

## **Health Outcomes and Cost of Human Milk Feedings for Very Low Birthweight Infants**

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Human milk from the infant's own mother (HM) reduces the risk of short- and long-term complications of prematurity in very low birthweight (VLBW; <1500 grams birthweight, includes extremely low birthweight) infants. These complications, which include late onset sepsis, necrotizing enterocolitis (NEC), chronic lung disease, poor growth, neurocognitive delay and rehospitalization after discharge from the neonatal intensive care unit (NICU), are costly to families, health care institutions, educational systems and to society at large. As such, HM feedings can be conceptualized as a primary prevention strategy that is safe, effective, widely available and inexpensive. However, in many countries HM feeding in the NICU is more costly than is the feeding of commercial formula because HM feedings necessitate that the mother have an effective breast pump, storage containers for pumped milk and access to specialized lactation care. Similarly, the NICU typically incurs the cost of additional freezers, equipment and personnel to store prepare and feed HM that is not required for commercial formulas. Thus, it is imperative that the evidence for the feeding of HM in this population be sufficiently strong to justify additional initial expenditures for the use of HM in the NICU.

This presentation will focus on health and economic outcomes of HM feeding for VLBW infants from a recently completed NIH-funded 5 year cohort study of 430 mother-VLBW infant pairs from Rush University Medical Center (RUMC) in Chicago. A key component of the presentation will be the importance of establishing evidence-based quality indicators that measure how much HM is received by VLBW infants over critical exposure periods that are associated with the reduction in the risk of acquired complications of prematurity. Already published are data that reveal each additional 10 mL of HM received by VLBW infants during the first 28 days post-birth reduces the risk of late onset sepsis and its associated costs by 19%. Also recently published is the finding that exclusive HM (absence of formula) for the first 14 days of life reduces the risk of NEC 3-fold. Additional health and economic outcomes for this presentation will focus on chronic lung disease during the NICU hospitalization and the risk of neurocognitive delay at 18 months of age, corrected for prematurity. Also included will be the nutritional and bioactive mechanisms that are the likely explanation for these beneficial outcomes of HM feeding in this population. Direct application to clinical practice in the NICU, using the Rush Mothers' Milk Club program of evidence-based support in which this NIH cohort study was conducted, will be provided.