Abstract
Maintaining normothermia (36.5 – 37.5 °C) in the neonatal intensive care population is vital, resulting in decreased mortality and morbidity. Several interventions are already common practice in the delivery room to avoid hypothermia in newborns. These include chemical warming mattresses, increased delivery room temperature, knit hats and pre-warmed blankets. Even with these interventions in place hypothermia is still a concern. Due to a lack of published evidence about Thermoflect infant caps, further research was required to investigate the effectiveness of this technology.

This retrospective, non-randomized controlled study included using quantitative data of 330 infants admitted to the NICU over a six (6) month time span at Women’s Hospital in Greensboro, North Carolina. A baseline of temperature data was collected for three (3) months before the Thermoflect caps were put into place and for three (3) months while the Thermoflect caps were used. The study population was broken down into four (4) gestational subgroups: 23-27 weeks, 28-32 weeks, 33-36 weeks, and 37+ weeks.

The mean temperatures were calculated for each subgroup to compare temperatures before and after the use of Thermoflect caps. Results across the study saw nominal increases in body temperature. The older the gestational age the better the result. In the best case an average increase of 0.18°C was seen. In this study the majority of the subjects were normothermic upon admission. Additional studies are warranted to discover if the use of Thermoflect caps in conjunction with other interventions would lead to substantial increases in body temperature.

Introduction
Hypothermia causes a multitude of physiological changes that could trigger hypoglycemia, metabolic acidosis, peripheral vasoconstriction and a host of other complications. To prevent hypothermia in the neonatal population, the environment can be managed by increasing delivery room temperature, warming mattresses, skin-to-skin contact, and applying the Thermoflect hat immediately following delivery. The focus of our study was to determine if Thermoflect hats improved NICU admission temperatures in different gestational ages, from very low birth weight to term infants.

Methods

- Temperatures were recorded on admission to the NICU starting in September 2015 prior to implementation of Thermoflect hats giving us 3 months of data.
- Thermoflect hat use initiated December 15, 2015.
- Data was collected for 3 months after initiation of the Thermoflect hats.
- After data was collected, the neonates were grouped according to their gestational age to establish similar body surface area comparisons.
- Mean temperatures of each gestational group, both before and after initiation of the Thermoflect hat, are demonstrated on the charts included.

Conclusion
The results of our study indicate minimal mean temperature increases across gestational groups after implementation of the Thermoflect hats. While we expected to find a greater mean temperature increase, especially in the 23-27 week gestation group, due to immature thermoregulatory mechanisms and a large surface area to body weight ratio, it increased by a minimal 0.01 degree Celsius. The patient sample size for this gestation was only twenty-three patients over a 6 month span. The impact of hypothermia prevention measures, that were in place prior to the study, included increased delivery room temperature and chemical warming mattresses. The introduction of the Thermoflect hats contributed to a minimal gain in mean NICU admission temperatures across gestational groups.

References:

Neonatal Normothermia: Do We Have It Covered?

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