

Benefits of an Exclusive Human Milk Diet (EHMD) for Premature Infants

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The National Coalition for Infant Health is a collaborative of more than 200 professional, clinical, community health, and family support organizations focused on improving the lives of premature infants through age two and their families. NCfIH's mission is to promote lifelong clinical, health, education, and supportive services needed by premature infants and their families. NCfIH prioritizes safety of this vulnerable population and access to approved therapies.

“The benefits of breastmilk for preterm infants are very well established. However, when infants are born prematurely and miss all or part of the third trimester, they receive less vital nutrients via the placenta.”

Does your unit have goals to provide an exclusive human milk diet (EHMD) for preterm infants? Why should neonatal therapists play a role in advocating for EHMD and supporting families as they work alongside the team to help accomplish this? What does the evidence say?

The benefits of breastmilk for preterm infants are very well established. However, when infants are born prematurely and miss all or part of the third trimester, they receive less vital nutrients via the placenta. Preterm infants have low mineral stores and often



require fortification of breastmilk and/or pasteurized donor milk. Many NICUs utilize fortifier derived from cow's milk, and others use human-based milk fortifier (as part of the EHMD). Is there a difference?

“There is also a large body of evidence that illustrates the positive effects of breastmilk on infant neurodevelopment. However, there has been concern regarding the neurodevelopmental outcomes for preterm infants fed EHMD,”

What are the health benefits of EHMD for very low birthweight (1,250 grams and below) preterm infants?

Several studies demonstrate improved morbidity and mortality for these very preterm infants who are fed an EHMD over cow's milk-derived fortifier. A recent meta-analysis published in the summer of 2020 identified three studies directly comparing human milk-based vs. cow milk-based fortifiers where the base milk diet was all human milk. One study was a randomized trial that compared EHMD and cow's milk-derived fortifier, and two additional studies provided raw data to the authors as subgroup analyses of a randomized controlled trial and a quasi-experimental study (1). This study found that infants fed EHMD had significantly less: NEC, ROP, PDA, and feeding interruption.

Are there differences in neurodevelopmental outcomes for preterm infants fed EHMD?

A recent retrospective observational study found a correlation with decreased incidence of grade III or IV IVH and PVL for extremely low birthweight infants fed EHMD compared to infants fed formula or mother's milk fortified with bovine fortifier. It should be noted that more infants in the EHMD group received antenatal steroids, but after correcting for antenatal steroid use, the significant differ-

National Coalition for Infant Health Values (SANE)

Safety. Premature infants are born vulnerable. Products, treatments and related public policies should prioritize these fragile infants' safety.

Access. Budget-driven health care policies should not preclude premature infants' access to preventative or necessary therapies.

Nutrition. Proper nutrition and full access to health care keep premature infants healthy after discharge from the NICU.

Equality. Prematurity and related vulnerabilities disproportionately impact minority and economically disadvantaged families. Restrictions on care and treatment should not worsen inherent disparities.

ence remained (3).

There is also a large body of evidence that illustrates the positive effects of breastmilk on infant neurodevelopment. However, there has been concern regarding the neurodevelopmental outcomes for preterm infants fed EHMD, as there are associations between EHMD and extrauterine growth restriction (weight <10th % at discharge). One study published recently in *Breastfeeding Medicine* may dispel some of the concern. This prospective cohort study included 44 ELBW infants who were fed an exclusive human milk diet until 34 weeks, 36% of whom weighed <10th percentile at NICU discharge. They were tested using the Bayley Scales of Infant Development 3rd Edition at age 2. The study found that there were no statistically significant differences in communication, motor, or cognitive scores between the growth restricted and non-growth restricted groups. Researchers then suggest that there could be a neuroprotective element of EHMD in the ELBW population (2).

“They found that implementing the standardized feeding protocol, which included earlier fortification of maternal milk was associated with improved growth and had no effect on NEC. (5)”

So...What about growth?

One study sought to compare post-discharge growth, adiposity, and metabolic outcomes of AGA versus SGA premature infants fed EHMD. SGA premature infants who received EHMD exhibited greater catch-up growth without increased adiposity or elevated insulin resistance compared with AGA infants at age 2. This study suggests that being fed an EHMD may actually improve body composition and metabolic outcomes for SGA infants in the long term. (4)

Since growth has been shown to be less for infants fed EHMD, another research group sought to determine how to best optimize growth for these infants. This was a retrospective study that looked at growth (weight, length, and head circumference gain velocities from birth to discharge) in infants <1250g before and after the implementation of a standardized feeding protocol for EHMD. They found that implementing the standardized feeding protocol, which included earlier fortification of maternal milk was associated with improved growth and had no effect on NEC. (5)

What are the financial implications of using EHMD?

At first glance, using a human-derived milk fortifier may seem to increase healthcare expenditure. However, when considering the clinical benefits, it may be cost-saving over time. Researchers conducted an economic analysis of EHMD compared to the standard practice of care, which includes the use of cow's milk-based products when needed. Their analysis revealed that using EHMD saves \$16,309 USD per infant, given the improved clinical outcomes (6). Evidence also exists for the financial benefit of EHMD in Canada and Europe.

Final Thoughts

A growing body of evidence supports the use of EHMD for preterm infants. Neonatal therapists can have an important role in advocating for its use as part of a multidisciplinary team.

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