

**WESTERN NEW YORK / ECMC - ADULT INDUCED HYPOTHERMIA  
STATUS POST CARDIAC ARREST ORDERS (PG 1 OF 5)**



Name: \_\_\_\_\_  
 Med. Rec. #: \_\_\_\_\_ Date of Birth: \_\_\_\_\_ Age: \_\_\_\_\_  
 Visit #: \_\_\_\_\_ Insurance: \_\_\_\_\_  
 Service Date: \_\_\_\_\_ Service Time: \_\_\_\_\_ Room: \_\_\_\_\_

**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
- Severe CHF known to be present at baseline (NY Heart Association class III or IV)
- Known terminal illness or pre-arrest impaired cognitive status (unable to perform ADL independently)
- 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 box ✓ to activate desired orders.

<b>ORDERS AND PHYSICIAN'S SIGNATURE</b>	
<i>This is not a stand alone order set; MUST be used in conjunction with unit specific admission orders</i>	
<b>DATE :</b> _____	<b>TIME :</b> _____ (TIME of ROSC : _____ )
<b>ADMIT STATUS :</b>	<input type="checkbox"/> Admit to CCU <input type="checkbox"/> Admit to ICU _____
<b>DIAGNOSIS :</b>	S/P Cardiac Arrest. Other : _____
<b>ADMITTING PHYSICIAN :</b>	<b>Allergies/Intolerances/Nature of reaction :</b> _____
<b>CONSULTS :</b>	<input type="checkbox"/> Critical Care/Pulmonary _____ <input type="checkbox"/> Other _____ <input checked="" type="checkbox"/> Neurology on all patients
<b>LINE PLACEMENT :</b>	<input checked="" type="checkbox"/> Arterial line placement ( <b>MUST have Arterial line placed</b> ) <input checked="" type="checkbox"/> Cooling device set up unless placed in ED <input checked="" type="checkbox"/> CVP catheter needed <input checked="" type="checkbox"/> Place temperature - sensing foley to monitor temp ( 1/4 - 1/8" adapter for cooling device)
<b>COOLING PHASE :</b>	<p><b>(GOAL is to get core temp to 32° - 34°C within 6 hrs of onset of arrest)</b></p> <input checked="" type="checkbox"/> If core temperature is greater than (34°C) at initiation of protocol, bolus with <b>refrigerated (4°C)</b> 0.9% NaCl 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. ( <b>Omit if 2 L already given by EMS or ED</b> ). Place ice packs around head, neck, axillary areas, and groin for 20-25 min (include EMS time). <input checked="" type="checkbox"/> Initiate cooling device protocol for 24 hours with machine to <b>33°C, unless to cath lab, start protocol after lab.</b> <input checked="" type="checkbox"/> Place foley; temperature probe to cooling device. <input checked="" type="checkbox"/> Place rectal probe to cardiac monitor for secondary source of temperature <input checked="" type="checkbox"/> Correlate and record secondary temp every 2 hours. Document source of secondary temp (may be rectal or central catheter). <p> <b>IF</b> patient has recurring arrhythmias, discontinue active cooling, begin re-warming &amp; call MD STAT.  <b>IF</b> unable to obtain target core temperature consult MD for further cooling orders</p>
<b>TIME COOLING STARTED :</b>	
<b>VITAL SIGNS :</b>	<input checked="" type="checkbox"/> BP, MAP, HR, O2 sat, and cardiac rhythm every 15 min x 4, every 30 min x 4 then hourly and prn. Check CVP every hour. <input checked="" type="checkbox"/> Record foley temperature every 15 minutes until (32° - 34°C) is achieved. Then every 30 minutes until rewarming completed. <b>Do not cool less than (32°C)</b>
<b>IV :</b>	<input type="checkbox"/> 0.9% <b>Sodium Chloride</b> at _____ mL/hr <b>If possible, fluids should be dextrose free with the exception of standard infusions or Rx of hypoglycemia.</b>

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**WESTERN NEW YORK / ECMC - ADULT INDUCED HYPOTHERMIA  
STATUS POST CARDIAC ARREST ORDERS (PG 2 OF 5)**



Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_ Age: \_\_\_\_\_  
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<b>BP &amp; VOLUME MANAGEMENT :</b>	<p><b>Goal is MAP &gt; 75 and &lt; 120 mm Hg</b></p> <p><input type="checkbox"/> Replace urine output every 1 hour with : <input type="checkbox"/> 0.9% NaCl <input type="checkbox"/> 0.45% NaCl <input type="checkbox"/> Lactated Ringers 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><b>Observe closely for fluid overload.</b></p> <p><input type="checkbox"/> CVP goal of 6-10 mmHg  <input type="checkbox"/> Additional IV volume support : _____  <input type="checkbox"/> <b>Norepinephrine</b> IV start at 0.5 mcg/min and titrate as needed to keep <b>MAP</b> greater than 75.  <input type="checkbox"/> Other pressor agent : _____  <input type="checkbox"/> <b>Nitroglycerin</b> IV, start if <b>MAP</b> over 120 or _____. Start at 5 mcg/min, increase by 5 mcg/min increments every 3-5 min until a BP response is noted.</p>
<b>ANALGESIA</b>	<p>Use nonverbal pain scale to assess for pain/discomfort prior to administering a Neuromuscular Blocking Agent</p> <p>Goal for analgesia : <input type="checkbox"/> less than 3, on the 1-10 Nonverbal Pain Scale, or minimal pain behaviors.  <input type="checkbox"/> APP scale will be used for patients receiving Neuromuscular Blocking Agent or propofol.</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-left: 650px;"> <p>0-2 no pain              3-6 moderate pain              7-10 severe pain - use app</p> </div> <p><input type="checkbox"/> <b>Fentanyl</b> _____ mcg/hr (range: 0.5-2 mcg/kg/hr) continuous infusion.  <i>(Consider if patient is hemodynamically unstable or has renal insufficiency, or if GFR &lt; 30 mL/min.)</i></p> <p><b>OR :</b></p> <p><input type="checkbox"/> <b>Morphine</b> _____ mg (0.1 mg/kg load; typically 5 - 10 mg), then _____ mg/hr IV continuous infusion (range: 0.8 - 10 mg/hr IV)</p> <p>If <b>opiate overdose</b> in differential (small pupils, unresponsive and/or track marks), consider :</p> <p><input type="checkbox"/> <b>Naloxone</b> : 0.4 mg IV ; (may order every 2 -3 min as needed up to 2 mg; <b>do not cool further if awakens and neurologic deficit resolves</b>)</p>
<b>SEDATION</b>	<p><input type="checkbox"/> <b>Lorazepam</b> : _____ mg IV x 1 (range 1 - 2 mg)</p> <p><input type="checkbox"/> <b>Midazolam</b> : _____ mg/hr (range 2 - 5 mg/hr)</p> <p><input type="checkbox"/> <b>Propofol Infusion</b> : _____ mcg/kg/min (5 mcg/kg/min initially) continuous infusion, titrate every 5 minutes until at goal (range : 5 - 50 mcg/kg/min IV). <i>Monitor triglycerides after 48 hours. Dosing not to exceed 80 mcg/kg/min. Vial and tubing must be changed every 12 hours. Consider discontinuing propofol after 2 days; consult with MD for further sedation requirements.</i></p>
<b>NEUROMUSCULAR BLOCKING AGENT (For prevention of shivering)</b>	<p><b>Before starting neuromuscular blocking agent , verify that the patient is adequately medicated with analgesic and sedative agents at goal and receiving mechanical ventilation.</b></p> <p>Obtain baseline "train of four" then every 1 hour. Adjust degree of neuromuscular blocking agent to achieve 2/4. If unable to obtain train of four, titrate neuromuscular blocking agent to prevent shivering.</p> <p><input type="checkbox"/> <b>Vecuronium</b> : _____ mg (0.1 mg/kg) IV bolus x 1 (unless full neuromuscular blocking agent bolus given by ED or EMS)  <b>Vecuronium</b> : _____ mcg/min (range : 0.8 - 1.2 mcg/kg/min) continuous infusion. (Standard pharmacy solution). <i>Avoid in significant renal or hepatic impairment.</i></p> <p><b>If significant renal (GFR &lt; 30) or hepatic dysfunction, consider:</b></p> <p><input type="checkbox"/> <b>Cisatracurium</b> : _____ mg (0.2 mg/kg) IV bolus x 1 (unless full neuromuscular blocking agent bolus given by ED or EMS)  <b>Cisatracurium</b> : _____ mcg/min (range : 2.5 - 3 mcg/kg/min) continuous infusion</p>
<b>DVT PROPHYLAXIS</b>	<p><input checked="" type="checkbox"/> Sequential compression devices (SCDs). Use Foot Pumps if unable to use SCDs</p> <p><input type="checkbox"/> <b>Heparin</b> 5000 units subcutaneously every 8 hours</p> <p><b>OR :</b></p> <p><input type="checkbox"/> <b>Enoxaparin</b> 40 mg subcutaneously daily (automatic adjustment for GFR &lt; 30 mL/min)</p> <p><input type="checkbox"/> Other :</p>
<b>STRESS ULCER PROPHYLAXIS</b>	<p><input type="checkbox"/> <b>Famotidine</b> 20mg <input type="checkbox"/> IV every 12 hours stress ulcer prophylaxis (automatic substitution permissible)  <input type="checkbox"/> If GFR &lt; 30 mL/min, give Famotidine (Pepcid) 20 mg <input type="checkbox"/> IV every 24 hours.</p> <p><input type="checkbox"/> Other : _____</p>

