AVALANCHE COMMISSION REPORT
International Commission for Alpine Rescue

Kommission für Bodenrettung/Commission pour
le Sauvetage Terrestre/Commission for Terrestrial Rescue

Killarney, Ireland, 13-17 October 2015

Prepared By:

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For the Mountain Rescue Association (MRA-USA)

INTRODUCTION The International Committee for Alpine Rescue (ICAR) annual meeting was held in Killarney, Ireland during the non-rainy week of 13-17 October 2015, lending to good views and good hiking. The event was hosted by Mountain Rescue Ireland.

The venue for the conference was the International Exhibition Centre set in the beautiful town of Killarney. South and west of the town of Killarney in Co. Kerry is an expanse of rugged mountainous country. This includes the McGillycuddy's Reeks, the highest mountain range in Ireland.


Figure 1 Doolin and Cliffs of Moher region.

The Cliffs of Moher, the Dingle Peninsula, as well as the Ring of Kerry, are all located near the conference, and all offer response areas for a rescue community that has a wide variety of land and sea operations. Although snow is a rare commodity in Ireland, and avalanche rescue even more rare, it offered a respite for those of the Avalanche Commission from their respective homelands and snowy peaks.

The Congress: More than 450 participants and presenters convened in Killarney, while Ireland's own rugby team was playing in the World Cup, and Kerry Mountain Rescue celebrated their 50th anniversary. Papers, abstracts, and presentations were called in advance.

The theme of this year's congress was safety. Being searchable is part of that theme when it comes to avalanche safety, not only by the general public, but also for rescuers, which can be complex when it comes to using rescue equipment where searchers must also be searchable. English has become the ubiquitous language adopted by ICAR and no further translations were provided at this congress. However, next year's congress will likely have translators once again.

Representing the United States of America's Mountain Rescue Association (MRA) at Killarney were Casey Ping (Air Rescue), James Marc Beverly (Avalanche Rescue), Dan Hourihan (Terrestrial Rescue), Tom Wood (Terrestrial Rescue), Ken Zafren, M.D. (Medical), and Skeet Glatter, M.D. (Medical).

Attendance of the U.S. delegates was made possible by support from CMC Rescue, RECCO, the MRA and a significant private donor wishing to remain anonymous**.** The U.S. MRA delegates are grateful to our sponsors for the long-term support of this important international exchange.

Delegates arrived in Dublin, Cork, or Shannon, and made their way to the Killarney for registration. The first day was a practical session where a discussion and demonstration of intermittent CPR was performed at the world-famous Gap of Dunloe. A good case is made (see below and Medical Commission minutes) for intermittent CPR for those who arrest from hypothermia.

There were numerous vendors in the exhibition hall throughout the conference with displays of new outdoor and rescue equipment.

Practical Day Sessions:

The Technical Rescue and Medical Commissions organized the Practical Day at the Gap of Dunloe, near Kate Kearney's Cottage, with a multi-faceted demonstration of new or rarely used techniques.

The Irish group showed off some techniques on how to use turf for technical anchors. Some of these techniques may prove useful in areas where technical winter skills may be needed in alpine terrain.

A demonstration by the Polish rescue group, TOPR, was provided showing how they have incorporated Dyneema rope systems, especially for long technical evolutions or guiding lines.

