EtD 40. Is switching from fortified EBM/preterm formula to unfortified EBM/term formula recommended in preterm infants before discharge or term?

POPULATION:	Preterm infants before discharge or term
INTERVENTION:	Switching from fortified EBM/preterm formula to unfortified EBM/term formula
COMPARISON:	Not switching from fortified EBM/preterm formula to unfortified EBM/term formula before discharge or term
MAIN OUTCOMES:	Consideration will be given to the evidence (or lack thereof) for Māori and non-Māori infants and their whānau **Critical for making a decision** Neurodevelopmental impairment Faltering growth/body composition Fully breastfeeding at hospital discharge Duration of initial hospital stay Time to full sucking feeds Adverse effects (metabolic bone disease) **Important but not critical** Mortality Fully breastmilk feeding at hospital discharge Necrotising enterocolitis (NEC) Sepsis: proven or suspected Bronchopulmonary dysplasia Retinopathy of prematurity Anaemia of prematurity Cost: cost of intervention, cost of neonatal care and life-long cost **Of limited importance** Time to full enteral feeds
SETTING:	Neonatal care
PERSPECTIVE:	
BACKGROUND:	Fortified expressed breastmilk or preterm formula is required by preterm infants during their hospital stay to meet their increased nutritional needs for growth and development. As they approach discharge or term-equivalent age, it is common practice to consider transitioning them to unfortified expressed breastmilk or standard term formula. In some NICUs, this may be considered at 36 weeks corrected gestational age or when the infant reaches 2,500 g or to induce hunger and encourage better breastfeeding. However, the timing of this switch remains controversial, and its impact on key outcomes such as time to discharge, breastfeeding success, growth and neurodevelopment is not known. Switching too early may compromise nutritional intake during a critical period of brain and body growth, while delaying the switch may prolong hospital stay or reduce breastfeeding confidence. Evidence is needed to determine whether making this transition at or before discharge affects length of stay, breastfeeding continuation,

	or the infant's short- and long-term outcomes. Clear guidance would support consistent decision-making and help balance the benefits of continued nutritional support with the goal of promoting breastfeeding and timely discharge.
CONFLICT OF INTERESTS:	None

Assessment

Desirable Effects

How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Trivial ○ Small ○ Moderate ○ Large ○ Varies ● Don't know	No studies were identified which were applicable to this review question. The goal of fortification is to ensure that, at recommended feeding volumes (135–200 mL/kg/day), preterm infants receive nutrient intakes that support fetal-equivalent growth. These requirements are largely based on fetal nutrient accretion data and supported by empirical evidence. However, individual needs vary depending on clinical conditions such as fetal growth restriction or morbidity. These additional nutrient requirements decrease as an infant approaches 40 weeks but they do not suddenly change to the nutritional requirements of a term infant at 36 weeks or at 2,500 g. **Theoretical benefits of continuing fortifier or preterm formula until discharge or term are: Avoidance of faltering growth due to substantially lower energy and nutrient intake of all nutrients** as in Figure 1 below:	180 mL/kg/day expressed breastmilk or term formula provides ~119 kcal/kg/day and ~2.3 g/kg/day protein 180 mL/kg/day fortified expressed breastmilk provides 149 kcal/kg/day and 4.9 g/kg/day protein 180 mL/kg/day preterm formula provides 144 to 146 kcal/kg/day and 4.9 to 5.2 g/kg/day protein

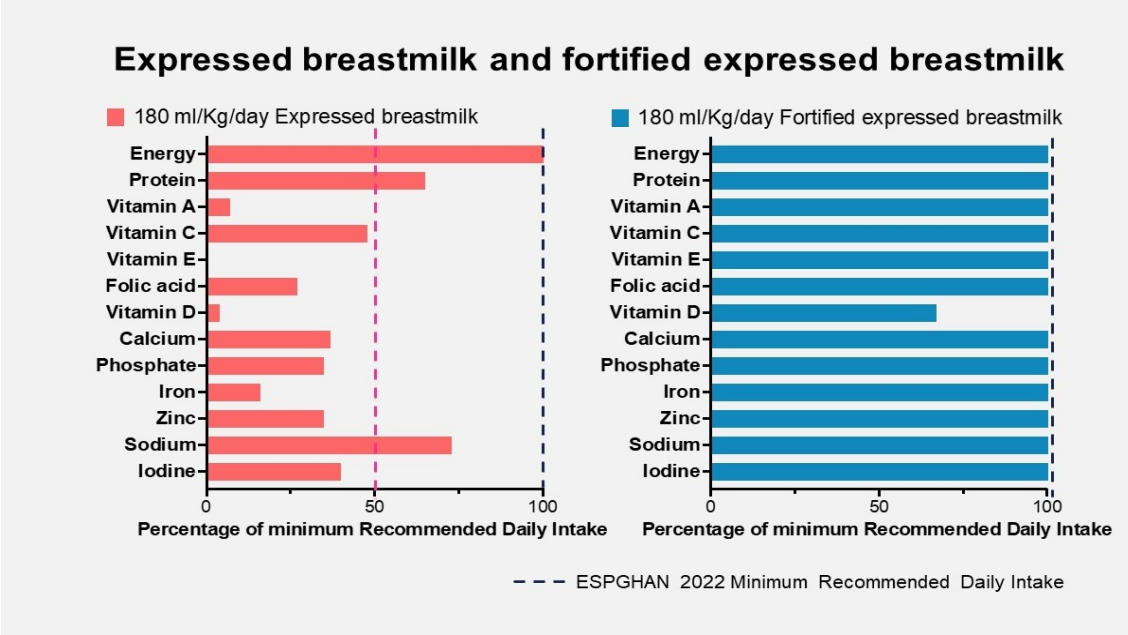


Figure 1 Difference in nutrient intakes between fortified and unfortified breastmilk at 180 mL/kg/day compared with minimum of ESPGHAN recommended nutrient intake ranges.

