**CMICU Orders for Induced Hypothermia Post-Cardiac Arrest**

**Code Chill Maintenance Phase**

- **Goal**: To cool patient at 33.0°C (TARGET TEMPERATURE) for 24 hours
- **Do NOT**: Cool patient to less than 32.5°C
- **Clearly denote** time TARGET TEMPERATURE is reached (NOTE: Code Chill start time begins when TARGET TEMPERATURE is reached and continues for 24 hours thereafter)
- **Sedation goal** during Induction Phase is RASS -3 to -4
- **Continue** to monitor and record esophageal and rectal temperatures hourly if stable
- **Immediately notify** Cardiologist for continued/prolonged arrhythmias – consider termination of treatment
- **ICY™ catheter** must be discontinued and removed after four (4) days – Discontinue Date [ ]

<table>
<thead>
<tr>
<th>Code Chill Begin Time &amp; Date:</th>
<th>Code Chill Stop Time &amp; Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Actual time TARGET TEMP reached]</td>
<td>[24 hours post TARGET TEMP]</td>
</tr>
</tbody>
</table>

**DATE** | **TIME** | **Diagnostics/ Lab, Radiology, Other:**
---|---|---
1. | | CBC, Comprehensive metabolic profile (COMPMET), Magnesium, Phosphorus, PT/PTT, Lactic Acid, CPK, CK-MB, Troponin I and ABG every 8 hours times 24 hours
2. | | CBC, Basic metabolic profile (BASCMET), Magnesium, Phosphorus, PT/PTT, LFT daily times 2 day
3. | | ABG every AM until extubated and PRN for respiratory rate greater than 30 and/or SpO₂ less than 90%
4. | | EKG every AM x 3 days
5. | | Portable chest x-ray daily until extubated

**Interventions and Treatments:**

6. | | Ventilator Mode Settings: [ ] AC [ ] SIMV
   | Rate: _____ | FiO₂: _____ | Vt: _____ | PEEP: _____ | PSV: _____
   | **SpO₂ Goal:** 94 to 96% / **PaO₂ Goal:** 80 – 120 mm Hg
   | **Arterial line should be in place as soon as reasonably possible**
   | **Ensure ventilator humidifier is OFF until rewarming phase is initiated**

**Gastric motility and absorption may be dramatically slowed during hypothermia. If possible, avoid enteral use for 72 hours post admission**

7. | | Place NG/OG tube and attach to low continuous suction
8. | | Oral care every 2 hours
9. | | Bed rest with HOB less than 30° until target temperature is reached, then may elevate HOB to 30° if not contraindicated
10. | | Log roll every 2 hours once target temperature is reached and if not contraindicated
11. | | Notify Physician for urinary output less than 0.5 ml / kg / hr WEIGHT: _____________ kg
12. | | Monitor CVP – Maintain CVP 10 cm H₂O
13. | | Monitor arterial line – Maintain mean arterial pressure (MAP) of at least 70 mm Hg
14. | | Obtain and document daily weight
15. | | Do **NOT** bathe patient during Maintenance or Rewarming Phases
16. | | Heel protection applied

**Signature ____________________________________________ Date _______________ Time _______________**

Henrico Doctors’ Hospital
**CMICU Orders for Induced Hypothermia Post-Cardiac Arrest Maintenance** (Page 1 of 4)

HDH.HOSP#168 (11/10)
Authorization is hereby given to dispense the generic equivalent unless otherwise indicated by the physician.

---

**CMICU Orders for Induced Hypothermia Post-Cardiac Arrest**
**Code Chill Maintenance Phase (continued)**

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
</tr>
</thead>
</table>

**Medications (Sedation, Pain and Neurovascular Blocking Agents):**

*Sedation goal during Induction and Maintenance Phases is RASS -3 to -4. Duration of sedation may be prolonged in hypothermic patients.*

17. **Medications: IV Bolus – Select one choice only**
   - [ ] Midazolam (Versed) 1 mg IV every 30 minutes PRN for sedation
   - [ ] Fentanyl 50 mcg IV every 30 minutes PRN for sedation and/or pain
   - [ ] Morphine 2 mg IV every hour PRN for pain

