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[Intervention Review]

Formula milk versus donor breast milk for feeding preterm or low birth weight infants

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ABSTRACT

Background

When sufficient maternal breast milk is not available, the alternative sources of enteral nutrition for preterm or low birth weight infants are donor breast milk or artificial formula milk. Feeding preterm or low birth weight infants with formula milk might increase nutrient input and growth rates. However, since feeding with formula milk may be associated with a higher incidence of feeding intolerance and necrotising enterocolitis, this may adversely affect growth and development.

Objectives

To determine the effect of formula milk compared with donor human breast milk on growth and development in preterm or low birth weight infants.

Search methods

The standard search strategy of the Cochrane Neonatal Review Group was used. This included electronic searches of the Cochrane Central Register of Controlled Trials (CENTRAL, The Cochrane Library, Issue 2, 2007), MEDLINE (1966 - May 2007), EMBASE (1980 - May 2007), CINAHL (1982 - May 2007), conference proceedings, and previous reviews.

Selection criteria

Randomised controlled trials comparing feeding with formula milk versus donor breast milk in preterm or low birth weight infants.

Data collection and analysis

Data were extracted using the standard methods of the Cochrane Neonatal Review Group, with separate evaluation of trial quality and data extraction by two reviewer authors, and synthesis of data using relative risk, risk difference and weighted mean difference.

Main results

Eight trials fulfilled the inclusion criteria. Only one trial used nutrient-fortified donor breast milk. Enteral feeding with formula milk compared with donor breast milk resulted in higher rates of growth in the short term. There was no evidence of an effect on long-term growth rates or neurodevelopmental outcomes. Meta-analysis of data from five trials demonstrated a statistically significantly higher incidence of necrotising enterocolitis in the formula fed group: typical relative risk 2.5 (95% confidence interval 1.2, 5.1); typical risk difference: 0.03 (95% confidence interval 0.01, 0.06; number needed to harm: 33 (95% confidence interval 17, 100).

Authors' conclusions

In preterm and low birth weight infants, feeding with formula milk compared with donor breast milk results in a higher rate of short-term growth but also a higher risk of developing necrotising enterocolitis. There are only limited data on the comparison of feeding with formula milk versus nutrient-fortified donor breast milk. This limits the applicability of the findings as nutrient fortification of breast milk is now a common practice in neonatal care. Future trials may compare growth, development and adverse outcomes in infants who receive formula milk versus nutrient-fortified donor breast milk given as a supplement to maternal expressed breast milk or as a sole diet.

PLAIN LANGUAGE SUMMARY**Formula milk versus donor breast milk for feeding preterm or low birth weight infants**

When a mother's own breast milk is not available for feeding her preterm or low birth weight infant, the alternatives are either formula milk or expressed breast milk from a donor mother ("donor breast milk"). Review of eight randomised controlled trials suggests that feeding with formula increases short-term growth rates but is associated with a higher risk of developing the severe gut disorder "necrotising enterocolitis". There is no evidence of an effect on longer-term growth, or on development. Further trials that compare these two strategies are needed. These should probably compare formula milk adapted for preterm infants with donor breast milk supplemented with nutrients.