EtD 43. Should the first feed for preterm infants be mother's expressed breastmilk vs. other milk to reduce the risk of mothers discontinuing optimal expressing or breastfeeding?

POPULATION:	Preterm infants
INTERVENTION:	First feed of mother's expressed breastmilk
COMPARISON:	other milk reducing risk of mothers discontinuing optimal expressing or breastfeeding
MAIN OUTCOMES:	**Critical for making a decision** Fully breastmilk feeding at hospital discharge Fully breastfeeding at hospital discharge Time to full enteral feeds Necrotising enterocolitis (NEC) Adverse effects **Important but not critical** Mortality Neurodevelopmental impairment Faltering growth / body composition Duration of initial hospital stay Bronchopulmonary dysplasia Sepsis: proven or suspected Retinopathy of prematurity Anaemia of prematurity Cost: cost of intervention, cost of neonatal care and life-long cost **Of limited importance** Time to full sucking feeds
SETTING:	Postnatal neonatal care
PERSPECTIVE:	
BACKGROUND:	Preterm infants often receive expressed breastmilk as their first feed. Early provision of a mother's own expressed breastmilk may support continued expressing and breastfeeding by enhancing maternal confidence and maintaining milk supply. Conversely, initial feeding with donor milk or infant formula may impact maternal motivation, lactation outcomes and breastfeeding continuation rates. Supporting mothers to provide their milk for their baby's first feed may be a key strategy for promoting optimal longer-term feeding outcomes. Equity considerations are critical because systemic barriers may prevent some mothers from accessing lactation support services or timely breastmilk expression opportunities after preterm birth. Ensuring that the first feed is a mother's own expressed breastmilk whenever possible could contribute to improving breastfeeding rates and long-term health outcomes, particularly for populations at higher risk of preterm birth, breastfeeding challenges and infant morbidity.
CONFLICT OF	The following DIAMOND cohort study authors are on the Guideline Development Group:

INTERESTS:	Tanith Alexander and Frank Bloomfield

Assessment

Desirable Effects

How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Trivial ● Small ○ Moderate ○ Large ○ Varies ○ Don't know	This is a narrative summary of evidence on whether the first feed being mothers' EBM compared with other milk reduces the risk of mothers discontinuing optimal expressing or breastfeeding. Fully breastfeeding at hospital discharge: Moderate to late preterm infants who successfully transitioned from parenteral fluids onto only mother's own milk were more likely to be exclusively breastmilk at discharge (Aotearoa New Zealand based RCT) [critical]. Fully breastmilk feeding at hospital discharge: A large study of infants <33 weeks' gestational age (n=6,404) found that feeding mother's own milk on/by day 3 was associated with higher odds of any breastmilk feeding at discharge. A delay in the initiation of supplementation was associated with higher breastfeeding at discharge rates (n=3,102) [critical]. Adverse effects: Receipt of formula as the first milk feed was associated with a reduction in exclusive breastfeeding at 6 weeks corrected age (n=279) [Critical]. Time to full enteral feeds: In one large study (n= 1273), there was no significant difference in days to reach full enteral feeds, days on which feeds were interrupted, discharge weight, or length between infants who received their mother's own milk, formula or donor milk [Important]. Length of hospital stay: In one study (n= 1273), there was no significant difference in length of stay, between infants who received their mother's own milk, formula or donor milk. In a smaller study (n=279), length of stay was 2.9 days longer for infants who received any formula compared with those receiving only breastmilk [Important]. No faltering growth/body composition: In one large study (n= 1273), there was no significant difference in discharge weight, or length between infants who received their mother's own milk, formula or donor milk [Important].	Aotearoa New Zealand: Cohort within a RCT [1]. Moderate to late preterm infants (32 to 35+6 weeks' gestational age). Australia/New Zealand/Singapore: Secondary analysis of an RCT [2]: <29 weeks' gestational age. Australia: Prospective cohort [3]: Late preterm infants. Ireland: Retrospective review [4]: Moderate-late preterm infants ≥1500g. Canada. Cohort study [5]: Infants <33 weeks' gestation. USA: Retrospective cohort [6]: ≥35 to 36+6 weeks' gestation.

