Appendix H.1 — Evidence to Decision: Parenteral Nutrition

EtD 1. In moderate-to-late preterm infants whose mothers' breastmilk is not available at birth, while we wait for mothers' breastmilk what method of nutrition (parenteral nutrition vs. 10% glucose vs. infant formula vs. donor milk), is best for breastfeeding at discharge, neurodevelopment, weight loss/growth in first week, mode of feeding at discharge?

POPULATION:	Moderate-to-late preterm infants whose mother's breastmilk is not available at birth, while we wait for mother's breastmilk
INTERVENTION:	Parenteral nutrition
COMPARISON:	10% glucose
MAIN OUTCOMES:	**Critical outcomes** Mortality Neurodevelopmental impairment Fully breastfed or breastmilk feeding at hospital discharge **Important but not critical** Adverse effects Time to full enteral feeds Duration of initial hospital stay Sepsis: proven or suspected Bronchopulmonary dysplasia Necrotising enterocolitis Retinopathy of prematurity Anaemia of prematurity Faltering growth/body composition Cost: cost of intervention, cost of neonatal care and life-long cost **Less important for decision making** Time to full sucking feeds
SETTING:	Neonatal care
PERSPECTIVE:	Clinical recommendation: population perspective
BACKGROUND:	The choice of nutrition support for moderate-to-late preterm infants when mothers' breastmilk is not yet available may have a significant impact on short- and long-term outcomes. Parenteral nutrition (PN) ensures the direct provision of essential nutrients into the bloodstream. While PN supports early growth and prevents malnutrition, it is invasive and poses risks such as catheter-related infections, biochemical imbalances and liver dysfunction. Parenteral 10% glucose is often used temporarily to prevent dehydration and hypoglycaemia in the absence of enteral nutrition, but it does not provide the protein, fat, and micronutrients necessary for growth and development. Use for more than a few days leads to nutrient deficits. Infant formula is nutritionally complete and supports growth when human breastmilk is unavailable. However, it lacks the bioactive components of breastmilk, increasing the risk of feeding intolerance and necrotising enterocolitis (NEC). Donor breastmilk, when available, is preferred to infant formula because it provides bioactive factors that promote immunity, gut maturation, and neurodevelopment while lowering the risk of NEC. However, the protein and energy content may be lower than infant formula, necessitating additional fortification. Selecting the optimal feeding method involves balancing the immediate

	fluid and nutritional needs of the infant with the long-term benefits of waiting for mother's own breastmilk to promote breastfeeding, optimal neurodevelopment and long-term health.
CONFLICT OF INTERESTS:	The following DIAMOND study investigators and co-authors (references 1, 3 and 4) are on the Guideline Development Group: 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	Evidence is based on two randomised trials (RCT)[1,2] and a cohort analysis [3]. **Mortality**: RCT: Little or no effect on mortality between parenteral nutrition and 10% glucose (1/269 for parenteral nutrition and 0/263 for 10% glucose). [Critical] **Fully breastfed or breastmilk feeding at hospital discharge**: RCT: No significant effect on increased breastfeeding at discharge for infants receiving parenteral nutrition (2 more per 1,000; 83 fewer to 76 more). [Critical] **Fully breastfed or breastmilk feeding at hospital discharge**: Cohort: Receiving exclusively breastmilk at discharge was more likely for infants who successfully transitioned from IV fluids onto mother's own milk only [OR (95% confidence intervals) 4.9 (2.3–10.6)] and who received only mother's own milk in the first week after birth [4.8 (2.2–10.4)], both p < 0.0001. Pēpi Māori transitioned off IV fluids more quickly than other ethnicities but were less likely to achieve a successful transition to mother's own milk only (43%) than Pacific (74%, p= 0.02) and Caucasian (70%, p= 0.03) infants. Pēpi Māori received alternative nutrition earlier than infants of other ethnicities (p= 0.007); by day 3, 55% of Māori, 22% of Pacific, 20% of Caucasian, and 28% of Asian infants were receiving alternative nutrition that was not mother's own milk. Pēpi Māori were significantly less likely to receive exclusively breastmilk at discharge compared with Caucasian infants [OR= 0.2 (0.1–0.6), p < 0.01]. **Full enteral feeds**: RCT: Large effect for faster time to full enteral feeds for parenteral nutrition (Adj HR 1.05 days higher; 0.88 higher to 1.25 higher). [Important] **Duration of initial hospital stay**: RCT: No significant effect on duration of hospital stay between parenteral nutrition and 10% glucose (Adj MD 0.32 days lower; 1.91 lower to 1.28 higher). [Important] **Sepsis**: RCT: Little or no effect between parenteral nutrition and 10% glucose for incidence of sepsis (3/269 for parenteral nutrition and 1/263 for 10% glucose). [Important] **Necrotising enterocolitis (NEC):** RCT: Little or no effect between parenteral nutrition and 10% glucose for incidence of NEC (1/269 for parenteral nutrition and 0/263 for 10% glucose). [Important]	**Population information for included evidence** [1,2] New Zealand. RCT + cohort analysis Moderate- to late-preterm infants. [3] Australia. RCT. Infants of 30-33 weeks' gestation. [4] New Zealand: Conference proceedings: Neurosensory impairment was similar at 2 years in amino acid and glucose group (no data provided in abstract).