18. **Medications: IV Continuous – Select one choice only**
   - [ ] Fentanyl 5,000 mcg in 100 ml Normal saline initiate at 25 mcg / hour. May give one time bolus of 25 mcg with initiation and then increase rate by 25 mcg / hour every 15 minutes PRN to maintain sedation at desired goal up to a max dose of 200 mcg / hour
   - [ ] Precedex (Dexmedetomidine) 400 mcg in 250 ml Normal saline at 0.2 mcg / kg / hour. Titrate up or down by 0.1 mcg / kg / hr every 30 minutes up to a max dose of 1.4 mcg / kg / hour
   - [ ] Propofol 1,000 mg in 100 ml Normal saline. Initiate at 10 mcg / kg / minute. Titrate up or down by 5 mcg / kg / minutes every 15 minutes to a max dose of 50 mcg / kg / minute
   - [ ] Versed 100 mg in 100 ml Normal saline. Initiate at 2 mg / hour. Titrate up or down by 1 mg every 5 minutes up to max dose of 10 mg / hour
   - [ ] For ineffective cooling (less than 1.5 degree C drop from baseline within the first hour of treatment, give Vecuronium [Norcuron] 0.1 mg / kg bolus x 1 dose.
   - [ ] Other: __________________________________________________________

**Routine Medications:**

19. Initiate Potassium Protocol on admission – scan protocol to accompany this order to Pharmacy
   *Stop all potassium 8 hours prior to rewarming*
   
   Hypokalemia should be treated within the first hour to CMICU, repeat K levels 2 hours after completion of replacement dose.

20. Initiate Magnesium Protocol on admission – scan protocol to accompany this order to Pharmacy

**For DVT Prophylaxis: - Select one choice only**

21. [ ] Heparin 5,000 units subcutaneous twice daily - *First dose: Now*
22. [ ] Enoxaparin (Lovenox) 40 mg subcutaneous daily - *First dose: Now*
23. [ ] Enoxaparin (Lovenox) 30 mg subcutaneous daily for Creatinine Clearance less than 30 - *First dose: Now*

**24. Stress Ulcer Prophylaxis:**

 [ ] Esomeprazole (Nexium) 40 mg IV daily - *First dose: Now*

---

Signature __________________________________________________________ Date _______________ Time _______________

Henrico Doctors’ Hospital

CMICU Orders for Induced Hypothermia Post-Cardiac Arrest (Page 2 of 4)

HDH.HOSP#168 (11/10)

*POS*
### CMICU Orders for Induced Hypothermia Post-Cardiac Arrest
**Code Chill Maintenance Phase (continued)**

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>Medications Continued:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>25. Glycemic control:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Elevated glucose post resuscitation is independently linked with poorer outcome; Due to vasoconstriction during hypothermic states, all blood glucose should be drawn from CVL or Arterial lines. Finger sticks may be inaccurate.</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blood glucose monitoring via Art-Line/ CVL only. Every hour until goal is reached (goal is 100 to 150 mg / dL) and maintained for 2 consecutive readings. Then every 2 hours until patient reaches normothermic state.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[ ] Initiate Insulin drip per protocol for 2 consecutive readings greater than 150 mg / dL (monitor glucose per insulin drip protocol). Scan protocol to accompany this order to Pharmacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>26. [ ] Acetaminophen (Tylenol) 650 mg per rectum every 4 hours PRN for temperature greater than 37° C</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>27. [ ] Additional ________________________________________________________________</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>28. [ ] Additional ________________________________________________________________</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A MAP of 70 to 100 mm Hg during treatment should be maintained to provide adequate end organ perfusion. Heart rates less than 40 are common. This alone is not cause for concern in the absence of other evidence of hemodynamic instability.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>29. Hypotensive Management:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For MAP less than 70 mm Hg and/or CVP less than 10 cm H2O, give 500 ml refrigerated 0.9% Normal saline IV bolus, may repeat x 1 to achieve desired results; if increase in MAP not achieved, continue fluids and start:</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>For symptomatic bradycardia, consider Dopamine as first choice</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[ ] Dopamine 400 mg in 250 ml Normal saline: initiate at 5 mcg / kg / minute PRN for a MAP less than 70 mm Hg and/or heart rate less than 40 bpm. Titrate up or down by 2 mcg / kg / min every 15 minutes to achieve a MAP of 70 to 100 mm Hg, up to a maximum dose of 20 mcg / kg / min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[ ] Neosynephrine (Phenylephrine) 40 mg in 250 ml Normal saline: initiate at 100 mcg per minute PRN for MAP less than 70 mm Hg. Titrate up or down by 25 mcg / min every 15 minutes to achieve a MAP 70 to 100 mm Hg, up to a maximum dose of 300 mcg / min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[ ] Levophed (Norepinephrine) 4 mg in 250 ml Normal saline: initiate at 2 mcg / minute PRN for a MAP less than 70 mm Hg. Titrate up or down by 2 mcg / minute PRN for a MAP 70 to 100 mm Hg, up to a maximum dose of 30 mcg / min</td>
</tr>
</tbody>
</table>

