MEDICAL STANDARDS FOR MOUNTAIN RESCUE OPERATIONS USING HELICOPTERS

Official Consensus Recommendations of the International Commission for Mountain Emergency Medicine (ICAR MEDCOM)

Iztok Tomazin, John Ellerton, Oliver Reisten

ICAR Slovakia 2010
To establish medical recommendations for safe and effective Helicopter Emergency Medical System (HEMS) in mountain rescue.

ICAR Slovakia 2010
For the severely injured or ill patient, SURVIVAL IS TIME DEPENDENT. Helicopters can provide significant shortening of the times involved in mountain rescue.
The north face of Rjavina in Julian Alps: hanging climber with fractured pelvis

SCOOP AND RUN
“STAY AND TREAT”
“STAY AND TREAT”
THE FUNDAMENTAL PRINCIPLES OF (H)EMS IN MOUNTAINS

• Safety is most important!
• Speed and quality of HEMS are critical factors in patient’s ultimate outcome
• Cooperation amongst all involved services
• Helicopter characteristics for safe and effective work
• Appropriate, light and portable medical and rescue equipment
• Appropriate continuous training and education of all involved personnel are of utmost importance.
• “Golden hour” (time from the accident to the hospital)
• Helicopter with a mountain rescue competent crew should be dedicated to HEMS within a region
• Ideally, every medical emergency within the region should be reached in less than 20 minutes
• Role of Medical Director (quality management, clinical governance, education etc.)
• UIAA-ICAR-ISMM Mountain Emergency Medicine diploma
• Safety Officer responsible for a Safety Management System
• Facilities for rest, pre-mission planning and training
• Appropriate rescue and medical equipment etc.
INTEGRATION AND COOPERATION

- HEMS operating in the mountains should be integrated within the EMS and other emergency systems of the particular area.
- Strategies for cooperation across international boundaries are essential.
FINANCE should not compromise safety nor basic principles:

- service is for everyone according to medical and rescue need
- regardless of nationality, insurance or other influences
DISPATCHING

- Dispatch centers should be contacted by a widely publicized internationally recognized calling number (112, 911...)
- Integrated centers for all emergency medical and rescue calls are recommended
- Dispatcher should be aware of specific mountain rescue problems
- Decision to dispatch HEMS should be between the dispatch center and HEMS team, and should exclude unnecessary bureaucratic steps
- The final decision to perform the mission remains with the HEMS team
- The nearest qualified HEMS team to the site of the mountain accident, regardless of administrative boundaries, should be dispatched
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TIME

Survival is time dependant!

TIME IS LIFE
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**TIME – medical perspective**

Survival is time dependant!

- HEMS activation time (from emergency call to take off) of < 5 minutes
- approach time (from emergency call to HEMS team reaching the victim) of < 20 minutes
- minimal standard should be 'as fast as feasible without compromising safety'
- Safety supersedes medical considerations at all times!
Tragedija v Turski gori

Iztok Tomazin
• Robust two-way communication between HEMS crewmembers, dispatching centres, other EMS and the incident site is essential for safety, efficiency and medical outcome

• personal helmet with an integrated two-way radio headset allowing communication at all times.

• international recognized hand signals
TEAM - QUALIFICATION

- All members, including medical personnel, should be trained and regarded as members of the air crew
- Leadership qualities in their area of expertise
- Training in all aspects of mountain rescue and safety, and cooperation with terrestrial teams is essential
- The operator should ensure medical staff are trained in its safety management system and CRM
- Local knowledge is essential
TEAM - LOCATION

• Ideally all team members are present at the HEMS base ready for immediate activation

• Minimum standard: it may be appropriate, depending on the service, for rescue and medical members to be on call with an appropriate activation time
“Air rescue optimal crew” concept allows for different persons to perform the tasks required, permitting flexibility in crewing depending on the nature and complexity of the mission, and the carrying capacity of the aircraft.

Specific criteria and qualifications are recommended for the tasks.

It is strongly recommended that medical personnel assess a casualty at the site of the accident except when the terrain is extremely dangerous and beyond the competence of the medical crewmember.
### 'AIR RESCUE OPTIMAL CREW MEMBER' CONCEPT MEDICAL PERSPECTIVE

<table>
<thead>
<tr>
<th>Task</th>
<th>Crewmember</th>
<th>Qualifications</th>
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<tbody>
<tr>
<td>MEDICAL</td>
<td>Doctor, Advanced Life Support (ALS) paramedics, EMT or nurse. Ideally a BLS-trained EMT, nurse or paramedic should assist the ALS-trained member.</td>
<td>According to relevant regulations and ICAR MEDCOM recommendation no. 3. This includes the ability to perform mountain and mountain rescue techniques as well as appreciate mountain safety. A higher qualification in Mountain Emergency Medicine should be aspired to (MEM diploma).</td>
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<tr>
<td>RESCUE</td>
<td>Mountain rescue (MR) specialist or mountain guide trained in MR. A minimum of BLS-level first aid but preferably higher training should be required.</td>
<td>A high level of experience, knowledge and proficiency in mountaineering and mountain rescue techniques.</td>
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<tr>
<td>SPECIAL TASKS</td>
<td>Medical specialty personnel...</td>
<td>Regular education and training in helicopter safety and rescue.</td>
</tr>
<tr>
<td>Appropriate activation times should be predefined</td>
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</tbody>
</table>
Medical personnel (doctor) to the site of the accident!
QUALIFICATION FOR EMERGENCY DOCTORS IN MOUNTAIN HELICOPTER RESCUE

- Physical and mental fitness
- Trained mountaineer
- Comfortable in exposed situations
- Well trained in mountain helicopter rescue
- Able to work under extreme conditions
- Experienced emergency doctor
- Familiar with mountain medicine
The helicopter must be able to:

• bring the HEMS team to the incident site with all necessary rescue and medical equipment
• pick up the casualty and HEMS crewmember(s) from the incident site
• provide adequate space and equipment for performing medical treatment and monitoring on board
From the medical point of view, helicopter is only flying ambulance vehicle.
1. Bring HEMS team to the incident site with all necessary rescue and medical equipment
2. Pick up the casualty and HEMS crewmember(s) from the incident site
2. Pick up the casualty and HEMS crewmember(s) from the incident site
3. Provide adequate space and equipment for performing medical treatment and monitoring on board
MEDICAL EQUIPMENT

- Should meet national and international emergency medicine and other standards
- Must be light, portable (so as to be brought to the patient) and robust
- Must be safely secured during the mission
- Specialist medical equipment and drugs to manage specific mountain related emergencies (hypothermia, altitude illness, snakebite...)
- Ergonomic and compartmentalized medical rucksacks are recommended.
Portable medical equipment

Medical rucksack
- Injection set
- Infusion set
- Intubation set
- ECG
- Set for coniotomy
- Aspirator
- Adjustable cervical collars
- O2 cylinder
- Tympano thermometer
- Pulse oximeter
- Glucometer
- Set for coniotomy
- Aspirator
- Ampullarium
- RSI drugs
- Used needles depot
- Intubation set
- Injection set
- Infusion set
Stethoscope
Soft cervical collar
Bandage material, gloves, disinfection etc.
Various drugs and other items: intraosseous injection surgical material...
Pneumatic and SAM splint
Suction catheters
Laryngeal tube
Blood pressure monitor
Bag mask ventilation devices
O2 masks
Ventilation devices
RESPECT

FRIENDSHIP

CONFIDENCE
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THANK YOU FOR YOUR KIND ATTENTION

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