

Hypothermia Short Set-Critical Care  
**HYPOTHERMIA SS- CRITICAL CARE**

**Inclusion Criteria – all must be present**

- Cardiac arrest with return of spontaneous circulation (ROSC)
- ROSC within 60 mins of witnessed arrest; unknown downtime may be cause for exclusion
- Age > 18 years
- Initial temperature > 35° C
- Patient is intubated and remains comatose (defined as: not following commands, no speech, no purposeful movement to noxious stimuli, no eye opening within 15-30 mins after resuscitation)

**Exclusion Criteria (Absolute)**

- Patient awakening with return of normal mental status within 15-30 mins after successful resuscitation
- Known terminal illness
- Existing DNAR status

**Exclusion Criteria (Relative)**

- Actively bleeding or at high risk of bleeding
- Persistent shock: SBP < 90 mm Hg or MAP < 60 mm Hg **after resuscitation with fluids and/or vasopressors**
- Pregnancy (Discuss on a case to case basis with family)
- Sustained refractory ventricular arrhythmias

**NURSING**

Hypothermia Instructions:

- Monitor Temp continuously via urinary catheter, esophageal probe, or rectal probe. (No oral or axillary temps)
- Apply Arctic Sun cooling pads to patient to cover 40% of body surface area. Use additional “universal” pad if patient’s weight is over 100 Kg.
- Set Arctic Sun cooling machine to 33°C
- Notify Intensivist if unable to reach goal Temp of 33°C within 4 Hrs or if unable to decrease Temp 1°C X 2 Hrs
- Begin re-warming 24 Hrs after initiation of cooling therapy; Set Arctic Sun target Temp to 37°C and re-warming rate at 0.25° C/Hr
- After re-warming complete, maintain patient on Arctic Sun for 48 Hrs at target Temp of 37° C to avoid hyperthermia

- Insert nasogastric / orogastric tube (NGT / OGT) tube to low continuous suction
- Apply leg compression device to lower extremities at all times
- Blood glucose monitoring Q 1 Hr (**DO NOT use finger stick**)
- Train of four monitoring with neuromuscular stimulator Q 1 Hr while on Vecuronium drip
- Apply BIS monitor continuously while on hypothermia. Goal to maintain BIS 40-60.
- Indicate Richmond Agitation Sedation Scale (RASS) Sedation Goal: -5 Unarousable.
- Maintain CVP of 6-10 mmHg or PCWP 8-12 mmHg
- RN to order electrocardiogram (EKG) Prn sustained dysrhythmia
- Notify Physician (Intensivist) to initiate Critical Care Insulin Drip Orders if serum glucose > 180 x 2 Hrs

**ACTIVITY**

- Elevate head of bed (HOB) to 30° unless contraindicated
  - Activity restrictions: Bedrest
- (If there are no restrictions nursing will ambulate patient at least four times a day per policy PC-112.)

**RESPIRATORY**

Hypothermia Ventilator Management

Ventilator Adjustment to be made by therapist to maintain:

pH 7.35-7.45, PaCO<sub>2</sub> 35-45 mm Hg, PaO<sub>2</sub> 80-120 mm Hg  
No Weaning parameters during hypothermia protocol  
Resume Weaning parameters after normothermia restored and sedation is discontinued  
ABGs after intubation – STAT

- Discontinue heating circuit
- Continuous End Tidal CO<sub>2</sub> Monitoring  
Lo ETCO<sub>2</sub> 35-Hi ETCO<sub>2</sub> 45

#### IV FLUIDS

- Sodium Chloride 0.9% IV to run at 100 mL/Hr.
- Sodium Chloride 0.9%, 250 mL IV over 30 mins Prn CVP < 6 or PCWP < 8, REPEAT until CVP > 6 or PCWP > 8 or until 2 liters infused (i.e. DO NOT exceed 8 doses total). If CVP or PCWP goals are still not achieved after 8 doses, notify intensivists.
- Albumin 5% 250 mL IVPB over 30 mins x 1 dose Prn if Sodium Chloride boluses are ineffective (i.e. CVP still < 6 or PCWP still < 8).

