

NURSING CLINICAL STANDARD

THERAPEUTIC HYPOTHERMIA-NICU

- PURPOSE:** To outline the management of patients receiving therapeutic hypothermia for hypoxic – ischemic encephalopathy (HIE) in newborns, in the NICU
- INDICATIONS:** Implement this standard within 24 hours (optimally within 6 hours) after birth unless any inclusion criteria are not met.
- SUPPORTIVE DATA:** Recent research indicates hypothermia is an available, safe and effective treatment for hypoxic-ischemic encephalopathy (HIE) in newborns.

Hypothermia is maintained for 72 hours from initiation of cooling.
Re-warming occurs at 0.2° - 0.5° (as indicated by provider) Celsius per hour.

Inclusion Criteria

- Acute perinatal event:
 - Abruption placenta
 - Cord prolapse
 - Severe fetal heart rate (FHR) abnormality; i.e., variable or late decelerations
- Apgar score less than or equal to a score of 5 at 10 minutes
- Blood pH less than or equal to 7.0 (cord blood or any postnatal blood gas) at less than one hour of life
- Base deficit greater than or equal to 16 meq/L (cord blood gas or any postnatal blood gas) at less than one hour of life
- Continued need for ventilation initiated at birth and continued for 10 minutes or longer

Exclusion Criteria

- Birth weight less than 1800 grams
- Gestational age less than 34 weeks
- Imperforate anus
- Evidence of head trauma
- Skull fracture causing major intracranial hemorrhage
- Major congenital anomalies

- ASSESSMENT:**
1. Assess/ obtain the following prior to induced hypothermia:
 - Vitals signs
 - Blood gas
 - Weight
 2. Assess the following while on Hypothermia Therapy:
 - Every 15 minutes for the first 4 hours
 - Every hour from hours 4-12 of cooling
 - Every 2 hours from hours 12-72 of cooling
 - esophageal probe temperature
 - heart rate
 - blood pressure
 - pulse oximeter saturation
 - blanket water temperature
 - Every hour skin assessment and cerebral function monitoring amplitude electroencephalogram [(aEEG) leads for contact/placement]
 3. Assess every 30 minutes during rewarming phase:

- esophageal probe temperature
 - heart rate
 - blood pressure
 - pulse oximeter saturation
 - blanket water temperature
4. Assess *continuously* for shivering.

COOLING PHASE:

5. Cool patient, using Cincinnati Sub Zero (CSZ) infant cooling blanket, as ordered (preset at 33.5° Celsius).
6. Obtain lab tests and other diagnostic tests as ordered.
7. Initiate a EEG monitoring.
8. Continue to cool until temperature reaches 33.5° Celsius.
9. Initiate sedation as ordered by provider.

REWARMING:

10. Re-warm the newborn gradually (by 0.2° or 0.5°) Celsius per hour over next 6-15-hour period) at completion of cooling therapy for 72 hours, as per provider's orders.
11. Place a new skin probe with reflective cover on the newborn and attach the probe to the radiant warmer once the patient reaches a temperature of 36.5° Celsius.

PATIENT/CAREGIVER EDUCATION:

12. Teach the family the purpose of induced hypothermia.

REPORTABLE CONDITIONS:

13. Notify provider for:
- Shivering (notify provider **immediately**)
 - Need for additional sedation
 - Temperature less than 33.0° Celsius or more than 34.5° Celsius
 - Vital signs outside of predetermined parameters

INTERHOSPITAL TRANSPORT

14. Assess/record axillary temperature on arrival at referring hospital.
15. Transport infant in the transport incubator with heat source off and port holes open to continue passive cooling.
16. Assess/record axillary skin temperatures every 15 minutes while on transport. **IF** the newborn's temperature:
- Falls below 34 ° Celsius, close port holes
 - Rises above 35° Celsius, reopen the portholes
17. Assess/record vital signs and pulse oximeter every 15 minutes
18. Do the following if heart rate is:
- Less than 80: no intervention
 - Between 70 to 80 without changes in hemodynamic status: no intervention
 - Less than 70 and stable or 70 to 80 with increased vasopressor requirement, raise core temperature slightly using measures above.
- Note: Sinus Bradycardia is a common side effect of hypothermia and is usually not accompanied by hemodynamic instability.
19. Keep an axillary temperature probe in place throughout transport
20. Check and record blood glucose at referral hospital before departure, and at least every hour during transport (more frequently if possible).

ADDITIONAL STANDARDS:

21. Refer to the following:
- Hypothermia- NICU Total Body Cooling Unit Structure Standards (USS)
 - Intravenous Therapy
 - Mechanical Ventilation - NICU
 - Sedation and Analgesia (Intravenous)- ICU

- Artificial Airway- ICU

DOCUMENTATION:

22. Document in accordance with documentation standards.
 - Document on Navigator Band: Therapeutic Hypothermia in electronic healthcare record.

Initial date approved: 09/11	Reviewed and approved by: Professional Practice Committee Nurse Executive Council Attending Staff Association Executive Committee	Revision Date: 02/16, 09/21
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