Adult Hypothermia Post Cardiac Arrest [2262]

Inclusion Criteria:
- Initiation of protocol is less than 6 hours from Return of Spontaneous circulation (ROSC)
- Cardiac arrest patients: this includes patients with witnessed Ventricular Fibrillation(VF), Pulseless Ventricular Tachycardia (VT), Pulseless Electrical Activity (PEA), and Asystole
- Downtime (5-15 minutes): Downtime is defined as “the time from the onset of cardiac arrest to the initiation of ACLS, bystander CPR does not count.
- ROSC within 60 minutes of primary cardiac event.
- Requires mechanical ventilation.
- Coma at time of cooling (Coma defined as: GCS <9, not following commands, no speech, no eye opening, no purposeful movement to noxious stimuli) Agitated/Combative patients are comatose by definition and should be cooled. Brainstem reflexes and pathological posturing movements are permissible.
- Equal to or greater than 18 yrs. of age, or if <18, must be over 60 kg.

Absolute Exclusion Criteria:
- Pregnancy
- Advanced directive or living will, DNR status, known terminal illness, family wishes.
- Known or pre-existing coagulopathy or active bleeding
- Major traumatic injury or isolated head trauma – a non-contrast CT must be performed to rule out intracerebral hemorrhage.

Possible Exclusion Criteria:
- Coma due to drug overdose or CVA
- Known or suspected Sepsis (hypothermia inhibits immune functions)
- Refractory Cardiogenic Shock in spite of IV fluids and vasopressors
- Recurrent VF or refractory VT in spite of appropriate therapy
- Time is >4 hrs. since return of spontaneous circulation (ROSC)
- Unwitnessed asystole or unwitnessed PEA cardiac arrest with CPR and/or ACLS >10 minutes
- Witnessed arrest: CPR >45 minutes and >60 minutes from collapse to restoration of spontaneous circulation.
- Recent major surgery within 14 days

General

Nursing

Vital Signs

[X] Vital signs - T/P/R/BP	Routine, Every 15 min
[X] Pulse oximetry continuous	Routine, Continuous Current FIO2 or Room Air:

Cooling Procedure

[X] Cooling Procedure (goal temp)	Routine, Until discontinued, Starting S Goal Temperature: To be maintained for 24 hours.
[ ] Intravascular cooling catheter	Routine, Once
[ ] External cooling device	Routine, Once

Nursing Care

[X] Neurological assessment	Routine, Every hour Assessment to Perform: Assess pupillary function every hour if paralyzed and document. Once patient has completed rewarming, complete neuro vital signs every 2 hours for 24 hours
[X] Take temperature via bladder temperature Foley catheter or rectal or esophageal temperature probe.	Routine, Until discontinued, Starting S
[X] Insert 1 temperature probe. If patient is anuric insert esophageal probe instead of bladder temperature probe	Routine, Until discontinued, Starting S
[X] Insert and maintain Foley (temperature sensing)	
[X] Insert Foley catheter	Routine, Once Type: Temperature Sensing Size: Urinometer needed:

[X]	Foley Catheter Care	Routine, Until discontinued, Starting S Orders: Maintain
[ ]	Nasogastric tube insertion	Routine, Once Type:
[ ]	CVP monitoring	Routine, Every 4 hours
[ ]	Hemodynamic Monitoring	Routine, Continuous Measure:
[X]	Monitor (Skin)	Routine, Every 2 hours, skin including under cooling pads.
[X]	Head of bed	Routine, Until discontinued, Starting S Head of bed: 30 degrees Maintain HOB 30 degrees
[X]	Notify Physician for shivering and further instructions	Routine, Until discontinued, Starting S

Rewarming Orders

[ ]	Induced Hypothermia Rewarming Instructions	Routine, Until discontinued, Starting S, -Begin after attaining goal temperature for 24 hours -Keep cooling device to "ON" to maintain body temperature at 37 degrees C for 24 hours after the target temperature of 37 degrees C is attained -Set target temperature 37 degrees C then set time to target for "Warm" to 0.15 degrees C per hour -STOP all potassium administration (including any potassium supplements in continuous IV fluids) -START Bedside Glucose Checks every 2 hours for 24 hours of rewarming until temperature reaches 37 Celcius
[X]	Bedside glucose - Rewarming	Routine, Conditional Frequency REWARMING: Bedside Glucose Checks every 2 hours for 24 hours of rewarming until temperature reaches 37 Celcius

