

Adult Induced Hypothermia and/or Re-warming Status Post Cardiac Arrest Orders – PILOT

140013

Inclusion Criteria

- Non Traumatic Cardiac Arrest with Return of Spontaneous Circulation (ROSC)
- Core Temperature greater than (34°C) at presentation
- Time to initiation of hypothermia is less than 6 hours
- Comatose after ROSC: GCS less than 8, and no purposeful movements to pain

Exclusion Criteria

- Uncontrolled GI bleeding
- Patient requiring Mannitol therapy
- Conflict with Advanced Directives or DNR status
- Cardiovascular instability as evidenced by: Uncontrollable arrhythmias
- Refractory hypotension (unable to achieve target MAP of 75 mm Hg despite interventions)
- Sepsis as suspected cause of cardiac arrest
- Suspected intracranial hemorrhage
- Major intracranial, intrathoracic or intrabdominal surgery within 14 days
- Gravid pregnancy

Check boxes where appropriate. Mark through undesired orders.

ORDER AND PHYSICIAN'S SIGNATURE	
<i>(This is not a stand alone order set; MUST be used in conjunction with unit specific admission orders)</i>	
DATE:	TIME: (TIME of ROSC: _____)**
ADMIT STATUS:	<input checked="" type="checkbox"/> Inpatient <input checked="" type="checkbox"/> Admit to adult ICU Admit to <u> </u> ICU
DIAGNOSIS:	S/P Cardiac Arrest. Other: _____
ADMITTING PHYSICIAN:	
CONSULTS:	<input checked="" type="checkbox"/> Critical Care/Intensivist _____ <input type="checkbox"/> Cardiologist _____ <input type="checkbox"/> Other _____
LINE PLACEMENT:	<input type="checkbox"/> Consult _____ for A-line placement (MUST have Arterial line placed) <input type="checkbox"/> Consult _____ service for CoolGard catheter placement unless placed in ED <input type="checkbox"/> Consult _____ service if additional CVC or PA catheter needed <input checked="" type="checkbox"/> Place temperature-sensing foley to monitor temp
COOLING PHASE:	<p>(GOAL is to get core temp to 32°-34°C within 6 hrs of onset of arrest)</p> <input checked="" type="checkbox"/> If core temperature is greater than (34°C) at initiation of protocol, bolus with refrigerated 0.9 % NS until patient's core temperature is (34°C). Bolus at 100mL/min with a maximum of 2 liters total; this is to include ED and EMS volume. May obtain cold saline from ED. (Omit if already given by EMS or ED). <input checked="" type="checkbox"/> Initiate CoolGard protocol for 24 hours. (preferred method). Set machine to 33 °C . <input checked="" type="checkbox"/> If unable to use intravascular catheter above, initiate surface cooling by placing : two cooling blankets (one anterior, and one posterior). Observe bony skin areas q 2hrs for any signs of breakdown. Place ice packs around neck, in axillary areas, and in groin. <input checked="" type="checkbox"/> Place rectal probe; slave to cardiac monitor to have secondary source of temperature. <input checked="" type="checkbox"/> Correlate and record secondary temp q2 hrs. Document source of secondary temp (may be rectal or PA Catheter). <p> IF patient has recurring arrhythmias, discontinue active cooling, begin re-warming & call MD STAT. IF unable to obtain target core temperature consult MD for further cooling orders</p>
TIME COOLING STARTED: _____ (TIME STARTS IN ED)	
VITAL SIGNS:	<input checked="" type="checkbox"/> BP, MAP, HR, O2 saturation, ETCO2 and cardiac rhythm hourly and prn monitoring. Monitor CVP q 2hrs. <input checked="" type="checkbox"/> Record foley temperature q 15 minutes until (32°-34°C) is achieved. Then q 30 minutes. Do not cool less than (32°C)
IV:	<input type="checkbox"/> 0.9% NS at _____mL/hr <hr/> (All fluids during the cooling and re-warming phase should be dextrose free if at all possible)

