Guidelines for hypothermia post cardiac arrest

Indications

Adult patients with ROSC and persistent coma (GCS<8) following return of spontaneous circulation post out-of -hospital cardiac arrest**.**

Consider also in patients with persistent coma and return of spontaneous circulation post in-hospital cardiac arrest

Contraindications

- Age <18
- Pregnancy
- Cardiogenic shock
- Pre-existing coagulopathy
- Suspected other causes of coma e.g. intracranial haemorrhage, trauma, overdose, CVA
- Known limitation of therapy or DNR

Initiating Cooling

1. Core temperature should be measured throughout the period of cooling via urinary catheter or oropharyngeal/nasopharyngeal probe NOT rectal probe
2. The aim is to cool the patient as soon as possible to **36°C.**
3. This temperature should be sustained for **28 hours from initiation of cooling.**
4. All patients should have reached the target temperature **as rapidly as possible** from Initiation of cooling. This is achieved initially by one of the following
   - Applying icepacks to the patients head, neck, torso and limbs (remove when temperature reaches 36°C)
   - Infusing 20-30mls/kg of refrigerated saline over 20-30mins if volume status permits
   - Applying a cooling device (Blanketroll III, available in ICU, see protocol for instructions on use)
5. Patients **should be sedated for 36 hours after initiation of cooling.**
6. Prevent shivering with sedation and/or vecuroium administered as required.
7. Monitor patient for arrythmias.
8. Monitor electrolytes, ABGs and coagulation every 6 hours during cooling and rewarming phase.
9. Monitor skin for breakdown and thermal burns. Use pillow case or other material between blanket and patients skin if required.
10. After the intervention period, the body temperature for should be **maintained below 37.5°C until 72 hours after the cardiac arrest**.

Calcium levels may fall with cooling.
Magnesium levels may fall with cooling.
Potassium levels may rise or fall with cooling.
Glucose levels may rise or fall with cooling.

Re-warming procedure

1. After 28 hours, gradual rewarming to 37°C in hourly increments of 0.5°C. Use cooling device to rewarm patient. **Do not remove the blanket to allow the patient to rewarm passively.**
2. Each hour increase the cooling blanket SETPOINT temperature by 0.5 °C (to maximum SETPOINT of 37 °C). Press the TEMPERATURE SET switch, use the up arrow to increase the SETPOINT by 0.5 °C.
3. Press the GRADIENT VARIABLE button. Please refer to Blanketroll III protocol for instructions on use.
4. Monitor electrolytes, ABGs and coagulation during and post rewarming.

Monitor closely during and a minimum of 24 hrs post rewarming for:

- Seizures
- Rebound hyperthermia
- Acidosis
- Hypocalcemia
- Hypoglycemia
- Hyperkalaemia
- Hypomagnesemia
- Diuresis/oliguria
- Vasodilatation and hypotension

REFERENCE:

Nielsen, N., Wetterslev, J., Cronberg, T., Erlinge, D., Gasche, Y., Hassager, C., Horn, J., Hovdenes, J., Kjaergaard, J., Kuiper, M., Pellis, T., Stammet, P., Wanscher, M, Wise, M.P., Åneman, A., Al-Subaie, N., Boesgaard, S., Bro-Jeppesen, J., Brunetti, I., Bugge, J.F., Hingston, C.D., Juffermans, N.P., Koopmans, M., Køber, L., Langørgen, J., Lilja, G., Møller, J.E., Rundgren, M., Rylander, C., Smid, O., Werer, C., Winkel, P., and Friberg, H. (2013). Targeted Temperature Management at 33°C versus 36°C after Cardiac Arrest. *NEMJ* 369; 2197-206.