

THERAPEUTIC HYPOTHERMIA AFTER CARDIAC ARREST PROTOCOL

Date: ___/___/___

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here

ABSOLUTE Contraindications

- Return of sustained pulse > 60 minutes after Sudden Cardiac Arrest
- Following verbal commands after return of sustained pulse
- DNR/DNI or known terminal illness
- Impaired neurologic status before to Sudden Cardiac Arrest (coma, dementia etc)
- MAP < 65 or SBP < 90 mmHg despite fluid resuscitation and on 3 vasopressors.
- Uncontrollable arrhythmias.
- Uncontrolled infection – (increase in WBC with persistent fever, severe sepsis or septic shock).
- Major Trauma (TBI)
- Intracranial hemorrhage/Stroke
- Meeting **any** of the above: **NOT TH** candidate. **STOP HERE**



INCLUSION Criteria

- Witnessed Out-of-Hospital sudden cardiac arrest (SCA)*
- Cooling initiation in < 6 hours from return of sustained pulse
- Pulseless VT or VF
- Meeting **all** above inclusion criteria's: **Initiate TH**

Date /Time of SCA: ___/___/___:___

Date /Time of ROSC: ___/___/___:___

Rhythm of SCA (circle): VF VT
PEA AS
Unknown

RELATIVE Indication

- Age < 18 year
- SCA due to PEA, Asystole
- Witnessed In-Hospital Sudden Cardiac Arrest

Consider cooling to 36°C only in any of the following situations

- High risk for uncontrollable bleeding.
- Requiring > 2 vasopressors to maintain MAP > 65 or SBP > 90.
- Recurrent ventricular arrhythmias.
- Pregnancy
- Unable to transfer patient to TH capable facility within 6 hours

* See FAQ for un-witnessed SCA

Signature: _____

MD

Nurse



TH PROTOCOL

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Phase	Temp Goal	CBC	CMP	Phosphate	Magnesium	Coagulation	Cardiac Marker	Arterial Blood Gas	Blood Culture
Initial Orders	33°C <input type="checkbox"/>	Stat	Stat	Stat	Stat	Stat	Q 6 hrs x 3	Stat	Stat x 2
	36°C <input type="checkbox"/>	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD
		<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse
Induction Phase	33°C <input type="checkbox"/>	Q 4hr	Q 4hr	Q 4hr	Q 4hr	Q 4hr	X		
Cooling started	36°C <input type="checkbox"/>	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD			
Date and time: / / : _____		<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse			
Maintenance Phase (24 hrs)	33°C <input type="checkbox"/>	Q 12hr	Q 12hr	Q 12hr	Q 12hr	Q 12hr	Q 12hr	Stat x 2	
Temp Goal reached	36°C <input type="checkbox"/>	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	
Date and time: / / : _____		<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	
Rewarming Phase		Re-warm goal	Q 4hr	Q 4hr	Q 4hr	Q 4hr	Q 4hr	Q 4hr	X
Rewarming started	0.3 to 0.5°C/hr	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD	<input type="checkbox"/> MD		
Date and time: / / : _____		<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse	<input type="checkbox"/> Nurse		
Normothermia	37°C <input type="checkbox"/>	!!Keep temperature < 37.5° C for 72 hours once normothermia reached (using antipyretic and cooling to keep core body temperature < 37.5° C)!!							
Normothermia reached	Date and time: / / : _____								
Must Check off <input type="checkbox"/>									

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TH PROTOCOL

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INITIAL ORDERS FOR TH

1. Monitoring: 12 lead EKG, BP, Pulse-oximeter. EEG if suspicion of seizures
2. Consult: Cardiology, MICU, Neurology and if indicated Materno-fetal
3. Temperature: Place esophageal, rectal or bladder temperature probe (at least 2).
4. **See table** for details for labs and orders (see page 2)
5. Medication: Buspirone (30mg po/per NG/OG tube q8h),
 Acetaminophen 650 mg q 4 hrs
6. Resuscitation: As per hospital/ICU protocol. Use of **4°C** 0.9 NS i.v boluses up to
 30ml/kg through **peripheral line**
 - If body core Temp **>34.5°C** for target temperature **33°C**
 - If body core Temp **>37.8°C** for target temperature **36°C**

Interventions: Imaging (including CT), Cardiac catheterization, central line placement and others procedures should not delay the initiation of TH!!!

Management of common complication due to therapeutic hypothermia:

Electrolytes goals:

1. **Magnesium:** >2 mg/dL,
2. **Potassium:** 3 meq/L > **K** < 5.2
3. **Phosphate:** > 2.5 mg/dL
4. **Ionized Calcium:** > 1.1 mmol/L

Bleeding:

Correct coagulopathy and if bleeding persists, use 36°C cooling protocol.

