain rescue. On site the Medical Commander and leaders of the involved rescue services should be located at the same site to optimise cooperation and all should be easily identifiable	1C
5	Ensuring effective communications. An effective communication structure should be implemented to support command and control	1C
6	Triage. Efficient triage tools adapted to mountain pathologies, should be implemented	1B
7	Organizing evacuations. Casualties should be evacuated to a safe area and then transferred to medical facilities appropriate to patient's medical needs	1C
8	Identification and traceability. Tools that enable clear Identification and tracking of casualties should be available for mountain MCIs	1B
9	Learning from experience. MCIs in mountain areas should be analysed after the fact and recommendations for changes in practice should be proposed and published	1B
10	Planning and training. Standard operation procedures (SOPs) should be available, well known and implemented with regular training involving collaboration between emergency services	1B
11	The use of helicopter. Helicopters with appropriate mountain rescue capabilities are often useful in MCIs. Coordination of helicopter operations is critical	1B
12	Communication. Effective radio communication should be established to enable rapid and detailed transfer of medical information.	1B
15	Management of uninjured people. Uninjured survivors should be considered as casualties at risk in a mountain environment.	1C
16	Psychological trauma. Immediate or delayed psychological support should be made available to the casualties.	1C
17	Lightning injuries. Lightning victims who are not breathing and who do not have obvious lethal injuries should be resuscitated before victims who have vital signs	1B
18	Avalanches. For a burial time <35 min, extrication is the first priority and medical care should focus on victims with signs of life until enough resources are available to treat additional victims in cardiac arrest. For a burial time 35 to 60 min, no CPR should be started on arrested victims unless enough resources are available. For burial time >60 min, CPR should only be initiated if the airway is patent. The use of a checklist may improve triage and treatment	1B
19	Medical strategy for a group of lost people. The principles of MCI in mountain areas should be applied to groups of trapped or lost people in harsh mountain environments	1C

Literature

Ben-Ishay O, Mitaritunno M, Catena F, Sartelli M, Ansaloni L, Kluger Y. (2016). Mass casualty incidents - time to engage. *World J Emerg Surg* **11**,8.

Blancher M, Bauvent Y, Bare S, Wuyts B, Fillet Y, Brun J, Albasini F, Bouzat P. (2017). Multiple casualty incident in the mountain: Experience from the Valfrejus avalanche. *Resuscitation* **111**,e7-e8.

Fattah S, Rehn M, Reierth E, Wisborg T. (2013). Systematic literature review of templates for reporting prehospital major incident medical management. *BMJ Open* **3**.

Johnsen AS, Fattah S, Sollid SJ, Rehn M. (2013). Impact of helicopter emergency medical services in major incidents: systematic literature review. *BMJ Open* **3**,e003335.

Kottmann A, Blancher M, Spichiger T, Elsensohn F, Letang D, Boyd J, Strapazon G, Ellerton J, Brugger H. (2015). The Avalanche Victim Resuscitation Checklist, a new concept for the management of avalanche victims. *Resuscitation* **91**,e7-8.

Thordardottir EB, Valdimarsdottir UA, Hansdottir I, Resnick H, Shipherd JC, Gudmundsdottir B. (2015). Posttraumatic stress and other health consequences of catastrophic avalanches: A 16-year follow-up of survivors. *J Anxiety Disord* **32**,103-11.

3. Original Recommendations

This work was published in the following journal:

High Altitude Medicine and Biology (HAMB)

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Mary Ann Libert, Inc

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4. Original Key Literature

Bogle LB, Boyd JJ, McLaughlin KA. (2010). Triaging multiple victims in an avalanche setting: the Avalanche Survival Optimizing Rescue Triage algorithmic approach. *Wilderness Environ Med* **21**,28-34.

Brugger H, Durrer B, Elsensohn F, Paal P, Strapazon G, Winterberger E, Zafren K, Boyd J, Icar M. (2013). Resuscitation of avalanche victims: Evidence-based guidelines of the international commission for mountain emergency medicine (ICAR MEDCOM): intended for physicians and other advanced life support personnel. *Resuscitation* **84**,539-46.

Tomazin I, Ellerton J, Reisten O, Soteras I, Avbelj M. (2011). Medical standards for mountain rescue operations using helicopters: official consensus recommendations of the International Commission for Mountain Emergency Medicine (ICAR MEDCOM). *High Alt Med Biol* **12**,335-41.

Torres B. (2004). MCI in the clouds: the beauty of the clouds & terrain of the Grand Teton masks the obstacles rescuers faced in the response, care & transport of multiple victims of a lightning strike. *JEMS* **29**,34-6, 38, 40 passim.

Zafren K, Durrer B, Herry JP, Brugger H, Icar, Uiaa M. (2005). Lightning injuries: prevention and on-site treatment in mountains and remote areas. Official guidelines of the International Commission for Mountain Emergency Medicine and the Medical Commission of the International Mountaineering and Climbing Federation (ICAR and UIAA MEDCOM). *Resuscitation* **65**,369-72.

5. New Literature 2018 – 2019

Key words “Mass casualty Incident AND Mountain (OR) AND Wilderness (OR) AND Remote areas

Zafren K, Brants A, Tabner K, Nyberg A Pun M, Baysnat B, Boroadman Maeder M (2018) Wilderness Mass Casualty Incident (MCI): Rescue Chain After Avalanche at Everest Base Camp (EBC) In 2015. *Wilderness Environ Med.* **29**, 401-410.

The Grading System of the American College of Chest Physicians

Grade	Description	Benefits vs risks and burdens	Methodological quality of supporting evidence
1A	Strong recommendation, high-quality evidence	Benefits clearly outweigh risks and burdens or vice versa	RCTs without important limitations or overwhelming evidence from observational studies
1B	Strong recommendation, moderate-quality evidence	Benefits clearly outweigh risks and burdens or vice versa	RCTs with important limitations or exceptionally strong evidence from observational studies
1C	Strong recommendation, low-quality or very low-quality evidence	Benefits clearly outweigh risks and burdens or vice versa	Observational studies or case series
2A	Weak recommendation, high-quality evidence	Benefits closely balanced with risks and burdens	RCTs without important limitations or overwhelming evidence from observational studies
2B	Weak recommendation, moderate-quality evidence	Benefits closely balanced with risks and burdens	RCTs with important limitations or exceptionally strong evidence from observational studies
2C	Weak recommendation, low-quality or very low-quality evidence	Uncertainty in the estimates of benefits, risks, and burden; benefits, risk, and burden may be closely balanced	Observational studies or case series

American College of Chest Physicians classification scheme for grading evidence and recommendations in clinical guidelines. RCT, randomized controlled trial.

Source: Guyatt et al. Chest 2006;129:174-81.