



International Commission on Alpine Rescue- Chamonix, France 2018 70th Anniversary ICAR

Medical Commission Report
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Called to order by ICAR MEDCOM President, Dr. John Ellerton

The Medical Commission (MEDCOM) meeting in Chamonix started with typical business such as reviewing minutes from Spring Tromso, Norway, meeting and review of upcoming events. The ICAR congress will be in Zakopane, Poland, in 2019, Thessalonica, Greece in 2020, Austria 2021 and possibly in Switzerland in 2022. These are typically in October. Spring MEDCOM meetings will be in Bolzano, Italy April 4, 5, 6, 2019 and in Christchurch, New Zealand, in 2020.

Various short discussions about the upcoming World Congress of the International Society of Mountain Medicine in Kathmandu in November 2018. Diploma in Mountain Medicine (DiMM) instructor training available.

There is discussion about updating the MEDCOM internal regulations. Goals are to streamline, take out confusing language and, hopefully, serve as a template for the other commissions. Changes being considered include definitions of participants, conflict of interest/commercialization, finances, elections of presidents, and similar updated rules to conform with ICAR.

Review of Recommendations, Dr. Matthias Jacob.

ICAR MEDCOM has published many recommendations to ICAR members on a variety of medical and rescue topics. The MEDCOM has been very active historically and is responsible for half of all ICAR recommendations. The oldest is now 22 years old with 17% <5 years old. The goal is for future recommendations to be based on peer reviewed published articles. Older recommendations should be updated by original authors if possible. Out of date recommendations should be removed. All ICAR recommendations should be open access to all.

Psychological Stress, Dr. Alison Sheets, Marie Norgren RNA, Dr. Itzok Tomazin.

A MEDCOM group has been developing a questionnaire for ICAR member teams to determine incidence of awareness, training and treatment for rescuers suffering stress injury. Research findings and details of programs including "Responder Strong" from Colorado, were presented. Areas of further development including psychological first aid training and stress injury prevention. There is significant variability in mental health resources available for first responders. Our understanding of mountain rescuers specific stressors and

susceptibility to stress injury needs more research. The concept of “operational readiness” in relation to job performance in search and rescue operations is borrowed from the American military and provides common language to address these issues. The topic of mental health and stress induced injuries needs to be destigmatized.

READY (Green)	REACTING (Yellow)	INJURED (Orange)	ILL (Red)
<u>DEFINITION</u> <ul style="list-style-type: none"> • Optimal functioning • Adaptive growth • Wellness <u>FEATURES</u> <ul style="list-style-type: none"> • At one's best • Well-trained and prepared • In control • Physically, mentally, and spiritually fit • Mission-focused • Motivated • Calm and steady • Having fun • Behaving ethically 	<u>DEFINITION</u> <ul style="list-style-type: none"> • Mild and transient distress or impairment • Always goes away • Low-risk <u>CAUSES</u> <ul style="list-style-type: none"> • Any stressor <u>FEATURES</u> <ul style="list-style-type: none"> • Feeling irritable, anxious, or down • Loss of motivation • Loss of focus • Difficulty sleeping • Muscle tension or other physical changes • Not having fun 	<u>DEFINITION</u> <ul style="list-style-type: none"> • More severe and persistent distress or impairment • Leaves a scar • Higher-risk <u>CAUSES</u> <ul style="list-style-type: none"> • Life threat • Loss • Moral injury • Wear and tear <u>FEATURES</u> <ul style="list-style-type: none"> • Loss of control • Panic, rage, or depression • No longer feeling like normal self • Excessive guilt, shame, or blame 	<u>DEFINITION</u> <ul style="list-style-type: none"> • Clinical mental disorder • Unhealed stress injury causing life impairment <u>TYPES</u> <ul style="list-style-type: none"> • PTSD • Depression • Anxiety • Substance abuse <u>FEATURES</u> <ul style="list-style-type: none"> • Symptoms persist and worsen over time • Severe distress or social or occupational impairment

Operational readiness- rescuer should evaluate their own and their teammates “color” or “readiness” prior to every mission.

Survey of illness and injury Search and Rescue England and Wales, Dr. Michael Greene.

Unpublished survey of incidence of illness and injury over a 10-year record review. 20% response rate from 2500 volunteers. About a third had some illness or injury. Falls are the #1 cause of injury, carrying heavy loads is #2.

Medicalization of Mountain Rescue Teams, Dr. Nerin.

Dr. Narin presented a thorough research project to evaluate and report on impacts of specialized mountain and emergency medical training for medical responders working in Spain. It began with a review of the monetary and human costs of mountain related accidents. They included emergency services preparation, evacuation, transport, hospital costs, rehabilitation, lost wages, and long term care. In Aragon, Spain, after initiation of specialized training in Mountain Medicine, they reported a decrease in mortality from 9.3% to 3.5%. There were estimated savings of 175 million euros. The conclusion is that with this specialized training, lives and money are being saved and that it should be continued.