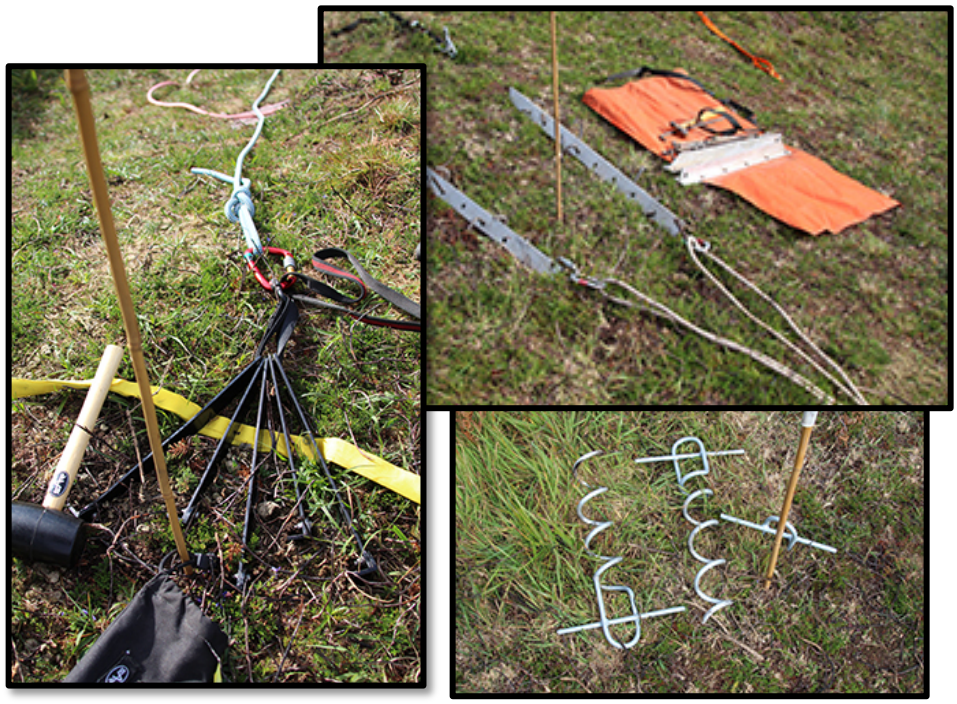


Figure 2 Intermittent CPR Demonstration for evacuation

Intermittent CPR is being explored as an option for those who go into cardiac arrest secondary to hypothermia. The crux for those who respond to avalanches will be to determine what the cause of cardiac arrest is. TOPR supports an aggressive hypothermia protocol and presented a case report of a witnessed hypothermic arrest that was successfully resuscitated after more than 5 hours of evacuation/CPR over complex terrain, and 9 days of ECMO (cardiac by-pass) in the hospital, with no neurological deficits.

Dave Clarke (MRA-USA president/Portland Mountain Rescue) demonstrated a tried and true technique of a two-tension system using the CMC MPD. The system itself has been used for many years, but the devices used were the main focus of this demonstration. There are multiple ways to set up technical systems, and better ways to run them. Many participants jumped in to give these techniques a go, learn some finer nuances, and take this information back home to spread to others. The beauty of ICAR is reflected in the dissemination of information at a viral rate. (Beverly)

Figure 3 two-tension system demonstrations.

The video including action from this demonstration will be posted to:
http://topographmedia.com/
The link will be active and updated to this report as the link becomes available. Notification is generally sent through the MRA list serve. Topograph Media has been providing excellent video coverage of the ICAR events and is a good resource to show your local team much of the material presented at ICAR.

There is a significant overlap in the techniques of terrestrial rescue as the overlap in the avalanche rescue venue, especially when there is technical terrain to assess, mitigate, and respond to. Complex glaciated terrain is matched in technical difficulty by the receding glacial alpine environment where rock on snow now exists. Having the ability to utilize all mountaineering rescue skills is exceedingly important, as is demonstrated later in this report.

AVALANCHE COMMISSION

Dominic Bestler

President of the Commission: Dominic Bestler

Dominic maintains the professionalism and the fluency of the meetings of the Avalanche Commission. His leadership and amount of time allocated to assuring the success of the Commission is realized by the amount of interest, attendance, and contribution echoed by others.

Manual Genswein started the assembly of avalanche delegates and members with the continued work on the major focus project on Accident Prevention, which continues in draft-proposal form. The Avalanche Commission has been tasked with review of this proposal.

Avalanche data reports were presented from the following delegation regions:

Italy: Late in the season was the most problematic, harboring deep slab instability with wide propagation on some slopes. One specific incident presented triggering of avalanches only after 40+ skiers had passed through the terrain; 60% of accidents were backcountry skier (BCS) attributed; 30 victims total, 18 BCS. Italy had many accidents in which multiple people were involved, which is unusual.

Another observation was that airbag use during an avalanche provided with high variability of being not buried all the way to being totally buried, 1 - 2m deep. These cases occurred in the alpine terrain.

A heli-skiing helicopter crash triggered a large 2km wide deep slab avalanche, burring many people and completely burying those with airbags. One of those burials was deep at 7m. This subject was a snowboarder who was unable to release the snowboard bindings during the slide, thus serving as an anchor. He did not survive.

Near Bolzen, Italy, 35+ people were on an up-track: 6 caught, 2 buried, 1 without a beacon; a sympathetic avalanche was triggered where 3 were caught while eating a snack, 2 more were caught and buried. Another accident on Terra Nera, 3 caught, 2 dead, 1 airbag destroyed, also in alpine terrain. For more information, you may e-mail a query to:
aineva@aineva.it

Norway:
Few fatalities. No specific data presented.

France: Last year was not *so* bad, but this year is the worst since the 1980s.
Deep slab persistent weak layers (same as for Italy) continued to bane the Alps.

