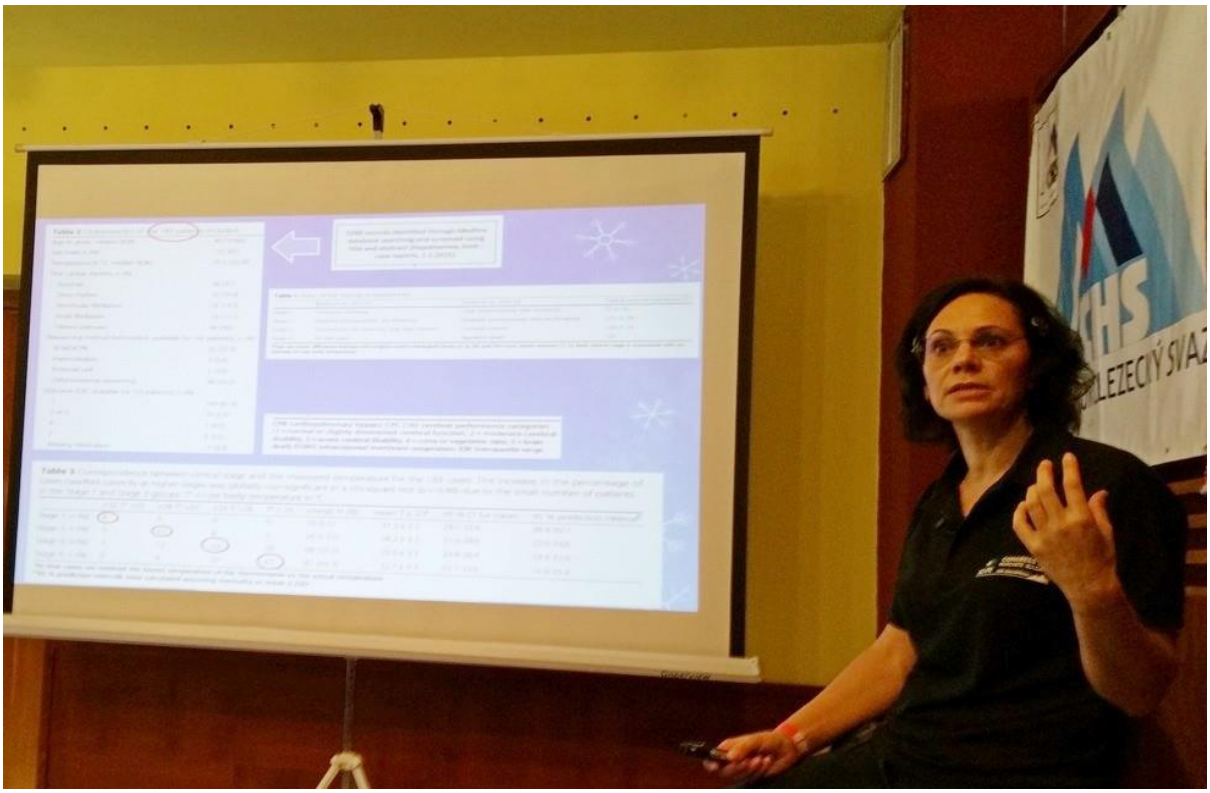


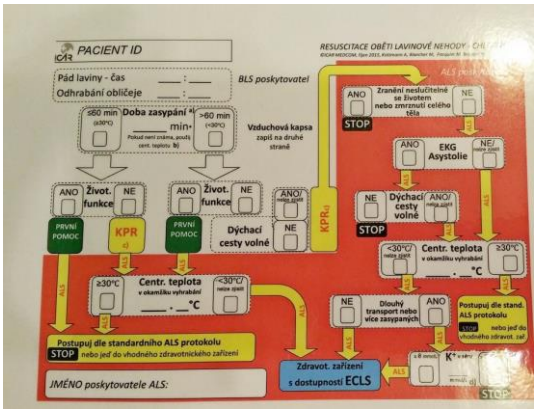
Inovace Avalanche Rescue Checklist (AVRC) a co je nového v literatuře

MUDr. Jana Kubalová

Zdravotnická záchranná služba Jihomoravského kraje, p.o.

kubalova.jana@zzsjmk.cz

LK ČHS, LK UIAA, SHM



AVRC + co je nového v literatuře?

Jana Kubalová

27. Pelikánův seminář

Hotel Skalní mlýn 29. 10. 2016

Výuková prezentace – POZOR! jedná se pouze o část výukové prezentace

Checklist pro oběti lavinové nehody – V2

AVALANCHE VICTIM RESUSCITATION CHECKLIST
International Commission for Mountain Emergency Medicine www.alpine-rescue.org

Úvod

- Většinu informací, které jsou potřebné k učinění medicínského rozhodnutí lze získat již během vyprošťování a prvního vyšetření oběti lavinové nehody.

- Je běžné, že tyto informace jsou získávány a shromažďovány zachránci bez lékařského nebo zdravotnického vzdělání.

- Tyto informace mají přímý vliv jak na přednemocniční tak i nemocniční fázi léčby pacienta. Proto je více než důležité shromažďovat tyto parametry sjednocenou, standardizovanou formou a usnadnit tak jejich sdílení během celé záchranné operace.