**Signature ____________________________ Date _______________ Time _______________**

---

**Henrico Doctors’ Hospital**

**CMICU Orders for Induced Hypothermia Post-Cardiac Arrest Maintenance** (Page 3 of 4)

HDH.HOSP#168 (11/10)  

**Patient Identification**

*POS*
CMICU Orders for Induced Hypothermia Post-Cardiac Arrest

Code Chill Rewarming Phase

- Rewarming phase begins after 24 hours at TARGET TEMPERATURE
- Goal is to warm patient to a normothermic state 36.5°C to 37.0°C
- Warm patient at a rate of 0.5°C every hour - rewarming to quickly can cause hypotension secondary to vasodilatation and rapid electrolyte shifts
- Rebound hyperthermia can be deleterious and should be avoided
- Do NOT allow core temperature to rise above 37.5°C for 72 hours after admission
- Monitor closely for rebound hypothermia. Restart cooling to prevent hyperthermia upon completion of the rewarming phase
- Use of the ICY™ catheter is not intended to exceed 4 days and must be discontinued and removed by day 4

**Date & Time Rewarming to Begin:**

**Date & Time Rewarming Completed:**

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.</td>
<td>Discontinue use of all paralytics</td>
</tr>
</tbody>
</table>
| 31. | For machine Set-Points see below:  
  - Set CoolGard 3000® warming temperature to a rate of 0.5°C every hour  
  - Set Point temperature on Blanketrol III to 34.5°C and increase by 0.5°C every hour |
| 32. | Respiratory Therapy: Add moisture exchanger and humidification to ventilator |
| 33. | Begin slowly weaning sedation medication to achieve a RASS of -1 to -2 12 hours into the Rewarming Phase, and every shift thereafter, a wake-up assessment should be attempted |
| 34. | Obtain EEG for all neurologically compromised patients |
| 35. | Consult Neurology during rewarming phase [consult may be called at 8 AM the morning of rewarming] |
| 36. | Document temperature and vital signs hourly |
| 37. | Resume Potassium Protocol ONLY when patient is normothermic [36.5°C - 37.0°C] - Scan protocol to accompany order to Pharmacy |
| 38. | Monitor patient temperature closely. Maintain temperature between 36.5°C - 37.0°C for 72 hours after admission |
| 39. | To avoid rebound hyperthermia (temperature greater than 37.5°C during/after rewarming):  
  - Resume initial cooling mode (CoolGard 3000® or Blanketrol III) to temperature of 36.5°C  
  - May place ice packs to groin and axilla  
  - Acetaminophen (Tylenol) 650 mg per rectum x 1 |
| 40. | Monitor patient for hypotension secondary to vasodilatation. |
| 41. | For MAP less than 70 mm Hg and/or CVP less than 10 cm H₂O, give 0.9% Normal saline 500 ml IV bolus x 2 doses |
| 42. | Meperidine (Demerol) 50 mg IV x 1 for noted shivering |
| 43. | Remove ICY™ Catheter on day 4 – discuss with physician the need for additional CVL if necessary |

Signature ____________________________ Date _____________ Time ____________

Henrico Doctors’ Hospital
CMICU Orders for Induced Hypothermia Post-Cardiac Arrest (Page 4 of 4)
HDH.HOSP#168 (11/10)