Twenty-five backcountry skiers were involved in a single event. The explanation of why there were so many skiers caught during a single event is due to the fact that backcountry travelers, skiing the way they usually do, were caught by surprise of the degree of propagation that is usually not so prevalent.

Ski instructors in the backcountry were not exempt as, while shooting a film, they were also caught off guard by large area deep slab propagation. They were stopping on the slopes behind what they thought were protective terrain rock features, but the propagation of the crown went higher and further than expected, and the snow was much deeper, thereby entraining enough snow to render the "safety rock feature" useless as protection. In general, larger destructive size and relative size to the path, events were occurring late in the season were underestimated.

France also experienced many multiple-person burials, also attributed to the deep slab pattern. In total, 134 people were caught, there were 29 events reported, and 45 fatalities overall.

Switzerland was not immune to the same issues as with France and Italy as deep slab instability near the end of the season, attributing to 33 fatalities in 25 reported avalanches, 23 backcountry skiers, 10 were off-piste, while none were on transportation routes/in buildings. However, of those caught, there was a 50% fatality rate.
Two big accidents occurred that accounted for 9 fatalities between them. As well, 1 x Guided group at the Velan hut with 9 caught, and 1 getting out on her own.
Combe de Morts, near the St. Bernard Hut, 5 were caught, and 4 died.

Austria: 175 accidents, 25 fatalities. Same issue as throughout the rest of the Alps.

North America
As outlined in the MRA Meridian, 2014-15 was a poor snow year for the majority of the continent early in the season, leading to less backcountry traveling. This could be one of the causes that the there were fewer accidents in this region.

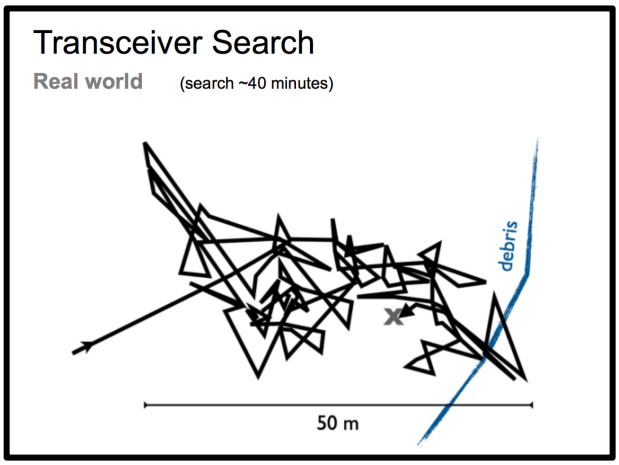
Canada:
There were fewer multiple fatalities in Canada this year, but during 2014-15, there were 2 ice climbing fatalities; 1 x ice climbing accident with no beacon, and in Parks Canada where 1 x IFMGA guide was working at Snowcrest Mountain.

The trend of avalanches occurred showing 63% fatalities in the province of British Columbia.

There was a good point-in-case to support the concept that volunteer rescuers and responders have to become more competent as they are being more exposed to avalanche calls on a regular basis. A good example is a mission where the rescuers used a risk assessment tool to make the decision ***not*** to respond for 1 ½ hours due to avalanche conditions, as well as not working with others that they were familiar in working with. This is a good case where risk formulation is evaluated by filling out a checklist of all the major components in a response, then coming up with a relative hazard to evaluate risk while responding to an incident. A risk assessment tool may indeed help you or your team with identifying potential issues that could affect your decisions. The one in used in this case was the RADeMS reference guide from Canada.

United States of America:
Again, this was the lowest avalanche death rate over the past 20 years for the USA, including Alaska. However, there were 11 fatalities, and for the first time in recorded history, there was an avalanche death in Virginia, which is not a common place for avalanches in general. Of the deaths, 6 were BCSs.

Dale Atkins was able to get hold of the GPS waypoint-tracking device of the searcher for one of these incidents, demonstrating erratic pattern of beacon search. It is clear that companion rescue techniques are lacking. Atkins said, "The searcher never was able to do a quality fine search and probe. Shoveling pushed the burial time to about an hour. The lowest reading was 4.9m for a 1.5m burial."



Professional rescue teams actively participated in 7/10 fatal accidents. Dale contends that we need to improve awareness to recreationalists about the actual abilities of professional rescue. Expectations of what professional rescue teams can do are perhaps exceeded by misinformation.