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BP & VOLUME MANAGEMENT:	<p>*(Goal MAP to be at least 75 mm Hg)</p> <p><input checked="" type="checkbox"/> Replace urine output q 1 hr with: <input type="checkbox"/> NS <input type="checkbox"/> ½ NS <input type="checkbox"/> LR using: <input type="checkbox"/> 0.5 mL/ 1 ml IVF replacement to urine output <input type="checkbox"/> 1 mL/ 1 ml IVF replacement to urine output</p> <p>Observe closely for fluid overload. Consider using Pressors next if urine output is > 0.5 ml/kg/hr</p> <p><input checked="" type="checkbox"/> CVP goal of 6-10 mmHg or _____</p> <p><input checked="" type="checkbox"/> Additional IV volume support: _____</p> <p><input checked="" type="checkbox"/> Norepinephrine (Levophed) IV start at 0.5 mcg/min and titrate as needed to keep MAP greater than 75.</p> <p><input type="checkbox"/> Other pressor agent: _____</p> <p><input checked="" type="checkbox"/> Nitroglycerin IV start if MAP over 120 or _____. Start at 5 mcg/min, increase by 5 mcg/min increments q 3-5 min until a BP response is noted. Goal is to keep MAP* less than 120 OR <input type="checkbox"/> _____</p> <p><input type="checkbox"/> Other: _____</p>
ANALGESIA	<p>Use numeric rating scale (1-10) or other pain scale to assess for pain/discomfort prior to administering a NeuroMuscular Blocking Agent (NMBA.)</p> <p>Goal for analgesia: <input checked="" type="checkbox"/> less than or equal to 3, on 1-10 scale, or minimal pain behaviors.</p> <p><input type="checkbox"/> Other: _____</p> <p style="text-align: center;"><i>(Numeric rating scale will not be applicable for assessing patients receiving a NMBA.)</i></p> <p><input type="checkbox"/> Fentanyl _____ mcg/hr (2 mcg/kg/hr initially) continuous infusion. (Pharmacy to mix in NS). <i>(Consider if patient is hemodynamically unstable or has renal insufficiency, or if Creatinine Clearance < 50 mL/min.)</i></p> <p>OR:</p> <p><input type="checkbox"/> Morphine _____ mg/hr (0.1 mg/kg/hr) continuous infusion <i>(Consider if patient is hemodynamically stable.)</i></p>
SEDATION	<p>Use Riker scale of 1-7 to assess sedation prior to administering an NMBA.</p> <p>Goal for sedation: <input checked="" type="checkbox"/> 2-3 on Riker Scale of 1-7</p> <p><input type="checkbox"/> Other: _____</p> <p style="text-align: center;"><i>(Riker scale will not be applicable for assessing patients receiving an NMBA. May consider use of BIS monitoring for level of sedation, however, BIS monitor may not stick due to cold skin, so titrate therapy to prevent shivering.)</i></p> <p><input type="checkbox"/> Lorazepam (Ativan): _____ mg/hr (0.01 mg/kg/hr initially) continuous infusion, titrate until at goal.</p> <p>OR:</p> <p><input type="checkbox"/> Propofol (Diprivan): _____ mcg/min (5 mcg/kg/min initially) continuous infusion, titrate Q 5 minutes until at goal. <i>Monitor triglycerides after 48 hours. Dosing not to exceed 80 mcg/kg/min. Vial and tubing must be changed Q 12 Hours. Need to discontinue propofol after 3 days; consult with MD for further sedation requirements.</i></p>
NEUROMUSCULAR BLOCKING AGENT (NMBA) (For prevention of shivering)	<p>Before starting neuromuscular blocking agent (NMBA), verify that the patient is adequately medicated with analgesic and sedative agents at goal and receiving mechanical ventilation.</p> <p>Obtain baseline “train of four” (TOF) then Q 1 Hour. Adjust degree of NMBA to achieve 1-2 of 4. If unable to obtain TOF, titrate NMBA to prevent shivering.</p> <p><input type="checkbox"/> Vecuronium (Norcuron): _____ mg (0.1 mg/kg) IV bolus x 1 (unless NMBA bolus given by ED or EMS) Vecuronium (Norcuron): _____ mcg/min (0.8-1.2 mcg/kg/min) continuous infusion. Pharmacy to mix 1:1 in NS <i>(Avoid in significant renal or hepatic impairment..)</i></p> <p>If significant renal or hepatic dysfunction, consider:</p> <p><input type="checkbox"/> Cisatracurium (Nimbex): _____ mg (0.2 mg/kg) IV bolus x 1 (unless NMBA bolus given by ED or EMS) Cisatracurium (Nimbex): _____ mcg/min (2.5-3 mcg/kg/min) continuous infusion</p>
DVT PROPHYLAXIS	<p><input checked="" type="checkbox"/> Sequential compression devices (SCDs). Use Foot Pumps if unable to use SCDs</p> <p><input type="checkbox"/> Heparin 5000 units subcutaneously Q 8 Hours</p> <p>OR</p> <p><input type="checkbox"/> Dalteparin (Fragmin) 5000 units subcutaneously daily</p> <p><input type="checkbox"/> Other: _____</p>
STRESS ULCER PROPHYLAXIS	<p><input type="checkbox"/> Famotidine (Pepcid) 20 mg PO/NG tube/IV Q 12 Hours stress ulcer prophylaxis</p> <p><input type="checkbox"/> If Creatinine Clearance < 50 mL/min, give famotidine (Pepcid) 20 mg PO/NG tube/IV Q 24 Hours</p> <p><input type="checkbox"/> Other: _____</p>