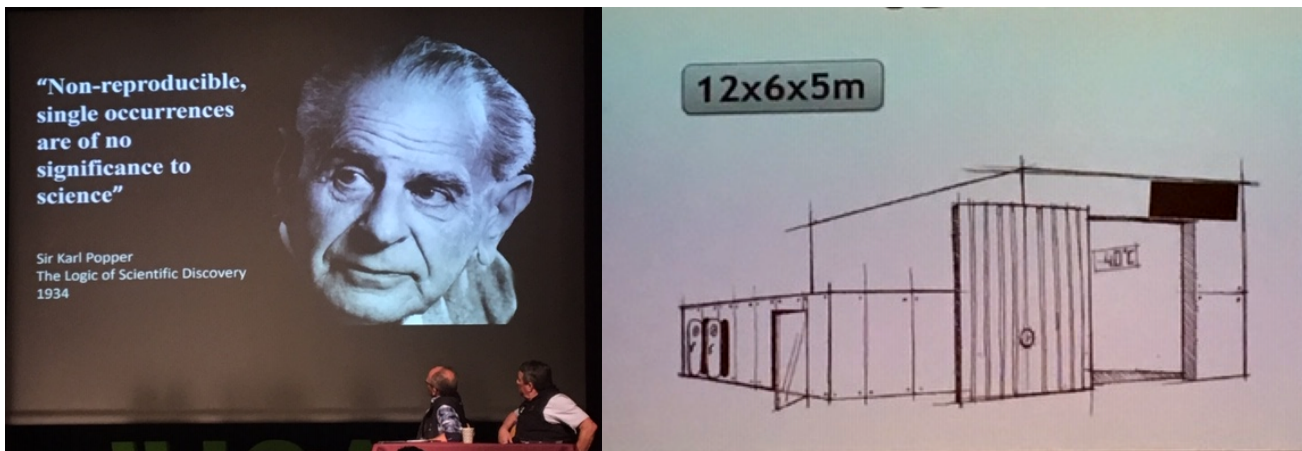
Determination of Death in Mountain Rescue, Dr. Corrine Schon

World Health Organization 2014-Definition of Death: “Death occurs when there is permanent loss of capacity for consciousness and loss of all brainstem functions. This may result from permanent cessation of circulation and/or after catastrophic brain injury.”

This paper is a work in progress and aims to give guidance to non-physicians about when to not initiate resuscitation (CPR). In most countries physicians determine death from a legal standpoint. Terminology may need to change from “determination”, which can be a legal concept, to “recognition of life extinct” (the UK concept for non-physicians). This is an important concept in mountain rescue as further rescue efforts or evacuation decisions are very different for someone undergoing CPR vs evacuation of a deceased individual. Also, this decision-making capability is crucial in multi-casualty incidents.

Push Dose Ketamine Sedation in Mountain Rescue, Dr. Scrimgeour Carron

Dr. Scrimgeour described use of a prefilled syringe to provide Ketamine for both induction and sedation in patients needing intubation. He draws up ketamine in a 250 mg per 25ml concentration and then uses 150 mg for rapid sequence intubation, along with succinylcholine 100mg. He then has two more doses of ketamine, 50 mg, for sedation during evac or hoist operations. Prefilled syringes simplify on scene preparation. Induction and sedation from same syringe. He uses weight-based chart pre-printed. Need to give every 15 minutes to maintain **sedation**.



Terra X Cube- Hermann Brugger

Dr. Brugger discussed the new Terra X Cube opening soon in Bolzano, Italy. The is a building dedicated to research and within the building the precipitation, wind, temperature, barometric pressure can easily be controlled to any climactic condition. This is an amazing facility in that subjects can be at altitude (up to 9000m!) or in any environmental conditions for several weeks without leaving building. Researchers have separate viewing quarters and monitoring capabilities and Dr. Brugger is inviting researchers to propose projects. It is his hope that the quality of research in mountain medicine will be furthered with the Terra X Cube and that reproducibility and the control of variables will be much easier than in traditional field research.

Advanced airway management in hoist and HEMS, Dr. Volker Lischke

Indications for intubation in mountain search and rescue were reviewed including the myriad difficulties and challenges both medical and technical found in our working environment. Often times, when able, intubation will wait until patient is in the helicopter. Sometimes this is not an option and in their research they found significant difficulties using bag-valve-mask ventilation during hoist operations. While mechanical ventilators are an option, they are heavy, poorly adapted to extremes of weather, and can interfere with litter attachments. Pulse oximetry monitoring is mandatory. Good quality manual CPR is difficult or impossible during hoist operations and automated CPR devices may improve quality of CPR *during hoist*. Whichever methods are chosen, Dr. Lischke emphasized that SOP's should be developed and techniques trained PRIOR to any live operations.



Mechanical Chest Compression Devices. Dr. Matthias Jacob

Nearly all CPR studies have obtained data during high quality, manual compressions given by trained personnel. Mechanical CPR devices have not been shown to improve survival and should not routinely replace manual compressions. The use of mechanical CPR devices has been introduced to mountain rescue as CPR during technical evacuations is extremely difficult and quality can suffer. They tested several devices in over snow “evac” and on hoist. They found that mechanical devices may improve quality of CPR during technical evacuations or when there is limited personnel. Hypothermic patients are most likely to benefit. And as Dr. Lischke emphasized in prior presentation, training and standardized operating protocols need to be established prior to field use.