Úvod

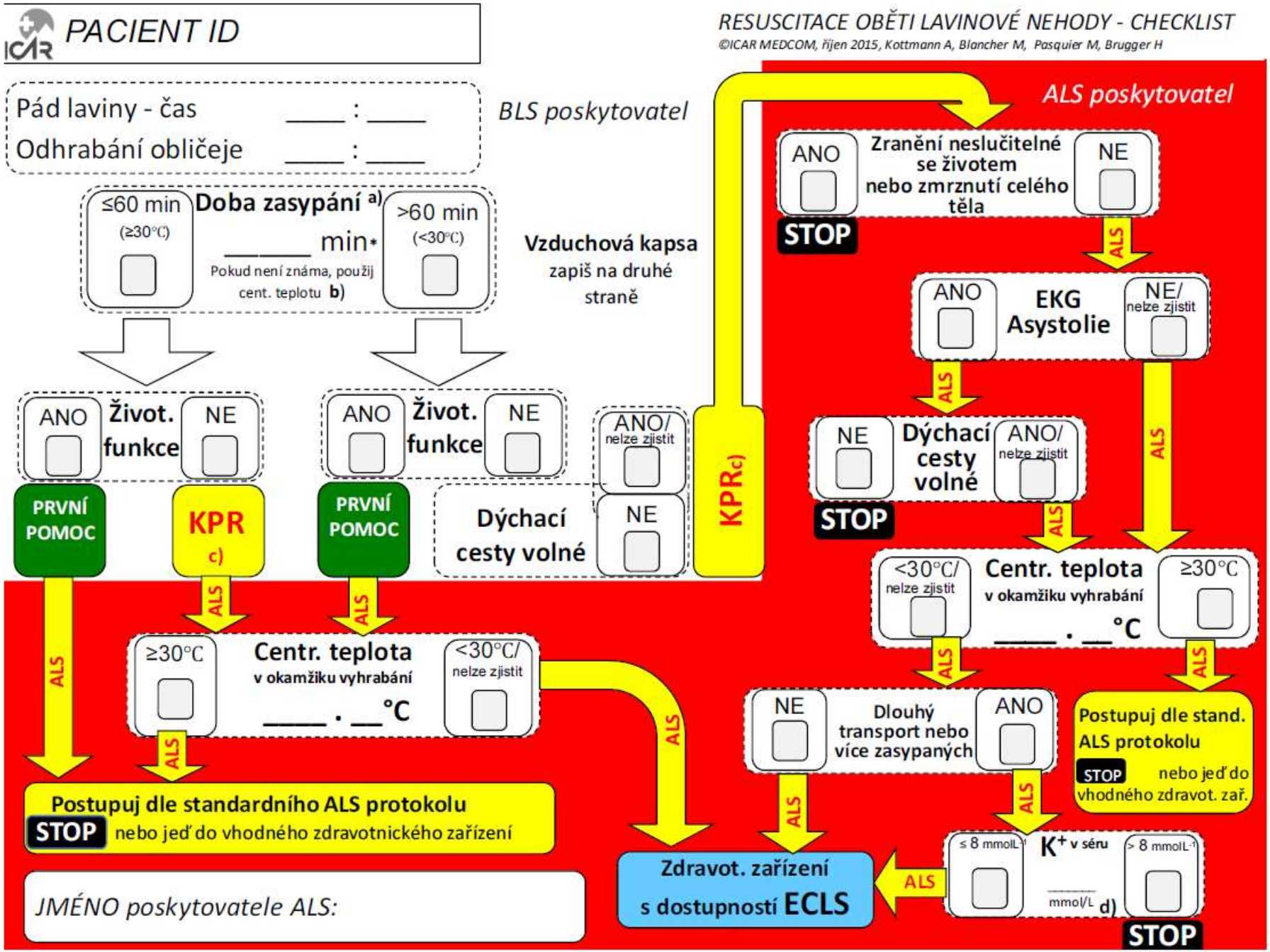
- Retrospektivní analýzy managementu obětí lavinových nehod ukazují, že triáž a postupy pro léčbu nejsou vždy přesně dodržovány. Značné množství pacientů se zástavou oběhu bez zjevného zranění neslučitelného se životem, dobou zasypání > 60 minut, centrální tělesnou teplotou pod 32 ° C a volnými (nebo nezjištěnými) dýchacími cestami nejsou resuscitováni nebo jsou prohlášeni za mrtvé, ačkoliv přežití a prognóza těchto pacientů může být příznivá.

- Na druhou stranu pacienti s výše uvedenými parametry, ale s neprůchodnými dýchacími cestami jsou transportováni do center s mimotělním oběhem (ECC – extracorporeal circulation), ačkoliv jsou v tomto případě již mrtví a resuscitace není vyžadována.