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OTHER MEDICATIONS	<input checked="" type="checkbox"/> Lacrilube to both eyes Q 4 Hours and PRN while on NMBA. <input checked="" type="checkbox"/> Initiate unit-specific (Glucomander or Adult Intensive Insulin Protocol) hyperglycemic management order set (Goal BG 80-110 mg/dL). Do NOT use fingersticks. <input checked="" type="checkbox"/> For intubated/trached patients: Chlorhexidine gluconate 0.12% (Peridex) 15 mL Q 12 Hours. Swab all oral surfaces (buccal, pharyngeal, gingival, tongue and tooth surfaces) for 30 seconds. Discontinue when patient extubated. If trached, continue for 6 months and then reevaluate. Note: Solution not to be swallowed. <input checked="" type="checkbox"/> Acetaminophen (Tylenol)* 650mg per feeding / NG tube / PR q 4hr PRN hyperthermia (which is temp above 98.6°F/ 37°C) during re-warming phase. If given via tube, clamp x 30 min. *Dosage not to exceed 4gm/24hrs. Consider all sources.*  <input checked="" type="checkbox"/> Caution: Do not administer any medication to hypothermic patient if medication is labeled “Do not refrigerate”. (Example: Mannitol)
NURSING:	<input checked="" type="checkbox"/> Insert NG/OG to low intermittent wall suction <input checked="" type="checkbox"/> Intake and output hourly; Call MD if urine output is less than 0.5 mL/kg/hr despite above volume given <input checked="" type="checkbox"/> Monitor CVP and A-line; use saline flush only for pressure line <input checked="" type="checkbox"/> If femoral line, place in reverse Trendelenberg to raise HOB as much as possible without kinking line <input checked="" type="checkbox"/> Do NOT bathe patient during hypothermic or rewarming period
VENT MANAGEMENT:	Vent Settings: _____ Calculate Ideal Body Weight on admission; to be used for ventilator management only: _____ <input checked="" type="checkbox"/> No warm humidified air <input checked="" type="checkbox"/> Continuous ET _{CO} ₂ monitoring <input checked="" type="checkbox"/> ABG prn monitor oxygenation and/or acid/base status (make sure temperature corrected) (Goal PaCO₂ 35-45)
IF NOT DONE IN ED: STAT LABS:	<input type="checkbox"/> BMP <input type="checkbox"/> CBC <input type="checkbox"/> Phos <input type="checkbox"/> ABG (temp corrected) <input type="checkbox"/> Calcium <input type="checkbox"/> PT <input type="checkbox"/> Magnesium <input type="checkbox"/> Troponin <input type="checkbox"/> UA <input type="checkbox"/> PTT <input type="checkbox"/> Lactate <input type="checkbox"/> Urine HCG <input type="checkbox"/> Other: _____
STAT DIAGNOSTICS	<input type="checkbox"/> PCXR <input type="checkbox"/> 12 lead ECG <input type="checkbox"/> Other: _____
LABS EVERY 6 HOURS X 24HRS	<input checked="" type="checkbox"/> BMP <input checked="" type="checkbox"/> Calcium <input checked="" type="checkbox"/> Phos <input checked="" type="checkbox"/> PT <input checked="" type="checkbox"/> CBC with diff <input type="checkbox"/> Other: _____ <input checked="" type="checkbox"/> PTT <input checked="" type="checkbox"/> Magnesium
12 HOURS AFTER INITIATION OF PROTOCOL	<input checked="" type="checkbox"/> Blood Culture x 2 at _____ <input checked="" type="checkbox"/> Other: _____
DAILY	<input checked="" type="checkbox"/> PCXR and ABG while on ventilator <input checked="" type="checkbox"/> CBC and BMP every am <input type="checkbox"/> Other: _____
OTHER LABS OR DIAGNOSTICS	<input type="checkbox"/> Troponin <input type="checkbox"/> CK's q ____ hrs x ____ <input type="checkbox"/> Other: _____
ELECTROLYTE REPLACEMENT	**Do not replace potassium <u>unless it is less</u> than 3 meq/L during cooling phase. Call MD for specific replacement dose. Make sure time to rewarm phase is communicated.  DO NOT USE PRE-EXISTING ELECTROLYTE REPLACEMENT ORDERS

