



RCNIC MANUAL

NUMBER: **III-2.13**

PAGE: **1 of 2**

DATE OF ORIGINAL: **2/05**

DATE OF REVIEW: **2/08**

DATE OF REVISION: **2/08**

SUBJECT: HYPOTHERMIA FOR HYPOXIC- ISCHEMIC ENCEPHALOPATHY IN TERM INFANTS

APPROVAL

I. PURPOSE:

To reduce the incidence of death and disability in full term infants with encephalopathy following an acute perinatal hypoxic-ischemic event, by inducing hypothermia through conductive heat transfer with total body cooling for 72 hours.

II. PERSONEL:

- A. RN
- B. MD
- C. APN

III. EQUIPMENT:

- A. Radiant Warmer Bed (Remains off until rewarming phase)
- B. Hyper/hypothermia system: Blanketrol II
 - i. Probe adapter cable
 - ii. 2 sets of connecting hoses.
- C. Rectal/Esophageal Temperature Probe
 - i. YSI 400 series single patient use
- D. Two Hyper/Hypothermia blankets
 - i. One infant size 25" x 33" Maxi-therm Lite blanket
 - ii. One adult size 25"x 64" Maxi-therm Lite blanket
- E. Distilled /sterile water
- F. IV pole or portable rack and soft clips with which to suspend the water-filled adult size blanket.

IV. BLANKETROL II PREPARATION

- A. Check water level in reservoir. Water should be touching the strainer. Add additional distilled/sterile water if necessary.
- B. For each set of connecting hoses, attach to both a return and an outlet coupling on the unit side panel. Connect the other ends of the hoses to the like-colored couplings on the blankets keeping hoses untwisted.
- C. Blankets should be flat and all clamps open to allow filling.
- D. Once blankets have filled, be sure water reservoir level is adequate.
- E. Pre-cool the blanket by first operating in the Manual Control Mode.
 - i. Press the TEPM SET switch
 - ii. Press the down arrow to change the SETPOINT display to 5°C.
 - iii. Press the manual control switch and allow blanket to pre-cool for 15 minutes prior to placing infant on blanket.
- F. Placement of esophageal probe:
 - i. Warm probe in warm water and lubricate the first 5cm before insertion to ease

placement

- ii. Insertion: Insert the esophageal probe, preferably via the nares, and if not possible, then orally
- iii. Position 2cm above the diaphragm (measure tip of nose to ear lobe, and down to the xiphoid, the minus 2cm). Confirm placement with chest X-ray.

V. IMPLEMENTATION: COOLING

- A. Place infant on hypothermia blanket once it has pre-cooled. Infant is to remain on blanket continuously for 72 hours.
 - i. Blanketrol blanket should be kept dry
 - ii. Infant, wearing only a diaper, may be placed directly on the blanket or one thin sheet may be placed over the blanket, under the infant.
 - iii. Assess skin integrity every 4 hours
- B. Connect esophageal probe to Blanketrol unit
- C. Suspend the unfolded 25' x 64' blanket from and IV pole or portable rack ensuring there are no kinks in the hoses or the blanket.
 - i. Infant blanket water temperature fluctuation is lessened by simultaneously operating a larger, 25' z 64' blanket suspended near the unit.
- D. Be sure the radiant warmer or any other heat source is turned off.
- E. Blanketrol to function on automatic control mode (Servo) at 33.5 degrees.
 - i. Press TEMP SET switch
 - ii. Press the up arrow to change the SETPOINT display to 33.5° C.
 - iii. Press the AUTOMATIC CONTROL switch.
- F. Maintain esophageal temperature at 33.5 degrees C; acceptable range is 32.5-33.5 degrees C.
 - i. In the first 30-45 minutes, the infant's temperature may drop below the desired temp of 33.5° C. By approximately 90-120 minutes, the infant's temperature should stabilize. It is normal for the blanket to feel warm to the touch at times is it maintains infant temperature at the desires setpoint.
- G. Positioning devises may be used but should be placed under the cooling blanket.
- H. Record esophageal and skin temperature (as shown on the Blanketrol unit)
 - i. Every 15 min for the first 4 hours of cooling
 - ii. Hourly for the next 12 hours
 - iii. Every 4 hours for the remainder of the 72 hours of intervention
- I. Record HR and BP hourly for 12 hours, then at least every 4 hours for 72 hours during the cooling intervention (anticipate bradycardia).
- J. The probe used to record the skin temp should be placed on the abdomen.
- K. Notify attending/fellow if temperature drops below 31 degrees C.



RCNIC MANUAL

NUMBER: **III-2.13**

PAGE: **2 of 2**

DATE OF ORIGINAL: **2/05**

DATE OF REVIEW

DATE OF REVISION: **2/08**

SUBJECT: HYPOTHERMIA FOR HYPOXIC- ISCHEMIC ENCEPHALOPATHY IN TERM INFANTS

REWARMING:

- G. After 72 hours of body cooling, core body temperature will be gradually increased over a 6-hour period at a rate of 0.5 degrees C per hour until a temperature of 36.5 degrees C is reached.
- H. Each hour, increase the set point temperature by 0.5 degrees C by pressing the Temperature Set switch and using the up arrow to change the set point display followed by pressing the Automatic Control switch.
- I. At the end of 6 hours:
 - i. Turn off the Blanketrol
 - ii. Remove the blanket from under the infant
 - iii. Remove the esophageal probe
 - iv. Turn on the overhead warmer
 - v. Set the RW temperature 0.5 degrees warmer than the skin temperature
 - vi. Raise the warmer set point temperature by 0.5 degrees C every hour until warmer reads 36.5 degrees C.
- J. **AVOID MORE RAPID REWARMING!**

References

Bara, R. and Shankaran, S. (1999). NICHD Neonatal Research Network, Hypothermia Study. Retrieved April 18, 2008, from https://neonatal.rti.org/studies_hypothermia.cfm