Koncept

- Řada faktorů, jako např. nepříznivé přírodní podmínky, časový faktor, nutnost rychle se rozhodnout se všemi definitivními a nevratnými důsledky, činí lavinovou nehodu pro záchranáře velmi obtížným úkolem. Je velmi dobře známé, že za těchto okolností může být schopnost rozhodování limitována.
- V letectví je běžné, že piloti při zvládání kritických situací využívají nouzové postupy, které jsou formulovány do podoby checklistů. Každý krok checklistu je vysloven nahlas, proveden a potvrzen ještě před započetím řešení dalšího kroku.
- Nově vytvořený algoritmus ICAR MEDCOM (lékařské komise mezinárodní komise pro alpskou záchranu) z roku 2012 jsme převedli do podoby checklistu a konzultovali jsme dosud existující doporučení [1] s cílem vytvořit checklist pro zdravotníky.

[1] Development of medical checklists for improved quality of patient care. HALES et al, Int J for Quality in Health Care 2008;20(1):22–30.


PACIENT ID
RESUSCITACE OBĚTI LAVINOVÉ NEHODY - CHECKLIST
©ICAR MEDCOM, říjen 2015, Kottmann A, Blancher M, Pasquier M, Brugger H
Pád laviny - čas ____ : ____
Odhrabání obličeje ____ : ____
BLS poskytovatel
ALS poskytovatel
≤60 min (≥30°C)
Doba zasypání a)
____ min*
Pokud není známa, použij cent. teplotu b)
>60 min (<30°C)
Vzduchová kapsa zapiš na druhé straně
ANO
Život. funkce
NE
PRVNÍ POMOC
KPR c)
ANO/ nelze zjistit
Dýchací cesty volné
KPR c)
Zranění neslučitelné se životem nebo zmrznutí celého těla
STOP
EKG Asystolie
NE/ nelze zjistit
Dýchací cesty volné
Centr. teplota v okamžiku vyhrabání
____ . __ °C
<30°C/ nelze zjistit
≥30°C
Dlouhý transport nebo více zasypaných
Postupuj dle stand. ALS protokolu
nebo jeď do vhodného zdravot. zař.
Postupuj dle standardního ALS protokolu
nebo jeď do vhodného zdravotnického zařízení
Zdravot. zařízení s dostupností ECLS
K+ v séru
≤ 8 mmol/L
> 8 mmol/L
mmol/L d)
ALS
JMÉNO poskytovatele ALS:

Vzduchová kapsa	Záchranná služba:
☐ Ano, ___ x ___ x ___ (cm) ☐ Ne ☐ Neznámá	Stanoviště: Telefon:

H	Checklist zůstává s pacientem po celou dobu přednemocniční i nemocniční péče až do místa definitivního ošetření

Záchranná služba	Při předání v nemocnici vytvoř kopii (scan nebo digitální fotografii) tohoto checklistu, kopii přilož k záznamu o výjezdu/ záchranné akci

Seznam zkratek:
Pacient ID = Identifikace pacienta
KPR = Kardiopulmonální resuscitace
ALS = Advanced Life Support (rozšířená neodkladná resuscitace)
BLS = Basic Life Support (základní neodkladná resuscitace)
ECLS = Mimotělní oběhová podpora (mimotělní oběh/ extrakorporální membránová oxygenace)

a) Doba od zasypání do odhrabání obličeje.
b) Jestliže je doba zasypání neznámá, může tento údaj nahradit hodnota centrální tělesné teploty změřená v jícnu.
c) KPR nemusí být zahájena v případě ohrožení života zachránců, úplného zmrznutí celého těla nebo zjevného zranění neslučitelného se životem (dekapitace nebo rozpůlení trupu).
d) Jestliže je hladina K^+ při přijetí v nemocnici vyšší než 8 mmol/L, uvažujte o ukončení resuscitace (po vyloučení crush syndromu a vyloučení vlivu depolarizujících myorelaxancií).

Pacient oběhově nestabilní (komorové arytmie, TK syst. < 90 mmHg) nebo s centrální tělesnou teplotou < 30° C by měl být transportován přímo do nemocnice s možností mimotělního ohřevu.

Postup při použití – specifika CZ:

- ZZS spolupracuje se záchranáři Horské služby ČR (dále jen HS) při vyproštění pacienta – lékař je na místě (pokud podmínky a další okolnosti nehody dovolí) ještě před vyhrabáním pacienta.
- BLS (umělé vdechy, stlačování hrudníku, AED) zahajuje nezdravotnický personál ihned po zjištění zástavy oběhu, není-li na místě lékař. BLS je prováděna až do předání zdravotnickému personálu – ZZS.
- ZZS provádí ALS, je-li indikována, nebo další urgentní péči a směřuje pacienta do cílového zdravotnického zařízení dle doporučení ERC 2015

