Initiation Phase Adult Induced Hypothermia

☐ Admit to ICU
☐ Obtain Neurology Consult
☐ Obtain Cardiology Consult
☐ Consult Intensivist
☐ Other Consult

☐ Obtain Baseline VS /GCS/ and SPO2

☐ Obtain Central Venous Access (Target goal CVP = 6-10 mmHg or PCWP 8-12 mmHg)
  ☐ Give fluid bolus for CVP less than 6 mmHg or PCWP less than 8 mmHg. Administer 250 mls of NSS.
  ☐ If CVP remains less than 6 mmHg or PCWP less than 8 mmHg, give 250 mls of 5% Plasmanate

☐ Arterial Line: maintain MAP of 80-100 mmHg. If ACS or CHF, use lower end of range, otherwise use higher end of range. See medication page.

☐ Initiate IV fluid: __ NSS _____ D5NS at _______ ml/hr to maintain euvolesia.
  Bolus with _______ mls cooled saline (available in pharmacy)

☐ Assess and document skin integrity on admission prior to pad placement

☐ Place Foley with Temp probe. Use rectal probe if unable to insert Foley.

☐ Obtain TOF baseline and document prior to administering paralytic if possible.

☐ Baseline Labs (prior to initiating hypothermia therapy)
  CBC, PT/INR, PTT/BMP, Magnesium, ionized calcium, phosphorus/Lactic acid level/ABGs/Blood cultures X2/
  Amylase and lipase

☐ STAT echocardiogram

☐ STAT EKG and document QTc interval. Report QTc interval of 450 msec or greater

☐ STAT baseline EEG if patient is not sedated and paralyzed. (Do not prolong initiating Hypothermia Therapy for EEG.)

☐ Intubate and ventilate with the following settings:
  Mode ______ Rate ______ PS ______ PEEP ______ FiO2 ______

☐ No weaning parameters during hypothermia therapy.

☐ Turn off vent heater until rewarming. May use HME filter.

☐ NPO; OG tube to low continuous suction

☐ Initiate BIS monitoring with a sedation goal of 40-60. See medication orders.

☐ Initiate insulin infusion orders with onset of hypothermia therapy when blood glucose is greater than 150 (as long as potassium is 3.5 or greater). Fax insulin infusion orders to pharmacy.

☐ Place pads and set Artic Sun to 33 degrees Celsius and begin cooling

☐ Observe for shivering every 15 minutes while cooling. See medication orders for treatment.
**MEDICATIONS**

**Paralytic**
- Stat EEG should be complete before Paralytic administration. (Do not delay treatment while awaiting this test.)
- TOF goal 2 of 4
  - Nimtegra (Cisatracurium) 0.15mg/kg IV bolus
  - Nimtegra (Cisatracurium) 2mg/kg/min infusion after initial bolus, titrate to maintain a TOF of 2 of 4. Mix 200 mg in 200 ml NSS.
- Ocular lubricant ointment to both eyes every 8 hours while receiving paralytic.

**Sedation/Shivering**
- Continuous BIS monitoring with goal of 40-60
- Diprivan (Propofol) infusion start at 10 mcg/kg/min and increase by 5 mcg/kg/min every 10 minutes to achieve and maintain BIS score of 40-60, maximum dose is 100mcg/kg/min OR
- If hemodynamically unstable use Versed (midazolam) drip. Pharmacy to mix 50 mg in 250 ml of NSS. Bolus with 0.125 mg/kg IV followed by infusion of 0.1 mcg/kg/hr. If CRI less than 30 ml/min adjust bolus to 0.0625 mg/kg/IV with maintenance drip at 0.05 mg/kg/hr.
- Demerol (Meperidine) 25mg IVP Q30minutes PRN shivering refractory to propofol(maximum dose of 500mg/24hours)
- Other:
  - Analgesia
    - Morphine 1-2 mg/hr IV via PCA pump (1 mg/ml)
    - Fentanyl 1-3 mcg/kg/hr IV via PCA pump (if allergic to morphine). Mix in normal saline to a concentration of 25 mcg/ml (750 mcg/ml).
  - Electrolyte Replacement
    - For K less than 3.2mmol/l give KCL 40 mEq IVPB over 2 hours through central line. Infuse 20 mEq/100 ml sterile water over 1 hour; repeat x 1. May repeat once per 24 hours.
    - For K less than 2 mmol/l give KCL 80 mEq IVPB over 4 hours through central line. Infuse 20 mEq in 100 ml sterile water over 1 hour. Repeat x 3 for total of 80 mcg in 4 hours. May repeat once per 24 hours.
    - For Mg less than 1.8mg/dl give Magnesium sulfate 2 grams in 50 ml sterile water IVPB over 1 hour. May repeat as needed.
    - For Phos less than 2 mg/dl give Sodium Phosphate 12 mmol in 100 ml NSS IVPB over 3 hours; may repeat as needed.
    - For Ionized Calcium less than 4 mg/dl, give calcium gluconate 2 grams in 50 ml NSS IVPB over 60 minutes. Calcium Gluconate and Sodium Phosphate should not be infused together. Use separate lines.
  - Vasoactive medications (mix all infusions in NSS when possible) Do not concentrate.
    - Maintain MAP between 80 and 100 mmHg or between _________ mm Hg.
      - For patients with ACS or CHF, use lower end of range. If no ACS/CHF, use higher end of range.
      - Vasopressin 200 units/200 ml NSS infusion. Start at 1 unit/hr with maximum dose of 4 units/hr to maintain MAP greater than 80 mmHg
      - Levophed (Norepinephrine) 4 mg/250 ml NSS infusion to maintain MAP 80-100 mm Hg (normal EF)
      - Neo-Synephrine (Phentolamine) 10 mg/250 ml NSS infusion to keep MAP 80-100 mm Hg (normal EF)
      - Dobutrex (Dobutamine) infusion 500 mg/250 ml NSS to keep MAP:_________ (if reduced EF)
      - Nitroglycerin 50 mg/250 ml D5W. Start at 10 mcg/min and titrate for MAP 80-100 mm Hg (max dose 200 mcg/min).

