Improving an ELBW Preemie NICU Experience Through a Newly Designed Diaper that Supports Skin Health

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BACKGROUND
Extremely low birth weight premature (ELBW) babies have unique anatomy and their developmental needs include fragile skin, immature musculoskeletal system, and the need for undisturbed sleep (Als & Gilkerson, 1995). Soft, absorbent diapers can help protect ELBW babies’ skin, but a recent survey showed that more than half of NICU nurses believe that diapers currently used do not properly fit, compromising their ability to support developmentally aligned positioning, nor fully support skin health (Sánchez, Kenneally, Maladen-Percy & Gustin, 2017). This survey evaluated a new diaper designed specifically for ELBW babies to determine if NICU nurses preferred it over their typical NICU diaper. Additionally, the survey evaluated nurses’ opinions on the in-use performance of this new diaper design on key attributes including fit, leakage, developmental appropriateness, and skin care.

METHODS & STATISTICS
This prospective, multicenter in-use based diaper assessment by NICU nurses was conducted in four level IIIIB or IV NICUs: Cincinnati Children’s Hospital Medical Center, Cincinnati, OH; Children’s Hospital of the King’s Daughters, Norfolk, VA; Good Samaritan Hospital, Cincinnati, OH; and University of Cincinnati Hospital Medical Center, Cincinnati, OH. Babies participating were ELBW male and female babies weighing up to approximately 800 grams ranging from 23 to 30 weeks gestational age. The assessment was conducted with hospital approval (e.g., Institutional Review Board).

The survey included 16 babies who exclusively wore up to 60 (each) of the improved new diaper for ELBW babies. NICU nurses completed one survey at the end of each shift for each baby given four total data sets. Nurses were collected for a total of 76 unique nurse-baby pairs. If more than one survey was provided from a unique pair then only the last survey was included in the statistical analysis. The survey consisted of 30 questions including preference, likelihood to recommend to another NICU nurse, overall rating of test diaper, ratings of key performance attributes, statements about the impact of new features on quality of care, and voluntary comments.

REFERENCE

RESULTS
Performance Attribute Ratings
Nurses were asked to rate the improved new diaper for key performance attributes (Figure 4). The results showed overall 88.2% of nurse-baby pair responses rated the new diaper as excellent or very good. Specifically, nurses gave high ratings to the improved new diaper for keeping baby skin healthy (88.2% Excellent + Very Good), being easy to use (86.8% Excellent + Very Good) and optimal fit for healthy development (88.8% Excellent + Very Good).

Figure 3 Improved Diaper Feature Impacts on Preemie Care
This diaper’s narrower crotch fits more appropriately between the legs, hence reducing the need to return the diaper to a supine position, thereby eliminating the need to turn the baby over for diapering.

Preference & Recommendation
Over 90% of nurses (as measured by nurse-baby pair assessments) in the survey preferred the improved new diaper over their usual diaper (Figure 2) and would recommend it to their colleagues (Figure 3).

CONCLUSION
This survey shows that intentional diaper design can have a significant impact on care for ELBW babies as assessed by NICU nurses. Nurses participating in the survey found that when a diaper includes features specifically designed for the unique anatomy and developmental care needs of ELBW babies, this can result in improved care. Optimization of diaper design for ELBW babies can help improve diaper fit, promote optimal developmental positioning, minimize sleep disruption, promote skin to skin contact, and provide better skin care. In fact, 92% of nurse-baby pair assessments in the survey preferred the improved diaper for ELBW babies over the diaper they normally used and 95% would recommend it to other nurses.

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REFERENCES