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**WESTERN NEW YORK / ECMC - ADULT INDUCED HYPOTHERMIA  
STATUS POST CARDIAC ARREST ORDERS (PG 3 OF 5)**



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<b>OTHER MEDICATIONS</b>	<input checked="" type="checkbox"/> <b>Lacrilube</b> to both eyes every 4 Hours and PRN while on neuromuscular blocking agent. <input checked="" type="checkbox"/> For intubated/trached patients : <b>Follow ICU Oral Care Policy</b> <input type="checkbox"/> Other : _____ _____ _____ _____ _____ _____ _____ _____ _____ _____			
<b>NURSING :</b>	<input checked="" type="checkbox"/> Insert NG/OGT to low continuous 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"/> Do <b>NOT</b> bathe patient during hypothermic or rewarming period			
<b>VENT MANAGEMENT :</b>	<b>Vent Settings :</b> _____ <input checked="" type="checkbox"/> No warm humidified air <input type="checkbox"/> ABG every _____ (maintain PaCO <sub>2</sub> 35 - 45)			
<b>IF NOT DONE IN ED : STAT LABS :</b>	<input checked="" type="checkbox"/> BMP <input checked="" type="checkbox"/> Troponin <input checked="" type="checkbox"/> UA	<input checked="" type="checkbox"/> CBC <input checked="" type="checkbox"/> PT/PTT <input checked="" type="checkbox"/> Serum & Urine Tox <input checked="" type="checkbox"/> Serum Albumin	<input checked="" type="checkbox"/> Ca/Magnesium/Phos <input checked="" type="checkbox"/> Lactate <input checked="" type="checkbox"/> Type & Screen Notify MD if Hgb < 10	<input checked="" type="checkbox"/> ABG (temp corrected) <input type="checkbox"/> Urine HCG Female (Age 10-55) <input type="checkbox"/> Other: _____
<b>STAT DIAGNOSTICS</b>	<input checked="" type="checkbox"/> PCXR	<input checked="" type="checkbox"/> 12 lead ECG	<input type="checkbox"/> Other: _____	
<b>LABS EVERY 6 HOURS X 24 HRS</b>	<input checked="" type="checkbox"/> BMP <input checked="" type="checkbox"/> PT/PTT	<input checked="" type="checkbox"/> Ca/Magnesium/Phos <input checked="" type="checkbox"/> CBC with diff	<input type="checkbox"/> Other: _____	
<b>12 HOURS AFTER START OF PROTOCOL</b>	<input type="checkbox"/> Blood Culture x 2 <input type="checkbox"/> Other: _____			
<b>DAILY</b>	<input checked="" type="checkbox"/> PCXR <input checked="" type="checkbox"/> CBC, BMP and ABG <input type="checkbox"/> Other: _____			
<b>OTHER LABS OR DIAGNOSTICS</b>	<input checked="" type="checkbox"/> Troponin every 8 hours x 24 hours <input type="checkbox"/> CK's every _____ hours x _____ <input type="checkbox"/> Other: _____			
<b>ELECTROLYTE REPLACEMENT</b>	Do not replace potassium unless serum potassium is less than 3mEq/L during cooling phase. Call MD for specific replacement dose. Make sure time to rewarm phase is communicated. <b>DO NOT USE PRE-EXISTING ELECTROLYTE REPLACEMENT ORDERS</b>			