Specifika CZ – po předání pacienta

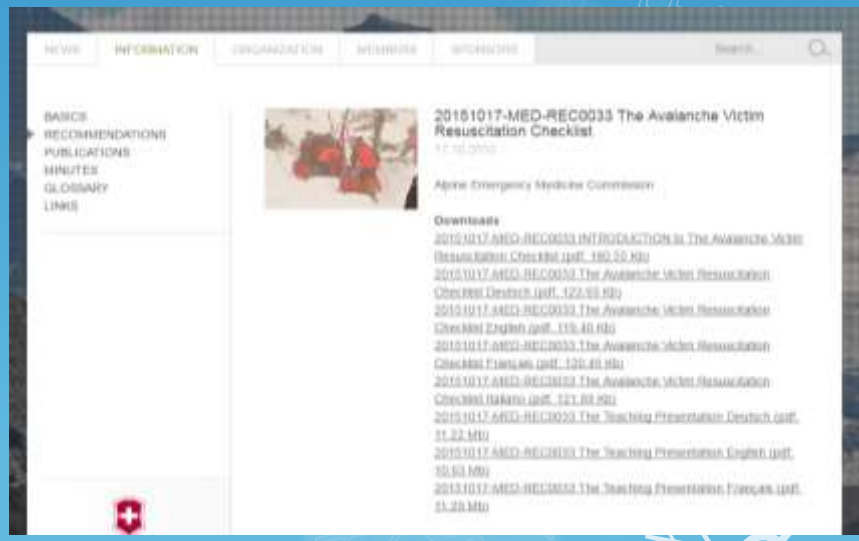
- Checklist pro oběti lavinové nehody je předán v cílovém zdravotnickém zařízení spolu s pacientem.
- ZZS nechá vytvořit 2 kopie (kopie, scan, foto)
  - 1. první se stává součástí záznamu o výjezdu příslušné ZZS,
  - 2. druhá pak součástí zásahové dokumentace HS, která provedla vyproštění a zahájila KPR.
- ZZS zašle naskenovanou kopii koordinátorovi projektu Avalanche victim resuscitation checklist v ČR, viz e-mail.

AVRC (CZ)– současný stav

- Checklist přeložen, v nejbližší době dostupný na:

  http://www.alpine-rescue.org/xCMS5/WebObjects/nexus5.woa/wa/icar?menuid=1066&rubricid=243&articleid=11284

- Seznámeni s konceptem: Horská služba ČR, ZZS na jejichž území se vyskytují laviny
- V nejbližší době: školení HS a ZZS – verze 2
- Překlad teaching prezentation v procesu



Co je nového v literatuře?

Paal *et al. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine* (2016) 24:111
DOI 10.1186/s13049-016-0303-7

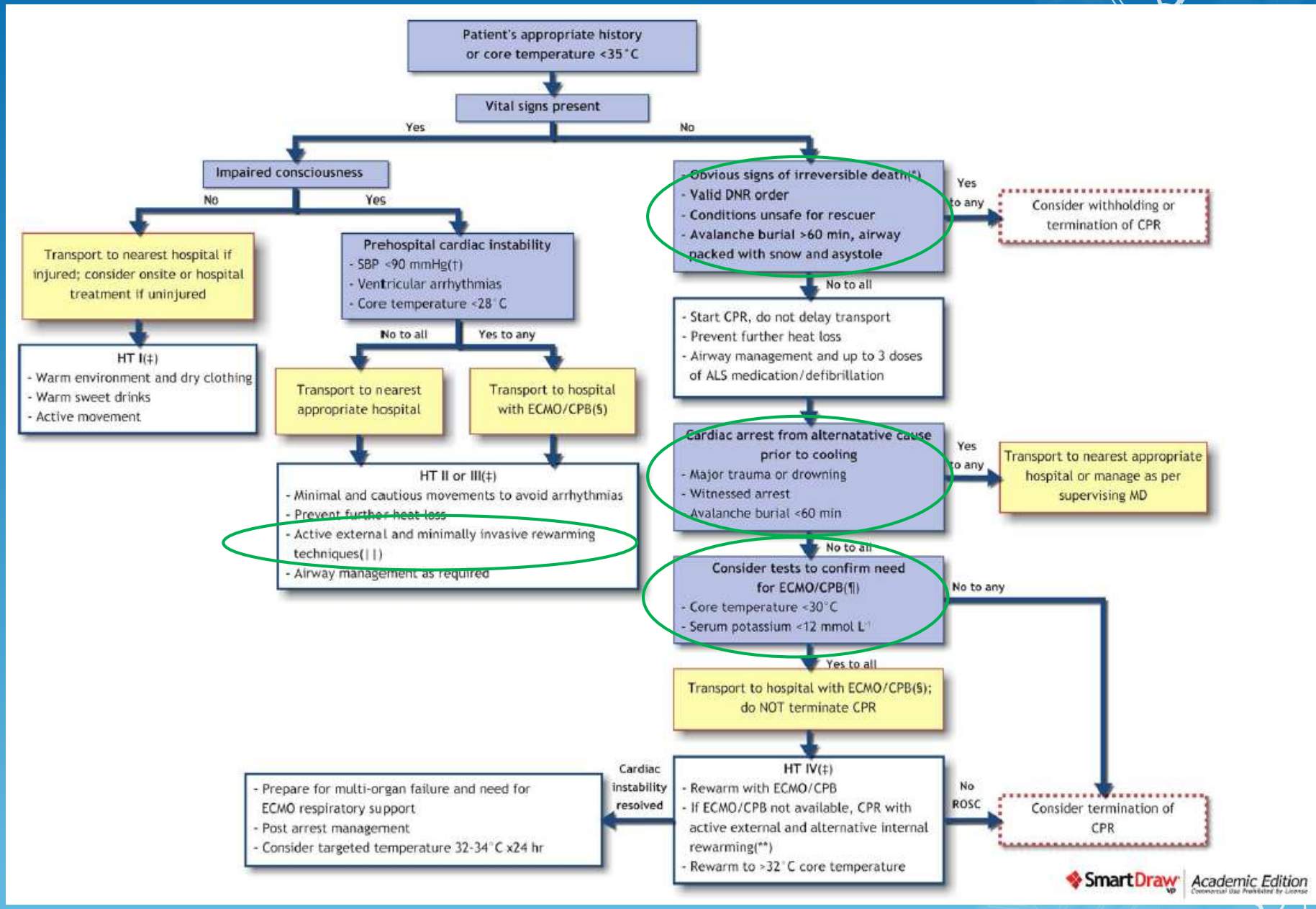
Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine

REVIEW Open Access

Accidental hypothermia–an update

The content of this review is endorsed by the International Commission for Mountain Emergency Medicine (ICAR MEDCOM)

Peter Paal[1,2,3*], Les Gordon[4,5], Giacomo Strapazzon[3,6], Monika Brodmann Maeder[3,6,7], Gabriel Putzer[1], Beat Walpoth[8], Michael Wanscher[9], Doug Brown[3,10], Michael Holzer[11], Gregor Broessner[12] and Hermann Brugger[1,6]


Patient's appropriate history or core temperature <35°C
Vital signs present
Yes
No
Impaired consciousness
No
Yes
Transport to nearest hospital if injured; consider onsite or hospital treatment if uninjured
HT I(‡)
- Warm environment and dry clothing
- Warm sweet drinks
- Active movement
Prehospital cardiac instability
- SBP <90 mmHg(†)
- Ventricular arrhythmias
- Core temperature <28°C
No to all
Yes to any
Transport to nearest appropriate hospital
Transport to hospital with ECMO/CPB(§)
HT II or III(‡)
- Minimal and cautious movements to avoid arrhythmias
- Prevent further heat loss
- Active external and minimally invasive rewarming techniques(‖)
- Airway management as required
- Obvious signs of irreversible death(*)
- Valid DNR order
- Conditions unsafe for rescuer
- Avalanche burial >60 min, airway packed with snow and asystole
Yes to any
Consider withholding or termination of CPR
No to all
- Start CPR, do not delay transport
- Prevent further heat loss
- Airway management and up to 3 doses of ALS medication/defibrillation
Cardiac arrest from alternatative cause prior to cooling
- Major trauma or drowning
- Witnessed arrest
- Avalanche burial <60 min
Yes to any
Transport to nearest appropriate hospital or manage as per supervising MD
No to all
Consider tests to confirm need for ECMO/CPB(¶)
- Core temperature <30°C
- Serum potassium <12 mmol L⁻¹
No to any
Yes to all
Transport to hospital with ECMO/CPB(§); do NOT terminate CPR
HT IV(‡)
- Rewarm with ECMO/CPB
- If ECMO/CPB not available, CPR with active external and alternative internal rewarming(**)
- Rewarm to >32°C core temperature
Cardiac instability resolved
- Prepare for multi-organ failure and need for ECMO respiratory support
- Post arrest management
- Consider targeted temperature 32-34°C x24 hr
No ROSC
Consider termination of CPR
SmartDraw VP Academic Edition

Rekordmani

Table 2 The most extreme reported accidental hypothermia cases

Longest no flow time	42-year-old male, found in crevasse, 7 m under snow, no vital signs, CPR started only after 70 min in hospital when patient was asystolic, 19 °C core temperature, ECLS rewarming, full recovery [211].
Longest manual CPR	42-year-old male, found outdoors. Developed asystole just after discovery, CPR started, 23.2 °C, 6 h and 30 min CPR. Rewarmed with non-ECLS methods until ROSC. Full recovery [143].
Longest mechanical CPR	42-year-old female, found unconscious in her apartment. VF arrest during evacuation to hospital. Manual CPR started and this was changed to mechanical CPR on arrival at hospital. Minimal temperature 24 °C. 80 min mechanical CPR while the patient was rewarmed noninvasively [153].
Longest total resuscitation	65-year-old female went missing and was found on a snow-covered riverbank. Initially 28 °C (rectal) but dropped to 20.8 °C. Asystole. Resuscitation was CPR (4 h 48 m) and ECLS (3 h 52 m). Total resuscitation time was 8 h 40 min [142].
Lowest survived body core temperature	29-year-old female, fell into water fall gully, flooded by icy water but able to breathe. Lifeless for approx. 45 min, CPR started after rescue, at hospital admission 13.7 °C and K+ of 4.3 mmol L^{-1}, ECLS rewarming, full recovery [11].
Longest persisting VF	42-year-old male, found outdoor, CPR started, repeated shocks, hospital transfer, 22 °C, ECLS rewarming started at 130 min CPR and after 38 shocks, successful shock at 30 °C, full recovery [234]. 25-year-old female, buried by and avalanche in Tatra mountains, Poland. Witnessed VF cardiac arrest (17.0 °C) after extrication, 3 unsuccessful shocks. CPR until ECMO rewarming (6 h, 45 min), and successful 4^{th} shock at 24.8 °C. Full recovery [235].
Longest intermittent CPR	57-year-old female, witnessed cardiac arrest in French Alps at 2000 m altitude in a snowstorm; transport distance to EMS vehicle of 1.1 km, 122 m difference in height; 1 min CPR alternating with 1 min walking for 25 min, 5 h CPR, ECLS rewarming, full recovery [69].
Longest submersion	2.5-year-old, submersion in cold water for at least 66 min, 19 °C, ECLS rewarming, full recovery [38]. 7-year-old child, submersion in icy water for at least 83 min, CPR for 64 min, 13.8 °C, K+ 11.3 mmol L^{-1}, ECLS rewarming, full recovery [212].

