**Does human milk (donor human milk or mother’s own milk) compared to premature formula help reduce the risk of Bronchopulmonary Dysplasia (BPD) in very preterm infants?**

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My CAT presentation investigated the following question: Does human milk (donor human milk or mother’s own milk) compared to premature formula help reduce the risk of Bronchopulmonary Dysplasia (BPD) in very preterm infants? The population is very preterm infants and the intervention is human milk (either mother’s own milk (MOM) or donor breast milk). The outcome is incidence of BPD. Very preterm infants commonly have BPD. Human milk has been associated with numerous health benefits for very preterm infants, including decreased risk of sepsis, retinopathy of prematurity, and necrotizing enterocolitis. The 2019 AAP guidelines advise that MOM is the preferred diet for very preterm infants and that there is observational data that shows that exclusively feeding MOM reduces the risk of BPD and that current trial data shows that DHM reduces the risk of necrotizing enterocolitis but does not reduce the risk of BPD (1) and that DHM is expensive (2). However, with a review of the newest data does MOM and DHM reduce the risk of BPD?  My PubMed search was with the following terms: ("Milk, Human"[Mesh] OR "human milk"[tiab] OR "breast milk"[tiab] OR "mother's own milk"[tiab] OR "mother's milk"[tiab] OR "donor milk"[tiab] OR "donor human milk"[tiab]) AND ("Bronchopulmonaryy Dysplasia"[Mesh] OR "bronchopulmonary dysplasia"[tiab]) , which yielded 132 results. I further narrowed the search by clinical trial/ meta-analysis/ RCT/ systematic review/ review for 31 results of which I selected 3 meta-analyses.

The first article is “Human milk as a Protective Factor for Bronchopulmonary Dysplasia: a systematic review and meta-analysis” (3). The authors searched 3 Chinese and 3 English databases for a variety of terms for breast milk and BPD. Inclusion criteria were that the study had infants < 32 weeks, compared human milk compared with formula feeding with BPD or chronic lung disease as the outcome and was a cohort or randomized controlled trial. 5 RCTs and 17 Cohort studies were selected. They found the odds ratios for exclusive human milk versus exclusive formula to be statistically significant and that human milk had a protective effect (OR 0.78, 0.68-0.88 95% CI). They also investigated mainly formula versus mainly human milk, but mainly encompassed a wide variation from greater than or equal to 50% but < 100%. No significant weight on the sub-studies for “mainly” human milk or “mainly” formula subsets was given in my appraisal.

The second article was “Donor Human Milk Protects agains Bronchopulmonary Dysplasia:a systematic review and meta-analysis” (4). They searched 2 databases in addition to manual review and found 7 RCTS and 11 observational studies. BPD was defined as at 36 weeks post-menstrual age requiring oxygen or requiring oxygen at 28 days of life. In the observational studies, they found that relative risk was 0.78 (0.67, 0.90 95% CI), indicating DHM reduced risk of BPD by 22% with low heterogeneity of 1.7%. Many of the studies were low quality secondary to colors design.

The third study evaluated “Mother’s own milk and Bronchopulmonary dysplasia: a systematic review and meta-analysis” (5). They searched two databases and did a manual review and found 14 observational studies and 1 case-control study. They defined BPD as oxygen dependence at 28 days of life or dependence on oxygen at 36 weeks adjusted gestational age and excluded studies using DHM. They found that for mainly MOM compared to mainly preterm formula a slight effect favoring MOM that was not statistically or clinically significant (Mantel-Haenzel risk ratio of 0.98 with the 95% CI of 0.77 - 1.23). They were limited by low quality of studies and by excluding studies that had DHM.

The net result of these three studies is that they would influence my management to encourage MOM/DBM for very preterm infants but realizing that all three of the meta-analysis are limited by heterogeneity and by low quality studies as many are cohort studies.

Works Cited

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4. Villamor-Martínez, Eduardo, et al. "Donor human milk protects against bronchopulmonary dysplasia: a systematic review and meta-analysis." *Nutrients* 10.2 (2018): 238.

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