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**WESTERN NEW YORK / ECMC - ADULT INDUCED HYPOTHERMIA  
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<p><b>RE-WARMING PHASE:</b></p> <p><b>A. TIME RE-WARMING STARTED:</b> _____</p> <p><b>B. TIME COOLING STARTED IN ED:</b> _____</p> <p><b>C. TIME RE-WARMING FINISHED:</b> _____</p> <p><b>SHIVERING :</b></p>	<p><b>Target Temperature (36.1° - 37°C)</b></p> <p><input checked="" type="checkbox"/> Begin rewarming 24 hours from time cooling was started</p> <p> <b>Target temperature to be obtained in approximately 18 hours; STOP re-warming once (36°C) is reached to prevent overshoot. Rewarming goal of 0.17°C/hr. Remove warming garments from patient.</b></p> <p><input checked="" type="checkbox"/> Empty foley at start of rewarming. Strict I &amp; O (see volume replacement section)</p> <p><input checked="" type="checkbox"/> Activate re-warming (<b>program warming device for 0.17°C/hr and 36°C</b>). Call MD if warming &gt; 0.5°C/hr.</p> <p><input checked="" type="checkbox"/> If external cooling devices used, remove cool packs.</p> <p><input checked="" type="checkbox"/> May place warm blankets (do NOT use Bair Hugger) if needed</p> <p><input checked="" type="checkbox"/> Monitor temp/Vs/rhythm closely every 30 minutes until target temp is reached, then every 1 hour x 12 additional hours, followed by temp/Vs every 4 hours IF patient remains normothermic or more if condition warrants</p> <p><input checked="" type="checkbox"/> Continue sedation and neuromuscular blocking agent until temperature is equal to or greater than 36°C. (Discontinue neuromuscular blocking agent first, <u>then</u> wean sedation.)</p> <p><input checked="" type="checkbox"/> Do not permit temperature greater than 37°C in first 24 hours after cooling phase.</p> <p><input type="checkbox"/> IF temp greater than (37°C) administer acetaminophen</p> <p><input checked="" type="checkbox"/> Continue labs as ordered (<b>anticipate increase in potassium</b>)</p> <p><input checked="" type="checkbox"/> Continue monitoring I &amp; O every 1 hour (<b>anticipate hypovolemia</b>)</p> <p><input checked="" type="checkbox"/> Once normothermic goal reached at end of 48 hours, consult with MD service for D/C of femoral line if present.</p> <p><input type="checkbox"/> <b>Acetaminophen</b> : Route 650 mg    <input type="checkbox"/> per feeding    <input type="checkbox"/> NG tube    <input type="checkbox"/> PR    every 4 hours PRN temp above <b>37°C X 48 hours</b>. If given via tube, clamp x 30 min. <b>Dosage not to exceed 4 gm / 24 hours</b></p> <p><input checked="" type="checkbox"/> Observe for shivering every 1 hour</p> <p><input checked="" type="checkbox"/> If off neuromuscular blockade, and shivering occurs during rewarming phase apply warm blankets.</p> <p><input type="checkbox"/> <b>Hydromorphone</b> 1 mg IV, may repeat in 5 minutes x 1</p> <p><input checked="" type="checkbox"/> <b>IF above methods(s) ineffective, call MD STAT for further orders (may need to restart neuromuscular blocking agent and sedation).</b></p>	
<p><b>Physician signature required :</b> _____</p> <p><b>Date :</b> _____ <b>Time :</b> _____</p> <p><b>Beeper # :</b> _____ --- _____</p>	<p><b>Transcribed by :</b> _____</p> <p><b>Date :</b> _____ <b>Time :</b> _____</p>	<p><b>Checked by (Nurse) :</b> _____</p> <p><b>Date :</b> _____ <b>Time :</b> _____</p>

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**Physician Information**  
**(Guidelines - do not replace physician judgment)**

- 1) Potassium less than 3.4 mEq/L early in cooling (first 12 hours) - replace Potassium Chloride with 40 meq by NG
- 2) Potassium less than 3.0 mEq/L late in cooling (12 - 24 hours) - replace Potassium Chloride with 40 meq by NG (Potassium tends to rise on rewarming)
- 3) Hgb less than 10 - Transfuse PRBCs
- 4) Platelets less than 30,000 - transfuse 2 packs
- 5) Platelets 30,000 - 50,000 with bleeding transfuse 2 packs
- 6) During rewarming there is an osmotic diuresis - replace volume slightly greater than 1 : 1 to urine output
- 7) Treatment of Hyperglycemia (non-diabetic) : glucose 200 - 249 - 2 units reg insulin, 250 - 299 - 3 units reg insulin, 300 - 349 - 4 units reg insulin, 350 - 400 - 5 units reg insulin
- 8) INR > 2 correct with FFP 2 - 4 units ± vitamin K (if on Warfarin)
- 9) Temp < 31°C - consider 250 mL bolus of warmed 0.9% normal saline and warming blanket
- 10) Unable to cool to temp 32°- 34°C - consider 250 - 500 mL 4 degree 0.9% sodium chloride
- 11) Magnesium < 1.7 - 2 grams Magnesium Sulfate IV
- 12) Corrected Calcium < 8.4 - Calcium Chloride 1 gram IV (Calcium level should be corrected for decreased albumin : Corrected calcium (mg/dL) = measured total Ca (mg/dL) + 0.8 (4.0 - serum albumin [g/dL]), where 4.0 represents the average albumin level)

**\*\* NOTIFY MD IF :**

- Magnesium < 1.7
- Corrected Calcium < 8.4
- Potassium < 3.4
- Hgb < 10
- Platelets < 30,000
- Platelets 30,000 - 50,000 with bleeding
- Glucose ≥ 200

Temperature Conversion Chart

C°	F°
31	87.8
32	89.6
33	91.4
34	93.2
35	95
36	96.8
36.1	96.98
37	98.6
38	100.0
39	102.2

