Change in Caregiving Activities in Extremely Low Birthweight Infants Over the First 14 Days of Life

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No Conflicts of Interest to Declare
Background

- High-risk infants are vulnerable to an altered microbiome due to the atypical Neonatal Intensive Care Unit (NICU)
- Microbiome typically developed in close contact with the mother and home environment.
Background

• How specific health caregiving activities in the NICU impacts the development of the preterm infant’s microbiome is largely unknown. ³ hartz & Brandon

• Understanding the nature of caregiving that could influence the microbiome is a critical first step.
Purpose

• To describe the frequency and change in caregiving activities of extremely low birthweight (ELBW) infants over the first 14 days of life that have the potential to alter the development of the microbiome – skin, – gut and – pulmonary microbiome.
Methods

• Design
  – Longitudinal multiple case study design

• Data Collection and Measures
  – Videotaped over the first 14 days of life while receiving care in their incubator in a Level IV NICU.
  – Observational coding of the frequency and length of caregiving activities was conducted using Observer XT ver. 11.5.
  – Development of the coding schema over five iterations resulted in 26 caregiving codes.

• Four coders were trained to 80% Kappa reliability.
Categorization of Caregiving

• Consensus for caregiving categorization was obtained between the authors.
• Skin—infant touch, diaper changing, cleansing, and infant removal from the incubator.
• Gut—oral care, oral or nasal pharynx suctioning, nasal gastric or oral gastric tube, and pacifier placement.
• Pulmonary—endotracheal placement (ETT) and ETT suctioning.
Data Analysis

• Descriptive statistics were used to calculate frequency and percent of each of the 26 categories per day.
• Case history of 5 extremely preterm infants – examine major events across the first 14 days of life including respiratory support, feeding status, medications, severity of illness and major diagnoses.
• The co-occurrence of case history events and changes in the frequency of caregiving activities were also explored.
Results

• 5 infants contributed 817 hours of data over 54 days.
• Some caregiving activities were not present.
• Routine caregiving activities were more consistent across time.
• Other caregiving co-occurred with procedural events.
Skin
Case 17

Caregiving Activity

- Cleansing
- Diaper change
- Hands In
- Infant Removed
- Touching Infant

Day of Life

Value

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

0 25 50 75 100

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Conclusions

• Caregiving activities were easily grouped into skin, gut, and pulmonary

• Over the first 14 days of life
  – Caregiving activities considered routine such as diaper changes were consistent over time
  – Other activities such as infant touch was associated with infant severity of illness or procedural events.

• Future research should map microbiome development of the skin, gut, and pulmonary systems in relationship to specific caregiving.

• Modifiable caregiving strategies should be considered based upon the at-risk alterations of the microbiome.
Questions