

**Abstract Title:**

Holding Infants Undergoing Therapeutic Hypothermia

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**Abstract Description:**

Parents of infants in the Neonatal Intensive Care Unit (NICU) are at risk for post-traumatic stress disorder and anxiety. A diagnosis of hypoxic ischemic encephalopathy (HIE) is stressful given the potential for brain injury and the abrupt physical separation of an infant from his parents. Kangaroo care has been shown to improve neonatal outcomes and enhance bonding between infant and parent. UCSF Benioff Children's Hospital Oakland's NICU is an out born referral service averaging 50 HIE admissions a year. Previously, holding infants during cooling was not encouraged as a standard of care.

To encourage parents to safely hold infants undergoing therapeutic hypothermia and continuous EEG monitoring while maintaining infant's goal rectal temperature (33-34°C). Study participants were infants admitted for therapeutic hypothermia in 2018. Patients receiving high frequency ventilation, inhaled nitric oxide or extracorporeal membrane oxygenation were excluded. Nursing education for holding intervention was provided. Bedside set up and infant positioning were standardized to optimize safety while holding, cooling, and receiving EEG monitoring (Fig. 1). Parents held their infant in horizontal positions while wrapped in cooling blankets up to 1 hour. Rectal temperature, mattress water temperature, and vital signs including NPASS pain and sedation scores were recorded at baseline and in 15-minute intervals for 1 hour. Adverse events were defined as: unplanned extubation, accidental intravenous line or rectal temperature probe dislodgment, and interruption in the EEG recording.

42 infants were admitted for cooling and 33 met criteria for holding. 17/33 (63%) infants were held and 10/17 (59%) were held more than once. 2 infants were intubated during holding. Fathers held 27% of the time compared to mothers. 5/16 infants not held had no parent visitors, 4/16 were visited only by their fathers during cooling and 7/16 were intubated. There were no rectal temperature deviations outside of goal and no adverse events occurred in any

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patients. Vital signs and NPASS scores were unchanged. Mothers reported feeling less anxious while holding their babies.

Holding infants during cooling can be performed safely without temperature deviations or adverse events. Development of a standardized protocol to ensure proper placement of lines and proper holding techniques is crucial for nursing comfort in offering and performing this procedure. Due to complexity, holding an intubated infant requires additional support and nursing assistance.