

Whole-Body Hypothermia for Hypoxic-Ischemic Encephalopathy (HIE)

Screening Criteria: Screen term infants for eligibility if they had poor respiratory effort at birth and needed resuscitation or appear encephalopathic.

Inclusion Criteria: Infants \geq 36 weeks **and** $>$ 1800 grams with **Perinatal Depression (Part A)** and **HIE (Part B)**.

Part A: Physiologic Criteria for Acute Perinatal Depression:

- 1) Cord gas or first postnatal blood gas at $<$ 1 hour of age with either pH \leq 7.0 or base deficit \geq 16 mmol/L.

OR

- 2) If cord gas or first postnatal blood gas at $<$ 1 hour of age has either a pH of 7.01 - 7.15 or a base deficit of 10 - 15.9 mmol/L or if a blood gas is not available then **the following additional criteria are required.**
 - a. An acute perinatal event (e.g., late or variable decelerations, cord prolapse, cord rupture, uterine rupture, maternal trauma, hemorrhage, abruptio placenta, etc.) **and either:**
 - i. Apgar score of \leq 5 at 10 minutes **or**
 - ii. Need for ventilation initiated at birth and continued for at least 10 minutes

Exclusion Criteria:

- a. Inability to initiate cooling by 6 hours after birth.
- b. Known chromosomal anomaly (excluding Trisomy 21, Turners, etc).
- c. Presence of major congenital anomalies.
- d. Infants *in extremis* for whom no additional intensive therapy will be offered.

If an infant meets either criteria A1 or A2, proceed to Part B (neurological criteria and exam).

Part B - Neurological Criteria: Infants meet criteria if either **seizures** or **HIE** is present.

Evidence for HIE:

Moderate/severe hypoxic-ischemic encephalopathy (HIE) will be defined as either **seizures** or in the absence of seizures, the presence of signs in **3 of 6** categories from the neurological exam.

Category	Moderate Encephalopathy	Severe Encephalopathy
1. Spontaneous activity	Decreased activity	No activity
2. Posture	Distal flexion or complete extension or frog-legged	Decerebrate
3. <u>Autonomic system</u> Pupils Heart rate Respirations	Constricted Bradycardia (< 100 BPM) Periodic breathing	Skew deviation/dilated/non-reactive Variable HR Apnea or ventilated
4. Tone	Hypotonia (focal or general) Hypertonia	Flaccid Rigid
5. <u>Primitive reflexes</u> Suck Moro	Weak Incomplete	Absent Absent
6. Level of consciousness	Lethargic (decreased activity, arousable, responsive to stimuli)	Stupor or coma (not arousable, non-responsive to external stimuli)

Timing of the examination: The exam should be done in the first **1 - 3 hours of life** once the patient’s cardiopulmonary status has been stabilized.

Performance of the neurological examination for Whole Body Cooling:

The neurological examination should take 10 - 15 minutes to complete and be performed by the attending and/or fellow. The exam is to be recorded in the admit note and performed in the following order: Spontaneous activity, posture, autonomic system, tone (via ROM), primitive reflexes and level of consciousness (response to stimuli).

Patients who have HIE as defined by seizures will still need to have a neurological exam for cooling performed and documented.

If the infant meets physiologic criteria A1 or A2 and neurologic criteria B without exclusion criteria, then whole body cooling can be initiated by ordering “Cooling per protocol”.

Reference: N Engl J Med 2005; 353:1574-84.