	Further details are below: Alexander 2022 [1]: 93/151 (63%) successfully transition from parenteral fluids to mother's own milk only (43% Māori, 73% Pacific, 70% European). Receiving exclusively breastmilk at discharge was more likely for infants who successfully transitioned from IV fluids onto mother's own milk only OR 4.9; 95%CI 2.3–10.6; P<0.0001. Hilditch 2022 [2]: Of 1273 infants, 93.2% received mother's own milk as the first enteral feed, 3.7% received formula and 3.5% received donor milk as first feed. At discharge or estimated date of delivery 66.1% received mother's own milk, 42.1% formula and 0.4% donor milk. Infants born ≥27 weeks were more likely to receive mother's own milk as the first feed. There was no significant difference in days to reach full enteral feeds which varied from 17.7 days for mother's own milk, 15.1 for donor milk and 18.0 days for formula milk. There was no significant difference in the number of days on which feeds were interrupted; Mean 7.4 days for mother's own milk (donor milk 2.20 days fewer; 4.90 days fewer to 0.49 days more; P=0.11; formula milk 1.01 days fewer; 3.23 fewer to 1.20 more; P=0.37). Length of stay did not vary significantly between mother's own milk fed, donor milk fed or formula fed infants. Mean 97.1 days for mother's own milk group (donor milk 8.46 days fewer; 17.70 fewer to 0.78 more; p=0.07; formula milk 2.50 days fewer; 16.10 fewer to 11.09 more; p=0.72). There was no difference in discharge weight or length between infants who received their mother's own milk, formula or donor milk. Head circumference at discharge was larger in infants who received formula 0.59 cm more (0.06 more to 1.12 more; P=0.03). Mean head circumference for mother's own milk was 33.4 cm. Keir 2022 [3]: Of 270 infants, 78% received breastmilk only as their first feed. 83% received formula during hospitalisation. 74% of infants were exclusively breastfed at discharge, 41% at 6 weeks corrected age. The mean duration of hospitalisation was 2.9 days longer (95%CI 0.31-5.43; p=0.03) in infants who received any formula compared with those receiving only breastmilk. Receipt of formula as the first milk feed was associated with a reduction in exclusive breastfeeding at 6 weeks corrected age (OR 0.22; 95% CI 0.09 to 0.53). Piquet 2019 [4]: 110 infants. The number of infants receiving mother's milk exclusively remained consistent from the time of their first feed to when they were discharged from the unit (26% compared to 27%). Of the 29 infants who were given mother's milk on their first feed, 59% were fed exclusive mother's milk on discharge. A relatively small (14%) number of these were receiving all	

	exclusive mother's milk feeds throughout their admission and on discharge. 20% of infants who received formula on first feeds were receiving exclusive breastmilk on discharge. Dharel 2021 [5]:6,404 infants. Feeding mother's own milk on/by day 3 of age was associated with significantly higher odds of any breastmilk feeding at neonatal intensive care discharge (adj OR 3.61; 95%CI 3.17 to 4.12). Of infants who received formula only at discharge, 629/1947 (32.3%) had received breastmilk at day 3 of life. Of infants who were discharged, receiving any breastmilk 2773/4457 (62.2%) had received breastmilk at day 3 of life (P<0.001). Kumar 2024 [6]: 3,102 infants. Among the entire cohort, 1,031 (33.2%) were breastfed at discharge, and 2,071 (66.7%) were formula fed at discharge. Median time to first supplementation was 6.4 hours (2.2– 13.1 hours). This was earlier among late preterm infants, small-for-gestational age and infants of diabetic mothers (4.4 hours (1.5–10.3 hours). Overall, a delay in the initiation of supplementation was associated with higher breastfeeding at discharge rates. The adjusted odds of breastfeeding at discharge increased by 2.8% (95% CI 1.022, 1.035) for each hour of delay in the commencement of supplementation from time from birth. 223 (7.2%) received supplementation with expressed breastmilk (EBM) at least once. Even one EBM supplementation was associated with higher odds of breastfeeding at discharge (adj OR 9.8; 95%CI 7.2 - 13.3; p<0.001). Desirable effects for Māori No additional evidence available	

Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Trivial ○ Small ○ Moderate ○ Large ○ Varies	None reported	

● Don't know		

Certainty of evidence

What is the overall certainty of the evidence of effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
● Very low ○ Low ○ Moderate ○ High ○ No included studies	These studies are observational and cohort studies or retrospective reviews of cases and are not judged as high quality. The certainty of evidence is judged as very low overall.	

Values

Is there important uncertainty about or variability in how much people value the main outcomes?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Important uncertainty or variability ● Possibly important uncertainty or variability ○ Probably no important uncertainty or variability ○ No important uncertainty or variability	Possibly important variability	

Balance of effects

Does the balance between desirable and undesirable effects favour the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Favours the comparison ○ Probably favours the comparison ○ Does not favour either the intervention or the comparison ● Probably favours the intervention ○ Favours the intervention ○ Varies	**First feed of mother's own milk versus other milk for reducing the risk of mothers discontinuing optimal expressing or breastfeeding - Low certainty evidence** Increase in breastfeeding at discharge Uncertain effect on growth, length of stay, time to full enteral feeding, and feed interruptions	

○ Don't know		

Resources required

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Large costs ○ Moderate costs ● Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ○ Don't know	Minimal resources required.	

