Hindmilk: a head start in preterm nutrition
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CRD summary
The review found that it was unclear whether expressed human hindmilk benefited growth and development in preterm infants and more research was needed. The authors noted that very few studies were available and most were inadequately controlled and/or had small samples. Despite poor reporting in the review, the authors’ cautious conclusions appear reliable.

Authors' objectives
To determine the effects of hindmilk on the growth and development of preterm infants.

Searching
MEDLINE, CINAHL and Cochrane Central Register of Controlled Trials (CENTRAL) were searched from 1980 to 2008. Search terms were reported. Reference lists of retrieved articles were checked.

Study selection
Experimental and quasi-experimental studies of the effects of hindmilk on the growth and development of preterm infants were eligible for inclusion.

Participants in the review were premature babies. Birth weight in the only study for which this was reported was less than 1,800 grams. All studies apparently used expressed human hindmilk; in half of the studies this was described as fortified. Hindmilk was administered for one or two weeks (where reported). Controls (where relevant) received composite or fortified composite milk. Outcomes reported in the included studies were changes in weight, length, head circumference and body fat. No studies reported neurodevelopment. Study duration (where reported) was two weeks. Study designs varied; one study used a crossover design in which infants received composite milk in the first week and hindmilk in the second week. Half of the studies were set in Nigeria.

The authors did not state how the papers were selected for the review.

Assessment of study quality
Methodological quality of the included studies was apparently considered using study design, sample size and statistical power.

The authors did not state how many reviewers performed the assessment.

Data extraction
The authors did not state how data were extracted for the review.

Methods of synthesis
The studies were combined in a narrative synthesis.

Results of the review
Four studies were included (n=119): two randomised controlled trials (RCTs) (n=88) and two observational studies (n=31, one crossover and one case series). The authors noted that three of the studies had serious methodological shortcomings.

One RCT (n=68) reported a significantly higher weight gain in the intervention group than in controls (12.92 to 12.99 versus 5.01 to 8.29g/kg/day), but no statistically significant difference between the groups in length or head circumference. The other RCT (n=20) reported no statistically significant difference between the hindmilk and control in weight, head circumference, length and body fat. The crossover study (n=15) reported that hindmilk was associated
with a significantly higher weight gain (7g/kg/day) than composite milk. The case series (n=16) reported that hindmilk was associated with a mean weight gain that surpassed expected growth standards by 3.8g/day.

**Authors’ conclusions**
It was unclear whether expressed human hindmilk benefited growth and development in preterm infants; more research was needed.

**CRD commentary**
The objectives and inclusion criteria of the review were clear in most respects; it was unclear whether a consistent definition of hindmilk was applied by the authors. Relevant sources were searched for studies. It was not stated whether there were search restrictions by language or publication status. It was unclear whether steps were taken to minimise the risk of reviewer bias and error by having more than one reviewer independently select studies, assess validity and extract data. Few details were provided about clinical characteristics and quality of the included studies (such as gestational ages, follow-up rates, durations of follow-up) and no measures of statistical significance or variability were reported; it was unclear whether such information was reported in the original studies. These factors made it difficult to determine the applicability or clinical significance of study findings. As the authors noted, very few studies were available and most were inadequately controlled and/or had small samples.

Despite poor reporting in the review, the authors’ cautious conclusions reflected the limited evidence and appear reliable.

**Implications of the review for practice and research**
**Practice:** The authors stated that health professionals should receive specialised training to enable them to promote initiation of breast milk expression soon after birth.

**Research:** The authors stated that rigorous studies were urgently needed on the effect of expressed human hindmilk on the growth and development of preterm infants.

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