#### MEDICATIONS

##### Antipyretic medications

- Acetaminophen (Tylenol) 650 mg via NG Q 4 Hrs Prn Temp > 99.6 °F /37.6 °C during re-warming phase. Clamp NG tube x 30 mins after each dose. \*Total Acetaminophen not to exceed 4,000 mg/24 Hrs\*
- Acetaminophen (Tylenol) 650 mg suppository PR Q 4 Hrs Prn Temp > 99.6 °F / 37.6 °C during re-warming phase if unable to give NG acetaminophen (if ordered). \*Total Acetaminophen not to exceed 4,000 mg/24 Hrs\*

##### Analgesic medications

REMINDER: For FentaNYL IV infusion - Use "Opiate Infusion - FentaNYL SS"

##### Analgesic/Paralytic medications: Shivering

- Meperidine (Demerol) 10 mg IV Push x 1 dose Prn shivering. If ineffective after 30 mins may repeat 10 mg IV Push x 1 dose. Contact MD if patient is still shivering after 2 doses have been given. Hold if SCr > 1.5.

REMINDER: Ensure sedation and analgesia are optimal prior to initiation of paralytic therapy.

REMINDER: Paralytic use is for intubated patients only.

- Vecuronium (Norcuron) 0.1 mg/Kg Bolus = \_\_\_\_\_ mg IV Push x 1 dose.
- Vecuronium (Norcuron) continuous IV infusion, start at 1 mCg/Kg/min and titrate up by 0.25 mCg/Kg/min or down by 50% after each train of four test to maintain train of four with neuromuscular stimulator goal 1 of 4. (max dose = 1.75 mCg/Kg/min)
- Lubricating Ophthalmic Ointment (Lacri-lube) to both eyes Q 4 Hrs ATC while on neuromuscular blocking agent. RN to contact Pharmacy to DC Lubricating Ophthalmic Ointment order when Vecuronium is discontinued.

##### CNS medications: Antiepileptics

- Phenytoin (Dilantin) Loading dose, 1,000 mg IVPB x 1 dose now.  
(Rate not to exceed 50 mg/min, if patient is > 65 years, rate not to exceed 25 mg/min.)
- Phenytoin (Dilantin) 100 mg IV Push Q 8 Hrs. Start 8 Hrs after completion of loading dose (if ordered).
- LevETIRAcetam (Keppra) 500 mg/100 mL NS IVPB over 15 mins Q 12 Hrs.

##### CNS medications: Sedatives \*\*For intubated patients only\*\*

REMINDER: For Propofol or Midazolam IV drip order – Use "Sedation Ventilator SS - CC"

##### Cardiac medications: Anti-arrhythmics

- Amiodarone (Cordarone) Bolus - 150 mg/100 mL D5W IVPB over 10 mins x 1 dose.
- Amiodarone (Cordarone) Drip - 450 mg/250 mL D5W continuous IV infusion. Start at

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MEDITECH NAME: MD.HYPOT

MEDITECH MNEMONIC: HYPOTHERMIA SS – CRITICAL CARE

ZYNX : none

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1 mg/min x 6 Hrs, then 0.5 mg/min. Use an in-line filter (1.2 micron).

Cardiac medications: Vasoactive Agents

REMINDER: For vasoactive IV drip orders – Use “Vasoactive Medication ICU – SS”

Other medications

- Potassium chloride 40 mEq (20 mEq/100 mL premixed IVPB over 1 Hr x 2 doses) Prn potassium level 2–3 mEq/L. Hold dose and notify intensivist if SCr > 1.8 mg/dL.
- Potassium chloride 80 mEq (20 mEq/100 mL premixed IVPB over 1 Hr x 4 doses) x 1 dose Prn potassium level < 2 mEq/L. Hold dose and notify intensivist if SCr > 1.8 mg/dL. May not repeat without additional orders. Hold dose and notify intensivist if SCr >1.8 mg/dL.
- Magnesium sulfate 2 Gm/50 mL premixed IVPB over 1 Hr Prn magnesium level < 2 mg/dL. Hold dose and notify intensivist if SCr >1.8 mg/dL.
- Sodium phosphate 12 mMol/100 mL NS IVPB over 3 Hrs Prn phosphorus level < or = 2 mg/dL. Hold dose and notify intensivist if SCr >1.8 mg/dL.
- Calcium gluconate 2 Gm/100 mL NS IVPB over 1 Hr Prn ionized Calcium level < 1 mMOL/L. Hold dose and notify intensivist if SCr >1.8 mg/dL.

