### Inclusion Criteria
- Non Traumatic Cardiac Arrest (for the purposes of these orders, hanging and drowning victims are considered non-traumatic arrests) with Return of Spontaneous Circulation (ROSC)
- Time to initiation of hypothermia is less than 6 hours
- GCS less than 8, and not following commands

### Exclusion Criteria
- Uncontrolled bleeding
- Refractory arrhythmias
- Refractory hypotension (unable to achieve SBP > 90 mm Hg despite interventions)
- Sepsis as suspected cause of cardiac arrest

### Special Consideration
- Major intracranial, intrathoracic or intrabdominal surgery within 14 days
- Highly suspected intracranial hemorrhage
- Gravid pregnancy – Informed consent from family must be placed in patient chart

### Orders and Physician’s Signature

<table>
<thead>
<tr>
<th>DATE:</th>
<th>TIME:</th>
<th>(TIME of ROSC: _____________)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMIT STATUS:</td>
<td>Inpatient</td>
<td>Admit to adult ICU</td>
</tr>
<tr>
<td>DIAGNOSIS:</td>
<td>S/P Cardiac Arrest</td>
<td>Other:</td>
</tr>
<tr>
<td>ADMITTING PHYSICIAN:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONSULTS:</td>
<td>Critical Care/Intensivist</td>
<td>Cardiologist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
</tr>
<tr>
<td>LINE PLACEMENT:</td>
<td>Arterial line (MUST have Arterial line placed)</td>
<td>RT to place arterial line</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Place temperature-sensing Foley to monitor temp</td>
</tr>
</tbody>
</table>

### Cooling Phase

**GOAL is to get core temp to 32°-34°C within 6 hrs of onset of arrest**
- If core temperature is greater than (34°C) at initiation of protocol, bolus with refrigerated 0.9 % NS IV until patient’s core temperature is (34°C). Bolus at 100mL/min IV 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).
- Set cooling machine to 33 °C x 24 hours.
- 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.
  - Place rectal probe or esophageal probe; slave to cardiac monitor to have secondary source of temperature.
  - Correlate and record secondary temp q 2 hrs. Document source of secondary temp (may be rectal, esophageal, or PA Catheter).
  - **IF** patient has refractory arrhythmias (other than stable Bradycardia, as this is expected), call MD STAT.
  - **IF** unable to obtain target core temperature within 4 hours consult MD for further cooling orders

### Vital Signs
- BP, MAP, HR, O2 saturation and cardiac rhythm hourly and prn monitoring.
- Record Foley temperature q 15 minutes until (32°-34°C) is achieved. Then q 30 minutes. **Do not cool less than (32°C)**
- If CVP monitoring ordered, monitor CVP q2h.
**BP & VOLUME MANAGEMENT:** *(Goal MAP to be at least 75 mm Hg or ___)*

- □ 0.9% NS at ________mL/hr
- □ Replace urine output q 1 hr with: □ NS □ ½ NS □ LR using:
  - □ 0.5 mL/ 1 mL IVF replacement to urine output
  - □ 1 mL/ 1 mL IVF replacement to urine output

**Note:** Consider all sources

- □ Additional IV volume support: ___________________________

**MANAGEMENT (All fluids during the cooling and re-warming phase should be dextrose free if at all possible)**

**Norepinephrine** (Levophed) Start IV infusion at 5 mcg/min and titrate from 0-30 mcg/min to achieve target noted above

**ANALGESIA**

- □ Start analgesia ONLY if Riker > 2
- □ Analgesia should be optimized prior to starting a sedative
- □ Numeric Rating Scale (NRS) q4h, titrate analgesia for NRS < 5 or minimal pain behavior *(Numeric rating scale will not be applicable for assessing patients receiving a NMBA)*
- □ Modified Riker Scale (MRS) q4h and titrate sedation for MRS 2-3 out of 7
- □ Call MD if unable to achieve pain and sedation goals at maximum doses ordered.

**Fentanyl:** Start IV infusion at 25 mcg/hr and titrate from 0-150 mcg/hr to achieve a Riker scale score of 2-3.

- □ Fentanyl 25 mcg IV (bolus from bag) q5min PRN pain or before infusion rate increases
- □ Chart Riker and NRS scores q4h per policy
- □ If patient over-sedated (e.g. NRS higher than goal or MRS score lower than goal), reduce dose by 50%.

