INDUCED HYPOTHERMIA POST CARDIAC ARREST ORDERS

PATIENT WEIGHT: ____________ kg

PATIENT INCLUSION CRITERIA
• Greater than 18 years of age resuscitated from cardiac arrest
• Initial rhythm Ventricular Fibrillation or Pulseless Ventricular Tachycardia, Pulseless electrical activity (PEA) or Asystole
• Comatose (Glasgow Coma Scale (GCS) less than 8) after return of spontaneous circulation
• No known pregnancy
• Mean arterial pressure (MAP) greater than 60 with or without vasopressors and volume resuscitation
• Endotracheal intubation with mechanical ventilation

ADMIT TO: ☐ CICU ☐ MSICU

DIAGNOSIS:

NURSING ORDERS:
1. Infuse bolus doses of pain medication and sedations as quickly as possible to achieve a sedation level of Riker 3 or less.
2. Infuse 30 mL/kg iced 0.9% saline (via peripheral vein only for rapid cooling) for T greater than 34 degrees (°) C as per medication orders.
3. Initiate mechanical cooling as quickly as possible once sedation level met.
   a. Cool as rapidly as possible to 32 - 34° C.
   b. Goal is to reach 32 – 34° C within two hours of initiation. Notify physician if goal temperature not met within 2 hours.
   c. Maintain 32 – 34° C for 24 hours once goal temperature met.
   d. Re-warm patient to 36° C at a rate not faster than 0.5°C every 2 hours then, use machine to regulate warming.
   e. Maintain normothermia Temperature (T) in 36° - 37.5°C range for 12 hours.
4. Insert two independent core temperature probes (Foley or Rectal) and monitor continuous core temperatures. If only one core temperature available obtain oral temperature hourly.
5. Ice packs to patients groin bilaterally, axilla bilaterally and neck unilaterally, remove when patient reaches 34°C.
6. Vital signs per unit protocol and,
   a. During cooling phase document T every 30 minutes.
   b. During maintenance phase document T every one hour.
   c. During re-warming phase document T every 30 minutes until T greater than 36° C for one hour, then record T hourly for 12 hours - maintain T less than 37.5° C.
7. Blood pressure goals
   a. Systolic blood pressure (SBP) greater than 90.
   b. MAP greater than 80 to maintain cerebral perfusion.
   c. If available, central venous pressure (CVP) greater than 6 mm Hg or pulmonary capillary wedge pressure (PCWP) greater than 8 mm Hg.
8. Neuro assessment at initiation and every 4 hours.
9. Document Bispectral index score (BIS) and train of four (TOF) every hour during initiation and with titrations. Once BIS stable between 50-70 and TOF is 2/4, these may be recorded every 4 hours.
10. Stop all potassium infusions six hours prior to start of re-warming.
11. Monitor closely for arrhythmias, blood pressure and electrolyte fluctuations – particularly during cooling & re-warming phases.
12. Monitor and record urine output hourly- expect diuresis during hypothermia.
### RESPIRATORY (RT) ORDERS:
1. Insert arterial blood pressure line
2. Titrate ventilator settings to arterial blood gases (ABG)
3. Assess and treat when normothermic and follow for 48 hours

### LABS:
1. At initiation of cooling (if not done within last six hours) obtain Complete Blood Count (CBC with Diff), COMP (CMP), Magnesium (Mg), Coag Panel then:
   a. K+, Mg every 6 hours X 5
   b. Complete Blood Count with Diff, Coag Panel, COMP, MAG, PHOS, LACTATE every AM.
2. Cardiac Enzymes every 8 hours X 3
3. At twelve hours post initiation of cooling obtain Combitach Sputum.