Other medications: \_\_\_\_\_

**\*All labs/diagnostics will be drawn/done routine now unless otherwise specified**

**BLOOD BANK**

**REMINDER: Review labs completed in ED prior to ordering**

- Type and Screen - STAT
- Type and Screen - in 3 days

**LABORATORY - Cardiac Markers**

- Cardiac enzymes with troponin – URGENT Q8 x 3,

**LABORATORY - Hematology**

- Complete blood count (CBC) - STAT

**LABORATORY – Chemistry**

- Basic metabolic panel (BMP) – STAT
- Magnesium (Mg) – STAT
- Phosphorus (Phos) – STAT

**LABORATORY - Blood Gas**

- Arterial blood gas( ABG) with Lactate – STAT
- Venous blood gas (VBG) with Lactate- STAT

**LABORATORY - Coagulation**

- Partial thromboplastin time (aPTT) - STAT
- Prothrombin time (PT/INR) - STAT

**LABORATORY – Urine**

- Urinalysis with reflex culture (UATC) - STAT

**LABORATORY – Toxicology**

- Phenytoin (Dilantin) levels
- Phenytoin (Dilantin) levels – in AM

**LABORATORY – Miscellaneous**

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hCG Pregnancy Serum – STAT

### **MICROBIOLOGY**

Respiratory sputum culture - STAT

**Hypothermia Induction LABS: Draw the following labs until Temperature is 33° C (RN to order labs in POM)**

Q 2 Hrs:

- Arterial blood gas (ABG) with Electrolytes and Lactate,
- Ionized Calcium

Q 4 Hrs:

- Magnesium (Mg)
- Phosphorus (Phos)

**Hypothermia Maintenance LABS: Draw the following labs while patient at goal Temp 33° C (RN to order labs in POM)**

Q 8 Hrs:

- ABG with Electrolytes, Lactate
- Ionized Calcium
- Magnesium (Mg)
- Phosphorus (Phos)
- Blood Urea Nitrogen (BUN)
- Creatinine
- Prothrombin time / partial thromboplastin time (PT/PTT)
- Hemogram (HMG)

**Re-warming Labs: Draw the following labs until Temperature is 36°C (RN to order labs in POM)**

Q 2 Hrs:

- Arterial blood gas (ABG) with Electrolytes, Lactate
- Ionized Calcium

Q 4 Hrs:

- Magnesium (Mg)
- Phosphorus (phos)
- Blood urea nitrogen (BUN)
- Creatinine

Q 8 Hours:

- Complete blood count (CBC)
- Prothrombin time / Partial thromboplastin time (PT/PTT)

### **DIAGNOSTICS - Cardiology**

Electrocardiogram (12 lead EKG) - STAT; Reason for exam: Cardiac Arrest

Electrocardiogram (12 lead EKG) - Q 8 Hrs x 3; Reason for exam: Cardiac Arrest

Echocardiogram Adult (ECHOA) – 2D Echo Doppler w/wo M Mode- now  
Reason for exam: Cardiac Arrest

### **DIAGNOSTICS - Radiology**

Chest X-ray (CXR) portable - STAT Reason for exam: Confirm endotracheal tube placement

Chest X-ray (CXR) portable – in AM; Reason for exam: \_\_\_\_\_

### **DIAGNOSTICS – Neurology**

Electroencephalograph (EEG Awake & Drowsy)- STAT

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**MD CONSULTS**

REMINDER: Contact neurologist

MD \_\_\_\_\_