



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:

Conceptional 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 life 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)

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Leadership organization

Planification