Presentation on Dog handling in Avalanche
Dogs were generally unsuccessful $p<0.001$. Of the times that dogs were successful, a proactive approach appeared to work better than reactive. When the dogs are independent, the problem is solved. Some issues may be genetic factors and better trainer handling.
Manuel Genswein on Standardized terminology and workgroup is be set later this afternoon.

Dominic (France):
AVA-Rec0010
Be Searchable! Recommendations for people who travel for work or pleasure in the mountains: People who are not searchable increase the risk to rescuers and decrease their survivability.

Atkins on Data Collection
Data Collection is important and showed that data was missing from more than 15 countries for just the past 3 years. If there is no data, then it is impossible to be able to make a plan to move forward. Having a global picture, not just a local picture, can help define problems better.
Reporting the Current Data:
There are only a few new data elements (age, gender, nationality)
A new data structure is to be used with the CAAML (www.caaml.org) reporting system. People in the USA will simply report to their local forecaster, and this information with be sorted.
Conclusions from ICAR in 2004: ICAR should offer the support and improve data collection, so the push for data collection continues. Atkins called on each representative from the countries that were deficient to bring their data to the table and help fill the gaps.

Christophe Christiansen
How to do a proper investigation: Who? = police/prosecution
Christophe is suggesting a STEP sequence
Drifting into failure for a business: boundary of economic failure and unacceptable workload usually cannot be expanded upon, but margins of safety can and will be compromised. Usually a culture change must occur, and so he is relating this to the attitude of backcountry travelers.

Manuel Genswein
The working group convened for avalanche posters that will be disseminated worldwide. The posters are to be standardized, so input from all avalanche delegations has been called upon. The committee worked together, but separated by groups of different languages, in an effort to standardized rescue and simplify instructions and pictures for the lay public so that companion rescue will be more effective. Atkins' slide showing the case of poor companion rescue via GPS recordings bolsters the validity of this working group.

Manuel strongly contending that there should be "*no more hasty search*. Hasty search should be combined with the signal search." (*Perhaps this should be called the "CLUE SEARCH" –Beverly)*

One major point to be made to the public at-large is: "you are responsible for understanding the recommendations and limitations of the manufacturers equipment you use."

Scoop and Run Procedure – Advanced helicopter avalanche rescue technique
Purpose: In order to get very close, very fast, and with high-risk terrain.
Procedure with the helicopter: Training level is quite high and the use of a hoist is a serious issue. Long line/short line is **preferred** because of avoidance of shock load on the hoist system. However, shock load absorbers will be used and static lines will be incorporated, rather than using dynamic lines. The goal of the rope is to be as thin as possible. Steel cable is a good medium to use since it can cut through the snow that has been dug out and become heavier after settling. Fixed carabiner links are used, along with a full body harness with a high ventral point of attachment.

The pilot keeps a 1kg balloon on the avalanche surface of the snow slope in order to use as a reference. Manuel states that a sturdy and short probe is important. Burials >1.5m deep are not considered scoop and run situations. Suggestion that a shovel should stay attached with a fine cord/bungee.

A decision must be made if 3 people can be taken down to safety. Otherwise, both rescuers must be taken to a safe zone first and leave one behind. For pilots, it is a complex situation. The French and Norwegian services are currently the only services that are routinely practicing this technique.

Beacon Testing by Slovakia – avalanche prevention center
The DAV – tested for range, direction – coarse search, accuracy - fine search, multiple burials – direct search; in an effort to measure how people use beacons these days/what is their proficiency?

Research from 2011 measured no signal to beep time, and time to stable signal.
The range testing in 2015 compared to 2011 showed there is not much variance in beep to stable time in regards to axis.
If BCA Tracker 3 is transmitting, then the BCA is best device to receive. In all other situations, Arva Neo was shown to be the best receiver.

It is well known by professionals that the meter vs. beacon display is inaccurate, ie., they are not the same. Most lay people believe they are equal.

Search strip width and reality is based on the beacon combination and manufacturer recommendations. The lowest strip width is best at 20m in order to retain a safe residual.

Directional tests from 2011 at 1.0-1.5m burial depth:
Flux lines are fairly flattened out overall.

Accuracy test – most beacons displayed a shorted distance than actual by approximately 10-20% more distance. In 2015, all beacons have been able to locate 3 buried beacons within 7 minutes. BCA uses a suppression mode rather than a lockout mode.
Improvements of Y–axis, differences in real and displayed distances are better in 2015 than they were in 2011. Clarification was made by the manufacturer (present at the meeting), that the Smart antenna in the Ortovox has the ability to choose the best antenna to receive with.

