

# Mobile Application to Determine Early Prognosis of Therapeutic Hypothermia in Neonates

Samrudh Shenoy, Dr. Anoop Rao (Stanford Pediatrics)

Los Altos, CA, USA

**Abstract:** Whole-body hypothermia (WBH) has been shown to decrease the risk of death or disability in infants with mild-moderate hypoxic ischemic encephalopathy. However, identifying infants eligible for WBH relies on a combination of criteria from the patient's history, labs and clinical exam. The criteria include several nested Boolean statements, which can confuse the naïve healthcare worker. To ease the cognitive burden of interpreting these criteria, and to identify WBH-eligible infants in a consistent way, we have developed a mobile application for iOS and Android. In this paper, we demonstrate the usability and accuracy of this app, Vindico, in hospital settings.

**Objective:** To provide an appropriate diagnosis of hypoxic and hypothermic conditions to caregivers and enable rapid treatment during the preliminary stages of hypoxia, we developed a smartphone app that allows reciprocal interaction between caregivers and pediatric experts. This paper describes a study to examine the app's basic design and functions and to establish its acceptability and usability in neonatal intensive care units.

**Method:** Vindico is a mobile application containing underlying ML/filtering algorithms authored in Swift and Java.

**Usability:** A total of 10 frontline healthcare workers [NNP, MDs] participated in the study. They used the smartphone app to enter data from standardized patients. Concordance of app diagnosis and each patient's suggested outcome was measured.

The acceptability and usability of the app were evaluated using self-report questionnaires completed by caregivers; qualitative feedback was obtained via semi-structured interviews after the intervention.

**Synopsis:** The purpose of this study is to develop and clinically evaluate a digital triage tool that can be used rapidly and reliably, without the need for extensive memorization or training, by frontline health workers, including nurses and non-physician clinicians, to identify and thereby treat critically ill children.