**OR:**

**Morphine:** Start IV infusion at 2 mg/hr and titrate from 0-10 mg/hr to achieve a Riker scale score of 2-3.

- □ Morphine 2 mg IV (bolus from bag) q10 min PRN pain or before infusion rate increases
- □ Chart Riker and NRS scores q4h per policy
- □ If patient over-sedated (e.g. NRS higher than goal or MRS score lower than goal), reduce dose by 50%.

**SEDATION**

- □ Start sedation if analgesic infusion does not achieve Riker 2-3 within 1 hour
- □ Modified Riker Scale (MRS) q4h and titrate sedation for MRS 2-3 out of 7 (if not on NMBA)
- □ Call MD if unable to achieve pain and sedation goals at maximum doses ordered.

**Propofol:** Start IV infusion at 10 mcg/kg/min and titrate from 0-80 mcg/kg/min to target a Riker scale score of 2-3.

- □ Monitor triglycerides after 48 hours. Discontinue q48hr serum triglyceride monitoring when propofol discontinued.
- □ **Vial and tubing must be changed Q 12 Hrs.**
- □ If patient over-sedated (e.g. MRS score lower than goal), reduce dose by 50%.

**SHIVERING**

- □ If shivering occurs, verify that patient has achieved goal MRS and NRS scores with sedatives and analgesics
- □ If shivering persists despite analgesia and sedation, passively rewarmed hands (e.g. with towels, socks)
- □ If shivering persists despite analgesia and sedation and passive rewarming, administer:
  - □ acetaminophen (Tylenol) 650 mg PT X 1
  - □ buspirone (Buspar) 30 mg PT X 1
  - □ cisatracurium (Nimbex) 20 mg IV push. May repeat dose in 30 minutes X 1 if shivering persists.
  - □ If shivering persists despite above interventions, initiate the **SYSWD Critical Care Neuromuscular Blockade Orders for Adults (650015)**. BIS goal = 40-60. NMBA goal: no shivering (if NMBA started for refractory shivering).

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**Patient Identification:**

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**WakeMed Physician Orders**

Critical Care

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## Adult Induced Hypothermia Orders

### DVT Prophylaxis

- **Sequential compression devices (SCDs). Use Foot Pumps if unable to use SCDs**

### Pharmacoprophylaxis (choose one):

- **Heparin** 5000 units subcutaneously Q 8 Hours
- **Enoxaparin (Lovenox) 40mg subcutaneously daily** (pharmacist may change to enoxaparin 30 mg subcutaneously daily if CrCl < 30 mL/min)
- **Enoxaparin (Lovenox) 30mg subcutaneously daily** (recommended for CrCl less than 30mL/min)
- **Other:** _______________________________

### Full anticoagulation:

- **SYSWD** Weight-based heparin orders for ACS (choose option for load, infusion and boluses).

### Stress Ulcer Prophylaxis

- **Famotidine** (Pepcid) 20 mg IV Q 12 Hours
  - If CrCl < 50 mL/min, pharmacist may change to famotidine (Pepcid) 20 mg IV Q24 Hours
- **Pantoprazole** (Protonix) 40 mg IV daily
- **Other:** ______________________________

### Other Medications

- **Lacrilube** to both eyes Q 4 Hours PRN dry eyes.
- **Initiate unit-specific (MDN Glucostabilizer) hyperglycemic management order set.** (Goal BG < 180mg/dL). Do NOT use fingersticks. IV Insulin ONLY. Do NOT transition to subcutaneous insulin until body temperature greater than or equal to 36°C.
  - 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.
  - **Acetaminophen (Tylenol)*** 650mg per feeding / OG 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.*
  - Pharmacist may renally adjust all medications
  - **Caution:** Medications labeled “Do not refrigerate” must not be infused through cooling catheter [metronidazole (Flagyl), mannitol, etc].