IV Fluids

IV Fluids (Single Response)

( )	sodium chloride 0.9 % infusion	intravenous, continuous
( )	lactated Ringer's infusion	intravenous, continuous
( )	dextrose 5 % and lactated Ringer's infusion	intravenous, continuous
( )	dextrose 5%-0.9% sodium chloride infusion	intravenous, continuous

Medications

Pharmacy Consult

[X]	Consult to Pharmacy - renal or hepatic adjustment	STAT, Until discontinued, Starting S Specify reason: renal or hepatic adjustment

Sedation: Propofol (DIPRIVAN) or DEXMEDETomidine (Precedex) infusion

[ ]	propofol (DIPRIVAN) infusion	intravenous, continuous After initiation reassess RASS/BIS within 10 min. Titrate for Sedation. Generally not for use in patients on neuromuscular blocking agents. LESS than desired sedation effect: INCREASE rate by 5 mcg/kg/min. Reassess sedation within 10 minutes. DESIRED sedation effect: Continue the same rate. Reassess sedation within 4 hours. GREATER than desired sedation effect: DECREASE rate 5 mcg/kg/min and reassess sedation within 15 minutes. If patient requiring GREATER than: 50 mcg/kg/min, Contact MD to re-evaluate sedation therapy

[ ] DEXMEDETomidine (PRECEDEX) infusion	0.1-0.7 mcg/kg/hr, intravenous, continuous Generally for mild to moderate sedation. Not for use in patients onneuromuscular blocking agents. NO LOADING DOSE. After initiationreassess RASS within 1 hour. Titrate for Sedation. LESS than desired sedation effect: INCREASE rate by 0.1 mcg/kg/hour. Reassess RASS within 1 hours. DESIRED sedation effect: Continue the same rate. Reassess sedation within 4 hours GREATER than desired sedation effect: DECREASE rate by 0.1 mcg/kg/hour. Reassess RASS within one hour. If patient requiring GREATER than: 0.7 mcg/kg/hr, Contact MD to re-evaluate sedation therapy

Sedation: lorazepam (ATIVAN) or MIDAZOLAM (VERSED) infusion - HMH, HMSTC, HMSTJ, HMSL, HMSJ, HMTW, HMWB (Single Response)

( ) lorazepam (ATIVAN) 60 mg/30 mL infusion	Loading Dose (optional): Not Ordered Nursing Bolus Dose: 0.5 mg Continuous Dose: Not Ordered intravenous, continuous If LESS than desired sedation effect: administer ordered BOLUS dose IVOnce and increase rate by 0.25 milligram/hour then reassess sedation inone hour.If DESIRED sedation effect: Continue the same rate. Reassess sedationwithin 4 hours.If GREATER than desired sedation effect: Decrease rate by 0.25milligram/hour and reassess sedation within one hour.If patient requires GREA TER than 5 milligram/hour lorazepam, contact MDto re-evalute sedation therapy.
( ) midazolam (VERSED) 60 mg/30 mL infusion	intravenous, continuous If LESS than desired sedation effect: administer ordered BOLUS dose IVOnce and increase rate by 0.25 milligram/hour then reassess sedation inone hour.If DESIRED sedation effect: Continue the same rate. Reassess sedationwithin 4 hours.If GREATER than desired sedation effect: Decrease rate by 0.25milligram/hour and reassess sedation within one hour.If patient requires GREA TER than 5 milligram/hour midazolam, contact MDto re-evalute sedation therapy.

Sedation: lorazepam (ATIVAN) or MIDAZOLAM (VERSED) infusion - HMW (Single Response)

( ) LORAZepam (ATIVAN) 30 mg/30 mL infusion	Loading Dose (optional): Not Ordered Nursing Bolus Dose: 0.5 mg Continuous Dose: Not Ordered intravenous, continuous If LESS than desired sedation effect: administer ordered BOLUS dose IV Once and increase rate by 0.25 milligram/hour then reassess sedation in one hour. If DESIRED sedation effect: Continue the same rate. Reassess sedation within 4 hours. If GREATER than desired sedation effect: Decrease rate by 0.25 milligram/hour and reassess sedation within one hour. If patient requires GREA TER than 5 milligram/hour lorazepam, contact MD to re-evalute sedation therapy.