**Prophylaxis**
- Amiodarone 150 mg IVPB over 10 minutes, then 1mg/min for 6 hours then 0.5mg/min for 18 hours
- Knee high TED hose and knee high sequential compression devices
- Protonix (Pantoprazole) 40 mg IV Daily
- Cerebyx (Fosphenytoin) 1000mg in 50 ml NSS IV loading, then 100 mg IVP Q 8 hours
- Other:

---

**Hypothermia (Adult Induced)**

**Post Cardiac Arrest Orders**

---

**Memorial**

**Patient Label**

---

1073-CS 8/3/10 Page 2 of 4
COOLING PHASE (INITIATION AND MAINTENANCE)

- Set Arctic Sun Cooling Machine to 33°C
- Assess vital signs, rhythm, SpO2, and presence of shivering every 15 minutes during induction of hypothermia until goal temp is reached. Maintain SPO2 greater than 95%.
- After goal temperature is reached assess vital signs, rhythm, SpO2, and presence of shivering every 30 minutes for 2 hours and then every hour
- Document BIS every 30 minutes during induction, and then every hour after goal temperature is reached (Goal 40-60).
- Monitor/Document Arctic Sun water temperature hourly
- Monitor/Document patient's core temperature hourly. If patient does not reach goal temperature within 4 hours notify physician.
- Maintain goal temperature for 24 hours total after goal temp is reached.
- Knee-high TED hose and knee high sequential compression devices
- Assess skin integrity every 4 hours and prn
- HOB at 30 degrees or greater
- Turn every 2 hours and prn
- Initiate or continue Insulin Infusion Orders for blood glucose greater than 150 mg/dl. Fax to pharmacy if not already done.
- Twelve lead EKG every 8 hours during hypothermia protocol and document QTc. Report QTc greater than 450 msec.
- Twelve lead EKG prn sustained dysrhythmia and notify MD
- Maintain target CVP 6-10 mmHg or PCWP 8-10 mmHg. See medication orders for treatment.
- Maintain MAP of 80-100 mmHg. See medication orders for treatment.
- Ocular ointment to eyes while paralyzed. See medication orders for treatment.
- If patient becomes hemodynamically unstable and does not respond to treatment, call physician and begin to rewarm at 0.25 degrees C per hour

Labs
- Until goal temperature achieved
  - BMP, Magnesium Q 1 hour until goal temperature is reached. Call lab and obtain Chem 8 cartridge for POC testing.
  - Phosphorus and ionized calcium every 2 hours.
  - Temperature adjusted ABG, CBC, PT/INR, PTT, lactate q 6 hours
- During hypothermia maintenance (goal temp reached):
  - Temperature adjusted ABG, CBC, PT/INR, PTT, lactate, BMP, Magnesium, phosphorus, ionized calcium every six hours
REWARMINIG

☑ Begin rewarming once patient has been at goal temp for 24 hours

☑ Using automatic mode of Arctic Sun, increase temperature by 0.25 degree Celsius every hour until temp reaches 37.0 degrees Celsius. Continue to use Arctic Sun to maintain temp of 37 to 37.5 degrees Celsius for 12 hours.

☑ Remove HME filter from vent circuit and use ventilator heater at normal setting.

☑ Monitor VS/SPO2/rhythm/shivering every 30 minutes while rewarming.

☑ Monitor for hemodynamic instability
  If CVP is less than or equal to 6 or PCWP is less than 8 mmHg give a bolus of 250 mls NSS

☑ Discontinue Diprivan (Propofol) and neuromuscular blockade once core temp reaches 36 degrees Celsius

☑ During rewarming, if hyperkalemia develops, decrease Artic Sun temp by 0.5 degrees Celsius (do not set lower than 33 degrees C) and notify physician.

☐ Lovenox (Enoxaparin) 40mg SQ Daily when goal-rewarming temp reached. Pharmacy to adjust dose for renal clearance.

☐ Lovenox (Enoxaparin) 30 mg SQ daily for CrCl less than 30 ml/min. **Do not give to patients receiving dialysis.**

☑ Once rewarming temp is reached, monitor core temp for an additional 48 hours.

☐ Once patient is rewarmed, contact physician for complete order set.

Labs

☑ BMP, Magnesium every hour while rewarming. Use Chem 8 POC testing cartridge.

☑ Phosphorus and ionized calcium every 2 hours while rewarming.

☑ CBC, PT/INR, PTT, lactate every six hours while rewarming

☑ Temperature adjusted ABG every 6 hours while rewarming