

Hypothermia After Cardiac Arrest Guidelines (HACA)

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Therapeutic Hypothermia after Cardiac Arrest Guidelines of Care

Inclusion Criteria:

- Within 6 hrs following cardiac arrest (up to 12 hours at attending physician's discretion)
- Successful restoration of a perfusing rhythm and the ability to maintain a blood pressure with/without inotropes or vasopressors
- Comatose state – Lack of meaningful response to verbal commands

Yes

Exclusion Criteria:

- Major head trauma
- Major surgery within prior 14 days
- Systemic infection/sepsis
- Patients with clinically significant bleeding / risk of bleeding

Yes

Stop

No

Initiation of Cooling

- Initiate cooling as rapidly as possible
- Either method of cooling – ice packs/cooling blankets or Arctic Sun System – can be used to initiate cooling and should be started as soon as possible.
- Remove ice packs once the [Arctic Sun] system initiated to prevent overcooling of the patient
- Defibrillator pads may be placed under the Arctic Sun gel pads. It is safe to defibrillate the patient with the Arctic Sun pads on the patient.
- Ensure two methods (bladder, esophageal, core, rectal, groin, axillary) of measuring patient temperature

Shivering / Sedation / Analgesia

- **Non-Pharmacologic Prevention of Shivering**
Wrap hands/feet, cover head w/ blankets
- **Magnesium** 4 grams IVB over 4hrs
- **Sedation/Analgesia:**
Goal sedation level of RASS -4 to -5
- **Sedative Agents:** Patients should receive low dose, continuous infusion of a sedative agent
1) Propofol – 1st line agent; or 2) midazolam (if propofol contraindicated)
- **Analgesic agents**
1) Fentanyl or 2) Hydromorphone

Shivering

Shivering tends to occur most often with induction of hypothermia
If present, follow Algorithm in Full TH Guidelines

- Place the Bair Hugger on the patient
- Give extra boluses of analgesia
- Increase basal sedative rate
- Bolus NMBA –Cisatracurium
- NMBA infusion

*Never stop sedation and analgesic regimens while paralyzed

Monitoring/Supportive Therapy

- **Heart Rate** - Bradycardia is associated with hypothermia and should be treated if associated with hemodynamic instability. There is no need to treat normotensive bradycardia.
- **Mean Arterial Pressure (MAP):** MAP goal of >90 mmHg is preferred to theoretically improve cerebral perfusion, lower MAP goals (65-100mmHg) have shown benefit
- **Central Venous Pressure:** Goal 10-12 mmHg
- **Oxygenation:** Goal oxygen saturation of 94-96%
- **Ventilation:** Maintain normocarbida and avoid hyperventilation or hypoventilation
- **Electrolyte Repletion:** Basic chemistries should be monitored at least q 4 hours and replaced as necessary
- **Glucose Control:** Initiate BHIP for glucose is >200 mg/dl and monitor q hour while cooling q 30 min if glucose <80 mg/dl at any time. (Do not exceed 50 units of insulin / hour)
- **Miscellaneous:** EEG ASAP after initiation on TH via EEG Lab or on-call Fellow or if any suspicion of seizure. Blood cultures 12 hrs post initiation. Skin care check q 2 hr for burns caused by cold blankets.

Rewarming

- Begin re-warming 24 hrs after initiation of cooling at a rate of 0.25°C (0.5° F) every hour until the patient returns to normothermia (37°C/98.6° F).
- Keep Arctic Sun pads on for 48hr and set temperature at 37°C/98.6° F to maintain normothermia.
- Maintain paralytic (if started) and sedation until temperature of 36°C/96.8°F degrees is reached.
- Hypotension, hyperkalemia, hypoglycemia, and hyperthermia may occur during and after the re-warming.
- Stop IV insulin when glucose <200 mg/dl, unless T1DM.
- Testing to assess for neurologic prognosis should be delayed to at least 72 hours after the return to normothermia as patients who have TH have delayed neurologic recovery

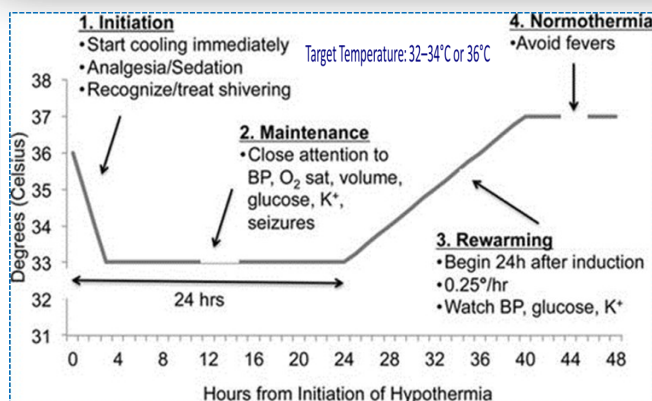
Special thanks to Dr. Peter Safar (1924-2003)

From Dr. Peter Safar:

- A Life Devoted to Cheating Death

- CPR is for the person with a heart and brain too good to die

- Dr. Peter Safar
- Father of Resuscitation medicine
- Helped develop CPR
- Directly responsible for the research used in therapeutic hypothermia.



Targeted Hypothermia in Survivors of Cardiac Arrest



Arctic Sun™ temperature management system