Atkins and Genswein on **Slalom Probing**.
"The more holes you can put into the snow, the more efficient."
Atkins found that 3 holes per step (3HPS) was more effective through computer modeling (Ballard, Atkins, 2004). However, there is still some room for improvement.

Slalom probing was (re) presented at ISSW 2014. The Norwegians (Nils Faarlund) have used this technique, found by trial and error, to be effective and more efficient, during the late 1970's, but it was never evaluated against other methods formally. Rather than moving the pole, and probing sideways, slalom probing incorporates always using the axial skeleton in-line with the probing effort, theoretically improving human performance and decreasing probe line time, and increasing live finds. This comparison takes into account the ease of probing with 2HPS, and 3HPS techniques.


Figure 4 Nils Faarlund (IFMGA Norway)

Slalom probing works well with trained persons, smooth, soft slabs, and without obstructions. Genswein suggests having no more than 10 people in the S-line. If >10 people, then split the group up and make two probe lines of 10.
For normal debris this is a very fast system. However, other non-side step probing is better. In complex terrain or where undulations in debris fields could be problematic to maneuver.
The Norwegians have been using the slalom technique since the 70's/80's, but since this is a new technique, and an alternative to traditional methods, acceptance by some groups may be difficult.

In the case of the use of by-standards, simply have them line up, shoulder to shoulder, and have them probe one hole per step.

The overall goal: Looking to improve statistics in order to gain success, not just counting victims.

PROBING STRATEGIES

To minimize search times, maximize survival chances and reduce risk to rescuers, it is recommended to apply the following procedures:

1. With limited resources, in cases with obvious terrain traps and around anchored surface clues, spot probe the most likely burial areas.
2. Coarse probe the likely burial areas:
    a. On first passage, limit the probing depth to 1.5m
    b. On second passage, probe with lateral offset and maximum probing depth.
3. Fine probe the entire avalanche debris including the immediate adjacent areas to maximum probing depth
4. Remove the fine-probed debris to within 1m of the probed depth. Repeat steps 2, 3 and 4.

Risks to rescuers are possible, so concentrate on the method to mitigate exposures.

Slalom Probing has been demonstrated to be an efficient coarse probing method.

The four key points are:

1. Space rescuers 1.5m apart (outstretched arms, wrist to wrist)
2. Apply a 50cm x 50cm probing grid.
3. The leader is probing in the center and gives commands: "probe" – "right" – "right" – "forward" – "left" – "left" … and "alight left to right" (if required)
4. Probe at 90 degrees to the surface in front of the rescuer.

If many rescuers are available, split them up in multiple probe lines of 6 to 10 rescuers. Longer probe lines

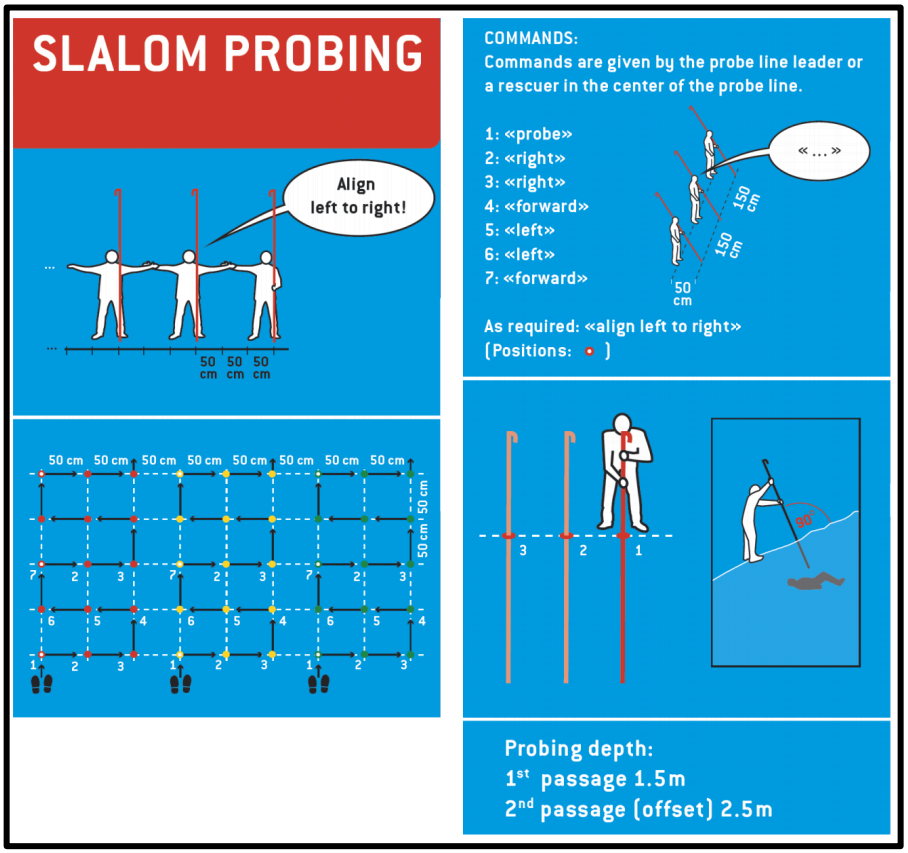


Figure 5 Taken from Genswein, ISSW 2014.

