

Growth and Necrotizing Enterocolitis Outcomes in Very low Birth Weight Infants fed Sterilized Donor Breast Milk Fortified with a Bovine Human Milk Fortifier as a Supplement to Mother's Own Milk

Mary Ann Victoria T Dimaguila, MD, Katherine Brigham, MEd, RD
Women's Hospital, Cone Health System, Greensboro, North Carolina, USA

Introduction

Breast milk is the preferred nutrition for infants as recommended by the American Academy of Pediatrics (AAP). Breast milk feeding could have even more substantial benefits for preterm infants. The AAP recommends an exclusive breast milk diet for all infants < 1500 grams birth weight. The use of an exclusive breast milk diet in these very low birth weight (VLBW) infants can significantly reduce necrotizing enterocolitis (NEC) incidence. Despite these benefits, mothers of preterm infants often do not have sufficient breast milk supply to feed their infants, for whom early nutrition has shown to improve outcomes. Pasteurized Donor Breast Milk (PDBM) is widely used to supplement mother's own milk (MOM) in the neonatal intensive care unit (NICU). Nutrient content of PDBM can be variable, making promotion of adequate growth challenging. Poor growth in the VLBW infants can have neurodevelopmental implications. Fortification of mother's milk or donor milk and infant formula, is recommended to maximize growth and development. Use of bovine human milk fortifier (HMF) added to breast milk can increase NEC incidence when compared to a diet of exclusive human breast milk. Recently available sterilized donor breast milk (SDBM) offers a homogenized DBM option with a defined nutrient composition. Use of SDBM with a bovine HMF and its outcomes have not been well documented in the literature.

Objective

The objective of this Institutional Board approved research study was to document NEC rate, feeding intolerance and weight gain with the use of SDBM fortified with bovine HMF, as a supplement to MOM.

Methods

All infants admitted to the NICU between September 2015 until September 2018, with a birth weight < or = 1500 grams were eligible. Standard NICU nutrition protocols followed. All infants received daily probiotic, Lactobacillus reuteri. Infant were eligible to receive SDBM (Co-op Donor Human Milk, Medolac Laboratories, Lake Oswego, OR) from birth to day of life (DOL) 30. A bovine based HMF was used to fortify the breast milk. Data was collected on weigh gain from DOL 7-30 in g-day, day of NPO due to feeding tolerance > 24 hours once infant has progressed past trophic feeds, number of days on parenteral support and incidence of NEC.

Results

Consent to use SDBM was obtained for 225 infants. Data was collected on a total of 157 infants, received SDBM only (36) or SDBM plus MOM (121). The average gestational age at birth was 29 3/7 weeks, with an average birth weight of 1197 grams. Average rate of weight gain DOL 7-30 was 24g/day. Average number of days on parenteral nutrition was 10.3. the NEC rate was 2.5% (all 4 cases were medical NEC).

NEC Rates Before and After Initiation of SDBM Program

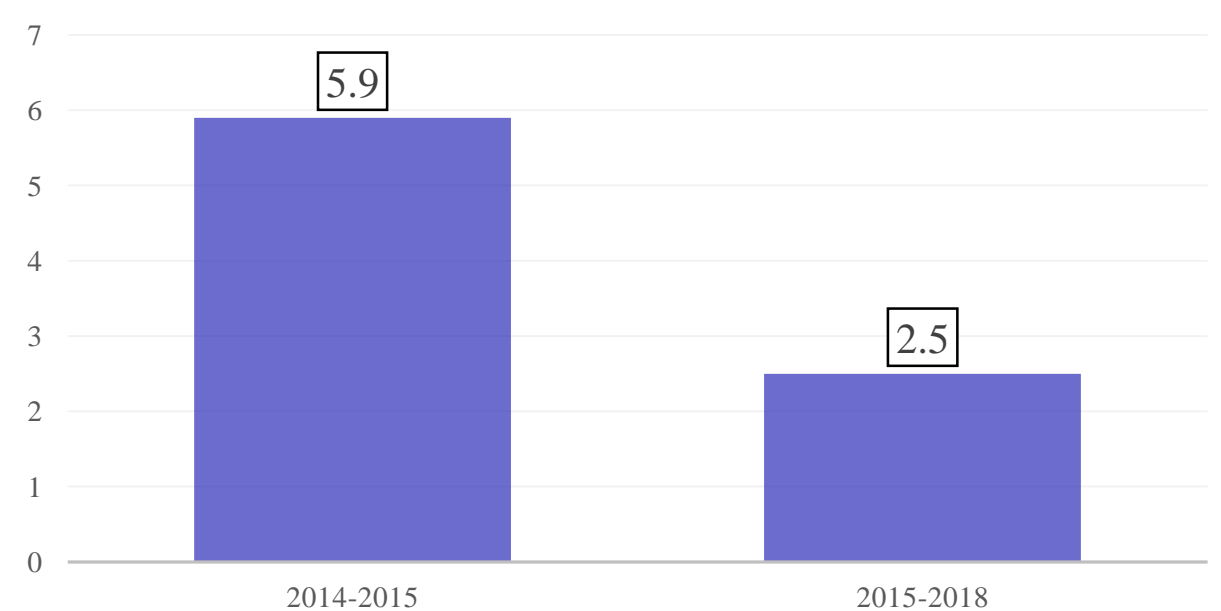


Figure 1. NEC percentage rate in years 2014-2015 and 2015-2018

Conclusion

SDBM fed population in our NICU met growth goals that mimic intrauterine growth rates for 29-week gestation infants, (24 g/day per Fenton 2013). NEC rate was not greater than that which is typical of an exclusive human milk diet plus use of human milk based fortifier in VLBW infants (2-3%) compared with our use of bovine HMF. Our trial indicates that even with an established NICU enteral protocol (use of probiotics), SDBM used with bovine HMF can support intrauterine growth rates and no increased incidence in NEC. The population size is small, and this is an ongoing study to further document growth and NEC incidence with the use of SDBM and bovine HMF as supplement to MOM.

References

1. Christofalo, E et al. Randomized trial of Exclusive Human Milk vs Preterm Formula Diets in Extremely Premature Infants. J. Pediatr 2013; 163:1592-5.
2. Neu, J. et al. Necrotizing Enterocolitis. N. Engl J Med 2011; 364:255-264.