Avalanche Victim Resuscitation Checklist

Changing process for saving lives

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Avalanche

Hazard

Time

Stressfull Situation

Life or death

Life or death
Background

- Important informations can be collected at extrication.
- They will have a big influence on further decisions.
- The initial steps and decisions have a crucial impact on patient’s outcome.
Algorithm = help to take decisions

-Easy to understand!

-Difficult to remember in detail, especially in stressful situations

Fig. 2. Management of the buried avalanche victim. In all cases gentle extrication and spinal precautions. Where appropriate core temperature and ECG monitoring, oxygen, insulation, heat packs on trunk; 0.9% NaCl and/or 5% glucose only if an intravenous or intraosseous line can be established within a few minutes; specific trauma care as indicated. Clinicians may consider withholding resuscitation at the scene if it increases risk to the rescue team or if the victim is lethally injured or completely frozen. If duration of burial is unknown core temperature may substitute. Initiate standard ALS including ventilations and chest compressions as indicated. Resuscitation may be terminated in normothermic patients if ALS is not successful >20min. Transport victims with concern of respiratory (e.g. pulmonary oedema) or other-system injury to the most appropriate medical centre. Hospital capable of advanced external or core rewarming. Patients who present with cardiac instability (ventricular arrhythmias, systolic blood pressure <90mmHg) or core-temperature <28° C should be transported towards ECC rewarming. Defibrillations beyond three attempts may be delayed until core-temperature >30° C. If direct transport to ECC rewarming is practical, the nearest ED can be bypassed. If K+ at hospital admission exceeds 12mmol L⁻¹, consider stopping resuscitation (after excluding crush injuries and consideration of the use of depolarizing paralytics); in an adult, levels 8–12mmol L⁻¹ may, in combination with other factors consistent with non-survival, assist in the decision to terminate resuscitation. ALS denotes Advanced Life Support; ED Emergency Department; ICU Intensive Care Unit; ECC extracorporeal circulation.
But...

Which patient has the biggest chance to survive an avalanche burial?

Remember ...
Avalanche, burial time >35min, ≤32°C, Cardiac arrest, no lethal trauma
n=243

Patent Airway +/- air pocket

Unknown
n=101

Yes
n=34

No
n=108

Adapted from Plankensteiner J. avalanche victims with OHCA in Tyrol 1987-2009

45% of "possible surviving" people where declared dead while CPR would have been indicated

27% of "already dead" people, benefited of high-tech resuscitation technology

27%!!!
45% of “possible surviving” people where declared dead while CPR would have been indicated

27% of “already dead” people, benefited of high-tech resuscitation technology
Avalanche = Emergency situation

- Time
- Life or death
- Hazard
- Multivictim avalanches

Stressfull Situation

- Emergency Procedure Checklist
Objectives

1) To increase the rate of resuscitation in patients who may survive

2) To avoid “over resuscitation” of non-survivors

To obtain a higher compliance with the algorithm.
Background from multivictim avalanches

- Though not possible to have a doctor present at the moment of extrication of every patient, especially in a mass casualty setting.

- First steps of treatment and information collection can be done by a BLS trained mountain rescuer.
Brainstorming

- Avalanche algorithm
- checklist
- Multiple victims

ICAR Avalanche victim resuscitation checklist
Validated by ICAR MEDCOM on 18th Oktober 2013

Air Pocket
- Yes, \( x \times x \) (cm)
- No
- Unknown

At Medical Facility delivery, make a copy of the checklist and keep it with the copy of your mission protocol.

Abbreviations:
- Pat ID = Patient Identity
- CPR = Cardiopulmonary Resuscitation
- ALS = Advanced Life Support
- ECLS = Extracorporeal Life Support (Cardiopulmonary Bypass/Extracorporeal Membrane Oxygenation)

* Time between burial and uncovering the face.
** If duration of burial is unknown, core temperature may substitute using esophageal or tympanic (thermistor-based sensor) temperature.
*** CPR can be withheld if unacceptable level of risk for the rescuer, total body frozen or obvious lethal trauma (decapitation, truncal transection).
**** Patients who present with cardiac instability (ventricular arrhythmias, systolic blood pressure <90mmHg) or core temperature <28°C should be transported towards hospital with ECLS rewarming possibility.
***** If K+ at hospital admission exceeds 12mmol/L consider stopping resuscitation (after excluding crush injuries and consideration of the use of depolarizing paralytics); in an adult with K+ = 8-12 mmol/L and other factors consistent with non-survival, termination of resuscitation should be considered.

AVALANCHE VICTIM RESCUSCITATION CHECKLIST
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Size: A6
### AVALANCHE VICTIM RESUSCITATION CHECKLIST

#### Time of avalanche:

- Time of avalanche: ___ : ___

#### Face exposure:

- Face exposure: ___ : ___

<table>
<thead>
<tr>
<th>Burial Time</th>
<th>Vital Signs</th>
<th>Airway Patent</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 35 min (&lt;32°C)</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>&gt; 35 min (&lt;32°C)</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

#### BLS Provider

- **FIRST AID**
  - Patient ID
  - Core Temp: ___ °C
  - Vital Signs:
    - YES
    - NO
  - Air Pocket:
    - YES
    - NO

- **CPR***
  - ALS or unknown
  - Core Temp:
    - ≥ 28°C
    - ≤ 12 mmolL⁻¹
  - ALS:
    - YES
    - NO
  - Enroute to appropriate medical facility
  - STOP

- **ECLS**
  - ALS
  - CPR
  - VS
  - Long transport or multiple casualties
  - ALS or unknown
  - ALS

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AVALANCHE VICTIM RESUSCITATION CHECKLIST

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Patient ID

Time of avalanche: __ : __
Face exposure: __ : __

BLS Provider

- Burial Time: ≤35 min (≥32°C) or >35 min (<32°C)
- Air Pocket ...

ALS Provider

- Obvious lethal trauma or body totally frozen

FIRST AID

- Vital Signs: YES or NO

CPR

- Airway Patent: YES or NO
- ECG: YES or NO

FIRST AID

- Face exposure: __ : __

CPR

- Core Temp: ≥32°C or <32°C or unknown

ALS

- Core Temp: ≥28°C
- Serum K+: ≤12 mmol/L
- Patient ID: NO or YES

STOP

APPROPRIATE MEDICAL FACILITY

ALS Provider Name:
The concept: 1 patient = 1 checklist

Usable for one casualty or in a multivictim situation
To carry the Information from the burial place to the hospital emergency physician is a challenge!

ECLS: YES or NO?
Conclusion

1 patient = 1 card

Usable by BLS and ALS provider

Algorithm as a checklist

Usable on every avalanche
Future:

• Pilot phase, feedback & data collections
• Translating & production
• Distribution & instruction
• Utilisation
• Data collection & further studies
Have a safe winter!

Feedback & Questions:
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