



## **MULTI CASUALTY INCIDENTS IN THE MOUNTAINS AND REMOTE AREAS**

### **GENERAL ASPECTS**

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## MULTI CASUALTY INCIDENT IN THE MOUNTAINS:

### Definition

- RESOURCES OF A LOCAL MOUNTAIN RESCUE TEAM ARE OVERWHELMED
- LACK OF TECHNICAL AND MEDICAL RESOURCES

#### Urban MCI

Rapid response  
Usually easy access  
Infrastructural resources  
Highly qualified rescue personnel  
Large number of technical resources  
Robust communication systems  
Rapid evacuation  
Short transport times

#### Mountain MCI

Delayed response  
Isolation, technical access  
Environmental exposure  
No infrastructure  
First responders at scene  
Limited (no) technical resources  
Difficult communications  
Technical extrication (ropes, pulleys)  
Prolonged transport  
Limited transport facilities



## PRINCIPLES OF MANAGEMENT A MCI IN THE MOUNTAINS

Must be adapted to mountain rescue incidents

Preparedness of mountain rescue teams:

Conceptual framework:

- Appropriate planning

- Equipment planning

- Communication planning (radio, relay station...)

- Strategy for possibly expected incidents

- Risk assessment

- Training

Koenig and Schultz , disaster medicine , Second edition 2016. P XVII)



**Recognition:**

assessment of emergency situation (MCI +/-)  
decision to be declared immediately  
appropriate communication to responding organizations

**Safety:**

first priority in all phases  
risk assessment for access  
delayed response until risk is acceptable  
pressure from outside (media, authorities...)



**Initial response:**

Command and control structure  
Trained medical provider in the command structure  
(medical commander)  
Overall medical assessment  
Cooperation with involved services (ski lift, witness...  
allocate rescuers for initial assessment  
triage all patients

No advanced medical care  
Rapid interventions only



### Leadership and command:

medical coordination by medical commander  
coordination of all medical aspects  
coordination with other teams → best plan of action

### Requirements:

trained in disaster medicine  
trained in mountain emergency medicine

co location with incident commander  
joint making decision  
clear identification on site



**Triage:**

individual care → best outcome for the most victims

**Medical commander:**

allocate medical providers for triage  
 overview of all patients  
 prioritize treatment and transport  
 adapted to location, environment and transport capacity  
 allocate medical resources



**Tools:**

Triage systems: quick and easy, usable in bad weather  
 e.g. avalanche resuscitation checklist  
 adapted to the specific environment  
 trained by rescuers



**Effective Communication / and orders Rules :**



## Organization of evacuation:

- Reliable information on number and types of casualties
- priority of evacuation depending on technical considerations
- identification of most appropriate medical centre
- pre notification of hospitals

- Clearing area for victims before evacuation
- shelter

- Reassessment and further treatment

- Fluids for exhausted victims

- Protection from cold (consider all victims hypothermic)

- Assess possibly walking victims

- Walking people need do be guided by experienced rescuers

### Identification and traceability:

- usually large disaster area
- different registration areas
- people trying to leave site of the accident

- wrist straps
- triage tag

- all victims must be assessed and identified

Written recording of environmental and logistical impact  
on decision making by the medical commander is important (legal issues)

### Learning from experience and training

- institutional memory** (need of interagency working, inadequate training, poor planning, ineffective communication, lack of leadership...)

### Implementation of Standard operation procedures





## TIME – TERRAIN – WEATHER

Natural hazards determining pace of mission  
rockfall, avalanches, weather changes, visibility

Priority of rapid evacuation over medical treatment

## HELICOPTERS:

transport of rescue teams  
evacuation of patients  
balance of medical evacuation and logistical needs  
Helicopters may save lives (Bekelis et al, 2015)

## COMMUNICATION:

limited telephone networks and radio communication  
different channels and frequencies by different teams  
medical coordination may be live saving

## MANAGEMENT OF UNINJURED VICTIMS

uninjured people are casualties or “walking wounded”

evacuation to a warm and safe place

psychological trauma

exhaustion

prevention of deterioration

crisis intervention





### Lightning injuries

“resuscitate the apparently dead first” - reverse triage

(Cooper Wilderness Medicine)

prolonged ventilatory support until return of spontaneous ventilation

### Avalanches:

lack of application of current guidelines

ICAR MEDCOM avalanche resuscitation checklist

### Trapped group of people:

Tend to leave site of the incident

Injuries during evacuation

unclear number of victims → search operations

strictly enforced regulations for mass and sport events



## CONCLUSION

Mountain rescue team should be familiar with the MCI principles

They should be prepared

One person = One role

Training

Interagency cooperation (Rescue teams, Authorities, HEMS)

Leadership organization

Planification