Smart Phones Affecting Decision Making in the Back Country:

Sweden is currently designing an app for smart phones that downloads maps of the area for skiing. Additional updates of separate data imposed upon the map with latest avi conditions. These updates would be alerted to the user via "push notifications", prompting the user to look at the map and see updated conditions.

98% of backcountry skiers took a smart phone while skiing when polled. High user-group.

Use of a Green, Yellow, Red, Black color overlay onto the map to show various avi condition may help the general public.

The psychological angle of this promotion should be to highlight areas of good skiing to direct people to safer skiing zones.
Maps of theoretical usage with ski tracks were presented. No current data has been gathered. This is a future proposal.
In the USA a barrier to this might be lack of cell service to update the map, but the technology has been used in the Wasatch for some time, and is similar. (Beverly)

Successful Avi Resuscitation – an incredible case report
21 Feb, 2015 - Western Polish Tatras, Poland
Avalanche danger was international scale II
Weather = moderate persistent gusts forming a wind slab over where the cave entrance was located and was on the lee aspect.
The cavers were buried on the way to a cave by the avalanche near the entrance (Komin cave) by a human triggered avalanche = D2, 50cm deep. The first female buried had no air pocket, but was resuscitated for 1-hour 25minutes. An AED was used upon arrival and showed asystole, so efforts were ceased.

The 2nd victim was extracted from the debris and was found to have a patent air pocket, with her backpack in front of chest. She was conscious but not verbally responsive, had a weak pulse HR = 60. Treatment: She was given oxygen, a hollow dug in the snow to protect her from environmental elements, and was given thermal insulation; the AED was applied and she was shown to have bradycardia (a low heart rate), bradypnea (slow breathing) → leading to cardiac arrest (Ventricular Fibrillation), → water and snow made it impossible to defibrillate her with 2x defib attempts without success. She was intubated and given 100% O2 and CPR. The patient was placed in a SKED and CPR continued with an auto-pulse. A 5km evacuation on harsh terrain was carried out. Her esophageal temperature was below 17C (only measures to 17C). Once in the ambulance, no further defibrillation attempts were performed. She was then transported by helicopter to with auto-pulse compressions continued all the way to a severe hypothermia treatment center. ECMO (cardiac bypass) was implemented in Karkow. Her core temperature at the hospital was recorded at Tc = 16.9C. There was 91 hours of ECMO and 2 surgeries. Pt completely recovered and has no neurological deficits.
Total of CPR 6 h 45 min.

The purpose of this story in this report is that multi-factorial:

1) Most responders in the United States are not physicians or highly trained medical providers.
2) The question of the use of CPR in the wilderness setting continues to be debatable.
3) The use of the ICAR avalanche resuscitation guidelines is important.
4) Knowing the difference between a hypothermia arrest and death by asphyxiation, trauma, or non-hypothermia is imperative in making the decision of whether to make an effort such as this.
5) Developing a hypothermia guideline that incorporates a major medical facility capable of handling severe hypothermia is important.

Manual Genswein on Shovel Testing
10 manufacturers x 25 models.
Need to capture each failure mode in order to have a better database in order to come up with a minimum criterion for a UIAA safety label.
Class I requirements to be included into the specification: Minimum blade dimensions, minimum shaft length, and minimum cantilever forces.

Question: how much does blade size effect efficiency? Must perform in soft, med, and hard snow

Dave Custer, President from the UIAA Safety Commission gave a recorded video welcoming the input from ICAR regarding a safety label, as well as extended the invitation for sharing members of the delegation for the sake of increasing knowledge and safety information.
Beverly (Executive Board Member of the UIAA), presenting on behalf of the UIAA with sustaining support of this project.

- ACTION: Vote: Unanimous decision to approve of the Probing Strategies Recommendations Code. This includes Slalom Probing, which was also approved by the General Assembly.
- ACTION: Vote: Unanimous decision to approve of the Accident Prevention Recommendations Code, which was also approved by the General Assembly.