Certainty of evidence of required resources

What is the certainty of the evidence of resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Very low ○ Low ● Moderate ○ High ○ No included studies	Reasonably certain.	

Cost effectiveness

Does the cost-effectiveness of the intervention favour the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Favours the comparison ○ Probably favours the comparison ○ Does not favour either the intervention or the comparison ○ Probably favours the intervention ○ Favours the intervention ○ Varies ● No included studies	No studies were available.	

Equity

What would be the impact on health equity?		
JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
○ Reduced ○ Probably reduced ○ Probably no impact ● Probably increased ○ Increased ○ Varies ○ Don't know	**Equity for Māori** Pēpi Māori are less likely to transition to enteral feeds with their mother's expressed breastmilk, with only 43% doing so compared to greater use of alternative sources such as formula (Alexander et al. 2022). Pēpi Māori are also significantly less likely to be exclusively breastfed at discharge (odds ratio 0.2, 95 % confidence interval 0.1 to 0.6, P <0.0006) (Hilditch et al. 2024). Ensuring pēpi Māori receive their mother's own milk for the first feed is critical for promoting breastfeeding continuation, supporting whakapapa and addressing entrenched inequities in neonatal and long-term health outcomes. **Equity for Pacific families** Pacific families may not be informed of how the first feed influences breastfeeding outcomes, especially if mother's milk is not immediately available. Without inclusive education, donor milk or formula may be used by default. Equity requires clear communication and culturally respectful support for expressing from the outset. **Equity for underrepresented groups** Families from underrepresented communities may have less access to donor milk or expressing support in the early hours after birth. If formula is offered without guidance, breastfeeding may be compromised. Equity means ensuring all families understand their options and are supported to provide their own milk when possible.	(Alexander et al., 2022): Alternative sources of milk, mostly formula, were used to transition from IV fluids onto enteral feeds more often in Māori, only 43% transitioned to mothers' own milk only. Receiving breastmilk exclusively at discharge was less likely for Māori than European infants OR 0.2; 95%CI 0.1–0.6, p<0.0006. (Hilditch et al., 2024) Infants were less likely to receive breastmilk as first feed if they were Indigenous (OR 0.25; 95%CI 0.07 to 0.86; p=0.03); Northeast Asian (OR 0.09; 95%CI 0.04 to 0.21; p<0.0001) or Southeast Asian (OR 0.19; 95%CI 0.07 to 0.50; p=0.0008).

Acceptability

Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ● Probably yes ○ Yes ○ Varies ○ Don't know	Probably acceptable for most.	

Feasibility

Is the intervention feasible to implement?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ○ Probably yes ● Yes ○ Varies ○ Don't know	Feasible	

Summary of judgements

	JUDGEMENT						
DESIRABLE EFFECTS	Trivial	**Small**	Moderate	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Trivial	Small	Moderate	Large		Varies	**Don't know**
CERTAINTY OF EVIDENCE	**Very low**	Low	Moderate	High			No included studies
VALUES	Important uncertainty or variability	**Possibly important uncertainty or variability**	Probably no important uncertainty or variability	No important uncertainty or variability			
BALANCE OF EFFECTS	Favours the comparison	Probably favours the comparison	Does not favour either the intervention or the comparison	**Probably favours the intervention**	Favours the intervention	Varies	Don't know
RESOURCES REQUIRED	Large costs	Moderate costs	**Negligible costs and savings**	Moderate savings	Large savings	Varies	Don't know
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	**Moderate**	High			No included studies

	JUDGEMENT						
COST EFFECTIVENESS	Favours the comparison	Probably favours the comparison	Does not favour either the intervention or the comparison	Probably favours the intervention	Favours the intervention	Varies	**No included studies**
EQUITY	Reduced	Probably reduced	Probably no impact	**Probably increased**	Increased	Varies	Don't know
ACCEPTABILITY	No	Probably no	**Probably yes**	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	Probably yes	**Yes**		Varies	Don't know

Type of recommendation

Strong recommendation against the intervention	Conditional recommendation against the intervention	Conditional recommendation for either the intervention or the comparison	**Conditional recommendation for the intervention**	Strong recommendation for the intervention
○	○	○	●	○

References

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