Shivering:

See shivering protocol page 5

Signature: _____ MD _____ Nurse



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INDUCTION PHASE ORDERS

1. Set up available cooling equipment
2. Sedation: Propofol preferred otherwise Fentanyl or Midazolam drip.
3. **See table** for details for labs and orders (see page 2)
4. Monitoring: When using Neuro Muscular Blocker (NMB)
 - a. Consider using Bispectral index (BIS) monitor with **goal < 60**
 - b. Peripheral Nerve Stimulator for train of four testing.
5. Medication:
 - a. Initiate Glucose control as per ICU/ED protocol
 - b. Continue Buspirone, Acetaminophen 650 mg q 4 hrs

MAINTENANCE PHASE ORDERS

(For 24 hrs from time patient reached temperature goal)

1. Maintain **SET POINT for 24 hours**
2. **See table** for details for labs and orders (see page 2)

REWARMING PHASE ORDERS

(After 24 hrs from time patient reaches temperature goal)

1. **See table** for details for labs and orders (see page 2)
2. Stop sedation and Buspiron **after** normothermia reached and NMB effect weaned off.
3. Monitoring: When using NMB
 - a. Peripheral Nerve Stimulator for train of four testing.
4. Neurologic exam: Repeat every 6 hrs once normothermia reached for at least up 72 hrs post normothermia.

Prognostication should be done **no earlier** than 72 hrs post normothermia

Signature: _____ MD _____ Nurse

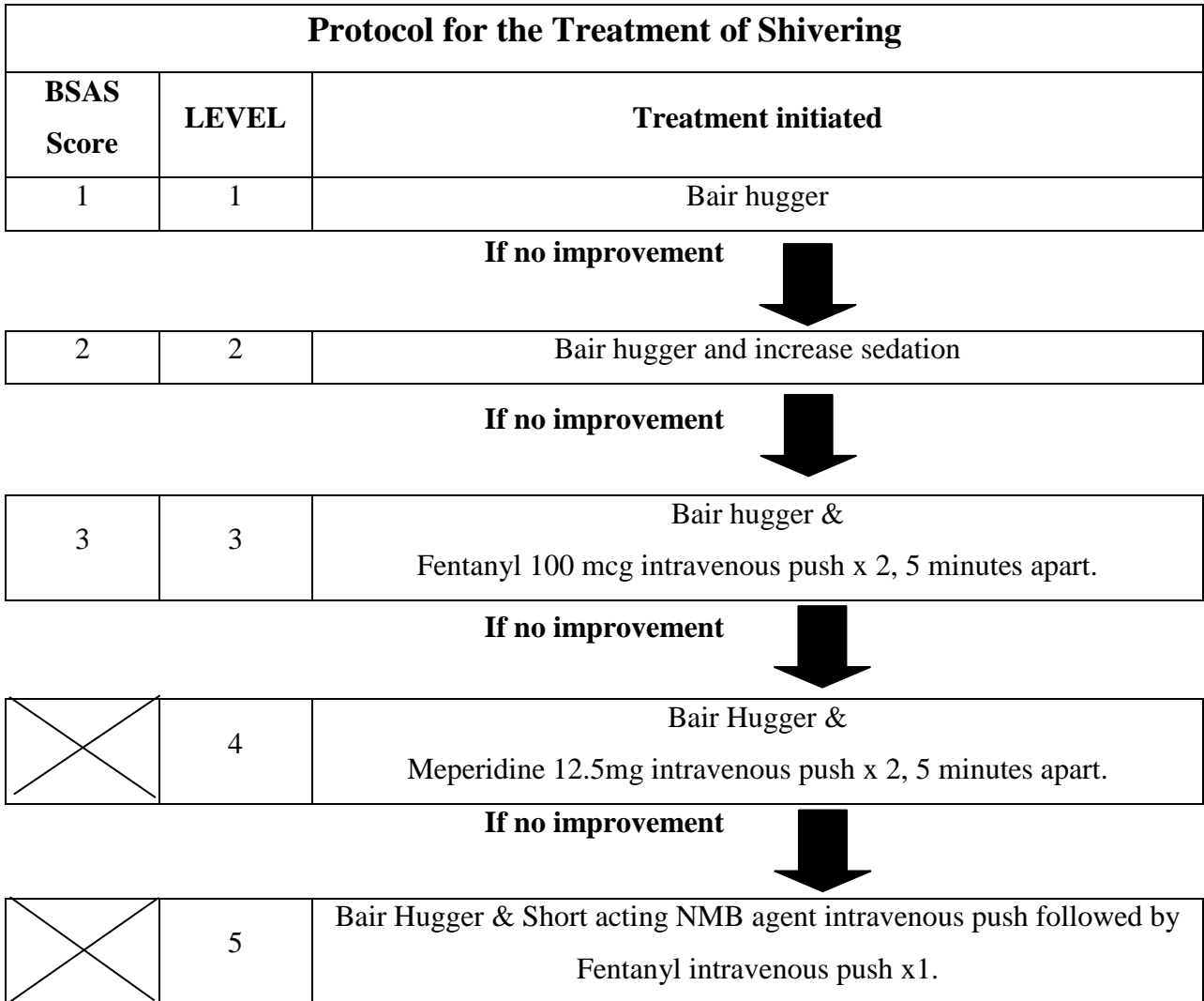


TH PROTOCOL

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The Bedside Shivering Assessment Scale (BSAS)	
Score	Definition
0	None: No shivering noted on palpation of the masseter, neck or chest wall
1	Mild: Shivering localized to the neck and/or thorax only
2	Moderate: Shivering with gross movement of the upper extremities (in addition to neck/thorax)
3	Severe: Shivering with gross movements of the trunk and upper and lower extremities

SCORE: 0 1 2 3



Signature: _____ MD _____ Nurse