Irish Framework for Mountain Rescue Training, Menzies- There are 11 mountain SAR teams in Ireland, all volunteer, with 272 incidents in 2017. The operating procedures of Mountain Rescue Ireland, including the scope of practice of various levels of medical providers was presented. Programs continue to develop ways for professional pre-hospital providers to utilize their skills when working in a volunteer capacity.

Extreme Helicopter rescues at high altitude in Nepal, Maurizio Folini- This Italian helicopter pilot is performing live external cargo helicopter rescues over 5000m. In Nepal, physicians are seldom available. Crew and pilots must use O₂ over 4000m. “Solo en Volo” was a video shown about his work.

Inhalational Analgesia: Pentrox[®] or Entonox[®] – which is better suited to mountain rescue? Lischke, Gordon, Greene, Zagorski. Volker and others discussed using Pentrox (methoxyfluorane) and Entonox (nitrous oxide) as analgesics in mountain rescue. There is no difference in efficacy, but there are differences in pharmacological properties, methods of administration and ease of use in the field. There are many contraindications to the use of methoxyfluorane and it is currently unavailable in the United States. Nitrous oxide is available and has fewer contraindications but is not widely used in the U.S. EMS or SAR environments.

Registry of Mountain Rescuer Deaths, Ellerton, Tomazin- Joint session with the terrestrial commission to explore the development of a registry of rescuer deaths. This will need to be developed with sensitivity, confidentiality, a central data base, a registry moderator. A working group is needed to start.

Snow Submersion Asphyxia, Dr. VanTilburg- Eight cases of non-avalanche snow asphyxia in North America in 2018 were presented. This mainly occurs in Western North America in deep snow and tree wells. Skiers and snowboarders fall head first, land upside down, and asphyxiate. More information is available on the website: www.deepsnowsafety.com

Avalanche/Hypothermia hospital preparedness video, Kottmann, Ellerton, Hölzl- John Ellerton presented a proposal for a video that would help hospitals be prepared to take care of patients with hypothermia who are transported from the field. By reviewing special techniques and infrequent procedures on video prior to patient arrival, they hope to streamline performance at receiving hospitals.

ICAR Medcom recommendation: Medical quality improvement for avalanche rescue missions, Kottmann, Pasquier- The consensus group of avalanche experts involved in developing the QI indicators held a face-to-face meeting over 4 hours to decide on the final list of indicators. Once the inputs have been assimilated an ICAR recommendation will be produced. This will then be presented to the ICAR Assembly of Delegates.

An ICAR MEDCOM session on mountain emergency medicine education included many short presentations. The session chaired by **Jason Williams** and **Natalie Holzi** began with an update on the International Society for Mountain Medicine (ISMM) World Congress in Katmandu, Nepal given by **Monika Brodmann** of EURAC. With a pre-conference session focusing on training faculty of the International Diploma in Mountain Medicine (DiMM) program. DiMM program faculty will learn new educational methodologies and host a workshop training local Nepalese rescuers. **Luigi Festi** gave an update of the Mountain Emergency Medicine textbook coming out of ICAR. It is in the final stages of editing with hopes of being published by Spring of 2019. **Iztok Tomazin** gave an overview of a mountain rescue book he is hoping to publish with stories from around the globe of mountain rescue cases. **Martin Musi** gave a short presentation about a new DiMM Expedition Specialty course to be held in Latin America run by the University of Colorado. This course is still awaiting final approval by the DiMM. **Borislav Aleraji** then gave a short presentation about the history of Croatian Mountain Rescue.



Photo- Martin Musi

The last remaining hour of the ICAR educational session was dedicated to the **International DiMM regulation and assessment committee**. This committee is composed of representatives from the UIAA, ISMM, and ICAR. They are currently updating the DiMM course regulations as per standard practice every three to five years. New updates may include a standard site visit report for DiMM program accreditation and the addition of new content into the DiMM to include "Death in the Mountains" and "Alpine Sports Accidents" (base jumping, paragliding, etc.). The final draft of the regulation update will be presented at the ISMM meeting in Katmandu in November and ultimately to a vote by the leadership of the medical commissions of UIAA, ICAR, and ISMM.

Pigne d'Arolla Accident 4/29/2018 Cabine de Vignettes- This rescue involved three parties caught out in a storm on the way to the Vignettes hut in Switzerland on the Haute Route near Arolla. Fourteen skiers failed to find the hut in a whiteout and spent the night outside in -5°C with heavy snow and winds of up to 100 k/hr. They were found by hut master the next morning as they were visible from the hut. Seven died, 7 survived with good functional outcome. There were many difficulties with poor weather, multiple helicopters (5), multiple agencies, overwhelmed radio communications, several helicopter hazards including small landing area and overhead wires, and complicated triage and determination of hospital destinations in two different countries. This accident was discussed in the MEDCOM and in the joint sessions and is still under investigation. Overall, an amazing display of mountain search and rescue capabilities and efficiencies and a tragic reminder of the environment we work in.