	No faltering growth/body composition: RCT: Small effect for increases in growth outcomes for parenteral nutrition for day 7 weight z score (Adj MD 0.11 points higher; 0.07 higher to 0.15 higher); day 14 weight z score (Adj MD 0.09 points higher; 0.04 higher to 0.14 higher); day 21 weight z score (Adj MD 0.1 points higher; 0.03 higher to 0.18 higher). No significant effect on day 28 weight z score (Adj MD 0.11 points higher; 0.01 lower to 0.22 higher). Small increase in discharge weight z score (Adj MD 0.07 points higher; 0.01 higher to 0.14 higher). No significant effect on 4 months corrected age weight z score (Adj MD 0.08 points higher; 0.1 lower to 0.26 higher); day 7 length z score (Adj MD 0.04 points higher; 0.06 lower to 0.14 higher); day 14 length z score (Adj MD 0.1 points higher; 0.01 lower to 0.21 higher); day 21 length z score (Adj MD 0.08 points higher; 0.06 lower to 0.21 higher); day 28 length z score (Adj MD 0.17 points higher; 0.02 lower to 0.37 higher); discharge length z score (Adj MD 0.06 points higher; 0.06 lower to 0.18 higher); 4 months corrected age length z score (Adj MD 0.15 points higher; 0.05 lower to 0.35 higher); day 7 head circumference z score (Adj MD 0.08 points higher; 0.02 lower to 0.18 higher); day 14 head circumference z score (Adj MD 0.06 points higher; 0.04 lower to 0.17 higher); day 21 head circumference z score (Adj MD 0.07 points higher; 0.06 lower to 0.19 higher); day 28 head circumference z score (Adj MD 0.11 points higher; 0.07 lower to 0.3 higher); discharge head circumference z score (Adj MD 0.04 points higher; 0.06 lower to 0.14 higher); 4 months corrected age circumference z score (Adj MD 0.01 points lower; 0.2 lower to 0.17 higher). Increase in discharge fat mass z score (Adj HR 1.06 points higher; 0.81 higher to 1.37 higher). [Important] **Desirable effects for Māori - see table below**	