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<p>RE-WARMING PHASE:</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>A. TIME RE-WARMING STARTED: _____</p> <p>B. TIME COOLING STARTED IN ED: _____</p> <p>C. TIME RE-WARMING FINISHED: _____</p> </div> <p>SHIVERING :</p>	<p>Target temperature (36.1°- 37°C)</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Begin rewarming 24hrs from time cooling was started in Emergency Department. Target temperature to be obtained in 6-8hrs; STOP re-warming once (36.1°C) is reached to prevent overshoot. <input checked="" type="checkbox"/> Empty foley at start of rewarming. Strict I & O (see volume replacement section) <input checked="" type="checkbox"/> Activate re-warming (program CoolGard for 0.5°C/hr and 36.1°C). <input checked="" type="checkbox"/> If external cooling devices used, remove cool packs and cooling blankets. <input checked="" type="checkbox"/> May place warm blankets (do NOT use Bair Hugger) <input checked="" type="checkbox"/> Monitor temp/Vs/rhythm closely q 30 minutes until target temp is reached, then q 1hr x 12 additional hours, followed by temp/Vs q 4hrs IF patient remains normothermic or more if condition warrants <input checked="" type="checkbox"/> Continue sedation and neuromuscular blocking agent (NMBA) until temperature is equal to or greater than (36.1°C). (Discontinue NMBA first, <u>then</u> wean sedation.) <input checked="" type="checkbox"/> Do not permit Hyperthermia in first 24hrs after cooling phase. <input checked="" type="checkbox"/> IF temp greater than (37°C) administer Acetaminophen <input checked="" type="checkbox"/> Continue labs as ordered (anticipate increase in potassium) <input checked="" type="checkbox"/> Continue monitoring I & O q 1hr (anticipate hypovolemia) <input checked="" type="checkbox"/> Once normothermic goal reached at end of 48 hrs, consult with MD service for D/C of femoral line 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Observe for shivering q 1 hour <input checked="" type="checkbox"/> If off neuromuscular blockade, and shivering occurs during rewarming phase apply warm blankets. <input type="checkbox"/> Meperidine (Demerol) 12.5mg IV, may repeat in 5 minutes x 1 <input checked="" type="checkbox"/> IF above methods(s) ineffective, call MD STAT for further orders (may need to restart NMBA and sedation)
<p>Physician signature required: _____</p> <p>Beeper #: _____</p>	<p>Transcribed by: _____</p> <p>Date: _____ Time: _____</p>	<p>Checked by (Nurse): _____</p> <p>Date: _____ Time: _____</p>

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