( )	MIDAZolam (VERSED) 30 mg/30 mL infusion	intravenous, continuous If LESS than desired sedation effect: administer ordered BOLUS dose IV Once and increase rate by 0.25 milligram/hour then reassess sedation in one hour. If DESIRED sedation effect: Continue the same rate. Reassess sedation within 4 hours. If GREATER than desired sedation effect: Decrease rate by 0.25 milligram/hour and reassess sedation within one hour. If patient requires GREA TER than 5 milligram/hour midazolam, contact MD to re-evalute sedation therapy.

Sedation: fentanyl (SUBLIMAZE) infusion - HMH only (Single Response)

( )	fentaNYL (SUBLIMAZE) 1500 mcg/30 mL infusion	intravenous, continuous If LESS than desired sedation effect: administer ordered BOLUS dose IVOnce and increase rate by 25 micrograms/hour then reassess sedation in onehour.If DESIRED sedation effect: Continue the same rate. Reassess sedationwithin 4 hours.If GREATER than desired sedation effect: Decrease rate by 25micrograms/hour and reassess sedation within one hour.If patient requires GREATE R than 200 micrograms/hour fentanyl, contact MDto re-evalute sedation therapy.

Sedation: fentanyl (SUBLIMAZE) infusion - Non-HMH (Single Response)

( )	fentaNYL (SUBLIMAZE) 600 mcg/30 mL infusion	intravenous, continuous If LESS than desired sedation effect: administer ordered BOLUS dose IVOnce and increase rate by 25 micrograms/hour then reassess sedation in onehour.If DESIRED sedation effect: Continue the same rate. Reassess sedationwithin 4 hours.If GREATER than desired sedation effect: Decrease rate by 25micrograms/hour and reassess sedation within one hour.If patient requires GREATE R than 200 micrograms/hour fentanyl, contact MDto re-evalute sedation therapy.

Cooling Procedure

[X]	magnesium sulfate IV	2 g, intravenous, once, For 1 Doses

Bowel Regimen

[X]	docusate (COLACE) 50 mg/5 mL liquid	100 mg, Nasogastric, 2 times daily HOLD FOR DIARRHEA OR MORE THAN 2 STOOLS PER DAY

Antibiotics

[ ]	vancomycin (VANCOCIN)	15 mg/kg, intravenous Reason for Therapy:
[ ]	piperacillin-tazobactam (ZOSYN) IV	intravenous Type of Therapy:
[ ]	cefepime (MAXIPIME) IV	intravenous Type of Therapy:
[ ]	If Penicillin Allergy	
[ ]	aztreonam (AZACTAM) IV	intravenous, every 6 hours Reason for Therapy:
[ ]	metronidazole (FLAGYL)	intravenous, every 8 hours Reason for Therapy:

Other Medications

[ ] thiamine (B-1) injection	100 mg, intravenous, daily, For 3 Doses

Paralysis - NOT HMWB

[ ] Cisatracurium Bolus	
[ ] cisatracurium (NIMBEX) injection	0.15 mg/kg, intravenous, once, For 1 Doses **paralytic should NOT be given until properly sedated**
[ ] cisatracurium (NIMBEX) injection	0.15 mg/kg, intravenous, PRN, bolus for paralysis **paralytic should NOT be given until properly sedated**
[ ] cisatracurium (NIMBEX) infusion	0.5 mcg/kg/min, intravenous, continuous **paralytic should NOT be given until properly sedated** START IV INFUSION AT 0.5 MICROGRAMS PER KILOGRAM PER MINUTE. TITRATE TO ABOLISH AND PREVENT SHIVERING. GOAL TRAIN OF FOUR 1-2 OUT OF 4. IF SHIVERING OR OVERBREATHING VENT ADMINISTER BOLUS CISATRACURIUM 0.15 MILLOGRAMS PER KILOGRAM AND DOUBLE INFUSION DOSE
[X] artificial tears ophthalmic solution	1 drop, Both Eyes, every 6 hours
[ ] white petrolatum (LUBRIFRESH) ophthalmic ointment	1 application, Both Eyes, every 6 hours OCULAR LUBRICANT OINTMENT TO BOTH EYES WHILE RECEIVING PARALYTIC.
[ ] meperidine (DEMEROL) injection	25 mg, intravenous, every 2 hour PRN, shivering, For hypothermia PHARMACIST TO ADJUST DOSE TO 12.5 MILLIGRAMS IV EVERY 2 HOURS AS NEEDED FOR SHIVERING IF ESTIMATED CREATININE CLEARANCE IS LESS THAN 30 ML PER MINUTE Formulary approved non-pain management indication(s) :

