



London Health Sciences Centre

Critical Care

INDUCTION OF MILD HYPOTHERMIA POST CARDIAC ARREST PREPRINTED ORDERS FOR ADULT PATIENTS

Page 1 of 2

KEY: R - REQUISITIONED P - PROCESSED (KARDEX)

NON-MEDICATION ORDERS	R	P	MEDICATION ORDERS	P
<p>INCLUSION CRITERIA:</p> <ul style="list-style-type: none"> • Post cardiac arrest, in or out of hospital, where there has been a return to spontaneous circulation, regardless of patient age or downtime. This may include other types of circulatory arrest (e.g. attempted hanging) <p>EXCLUSION CRITERIA: See reverse</p> <p>COOLING:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Initiate cooling as soon as bolus doses of medications administered. <input type="checkbox"/> Do not delay cooling for diagnostics, interventional cardiology, or to monitor for neurological improvement. <input type="checkbox"/> Hypothermia goal: Core temperature 32° - 34°C within four hours of admission and maintain for 24 hours from the time when the temperature is < 34°C. <input type="checkbox"/> Hold cooling if T < 32°C. <input type="checkbox"/> Wrap hands and feet with dry towels to prevent frost bite and to decrease shivering during period of therapeutic hypothermia. <input type="checkbox"/> If temperature above range, ice packs may be added to the groin, axilla and /or neck area. <p>ASSESSMENT / MONITORING:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Continuous core temperature by pulmonary artery or esophageal probe. <input type="checkbox"/> Notify MD if MAP < 80 - 100 mmHg <input type="checkbox"/> Monitor ECG for arrhythmias during repositioning or procedures <input type="checkbox"/> Ensure pacemaker pads are not in direct contact with wet linen. <input type="checkbox"/> Assess skin for signs of frostbite q 2h. <input type="checkbox"/> Continuous subhairline EEG. 			<ul style="list-style-type: none"> • Administer bolus doses of analgesic, sedation and neuromuscular blocking agent (NMBA) STAT, then immediately initiate I.V. cooling solution. <p>COOLING AGENT:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Refrigerated I.V. 0.9% NaCl 1 L bolus over 30 minutes post administration of I.V. bolus medications. Repeat q 30 minutes to a maximum of 4 L until T < 34°C. <p>ANALGESIC:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Fentanyl bolus: _____ mcg I.V. STAT (2 - 3 mcg/kg recommended). <input type="checkbox"/> Fentanyl infusion: 1000 mcg/50 mL 0.9% NaCl _____ mcg/hr (1 - 2 mcg/kg/hr recommended). <p>SEDATION:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Midazolam bolus: _____ mg I.V. STAT (0.125 - 0.2 mg/kg recommended). <input type="checkbox"/> Midazolam infusion: 100 mg/50 mL 0.9% NaCl _____ mg/hr (0.1 - 0.2 mg/kg/hr recommended). <p>NEUROMUSCULAR BLOCKING AGENT:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cisatracurium bolus: _____ mg I.V. STAT (0.15 - 0.2 mg/kg recommended). <input type="checkbox"/> Cisatracurium bolus: _____ mg IV q 1h p.r.n. for shivering, muscle movement, ventilator triggering or temperature > 34°C. <p>EYE CARE:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lacrilube ophthalmic ointment to both eyes q 4h and p.r.n. Maintain eyelids closed. <p>REWARMING:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Discontinue all sedative and analgesic infusions and NMBAs simultaneously at the end of the 24 hour cooling period. <input type="checkbox"/> Continue with p.r.n. symptom management as required. 	

ORDER CONTINUED ON PAGE 2

PRESCRIBER'S PRINTED NAME / SIGNATURE:		DATE (YYYY/MM/DD):		TIME:	
PROCESSOR'S INITIALS:	DATE (YYYY/MM/DD):	TIME:	NURSE INITIALS:	DATE (YYYY/MM/DD):	TIME:

PROCEDURE FOR IMPLEMENTING MILD THERAPEUTIC HYPOTHERMIA

Goal is to achieve target temperature within 4 hours of arrest.

1. Exclusion Criteria:

- Patient obeys commands and opens eyes to voice prior to initiation of cooling. Agitated/combatative patients are considered neurologically altered and should be cooled.
- Poor neurological outcome IF determined by a neurologist.
- Severe coagulopathy.
- Patient terminally ill from another underlying medical condition.

2. Complete preprinted orders for "Mild Hypothermia Post Cardiac Arrest".

3. Initiate cooling immediately following an in-hospital or out-of-hospital cardiac arrest. Do not delay for line insertions, tests or procedures. If the patient is not obeying commands, do not delay hypothermia while awaiting neurological reassessment/improvement. The sooner it is started, the greater the chance that brain cells will be preserved. Cooling can be initiated up to 8 hours post event. Some centres now initiate cooling prehospital.

4. Initiate Anesthesia prior to cooling to prevent shivering:

- Initiate cooling as soon as bolus of analgesic, sedative and neuromuscular blocking agents (NMBA) are administered (do not delay while preparing infusions).

5. Establish Temperature Monitoring:

Rectal temperature monitoring can be used until PA or esophageal temperature monitoring is established. Rectal temperature monitoring can be slow to reflect core changes, can be inaccurate when stool is in the rectum or if ice packs in the groin come in contact with the probe.

6. Cooling:

- Begin cooling by rapid administration of refrigerated 0.9 % NaCl. Up to 4 L may be administered to achieve a target T of < 34°C. In addition to facilitating cooling, the volume expansion helps to augment the MAP to ensure adequate cerebral perfusion.
- If pacemaker pads are placed, ensure there is no direct contact with wet linen.
- Extremity wrapping decreases stimulation of thermoreceptors and prevents triggering of body rewarming responses.
- Muscle activity increases heat production and metabolic rate. Administer neuromuscular blocking agents prn for any muscle activity during period of therapeutic hypothermia.

7. Warming:

- During the period of passive rewarming, shivering may occur as a way to increase the patient's temperature. A blanket from the warming cupboard may be used at this point to reduce shivering. Treat pain or agitation with p.r.n. medications as per usual care.

8. Other interventions:

- Cerebral edema may be present following cardiac arrest. The MAP goal is 80-100 mmHg to maintain adequate cerebral perfusion pressure and provide "cerebral" resuscitation. Vasoactive drugs may be required to achieve this goal.
- Initiate enteral feeding, DVT prophylaxis, GI prophylaxis, VAP reduction protocols and intensive insulin therapy.
- Attempt to place feeding tube in small bowel; if small bowel placement unsuccessful, obtain order to initiate gastric feeds at 10 mL/hr, as hypothermia increases risk for impaired gastric emptying.
- Administer ASA, thrombolytics and anticoagulants as required to manage Acute Coronary Syndrome.
- If antiarrhythmic therapy is required, amiodarone is recommended, unless contraindicated.

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