

# **Incidence of Cerebral Palsy, Seizure Disorder and Developmental Delay in Newborns with Hypoxic Ischemic Encephalopathy Following Treatment with Hypothermia**

**Kazeerat Adedokun<sup>1</sup>, Heather Wolfe<sup>2</sup>**

<sup>1</sup>Indiana University School of Medicine, <sup>2</sup>Lutheran Health Network, Neonatal Intensive Care Unit

Neonatal Hypoxic ischemic encephalopathy (HIE) is a serious condition that can lead to significant neurological problems, developmental delay, and mortality. Fetal oxygen deficiency decreases cardiac output, leading to reduced cerebral blood flow and brain injury. In 2006 the United States spent over 300 billion dollars in disability related health care expenditure. HIE if left untreated leads to poor quality of life, and survivors end up with lifelong disabilities. Therapeutic hypothermia became standard of care in 2002, and evidence has shown it has neuroprotective benefit. We hypothesize that neonates treated with hypothermia will have lower incidence of cerebral palsy (CP), seizure disorder (SD) and developmental delay (DD), compared to neonates diagnosed with HIE prior to the current standard of care. Compared to healthy neonates, neonates treated with hypothermia will have higher incidence of CP, SD, and DD

**Project Methods:** A retrospective chart review will be performed using 200 participants with medical records from Lutheran health network neonate intensive care unit. Historical data from prior to the current standard of care (January 2007 to 2011) will be used for newborns with HIE. Another data set from January 2015 to December 2019 will be used for newborns treated with hypothermia and healthy patients as well. The TIMP test will be used to assess motor performance in early infancy. The Bayley Scales of Infant and Toddler Development third edition will be used to measure cognitive, language and motor development. Cerebral palsy will be assessed using the Gross Motor Function Classification System.

**Results:** We expect that the results of this study will match previous research, which found that neonates treated with hypothermia had better outcomes compared to neonates not treated with hypothermia.

**Potential Impact:** If found to be effective, this intervention may improve the quality and quantity of a patient's life and reduce the cost of healthcare spending on disability.