Nurse’s Notes.....

Therapeutic Temperature Modulation (TTM) After Cardiac Arrest Order Set Updates/Changes

For Use in the ED and ICU

Includes Bedside Shiver Assessment Scale
What is Therapeutic Temperature Modulation?

- Therapeutic Temperature Modulation, formerly known as Hypothermia Protocol refers to artificially induced and maintained mild hypothermia followed by controlled return to normothermia.
- This treatment is standard for comatose patients following cardiac arrest in whom cardiac perfusion has been reestablished.
Why is Hypothermia Beneficial?

- Patients who experience cardiac arrest, suffer both cerebral ischemia and hypoxia.
- Once circulation returns, destructive processes occur that can lead to cellular death and organ failure.
- Hypothermia is thought to decrease the effects of harmful reperfusion injuries.
Phases of TTM

- **Induction** (Cooling to a Setpoint) – Use of Gaymar Medi-Therm II, Ice packs, Cold N.S. (should reach Goal cooled temp within 4 hours from initiation)

- **Maintenance** (Setpoint temp maintained 24 hrs.)

- **De-Cooling** (Re-Warming old term) - Use of Gaymar Medi-Therm II
Complications of TTM

• **Shivering**
  - Can increase the basal metabolic rate
    2-5x of normal rate
  - Is associated with increases in HR, BP, RR, cardiac indices, and ICP
  - Most likely to occur during Cooling and De-Cooling

• **Electrolyte Disturbances**
  - Hypomagnesia
  - Hypokalemia

• **Hemodynamic Instability**
  - Hypotension
Assessment of Shiver with Bedside Shivering Assessment Scale (BSAS)

- **0 (NONE)** Absence of shivering on palpation of neck or pectoralis
- **1 (MILD)** Shivering localized to the neck and/or thorax. *May be present only on palpation
- **2 (MODERATE)** Shivering involves gross movement of the upper extremities (in addition to the neck and thorax)
- **3 (SEVERE)** Shivering involves gross movements of the trunk and upper and lower extremities (*generalized whole body movement*)

**Goal** score is *less than or equal to 1*.

**Assess** the patient for shivering with BSAS every 15 minutes during initiation phase of TTM; hourly and prn thereafter. Document findings on flowsheet or EHR.

**Notify** provider if score rises above goal.

**Initiate** treatment for shivering per the protocol and document patient’s response on flowsheet or HER.
Pharmacologic Treatment Strategies for Shivering

- Demerol
- Buspar
- Propofol
- Fentanyl
- Nimbex
- Tylenol (for temperature above 99.0 F during the de-cooling phase)
- Please follow treatment protocol using Bedside Shivering Assessment Scale Score.
Nursing Considerations

- Magnesium replacement protocol for TTM should be used.
- **All other magnesium replacement order sets should be discontinued while patient is on TTM.**
- Skin assessment is required every 2 hours. Specific attention is given areas that come into contact with skin wraps of cooling devices.
- Refractory fever (above 99.0 F) should be managed during de-cooling phase and for several days afterward. Rapid de-cooling should be prevented due to acute vasodilation and hypotension risks.
QUESTIONS??

• Please consult with your Charge Nurse, Clinical Nurse Educator, or Nurse Practice Specialist.
To document completion of this module in your continuing education record:

1) WFBMC Employees Click [HERE](#) to sign into PeopleSoft
   2) Go to “Courses & Tests” and Click on [Take Course Test](#).
   3) Enter Test Code: **92012**

1) WFHS Employees Click [HERE](#) to sign into PeopleSoft
   2) Go to “Courses & Tests” & Click on [Take Course Test](#).
   3) Enter Test Code: **92012**