Multiple Casualty Incidents (MCI):

MCI Avi triage
Academic MCI we use a specific tools with temporary START system, a list of victims, and a map.
We must use an MCI toolbox in order to get good results and reduce risk to the rescuers. It is important to go from improvised rescue to organized rescue. Switching from emergency medicine to MCI medicine is not easy, and can be affected by environment, technical terrain, avalanche, etc. There is no indication to work someone in cardiac arrest with multiple patients.

Use of videography to clear an avalanche of victims
A video was shared by the French Delegation demonstrating a camera and wifi recording every :01 minutes from the top of the Augi du Midi. An avalanche was recorded where there were 5 people within a potential run-out on Mt. Blanc. It was simple to see that all people were not caught by review of the photos, so there was no need for a response simply within :10 minutes of the occurrence.

A short presentation on MCI with avi from the Suiss Delegation
Main points from experiences from Valsory and Mt. Mort: There is much higher stress on the rescuers with MCIs. This should be taken into account, reverberating the suggestions form ICAR 2014 to practice for MCIs as a multi-agency training.

And another by Frnace
Ecrins Pass on April 1st, 2015 14:45
wind slab, crown 150m / 400cm max, Length 700m, vert = 400m
18 people (2MG), 3 CZH, 4 German
trigger = 11 ski tourers; 1st responders were summoned by a witness.
12 skitourers involved , 4 completely buried, 3 dead, 1 injured, 3 partly buried critical, …

Again, the lessons learned form the 2015 spring cycle is that rescuers and care centers need to be prepared mentally and with their training, for MCIs. Behavioral changes of backcountry travelers are difficult to control.

2015 Review of Airbag Effectiveness – from Davos:
Grade of burial is strongest factor in determining survival, airbags appear to change the grade of burial.
Mortality diff = Mort user- Mort non-user.
Retrospective study
Dataset: D2 245 accidents 424 victims -→ 66 accidents , 223 victims for avis that involved BOTH users and non-users.
Results: airbags can only influence mortality indirectly (grade of burial).

With airbag: Mortality rate is approx. 44% of those critically buried, non-critical → overall there is a 11.1% benefit.
So 22/100 without airbag, 11/100 with airbag
Non-inflation rate was 22% and only reduces mortality difference 9%
Non-inflation rate of professional vs non-professionals is 3x lower.
The reduction of wearing an airbag is nullified by getting caught in a grade larger avalanche.
60% of cases with non-inflated airbags: deployment failure
Familiarity with release procedure and correct maintenance

Medical treatment of Avalanche Victims
European Resuscitation Guidelines by Herman Brugger, Peter Paal:
Although these concepts have not yet been incorporated by the USA on a grand scale, we need to make the effort to understand and utilize these guidelines.

Discriminate asphyxia vs. hypothermia for ECMO (Extracorporeal membrane oxygenation)
Cut offs for CPR and EMCO

1) >35 minute burial + patent airway
2) Core temperature, esophageal <32C
3) Serum K+, >/+ 8-12 *mmol*

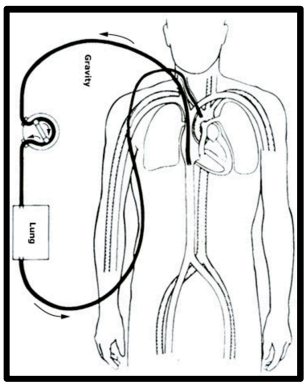


Figure 6 ECMO picture taken form: en.wikipedia.org

Recent outcome studies of avalanche victims with cardiac arrest + ECMO
Survival rate is very low (1.2%) of those who are in cardiac arrest that were buried.

There is only 1 asystolic long-term survivor in the literature → too many being transported.
Duration of burial <60min, or core temp>30C → Universal ACLS
Any signs of life → transport
No sign of life and airway is blocked → D/C
No SxS life → K+
Cardiac arrest + burial >60min + airway blocked: No CPR death from asphyxia