Rekordmani

Longest survival in an avalanche	Female, core temperature <32 °C, when found somnolent, disorientated. 1st- 2nd degree frost bites on hand and feet, no injuries, 43 h and 45 min [236, 237].
Longest time in an avalanche indoor	Thirteen days entrapped in a house which in part collapsed after being hit by an avalanche, Heiligenblut, Austria [238].
Lowest temperature with vital signs	Male age 3 years. ECG showed very irregular rhythm 8–10/min. Rectal temperature recorded about 20 min after arrival at the hospital was 17 °C [232]. Female age 37 years. Rectal temperature 17.2 °C. ECG showed atrial fibrillation 28–40/min with PVCs [233].
Highest survived potassium in an avalanche victim	Avalanche victim, 6.4 mmol L^{-1}, survived; core temperature and neurological outcome are not reported [130].
Highest survived potassium in an adult	34 year old female, 20 °C, cold environment exposure, asystole, 7.9 mmol L^{-1}, ECLS rewarming, survived. Neurologic outcome not reported [239].
Highest potassium in an accidentally hypothermic patient	7 -year-old and, cold water submersion, 11.3 mmol L^{-1} [212], and 31 month old child, cold water submersion, 11.7 mmol L^{-1} [131].
Longest time in a crevasse	27 -year-old male, 8 days, good outcome, no temperature or other specific details reported [240] 70 year male, moderate fractures of skull, vertebral column, pelvis, and femur, 6 days, 33.5 °C, cold injuries to toes, otherwise good outcome [241].
Largest number of simultaneous cases of accidental hypothermia with cardiac arrest	15 healthy subjects age 15–45 years were immersed in 2 °C salt water. Seven victims were recovered in circulatory arrest with a median temperature of 18.4 °C. They were rewarmed with ECMO and were subsequently evaluated with advanced neuroradiological and functional testing. All were successfully resuscitated [41].

Co je nového v literatuře?

Deslarzes *et al. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine* (2016) 24:16
DOI 10.1186/s13049-016-0210-y

Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine

ORIGINAL RESEARCH Open Access

An evaluation of the Swiss staging model for hypothermia using case reports from the literature

T. Deslarzes[1,2], V. Rousson[3], B. Yersin[1,2], B. Durrer[4] and M. Pasquier[1,2*]

Table 2 Characteristics of the 183 patients included

Age in years, median (IQR)	40 (17;60)
Sex male, n (%)	111 (61)
Temperature in °C, median (IQR)	25.2 (22;28)
First cardiac rhythm, n (%)	
Asystole	36 (31)
1	149 (81.4)
2 or 3	10 (5.5)
4	1 (0.5)
5	6 (3.3)
Missing information	17 (9.3)

3299 records identified through Medline database searching and screened using title and abstract (Hypothermia, limit : case reports, 1.2.2015)

Table 1 Swiss clinical staging of hypothermia

	Brown et al., 2012 [1]	Durrer et al., 2003 [4]	Typical core temperature (°C)
Stage 1	Conscious, shivering	Clear consciousness with shivering	35 to 32
Stage 2	Impaired consciousness, not shivering	Impaired consciousness without shivering	<32 to 28
Stage 3	Unconscious, not shivering, vital signs present	Unconsciousness	<28 to 24
Stage 4	No vital signs	Apparent death	<24

There are minor differences between the original system developed Durrer et al. [4], and the most recent versions [1, 5]. Each clinical stage is associated with an estimate of core body temperature

CPB: cardiopulmonary bypass; CPC [16]: cerebral performance categories (1 = normal or slightly diminished cerebral function, 2 = moderate cerebral disability, 3 = severe cerebral disability, 4 = coma or vegetative state, 5 = brain dead); ECMO: extracorporeal membrane oxygenation; IQR: interquartile range

Table 3 Correspondence between clinical stage and the measured temperature for the 183 cases. The increase in the percentage of cases classified correctly at higher stages was globally non-significant in a chi-square test ($p = 0.48$) due to the small number of patients in the Stage 1 and Stage 2 groups. T° = core body temperature in °C

	≥32 T° <35	≥28 T° <32	≥24 T <28	T° < 24	overall, N (%)	mean T ± SD[a]	95 % CI for mean	95 % prediction interval[b]
Stage 1, n (%)	4	6	0	0	10 (5.5)	31.3 ± 2.2	29.7-32.9	26.9-35.7
Stage 2, n (%)	3	11	8	2	24 (13.1)	28.3 ± 3.2	27.0-29.6	22.0-34.6
Stage 3, n (%)	3	12	33	20	68 (37.2)	25.6 ± 3.2	24.9-26.4	19.3-32.0
Stage 4, n (%)	0	9	25	47	81 (44.3)	22.7 ± 4.3	21.7-23.6	14.0-31.4

[a]In nine cases, we retained the lowest temperature of the thermometer as the actual temperature
[b]95 % prediction intervals were calculated assuming normality as mean ± 2SD

http://theuiaa.org/mountain-medicine/medical-advice/

- **LIBRARY OF RECOMMENDATIONS**
- **1. 4 X 4 HEALTH RULES FOR MOUNTAINEERS**
- These general suggestions are designed to guide those who are unfamiliar or less experienced with mountain terrain and who wish to hike or climb. 16 good advice for what to do when you are in the mountains, before the tour, during the tour and in case something happens.
- **2. AMS, HAPE, HACE – EMERGENCY FIELD MANAGEMENT**
- Acute mountain sickness (AMS), high altitude pulmonary oedema (HAPE) and high altitude cerebral oedema (HACE) are the most important and most common altitude related diseases. Primary prevention is considered the gold standard to avoid altitude illness. Learn how to diagnose, treat and most important how to prevent.
- **3. PORTABLE HYPERBARIC CHAMBERS**
- A portable hyperbaric chamber is a small inflatable chamber made of fabric, which can fit one person. When it is inflated, pressure is created inside the chamber which simulates a descent of 1500-2500 altitude meters. It is used to stabilise patients with serious altitude illness, so that their condition improves and they can descend to lower altitudes to recover. This paper gives advice on the use of such chambers.
- **4. NUTRITIONAL CONSIDERATIONS IN MOUNTAINEERING**
- There are many additional nutritional issues that must be considered when preparing for any mountaineering pursuit, especially those of longer duration. Therefore the aim of this paper is to briefly outline evidence-based nutritional considerations and strategies that can be adopted to minimise weight loss, and improve health and performance.
- **5. TRAVELLER'S DIARRHOEA**
- Traveller's diarrhoea is one of the most important medical problems for trekkers and those taking part in expedition mountaineering. Although the details of the data are still being discussed there is no question that the loss of body water and electrolytes impairs the physical and mental capacity significantly and dehydration increases the risk of Acute Mountain Sickness (AMS).





- **6. WATER DISINFECTION IN THE MOUNTAINS**
- Infected water is the most common risk for diarrhoea. This UIAA MedCom recommendation summarises advantages and disadvantages of the several procedures of water disinfection with special regard to the situation in the mountains or at high altitude; and will advise mountaineers on how to prepare safe water while minimising the environmental damage.
- **7. HOW TO CHECK THE QUALITY OF A COMMERCIALLY ORGANIZED TREK OR EXPEDITION**
- As the number of mountaineers who are joining organised treks or expeditions continues to increase, so too does incidence of altitude-related diseases. The following recommendations should assist the mountaineering tourists to check as far as is reasonably possible, whether their organisation has taken into account potential health risks when planning the trip itinerary.
- **8. MODEL CONTRACT FOR HEALTH CARE ON TREKKING AND EXPEDITIONS FOR DOCTORS**
- Being an Expedition or Trekking Doctor is more than being merely a member which advises others in case of a health problem during the trip and who may get a discount on organized trips! An expedition doctor has specific responsibilities, has to provide special skills, and must always accept responsibility for any diagnosis made, whether right or wrong. This contract document attempts to clarify the rights and obligations of the tour operator, the expedition doctor and the expedition, to avoid trouble and misunderstandings during the trip.
- **9. CHILDREN AT ALTITUDE**
- Each year many thousands of lowland children travel to high altitude uneventfully. The majority of these ascents involve trips to mountain resorts, especially in North America and Europe. While altitude travel is without incident for most, some of these children develop symptoms that may be attributed to altitude exposure. The following consensus view described here provides the conservative recommendations that should be helpful for mountaineers and physicians who are required to offer advice about ascent to high altitude with children.
- **10. THE EFFECT OF EXTREMES OF TEMPERATURE ON DRUGS**
- Harsh environmental factors “especially heat and cold” can significantly affect drugs, the substances as well as stabilisers, solvents etc. Temperatures inside emergency medical bags have been reported to be between -40°C and +80°C. Such temperature extremes may be even harsher in a mountaineering environment. The following recommendations are given on how to handle drugs under such circumstances, side effects and other drug related matters in the mountains.
- **11. THE USE OF HIKING STICKS IN THE MOUNTAINS**
- Hiking sticks have become popular among many who walk in the mountains. This document explains the right technique for using telescopic sticks and outlines the advantages and disadvantages of hiking with them. It also explains the correct walking techniques which make the use of sticks unnecessary for healthy hikers.
- **12. WOMEN GOING TO ALTITUDE**
- This document gives advice to women about their risk of altitude illness, the effect of altitude on the menstrual cycle and the use of birth control pills. It also gives advice to pregnant women about the effects high altitudes can have on their health and gives recommendations on how to prevent complications.

