Clinical application of induced hypothermia: Background and practical aspects.

K.H. Polderman, internist/intensivist
University medical center Utrecht, The Netherlands
Sponsors:
Speakers:

Fritz Sterz, Vienna, Austria
Michael Holzer, Vienna, Austria
Bernd Böttiger, Heidelberg, Germany
Kees H. Polderman, Utrecht, The Netherlands
Armand R.J. Girbes, Amsterdam, the Netherlands
Kjetil Sunde, Oslo, Norway
Mauro Oddo, Lausanne, Switzerland
Topics that will be addressed during this workshop:

1: Basic aspects of care in neurocritical patients
2: Potential indications for use of hypothermia
3: Discussion of the evidence for some of the most important potential indications
4: Practical aspects & cooling methods
## Topics:

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>09:10-09:35</td>
<td>Circulation</td>
<td>Armand Girbes, Amsterdam, The Netherlands</td>
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<td>09:35-10:00</td>
<td>Airway, breathing, ventilation</td>
<td>Kees Polderman, Utrecht, The Netherlands</td>
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<td>10:00-10:25</td>
<td>Early strategies to prevent brain injury and</td>
<td>Bernd Böttinger, Heidelberg, Germany</td>
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<td></td>
<td>improve outcome</td>
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<td>10:25-10:50</td>
<td>Coffee break</td>
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<tr>
<td>10:50-11:15</td>
<td>The rescue chain</td>
<td>Kjetil Sunde, Oslo, Norway</td>
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<td>11:15-11:40</td>
<td>The Emergency Room</td>
<td>Michael Holzer, Vienna, Austria</td>
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<td>11:40-12:05</td>
<td>The ICU</td>
<td>Armand Girbes, Amsterdam, The Netherlands</td>
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<td>12:05-13:00</td>
<td>Lunch break</td>
<td>Lunch break</td>
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### Organisational aspects

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>13:00-14:30</td>
<td>Workshop 1 (3 groups)</td>
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<td>Alsium/Cincinnati Sub Zero/Medivance</td>
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<tr>
<td>Time</td>
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<tr>
<td>14:30-14:55</td>
<td>Historical perspective: what can we learn from past experiences?</td>
<td>Kees Polderman, Utrecht, The Netherlands</td>
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<td>14:55-15:20</td>
<td>Underlying mechanisms: how hypothermia can protect the brain</td>
<td>Bernd Böttinger, Heidelberg, Germany</td>
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<td>15:20-15:45</td>
<td><strong>Tea break</strong></td>
<td><strong>Tea break</strong></td>
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<tr>
<td>15:45-16:05</td>
<td>The clinical evidence: Hypothermia for cardiac arrest</td>
<td>Fritz Sterz, Vienna, Austria</td>
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<tr>
<td>16:05-16:25</td>
<td>The clinical evidence: hypothermia for other indications</td>
<td>Kees Polderman, Utrecht, The Netherlands</td>
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<td>16:25-16:45</td>
<td>Place of induced hypothermia in the rescue chain</td>
<td>Kjetil Sunde, Oslo, Norway</td>
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<td>16:45-17:05</td>
<td>Patient selection</td>
<td>Mauro Oddo, Lausanne, Switzerland</td>
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<tr>
<td>17:05-17:25</td>
<td><strong>QUESTIONS AND PANEL DISCUSSION</strong></td>
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## Practical aspects

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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Location</th>
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<tbody>
<tr>
<td>09:00-09:25</td>
<td>Side effects of hypothermia</td>
<td>Kees Polderman, Utrecht, The Netherlands</td>
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<tr>
<td>09:25-09:50</td>
<td>Cooling methods and devices</td>
<td>Michael Holzer, Vienna, Austria</td>
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<td>09:50-10:10</td>
<td>Implementation, motivation and team building.</td>
<td>Armand Girbes, Amsterdam, The Netherlands</td>
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<tr>
<td>10:10-10:30</td>
<td>Monitoring and predicting outcome in cooled patients</td>
<td>Fritz Sterz, Vienna, Austria</td>
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<tr>
<td>10:30-10:45</td>
<td>How we introduced hypothermia in our ICU: a practical experience</td>
<td>Mauro Oddo, Lausanne, Switzerland</td>
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<tr>
<td>10:45-11:15</td>
<td>Break</td>
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11:15-12:45 workshop 2 (3 groups)  
Alsium/Cincinnati Sub Zero/Medivance

13:40-15:10 workshop 2 (3 groups)  
Alsium/Cincinnati Sub Zero/Medivance
Potential indications for induced hypothermia:

- Acute disseminated encephalomyelitis (Level IV)
- Grand mal seizures (Level IV)
- Cardiac arrest due to non-coronary causes (Level IV)
- Sepsis/septic encephalopathy (Level IV)
- Preventing/delaying cardiac arrest in severe hypovolemic shock (Level IV)
- Perioperative (vascular, cardiac and neurosurgery) (Level III)
- Stroke (Level III)
- Post-anoxic encephalopathy VT/VF (Level I)
- Post-anoxic encephalopathy Asystole/PEA (Level III)
- Traumatic brain injury – improving outcome (Level IIA)
- Mitigating myocardial injury during Ischemia/reperfusion (Level III)
- Traumatic brain injury - reducing ICP (Level I)
- Reversing cardiac shock following cardiac surgery (Level III)
- Hepatic encephalopathy (reducing ICP) (Level III)
- Subarachnoid haemorrhage (Level IV)
- Fever in presence of neurological injury (Level IIB)
- Perinatal asphyxia (Level I)
- Preventing cardiac injury during cardiac surgery (Level III)
- Delayed spinal ischemia (Level IV)
- ARDS (Level IV)
- Spinal cord contusion (Level IV)
- Bacterial meningitis (Level IV)

Potential indications for induced hypothermia:

- Acute disseminated encephalomyelitis Level IV
- Grand mal seizures Level IV
- Cardiac arrest due to non-coronary causes Level IV
- Post-anoxic encephalopathy VT/VF Level I
- Post-anoxic encephalopathy Asystole/PEA Level III
- Traumatic brain injury – improving outcome Level IIA
- Traumatic brain injury - reducing ICP Level I
- Perinatal asphyxia Level I
- Spinal cord contusion Level IV

Mitigating myocardial injury during Ischemia/reperfusion Level III

Reversing cardiac shock following cardiac surgery Level III

Hepatic encephalopathy (reducing ICP) Level III

Subarachnoid haemorrhage Level IV

Fever in presence of neurological injury Level IIB

ARDS Level IV

Bacterial meningitis Level IV

Europe vs. USA
Post-anoxic encephalopathy
VT/VF
Level I

Potential indications for induced hypothermia:
The strongest evidence...

Traumatic brain injury - reducing ICP
Level I

Perinatal asphyxia
Level I

Fever in presence of neurological injury
Level IIB
Induced hypothermia: “can be risky, but is potentially highly rewarding”
Situations to be avoided....
Time to begin our workshop!