Paralysis - HMWB Only

[ ] Cisatracurium Bolus	
[ ] cisatracurium (NIMBEX) injection	0.15 mg/kg, intravenous, once, For 1 Doses **paralytic should NOT be given until properly sedated**
[ ] cisatracurium (NIMBEX) injection	0.15 mg/kg, intravenous, PRN, bolus for paralysis **paralytic should NOT be given until properly sedated**
[ ] cisatracurium (NIMBEX) infusion	0.5 mcg/kg/min, intravenous, continuous **paralytic should NOT be given until properly sedated** START IV INFUSION AT 0.5 MICROGRAMS PER KILOGRAM PER MINUTE. TITRATE TO ABOLISH AND PREVENT SHIVERING. GOAL TRAIN OF FOUR 1-2 OUT OF 4. IF SHIVERING OR OVERBREATHING VENT ADMINISTER BOLUS CISATRACURIUM 0.15 MILLOGRAMS PER KILOGRAM AND DOUBLE INFUSION DOSE
[X] polyvinyl alcohol (LIQUIFILM TEARS) 1.4 % ophthalmic solution	1 drop, Both Eyes, every 6 hours
[ ] white petrolatum (LUBRIFRESH) ophthalmic ointment	1 application, Both Eyes, every 6 hours OCULAR LUBRICANT OINTMENT TO BOTH EYES WHILE RECEIVING PARALYTIC.
[ ] meperidine (DEMEROL) injection	25 mg, intravenous, every 2 hour PRN, shivering, For hypothermia PHARMACIST TO ADJUST DOSE TO 12.5 MILLIGRAMS IV EVERY 2 HOURS AS NEEDED FOR SHIVERING IF ESTIMATED CREATININE CLEARANCE IS LESS THAN 30 ML PER MINUTE Formulary approved non-pain management indication(s) :

VTE

Labs

STAT Labs

[ ]	Lactic acid level	STAT For 1 Occurrences
[ ]	CBC with platelet and differential	STAT For 1 Occurrences
[ ]	Comprehensive metabolic panel	STAT For 1 Occurrences
[ ]	Ionized calcium	STAT For 1 Occurrences
[ ]	Urine drugs of abuse screen	STAT For 1 Occurrences
[ ]	hCG qualitative, serum screen	STAT For 1 Occurrences
[ ]	Lipase level	STAT For 1 Occurrences
[ ]	Arterial blood gas	STAT For 1 Occurrences
[ ]	Magnesium level	STAT For 1 Occurrences
[ ]	Partial thromboplastin time	STAT For 1 Occurrences
[ ]	Prothrombin time with INR	STAT For 1 Occurrences
[ ]	Fibrinogen	STAT For 1 Occurrences

Labs Every 4 Hours

[X]	Basic metabolic panel	Now then every 4 hours For 3 Occurrences
[X]	Magnesium level	Now then every 4 hours For 3 Occurrences
[X]	Arterial blood gas	Now then every 4 hours For 3 Occurrences

Labs Repeat

[X]	Troponin	Now then every 4 hours For 2 Occurrences
[ ]	Troponin	Now then every 8 hours For 3 Occurrences

Cardiology

ECG

[X]	ECG 12 lead	STAT, Once Clinical Indications: Other: Other: cardiac arrest Interpreting Physician: On arrival to unit
[ ]	ECG 12 lead	Routine, Every 4 hours For 2 Occurrences Clinical Indications: Interpreting Physician:

Imaging

Other Studies

Other Studies

[X]	EEG cont bedside monitoring	STAT, Once Rule out non-convulsive status epilepticus. Page EEG technician at night (713) 404-7276

Respiratory

Respiratory

[ ]	Mechanical ventilation	Routine Mechanical Ventilation: Vent Management Strategies: Vent Management Strategies: Vent Management Strategies: Vent Management Strategies:

Rehab

Consults

For Physician Consult orders use sidebar

Additional Orders