- **13. PEOPLE WITH PRE-EXISTING CONDITIONS GOING TO THE MOUNTAINS**
- This document gives advice to people with medical conditions who want to go to the mountains. It describes the affects altitude can have on conditions such as asthma, heart problems and migraine. It also takes into consideration other risk factors connected to mountain holidays, such as strenuous exercise, lack of nearby medical facilities and change of culture and lifestyle.
- **14. CONTRACEPTION AT ALTITUDE**
- A large proportion of women do not principally use contraception during their travel for contraceptive reasons but for regulating and controlling their periods.This paper focuses specifically on the use of contraception during altitude sojourns and reflects the official standard recommendation of UIAA MedCom, which is based on current literature.
- **15. WORK IN HYPOXIC CONDITIONS**
- Until recently only mountaineers and high altitude residents were exposed for prolonged periods to a low oxygen (hypoxic) environment. Over the last decade artificial hypoxic rooms have been built as a fire preventative environment for libraries and are now also used for Hypoxic training for athletes and other purposes.
- **16. TRAVEL TO ALTITUDE WITH NEUROLOGICAL DISORDERS**
- The present review examines several neurological conditions and the problems posed by travelling to high altitude, and in particular whether the underlying disease is likely to worsen. The neurological conditions include migraine and other types of headaches, transient ischemia of the brain, occlusive cerebral artery diseases, intracranial hemorrhage and vascular malformations, intracranial space occupying mass, multiple sclerosis, peripheral neuropathies, neuromuscular disorders and epileptic seizures.
- **17. INJURY CLASSIFICATION FOR MOUNTAINEERING AND CLIMBING SPORTS**
- In the past 20 years several studies (pro- and retrospectively) were conducted to evaluate the injury and fatality risk of rock, ice and mountain climbing. A simple and common protocol was developed, by the UIAA MedCom to report injuries in mountaineering and climbing studies. This protocol includes the use of a single climbing grade reference that converts UIAA climbing grades into a standardised metric form.
- **17A TRAVEL AT HIGH ALTITUDE**
- An easy to understand leaflet for people going to high altitudes. It gives advice on how to avoid serious altitude illness and other health problems. The leaflet is prepared by Medex with support from the UIAA. It describes going from sea level to anywhere above 2,000m.
- This booklet is available here in many languages.
- **18. BLOOD BORNE INFECTIONS IN CLIMBING**
- Climbing often involves travel to foreign and remote destinations, whether for competitions or personal pursuits. Sustaining cuts, abrasions or lacerations, typically on the fingertips in contact with holds, is a common occurrence in climbing. Therefore what is the risk of blood borne infections being transmitted to the climber following – i.e. whether seconding or in a competition?







- **19. RECOMMENDATION FOR PREVENTION AND CONTROL OF LEGIONELLA INFECTIONS**
- Legionnaires' Disease or Legionellosis is the term used for infections caused by Legionella pneumophila and other related bacteria. Legionella bacteria are only dangerous in respirable form and generally only in susceptible individuals for whom inhalation of the bacteria in aerosols or water droplets (showers) may cause severe pneumonia and, in extreme cases, death.
- **20. EYE PROBLEMS IN EXPEDITIONS**
- Excessive sunlight and white snow can be a very big problem when going in expeditions. Precaution and use of special glasses can help. But what if…
- **21. CARDIOVASCULAR DISEASES**
- Mountain activity addictive, therefore mountaineers and climbers usually cross the barrier of comfort to achieve goals and to be on the mountain. Going to high altitude can be a risk for those which suffer from cardiovascular diseases because of the low pressure, oxygen and extreme weather conditions.
- **22A. DRUG USE AND MISUSE IN MOUNTAINEERING**
- The UIAA Medical Commission has developed a new layperson's advice sheet on drug use in the mountains. This paper, which you can ready by clicking on the flag below, is the result of five years of discussion and consensus building between experts on the Commission and the international mountain medicine community.
- *Disclaimer: The UIAA is signatory of World Antidoping Code and does not tolerate the use of drugs and methods that are on the Prohibited List among UIAA registered athletes.*
- **22B DRUG USE AND MISUSE IN MOUNTAINEERING – A UIAA MEDCOM CONSENSUS GUIDE FOR MEDICAL PROFESSIONALS**
- This document can be downloaded here.
- **23. ALPINE HELICOPTER RESCUE OPERATIONS**
- The UIAA Medical Commission has decided to erase the appendix at No.15 and to include its content in an independent recommendation to address those who are active in helicopter rescue at altitude or who are responsible for the health of the crews.
- **24. ZIKA VIRUS**
- In the early weeks of 2016 media led with stories of the increasing awareness that infection with the Zika virus may be linked to an increase in children being born with birth defects such as microcephaly in some South American countries.

Děkuji za pozornost

Jana Kubalová

LK ČHS, LK UIAA, SHM

ZZS JmK, Kamenice 795/ 1d, Brno

kubalova.jana@zzsjmk.cz