### Nursing:

- Insert OG to low intermittent wall suction
- Intake and output hourly; Call MD if urine output is less than 0.5 mL/kg/hr despite above volume given
- A-line: use saline flush only for pressure line
- Place patient in reverse Trendelenberg to raise HOB as much as possible (30 degrees) without kinking line
- Do NOT bathe patient during hypothermic or rewarming period

### Vent Management:

- Calculate Ideal Body Weight on admission; to be used for ventilator management only: __________
- No warm humidified air
- Continuous ETCO₂ monitoring
- ABG PRN monitor oxygenation and/or acid/base status (make sure temperature corrected) (Goal PaCO₂ 35-45)

### If Not Done in ED: Stat Labs:

- **BMP**
- **Ionized calcium**
- **Ua**
- **CBC**
- **PT/INR**
- **Phos**
- **Magnesium**
- **Lactate**
- **ABG (temp corrected)**
- **Urine HCG**
- **Troponin**
- **Other:** ______________________________

### Stat Diagnostics:

- **PCXR**
- **12 lead ECG**
- **Other:** ______________________________

## Labs Every 6 Hours x 48 hrs

- **BMP**
- **PT/INR**
- **PTT**
- **CBC with diff**
- **ionized calcium**
- **Phos**
- **Magnesium**
- **Other:** ______________________________

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**Patient Identification:**

- **WakeMed Physician Orders**
- **Critical Care**
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**Adult Induced Hypothermia Orders**

### 12 Hours After Initiation of Protocol

- **Blood Culture x 2 at ________**
- **Other: ____________________________**

### Daily

- **PCXR and ABG while on ventilator every a.m.**
- **Other: ____________________________**
- **CBC and BMP every am**
- **Other: ____________________________**

### Other Labs or Diagnostics

- **Troponin 6 hours after initial**
- **Other: ____________________________**

### Electrolyte Replacement

**Do not replace during cooling phase:**
- Potassium unless it is less than 3 meq/L
- Magnesium unless it is less than 2 meq/L
- Calcium unless it is less than 8mg/dL
- Phosphate unless it is less than 2.4mg/dL

- Call MD for specific replacement dose. Make sure time to rewarm phase is communicated.

**Do not use pre-existing electrolyte replacement orders**

### Re-Warming Phase:

**Target temperature (37°C)**

- **Begin rewarming 24hrs from time cooling was started in Emergency Department.**

- **Target temperature to be obtained in 6-8hrs; If external: stop re-warming once (36°C) is reached to prevent overshoot.**

- **Empty Foley at start of rewarming.**
- **Strict I & O (see volume replacement section)**
- **Activate re-warming (program CoolGard for 0.5°C/hr and 37°C).** Use Coolgard to maintain 37°C X 24 hours.
- **If external cooling devices used, remove cool packs and cooling blankets.**
- **May place warm blankets (do NOT use Bair Hugger)**
- **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**
- **Continue analgesia and sedation until temperature is equal to or greater than (36°C). (If patient on continuous cisatracurium, discontinue cisatracurium first, wait for TOF of 4/4 twitches, then wean sedation.)**
- **Do not permit Hyperthermia in first 24hrs after cooling phase.**
- **IF temp greater than (37°C) administer Acetaminophen**
- **Continue labs as ordered (anticipate increase in potassium)**
- **Continue monitoring I & O q 1hr (anticipate hypovolemia)**
- **Once normothermic goal reached at end of 48 hrs, consult with MD service for discontinuation of femoral line**

**Patient Identification:**

WakeMed Physician Orders

Critical Care

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SHIVERING:
- ✅ Observe for shivering q 1 hour
- ✅ If shivering occurs during rewarming phase:
  - ✅ If off neuromuscular blockade, please apply blankets.
  - ✅ If shivering persists despite blankets, give **Acetaminophen (Tylenol)** 650 mg PT/PR X 1. Do not exceed 4000 mg daily. Consider all sources.
  - ✅ If shivering persists despite blankets and acetaminophen, give **Meperidine** (Demerol) 12.5mg IV X 1 dose
  - ✅ If shivering persists 15 minutes after first dose of meperidine, give **Meperidine 12.5 mg** IV X 1 and buspirone 30 mg PT X 1
  - ✅ **IF** above methods(s) ineffective to reduce shivering, call MD STAT for further orders (may need to restart sedation (propofol, dexmedetomidine) or give another dose of buspirone and/or order NMBA)

<table>
<thead>
<tr>
<th>ORDERS ONCE TEMPERATURE ≥ 37</th>
</tr>
</thead>
</table>
|     | ✅ Initiate Critical Care Electrolyte Replacement Orders  
|     | ✅ Discontinue urine output repletion orders and change IVF to: ____________________________ |

TO/VO per (PRINT Physician name/Nurse name):

- Date:
- Time:

Physician Signature/ pager:

- Date:
- Time:

Orders entered by:

- Date:
- Time:

Orders checked by (Nurse):

- Date:
- Time:

Patient Identification: