



**ICAR Congress – Killarney/Ireland 2015
Presentations All Commissions**

Place: Killarney (Ireland), Brehon Conference Center

Date: October 17, 2015

Time: 8 a.m.

Participants: Member all commissions

Chairman: Kirk Mauthner

Minutes: Fabienne Jelk

**1. R. Richard OCVS, G. Zenruffinen OCVS, P. Fauchère, OCVS: Multi-Victim
Avalanche**

The difficulties of human factors are presented during avalanches with multiple victims. On July 19, 2014 a large avalanche came down. It was an unexpected event and was therefore difficult to deal with. The buried persons did not have avalanche beacons, which was also out of the ordinary. Different avalanche accidents are presented, all with their own difficulties. When there are multiple victims, the intervention is more difficult. Everything has to happen quickly and logistics need to be overcome. Several decisions need to be made. The human factors of each rescuer are influenced by experience, equipment, and risk behavior. All involved face different difficulties. The command center has to fight

- Lack of avalanche knowledge
- Notifications out of the ordinary
- Difficulties localizing the accident site
- Difficulties in communication
- Many rescue organizations involved
- Speed required
- Other incidents happening concurrently
- Anticipate what will be needed (i.e. fueling of helicopters)
- Etc.

There are also difficulties for the rescuers when on the avalanche run-out, including psychologically if the victims are related or known personally or they are children, the time that has passed, transferred stress from the command center, etc.

The pilot is faced with weather, difficult location, difficult accessibility, experience of the rescue team, number of helicopters, rescuers on duty and number of rotations, number of victims and their medical status.

The physicians deal with personal mountain experience, accessibility of the victim, lack of medical and personal equipment, difficult environment for BLS-ACLS, unknown medical status of the victims, no direct communication with the hospital.

Avalanches with multiple victims cause more stress, especially since every minute counts. One has to try to organize the chaos.

Comment: Dominique Létang: Two new recommendations were distributed.
File: 20151017-TER-AVA-AIR-MED-01-MV-Avalanche-Accidents.pdf

2. F. Albasini, GSM, F. Jarry, ANEN: Multi-Victim Col Emile

On April 1, 2015 an avalanche came down on Col Emile near Grenoble. Eleven touring skiers from Austria were involved, two of whom were mountain guides, as well as 3 skiers from the Czech Republic and 4 from Germany. Twelve skiers were buried. Many other skiers were in the area and helped, which created chaos on the avalanche run-out. There were about 30 people on the run-out. Four skiers were completely buried (three were dead and one injured), three were partially buried and in critical condition, one was partially buried in non-critical condition, and four were not buried.

The call came in at 1510 hours. There was a strong wind. Fourteen rescuers were deployed. Medically speaking in such an incident the goal is to save as many lives as possible, which requires an effective rescue chain. There is a difference between the triage the rescuers do and the ones the physicians do. The problem was that the triage had already been done by the first responders since all buried victims had been dug out. It is difficult to change the already started path.

The checklists/equipment the rescue physicians use for the triage are presented. The use of these aids is important. The step from the improvised to the organized rescue is difficult.

The avalanche accident on Col Emile also had language barriers. It was difficult for the rescuers to obtain information from the people that had arrived on the avalanche run-out before them. When multiple victims are involved, the physicians need to switch from emergency medicine to disaster medicine.

Three important factors:

- Human factors
- Luck
- Lack of knowledge

Questions/Comments: None.

File: 20151017-TER-AVA-AIR-MED-02-Avalanche-Col-Emile-PIC.pdf

3. G. Darms, SLF: Avalanche Airbags Efficacy

G. Darms presents a study regarding the efficacy of airbags. The survival depends on the burial depth. The airbag reduces or avoids burial. The study was led by Pascal Nägeli.

How many of 100 buried victims would have survived with an airbag?

Sixty-six avalanche accidents with 233 buried victims were part of the study.

Of the people with airbag

- 20.1% critically buried
- 79.9% non-critically buried
- 11.1% dead

Without airbag

- 47% critically buried
- 53% non-critically buried
- 22.2% dead

Difference: 11.1%

One problem is that some airbags had not been deployed. If that factor were considered, the death rate without airbag would be reduced to 13%. Airbags can be advantageous; however, the effect on survival is smaller than initially believed, and the airbag does not guarantee survival.

The advantages of the airbag are negated when the carrier assumes more risks because of it.

Questions/Comments: None.

File: 20151017-TER-AVA-AIR-MED-03-Airbag_GianDarms_SLF.pdf

4. H. Brugger: CoSTR – Consensus of Science and Treatment Recommendations. European Resuscitation Council, Avalanche Treatment Recommendations 2015

The question is when CPR (cardiopulmonary resuscitation) is started and which patients are transferred to a hospital for ECLS (extracorporeal re-warming). This depends on the burial time (less than/equal to 60 minutes), the presence of an air pocket, body temperature (equal to/greater than 30 degrees), and potassium serum level (higher than 8 mmol/L). If the body temperature is less or the burial time longer but it is in conjunction with an air pocket, CPR and ECLS can still be administered under certain circumstances.

Questions/Comments: None.

File: [20151017-TER-AVA-AIR-MED-04-Brugger-ICAR-ERC-2015-avalanche-guidelines.pdf](#)

5. Marc Blancher: Avalanche Victim Resuscitation Checklist

In 2014 ICAR approved the Avalanche Victim Resuscitation Checklist. How has this worked out in the field ?

In Switzerland the checklist was introduced in the winter 2014/2015. It was utilized in 17 cases.

First experience : It is not easy to use the card for the first time. It was helpful for the physicians. It was often filled out on the way to the hospital ; it would be better to do in the field. When the checklist is used, there is a 20% increase in information. In 100% of the cases the algorithm was respected.

Questions/Comments: None.

File: [20151017-TER-AVA-AIR-MED-05-AVRC .pdf](#)

6. N. Klever, BWB: Rescue Mission Riesending Cave

On June 8, 2015 at 0130 hours there was an accident in the Riesending Cave. The call came in about 12 hours later at 1428 hours. On June 19, 2015 at 1219 hours the patient was on the helicopter being transferred to the hospital. The rescue took 11 days 10 hours 49 minutes. Based on the type of rescue, an organizational chart was established. Communication was a problem. The first information was 12 hours old. There was an attempt at laying a telephone line, but that only worked for the first 300 meters. The best option for communication was the Cave-Link. However, this only allowed for text messages and only from certain stations. Another problem was the transport of the material because the helicopter couldn't land at the site. A landing site had to be built. Several helicopter outfits were involved. There were also logistical problems with the material. The refueling of the helicopters needed to be organized. Medical aid for the victim needed to be ensured as he was suffering from a critical brain injury. Another problem could be the weather; lightning striking the tents, no-fly weather due to a storm. Therefore, pack animals were ordered as a precaution. However, the weather turned out to be good. Other difficulties included the transport of the material within the cave as well as the media interest in the rescue.

Almost every day there was a press conference. Additionally, a professional, mountain-experienced film crew was organized to capture the last moments of the rescue. This material was then made available to the press. The cooperation with the local organizations (helicopter, lodging, meals) worked

very well and so did the international cooperation. Such rescues cannot be done alone.

A total of 641 rescuers were on duty, 202 rescuers were in the cave.

Slogan of the day: Yes we can.

After the victim had been transferred to the hospital, the operation was not yet done. All material had to be removed. Due to the media interest, the cave entrance was fenced. Access is only possible with a key.

Questions/Comments: None.