### MEDICATIONS - DOSE/ROUTE/FREQUENCY/PRN-INDICATION
Contact physician if any maximum dose exceeded

1. Sedation
   a. Propofol (10 mg/mL) - preferred - begin continuous IV infusion now at 5 mcg/kg/minute - maximum dose 80 mcg/kg/minute. Increase by 5-10 mcg/kg/minute every 5-10 minutes. Titrate to Riker less than 3 or BIS score 50 - 70.
   b. If propofol (Diprivan) is contraindicated -
      i. Midazolam 4 mg IV push NOW
      ii. Midazolam (100 mg/100 mL) continuous IV infusion at 2 mg/hour – maximum dose 10 mg/hour. Increase infusion by 1-2 mg/hour every 10-30 minutes. Titrate to Riker of less than 3 or BIS score 50-70.

2. Pain Management
   a. Fentanyl 50 mcg IV push NOW over one minute
   b. Fentanyl (2000 mcg/100 mL = 20 mcg/mL) continuous IV infusion at ______ mcg/hour. May increase by 25-50 mcg/hour every 30 minutes.
   c. Titrate to Rikers less than 3 or BIS 50-70 – maximum dose 4 mcg/kg/hour

3. Shivering control / Ventilator Synchrony / Paralytic management
   a. Cisatracurium 0.1 mg/kg IV push NOW over one minute
   b. Cisatracurium (200 mg / 200 mL) continuous IV infusion – at 1 mcg/kg/minute
   c. Titrate for TOF, shivering or ventilator asynchrony as follows:
      i. TOF goal is 2/4
      ii. Insure sedation and pain management adequate prior to titrating
         iii. Infuse one-half original loading dose over one minute
         iv. Increase infusion by 0.5 mcg/kg/minute

4. Infuse 30 mL/kg iced 0.9% saline via peripheral line
   a. Paralytics on board prior to or within 10 minutes following initiation of infusion
   b. Infuse as rapidly as possible or within 50 minutes – free flow preferred
   c. Stop infusion if T reaches 34º C prior to completion

5. Follow Intravenous INSULIN Infusion Orders. Provider must send completed form (SO-421) to pharmacy.

6. Blood pressure maintenance
   a. During cooling and maintenance period: For SBP less than 90 give 250 mL 0.9% saline bolus over one hour; may repeat X 2, if no response call physician
   b. During re-warming period: For SBP less than 90 give 500 mL 0.9% saline bolus over one hour; may repeat X 2, if no response call physician
### Heart rate / Rhythm

- Maintain heart rate greater than 40
- While at goal T monitor core temperature variations closely – severe bradycardia may occur at lower end of goal T scale – increase patient target T to 33.5º C first
- For heart rate less than 40 and not responsive to goal T adjustment – begin continuous DOBUTamine (500 mg/250 mL) infusion at 2 mcg/kg/minute, titrate to heart rate greater than 45 – prefer central line infusion or large peripheral vein. Call physician if greater than 5 mcg/kg per minute.

### Potassium Sliding Scale – call physician for alternate scale if creatinine greater than 1.4.

- Discontinue all potassium infusions six hours prior to re-warming
- Central line infusion preferred – if central line not available limit concentration to 20 mEq/100mL at a rate not to exceed 10 mEq/hour
- For K less than 3.1 infuse 60 mEq KCl IV over 3 hours
- For K 3.1 - 3.5 infuse 50 mEq KCl IV over 2.5 hours
- For K 3.6 – 4 infuse 40 mEq KCl IV over 2 hours
- Call physician for K less than 3.0 or life-threatening arrhythmias

### Magnesium Sliding Scale

- For Mg++ less than 1.6 infuse 4 g magnesium sulfate over 4 hours
- For Mg++ 1.6 – 2 infuse 2 g magnesium sulfate over 2 hours

### Discontinuation of Sedation / Pain Management / Paralytic

- Sedation, pain or paralytic medication may not be discontinued while T less than 36º C
- When T reaches 36º C discontinue paralytic medication
- When TOF reaches 4/4 titrate sedation / pain medication to Riker of 2

### Temperature maintenance post re-warming

- Acetaminophen 650 mg PO/OG/PR every 4 hours for T greater than 37º C.

### Chlorhexidine 0.12% oral solution BID while intubated

### Deep vein thrombosis (DVT) prophylaxis

- Dalteparin (Fragmin) 5,000 units subcutaneous NOW and once per day

### Foot pumps bilateral