

RECOMMENDATIONS FOR HYPOTHERMIA TREATMENT **FOR THREE MAIN CLINICAL INDICATIONS**

ROSC AFTER CARDIAC ARREST

According to **ILCOR Advisory Statement**^a (Circulation. 2003)

1. **Indications :**

- ROSC after cardiac arrest due to VF or Pulseless VT
 - Age > 18
 - CPR < 60 minutes
2. Give 20-30ml/kg refrigerated saline in an infusion over 20-30 minutes.^b
 3. Use cooling device to keep temperature stable at 33.5 for 24 hours after induction of hypothermia.
 4. Closely monitor for shivering
 5. Re-warm at a rate of 0.5°C per hour (1°C per 2 hours)

PERINATAL HYPOXIC ISCHEMIC ENCEPHALOPATHY (HIE):

According to the **Toby Trial Procedure**^c (N Engl J Med 2009)

1. **Eligible Infants:**

- Infants are eligible if they were born at or after 36 completed weeks' gestation.
 - At 10 minutes after birth:
Either an Apgar score of 5 or less
or a continued need for resuscitation
or, within 60 minutes after birth, acidosis (defined as any occurrence of umbilical-cord, arterial, or capillary pH of < 7.00 or base deficit of ≥ 16 mmol per liter).
 - Moderate-to- Severe Encephalopathy (indicated by lethargy, stupor, or coma) and either hypotonia, abnormal reflexes (including oculomotor or pupillary abnormalities), an absent or weak suck, or clinical seizures.
 - Abnormal background activity of at least 30 minutes' duration or seizures on amplitude integrated electroencephalography (aEEG).
2. Excluded were infants expected to be more than 6 hours of age.
 3. Use cooling device to keep temperature at a target rectal temperature of 33 to 34°C for a period of 72 hours.
 4. All infants should be sedated with morphine infusions or with chloral hydrate if they appear to be distressed.
 5. Infants were treated in incubators with the power turned off.
 6. Rewarming Procedure: 0.5°C per hour, to a maximum of 37±0.2°C.
The rectal temperature should be monitored for at least 4 hours to prevent rebound hyperthermia.

Traumatic Brain Injury (TBI):

According to the **Eurotherm Trial Study^d**

(<http://www.eurotherm3235trial.eu/protocol/index.phtml>)

1. Indications:

- 18- 65 years old
- Primary, closed traumatic brain injury
- Raised ICP >20mmHg for \geq 5 minutes after first line treatments
- \leq 72 hours from the initial head injury
- Core temperature \geq 36°C
- Abnormal CT scan of the brain – haematoma, contusion, swelling, herniation or compressed basal ganglia

2. Exclusion Criteria:

- Administration of barbiturate infusion prior to treatment
 - Temperature <34°C at hospital admission
3. Give 20-30ml/kg refrigerated saline in an infusion over 20-30 minutes. ^e
 4. Use cooling device to keep temperature between 32°C -35°C for at least 48 hours after induction of hypothermia.
 5. Closely monitor for shivering
 6. No maximum duration of cooling is specified although re-warming should be considered after 48 hours of therapeutic hypothermia treatment.
 7. Patients should be re-warmed at a rate of 12-24 hours. ^f

Disclaimer: These protocols provide general information for cooling therapy only. They are not intended to determine the course of treatment. Rapid advances in medicine may cause information contained here to become outdated, invalid or subject to debate.

References:

^a Circulation. 2003;108:118-121

^b Circulation 2005; 112:715-719

^c N Engl J Med 2009;361:1349-58

^d <http://www.eurotherm3235trial.eu/protocol/index.phtml>

^e Crit Care Med. 2005 Dec;33(12):2844-5

^f [1] J of Neurotrauma 2009; 26:455-467