

**Abstract Title:**

Timely identification of inborn infants with hypoxic-ischemic encephalopathy eligible for hypothermia therapy

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**Abstract Description:**

**Introduction:** Hypothermia therapy (HT) is an effective treatment for term/near term infants with hypoxic ischemic encephalopathy (HIE). To maximize its beneficial effect HT should be initiated <6 ours of life, preferably < 3 hours, before onset of secondary injury (Thoresen et al., 2013).

**Objective:** To evaluate a clinical screening program for determining HT eligibility in a regional NICU.

**Methods:** This observational study included infants who were screened at birth for HIE/HT from 2008-2018 in a public safety net hospital. The screening program (Figure 1) was developed based on previously published HT criteria (Shankaran et al., 2005 NEJM, Azzopardi et al., 2009 NEJM). Cord blood gases were obtained per the American College of Obstetricians and Gynecologists recommendation and results were informed to NICU immediately if values met screening thresholds ( $pH < 7.15$  or  $BD > 10$ ). The severity of encephalopathy was determined based on the infant's level of consciousness. During NICU evaluation HT candidates were passively cooled and their temperatures were monitored q 15 minutes. Infants who met the HIE/HT criteria received active total body HT for 72 hours. Clinical data was prospectively collected in our NICU database. Time from birth to initiation of active cooling (TBA) was summarized as Box Plot.

**Results:** Of 42611 consecutive live births in the study period, 326 infants (7.6%) were admitted to NICU for evaluation of HIE/HT, and 66 (1.5/1000 birth) were treated with HT. Apgars, cord gas values and TBAs for each HIE severity group are presented in Table 1. The median TBA hours for each HIE severity group is shown in Figure 2. Thirty three (50%) HIE infants had TBA

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< 3 hours of life and 13 (20%) infants had a TBA > 6 hours of life (6.18-11.2 hours). Notably, the 29 (44%) infants whose HIE severity was assigned as normal/mild met HT criteria and received HT.

Conclusion: 1. Our overall HT rate was 1.5/1000 live births. 2. HIE presentation was dynamic; infants with mild to moderate HIE needed hours of ongoing evaluation to determine HT eligibility. 3. 20% HIE infants received HT > 6 hours of life, representing opportunities for improvement. 4. Of the infants who met HT criteria, 44% had documented HIE severity of normal or mild, demonstrating the challenge of using level of consciousness to determine HIE severity.