File: 20151017-TER-AVA-AIR-MED-06-BWB-Riesendinghoehle.pdf

7. Kazue Oshiro, Japanese Society of Mountain Medicine: Mt. Ontake (3067 m) Volcanic Eruption

On September 27, 2014 at 1152 hours the volcano Mt. Ontake erupted. Mt. Ontake is the second highest volcano in Japan. Numerous hikers were in the area at that time. Information needed to be collected first, which was accomplished by helicopter. About 500 rescuers marched to the top of the volcano. The second day about 550 rescuers were about on foot. Military helicopters were deployed the second day. Starting with day 3 the rescuers were flown to the top. Then it began to rain, which made things difficult. The rescuers could hardly walk in all the mud. Day 15: 1525 rescuers! 56 dead. Over the 20-day operational period a total of over 20,000 rescuers had been deployed. Volcanic eruptions cause more deaths than mountain accidents. Rescuers that had been flown to the top had less altitude sickness than the ones who had been on foot. Volcanic eruptions are powerful and violent. There is no time to flee. The closer to the crater, the less the chance of survival. Medical aid takes a smaller role. A volcanic eruption is more a catastrophic event than a mountain rescue. The rescuers have little mountaineering experience. Providing support to the rescuers is imperative.

Questions/Comments: None.

File: No file available.

8. J. Ellerton, MREW: Intermittent CPR

J. Ellerton talks about CPR guidelines. The current guidelines stipulate that in case of cardiac arrest, CPR is to be started and not to be ceased until re-warming. What if CPR is not possible during transport? Interrupt mechanical chest compression or CPR?

He shows results from studies done on animals. Several cases are presented in which CPR was successful. CPR needs to be started immediately and continued if possible. Interruptions in resuscitation are to be minimized.

Mechanical chest compressions are to be started as soon as possible. Interruptions in CPR only for primary accidental hypothermia if continued CPR is not possible. CPR needs to be practiced. The quality of CPR needs to be perfect (200%). Crew resource management is also essential. The material needs to be in working order.

File: 20151017-TER-AVA-AIR-MED-08A-intermittent CPR Ellerton.pdf

9. O. Reisten, OCVS: Modular Personal First Aid Medical Kit for Mountaineering Activities and Improvised Mountain Rescue

Oliver Reisten presents a first-aid kit for alpinists, rescuers, mountain guides, and physicians. Recommendations were worked out regarding this. The kit needs to cover the needs on site before professional help arrives. He shows a basic kit for people with little medical knowledge and an advanced kit for people with some medical knowledge like rescuers and also a medical kit for people with medical training. There is also a difference in what the kit is being used for; expedition, trekking in tropics, etc.

Questions/Comments: None.

File: 20151017-TER-AVA-AIR-MED-08B-first_aid.pdf

10. Mary Walsh, MRI: Reek Sunday

On Reek Sunday (St. Patrick) each year a pilgrimage to Croagh Patrick occurs. Croagh Patrick stands 764 meters and is Ireland's holy mountain. It is the last Sunday in July. Up to 30,000 people ascend the mountain. Despite this year's pilgrimage being cancelled due to strong winds, 5000 people still went. Numerous organizations, including all 12 Irish mountain rescue teams, need to be called upon to ensure the safety of the pilgrims. The difficulty is the lack of equipment as well as the lack of mountain experience of most pilgrims; sometimes they do not even wear shoes. The weather can also be a problem; rain and fog.

Question: How many victims are there on a regular pilgrimage day?

30 to 35.

*Files: 20151017-TER-AVA-AIR-MED-09A-Reek Sunday.pdf
20151017-TER-AVA-AIR-MED-09b-Reek Sunday .mp4*

11. Recommendation Coordination

Fidel Elsensohn:

Proposal: First develop guidelines within the Medical Commission and then discuss these with the other commissions.

Dominique Letang:

Many projects. They worked long on two recommendations; see distributed papers.

Gebhard Barbisch:

"Danger of Avalanches throughout the Year in High Mountain Areas". This is not a recommendation but a statement that is meant to reach all alpinists and not just ICAR members. The statement will be presented and distributed at the assembly of delegates in the afternoon.

Patrick Fauchère:

He is working on two papers: Loss on hoist, rescuers falling off and being killed; Two crashes due to wires, how to communicate with the ground. It has not been decided yet whether these are guidelines, recommendations or statements.

Felix Meier:

We should not only present the recommendations but also the reasons for them.

End of Meeting: 12 noon

For the English Translation: Olivia A. Cashner