HNE Area Intensive Care

Practice Guideline

Guideline approved for : JHH and CMN ICU

PROTOCOL FOR INDUCED HYPOTHERMIA AFTER CARDIAC ARREST

- Therapeutic hypothermia clearly reduces mortality and improves neurological outcomes after out-of-hospital VF cardiac arrest.

  Bernard *et al* NEJM 2002; 346: 557-63.

  HACA Study Group NEJM 2002; 346: 549-56.

- The International Liaison Committee on Resuscitation (ILCOR) has recommended that adult patients who are resuscitated from VF but remain comatose should be treated with hypothermia to 32°C-34°C for 12-24 hours.

Indications: ✓

1. VT/VF resuscitated but comatose (intubated or needing intubation) on arrival in the ED.

   ✓

2. Induced hypothermia may be used for other patients at the *discretion of the duty intensivist only* e.g. cardiac arrest associated with drowning, drug overdose, asthma etc.

In the ED:

- Ventilate using TV 8-10ml/kg, RR 8-10 breaths/min aiming for pO_2>100 mmHg (SpO_2 > 98%) and pCO_2 = 36-44 mmHg ($ETCO_2$ = 35mmHg).
- Insert nasopharyngeal temperature probe.
- Sedate and paralyse – midazolam 5mg, vecuronium 20mg.
- If there is no clinical evidence of pulmonary oedema, infuse 30ml/kg ice cold Hartmann's (max 2Litres) (stored in ED fridge at 4°C) as rapidly as possible – this will require a 16G IV cannula and a blood pump set.
- Contact ICU ASAP to organise ongoing care.

- Administer usual cardiac care for acute coronary syndromes in consultation with the cardiologist – hypothermia does not contraindicate thrombolysis or urgent angioplasty.

In the ICU:

- Maintain core temperature 32°C-34°C for 12 hours.

  If temp > 33.5°C use small doses of midazolam and vecuronium to prevent shivering and apply ice packs to completely cover the patient. Place a thin wet sheet over the patient before application of ice to prevent thermal skin injury.

  If temp < 32.5°C remove ice packs. Actively warm with an overhead heater if temperature < 31°C.

  No routine sedation or paralysis is required while hypothermic unless there is shivering.

- Maintain MAP 80-100mmHg with adrenaline/ GTN/ sedation.

- Maintain *temperature corrected* pCO_2 = 36-44 mmHg.
- Hypothermia will lower K^+ and Mg^+. Check K^+ frequently and maintain > 4.0 mmol/l.
- Control blood glucose as per ICU protocol.(hypothermia decreases insulin release)

- Commence rewarming after 12 hours of hypothermia(12 hours from time that temp is between 32-34). Rewarming must be active using an overhead heater aiming for a rewarming rate of 1^oC per hour. Shivering must be suppressed with midazolam +/- vecuronium during rewarming. Cease rewarming when temp > 36.0^o.

Created: 9/2003 by Dr B McFadyen Reviewed: 12/2003 by Dr B McFadyen
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