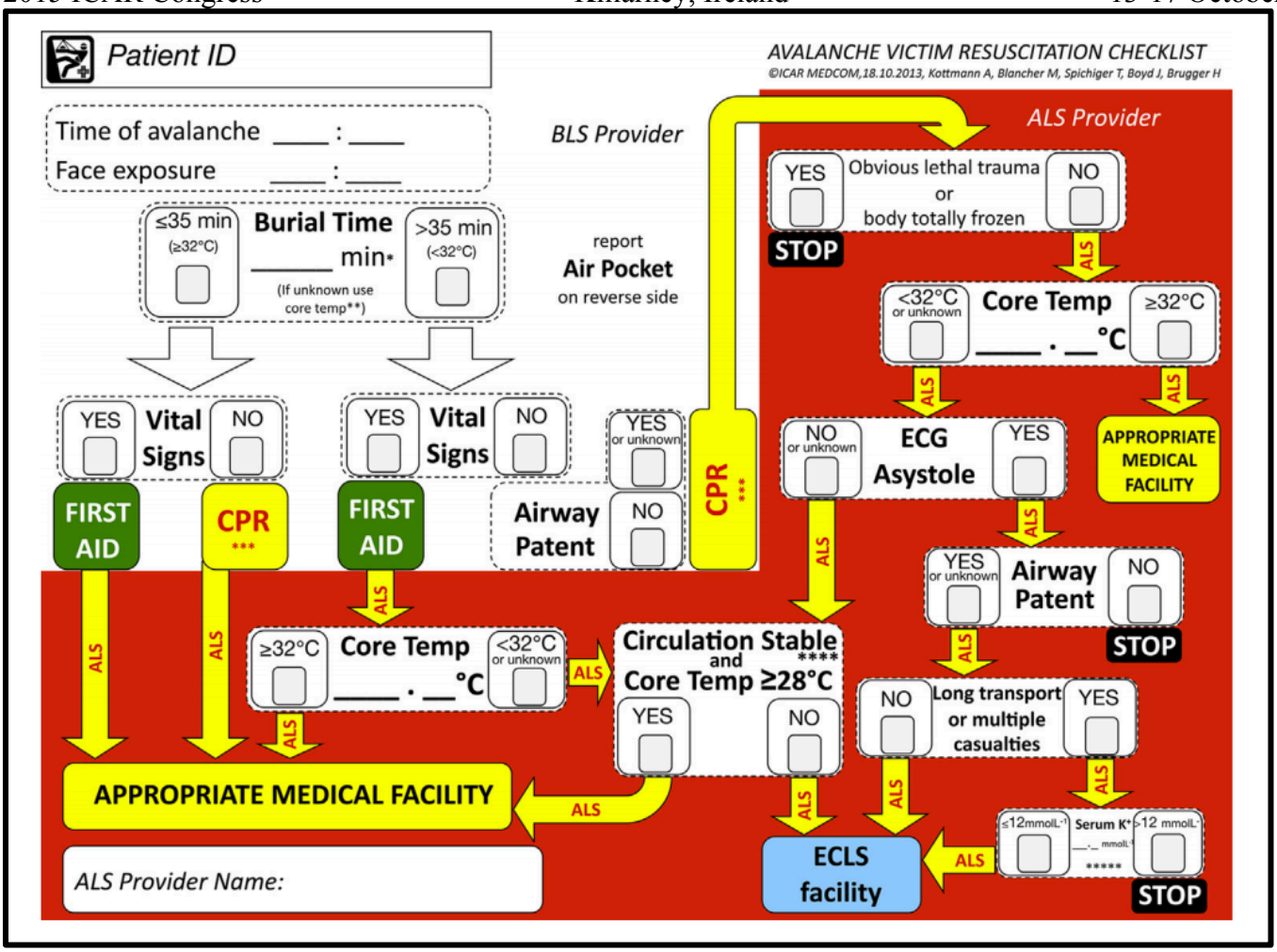


Figure 7 Checklists for Avalanche Burial. This is useful for MCIs as well. Taken from: http://www.alpine-rescue.org/ikar-cisa/documents/2015/ikar20150524001621.pdf

Checklists

20% more information is obtained when using the checklist.

Adapt to ERC Guidelines 2015 Checklist is being used in CHF, and FRA.

Dale Atkins stepped down from the Vice-Presidency of the Avalanche Commission and received a gift from the ICAR. He has contributed a large amount of education and information to ICAR and the general public over the years. His insights and research have been a driving force in the avalanche community, and we look forward for more from Dale in the coming years.

Figure 8, ICAR Avalanche Commission, Delegates, and Members 2015, Killarney, Ireland.

The 2015 ICAR Congress was held October 13-17 in Killarney, Ireland and marks the 50th anniversary of the Irish Mountain Rescue Association (IMRA). The ICAR flag was officially transferred from Mountain Rescue Ireland to the Bulgarians who will host ICAR 2016.

Respectfully Submitted,

James Marc Beverly, IFMGA, MRA
U.S.A. MRA ICAR Avalanche Commission Delegate