Inadequate protein intake in preterm infants is a key contributor to faltering growth, which is linked to impaired neurodevelopmental outcomes.

Better metabolic bone health
Deficiencies in specific nutrients such as calcium, phosphorus, zinc, iron, vitamins and iodine can lead to clinical problems like osteopenia or micronutrient deficiencies.

Fewer additives to feeds are needed
When fortifier or preterm formula ceases, additional iron, vitamins and other nutrients may need to be prescribed and added to feeds. This creates extra work for nurses and increases the risk of microbiological contamination.

Gradual transition to lower nutrient intake vs a large drop from one day to the next. In breastfed infants, the transition occurs gradually as the number of breastfeeds per day increases in the lead up to discharge.

Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Trivial ○ Small ○ Moderate ○ Large ○ Varies ● Don't know	Theoretical risks are: **Growth crossing centiles upwards** As nutritional requirement decreases as the infant approaches 40 weeks, growth may start crossing centiles upwards. **Lack of interest in breastfeeding due to enteral feeds meeting or exceeding nutritional requirements** *Both these undesirable effects can be managed by reducing feeds to 120 to 150 mL/kg/day without stopping fortifier or preterm formula.* **Prolonged length of hospital stay or reduced breastfeeding confidence** There is no evidence to support this, and the reverse may be true. Better nutrition support may lead to earlier discharge and better ability to breastfeed.	

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	No studies were identified which were applicable to this review question.	

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	Possibly important uncertainty or variability	

uncertainty or variability ○ No important uncertainty or 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 ● Don't know	There is no evidence that transitioning preterm infants from fortified expressed breastmilk/preterm formula to unfortified expressed breastmilk/term formula at discharge, rather than earlier, adversely affects time to discharge, breastfeeding continuation, growth or neurodevelopmental outcomes. Fortification or preterm formula provides the recommended nutritional intake for preterm infants. Discontinuing these before discharge means that nutritional requirements will not be met, which may have suboptimal consequences for some infants.	

Resources required

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Large costs ○ Moderate costs ● Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ○ Don't know	**Breastmilk fortifier $3.75 per 100 mL** Costs (for up to 100-120 days) Breastmilk fortifier $3.75 per 100 mL at 180 mL/kg/day ($5.80 to $9 per day) **Cost difference for fortified vs. unfortified breastmilk for 28 days is approx. $162 to $252 per infant.** Labour to add a fortifier to breastmilk by parent or nurse is minimal Labour to add a fortifier to breastmilk in a central milk preparation facility is higher **Aotearoa New Zealand Preterm infant formula (Liquid ready to feed) $3.24 per 100 mL** **Aotearoa New Zealand Term infant formula (Liquid ready to feed) $1.56 per 100 mL** Costs (for 28 days) Preterm infant formula $3.24 per 100 mL ($5 to $10 per day for a 1 kg infant, approx. $140 to $280 per baby per admission) Term infant formula $1.16 to $1.56 per 100 mL ($2.08 to $2.80 per day for a 1 kg infant, approx. $2.50 to $5 per day for a 1 kg baby, approx. $70 to $140 per baby per admission) **Cost difference for preterm vs. term formula for 28 days is approx. $70 to $140 per infant.**	

	Resources required for Māori No additional evidence available.	

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	The costs are 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 identified	

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 more likely to be born preterm and face growth challenges linked to systemic inequities in care. If the transition from fortified to unfortified feeds before discharge occurs without standard guidance, pēpi Māori may be at risk of nutritional shortfalls. Inconsistent decision-making and lack of culturally safe communication may mean whānau Māori are not informed or involved in feeding plans. Equity requires clear national protocols and inclusive dialogue to ensure fortified feeds are continued where appropriate and that pēpi Māori receive sustained nutritional support during this critical transition to home and community care.	

	Equity for Pacific families Pacific infants may be switched to term formula too early if hospitals lack clear guidelines or resourcing, potentially impacting growth. Pacific families may not be informed about the reasons for continuing fortified feeds. Equity requires culturally safe discussions and standardised practices that support sustained nutrition through to discharge. **Equity for underrepresented groups** Underrepresented families may not receive guidance on when or why to switch from fortified to term feeds, especially where follow-up services are limited. Early switching may occur without parental awareness. Equity requires consistent discharge planning, inclusive education and support to ensure optimal nutrition is maintained across all communities.	

Acceptability

Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ○ Probably yes ○ Yes ● Varies ○ Don't know	The intervention is acceptable to some but may not be acceptable to all staff and parents.	

Feasibility

Is the intervention feasible to implement?

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

Back to question list

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
○	●	○	○	○