International Commission for Alpine Rescue

Zakopane, 12.10.2019


Dead or not?
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 or after catastrophic brain injury.

In the context of death determination, ‘permanent’ refers to loss of function that cannot resume spontaneously and will not be restored through intervention at the present time or because of some situational or environmental conditions.”
Why is it important?

If somebody’s death is determined:

• a rescue mission can be aborted for safety reasons (risk assessment)
• unnecessary medical interventions can be avoided (important in incidents with several victims or when multiple incidents occur at the same time)
• the workload of the admitting team in a hospital can be reduced by preventing unnecessary transports

Important for emergency medical and other mountain rescue personnel!
Why can it be difficult?
How can it be done?

<table>
<thead>
<tr>
<th>Conditions which may allow determination of death in the mountains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Livor mortis</td>
</tr>
<tr>
<td>Rigor mortis</td>
</tr>
<tr>
<td>Decomposition / putrefaction</td>
</tr>
<tr>
<td>Decapitation</td>
</tr>
<tr>
<td>Massive cranial and cerebral destruction / loss of brain matter</td>
</tr>
<tr>
<td>Hemicorporectomy (or similar massive injury)</td>
</tr>
<tr>
<td>Completely frozen body with lack of chest compressibility</td>
</tr>
<tr>
<td>Avalanche victim in asystolic cardiac arrest with obstructed airways and a burial time of &gt;60min</td>
</tr>
<tr>
<td>Observed submersion of &gt;90min</td>
</tr>
<tr>
<td>Incineration with charring of all observable body surface</td>
</tr>
</tbody>
</table>
Pitfalls

Findings which can be confused with definitive signs of death:

• **dependent lividity:**
  hematomas, reddish skin discoloration in hypothermia and frostbite and by some skin conditions.

• **rigor mortis:**
  stiff joints in cold conditions, after surgical procedures or as a consequence of injuries

• **putrefaction:**
  dark skin color, hematomas, blistering, sepsis and bleeding from the mouth and nose

• **mummification:**
  full thickness frostbite
Examples
Examples
Training

• for medically and especially non-medically trained mountain rescuers

• content:
  • identification of the definitive signs of death
  • local conditions including regulations, the roles of other agencies, methods of interagency communication and ethical considerations

• clear criteria that define the situations in which also non-medically trained rescuers are permitted to determine death.

• support by a checklist
Check for physiological signs of life (at least 1 positive):
- Circulation: □ pulse present □ heart sounds □ rhythm on ECG
- Breathing: □ respiratory effort □ chest sounds
- Cerebral function: □ pupils responding to light □ reaction to painful stimuli

Think on situations of apparent death (e.g. hypothermia, lightning strike)

YES → START CPR MEASURES and FOLLOW RESUSCITATION PROTOCOL! (depending on the situation)

NO → gg not certain

Check for signs of death (at least 1 positive):
- dependent lividity
- rigor mortis
- decomposition
- decapitation / injuries totally incompatible with life
- solid frozen (not compressible) body
- observed submersion >90 min
- incineration
- avalanche victim with asystolic cardiac arrest, obstructed airways and burial time of >60min
- unwitnessed cardiac arrest following blunt trauma

Think on differential diagnoses like cold stiffness, etc.

YES → DETERMINATION OF DEATH

NO → gg not certain

Consider withholding CPR:
- unacceptable risk for rescuers
- CPR not possible because of extreme environment
- cardiac arrest in mass casualty
- «Do not resuscitate»-order

Important things to do:
- legal pronouncement / certification of death
- reporting to the police if necessary
- preserving scene as best as possible if necessary

Think on local legal regulations!

Documentation of:
- date and time when death was diagnosed
- place where death was diagnosed
- name/contact details of the person diagnosing death
Death must be determined with absolute certainty!
Thank you for your attention!

Contact:
Dr. med. Corinna Schön
corinnaschoen@gmx.de