Outcomes	№ of participants (studies) Follow-up	Certainty of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects* (95% CI)	
				Risk with 10% glucose	Risk difference with parenteral nutrition
Mortality	532 (1 RCT)	⨁◯◯◯ Very low[a,b]	-	1/269 for parenteral nutrition and 0/263 for 10% glucose	
Neurodevelopmental impairment - not measured	-	-	-	-	-
Fully breastfed or breastmilk feeding at hospital discharge: RCT	528 (1 RCT)	⨁⨁⨁◯ Moderate[a]	**OR 1.01** (0.69 to 1.49)	Study population	
				704 per 1,000	**2 more per 1,000** (83 fewer to 76 more)
Fully breastfed or breastmilk feeding at hospital discharge: RCT assessed with: Breastmilk (any) on discharge home	84 (1 RCT)	⨁⨁◯◯ Low[c,d]	**Adj OR 0.8** (0.2 to 3.3)	Study population	
				891 per 1,000	**178 fewer per 1,000** (713 fewer to 2,050 more)

Fully breastfed or breastmilk feeding at hospital discharge: Cohort	151 (1 non-randomised study)	⨁◯◯◯ Very low[a]	-	n=151 late and moderate preterm infants. Of these, 65 (43%) received IV glucose and 86 (53%) received parenteral nutrition, with 70% of the latter receiving IV lipid emulsion in addition to an amino acid solution. A total of 93 (63%) infants successfully transitioned from IV fluids onto mother's own milk. Late preterm infants transitioned off IV fluids onto only enteral feeds more quickly than moderate preterm infants and late preterm took the least time to transition. Receiving exclusively breastmilk at discharge was more likely for infants who successfully transitioned from IV fluids onto mother's own milk only [OR (95% confidence intervals) 4.9 (2.3–10.6)] and who received only mother's own milk in the first week after birth [4.8 (2.2–10.4)], both p < 0.0001. Multiples were less likely to achieve a successful transition to mother's own milk only than singletons (46 vs. 67%, p= 0.02), and this was particularly the case for late preterm infants (33 vs. 68%, p= 0.007). Pēpi Māori transitioned off IV fluids more quickly than other ethnicities but were less likely to achieve a successful transition to mother's own milk only (43%) than Pacific (74%, p= 0.02) and Caucasian (70%, p= 0.03) infants. Pēpi Māori received alternative nutrition earlier than infants of other ethnicities (p= 0.007); by day 3, 55% of Māori, 22% of Pacific, 20% of Caucasian, and 28% of Asian infants were receiving alternative nutrition that was not mother's own milk. Pēpi Māori were significantly less likely to receive exclusively breastmilk at discharge compared with Caucasian infants [OR= 0.2 (0.1–0.6), p < 0.01].		
Adverse effects: RCT assessed with: Hypoglycaemia requiring treatment	92 (1 RCT)	⨁◯◯◯ Very low[a,c,e,]	**Adj OR 0.5** (0.1 to 2.0)	Study population	
				160 per 1,000	**80 fewer per 1,000** (144 fewer to 160 more)
Time to full enteral feeds: RCT assessed with: Days	526 (1 RCT)	⨁⨁⨁◯ Moderate[a]	-	The mean time to full enteral feeds: RCT was **5.8 days**	Adj HR **1.05 higher** (0.88 higher to 1.25 higher)
Time to full enteral feeds: RCT assessed with: Days (120 mLs/kg/d)	92 (1 RCT)	⨁⨁⨁◯ Moderate[c]	-	The mean time to full enteral feeds: RCT was **6.2 days**	Adj ratio of means **1.1 higher** (0.9 higher to 1.2 higher)
Duration of initial hospital stay: RCT assessed with: Days	532 (1 RCT)	⨁⨁◯◯ Low[a,e]	-	The mean duration of initial hospital stay: RCT was **25 days**	Adj MD **0.32 lower** (1.91 lower to 1.28 higher)
Duration of initial hospital stay: RCT assessed with: Days	92 (1 RCT)	⨁⨁⨁◯ Moderate[c]	-	The mean duration of initial hospital stay: RCT was **35.6 days**	Adj ratio of means **1 higher** (0.9 higher to 1.1 higher)
Sepsis: proven or suspected: RCT assessed with: confirmed sepsis	92 (1 RCT)	⨁◯◯◯ Very low[c,b]	**Adj OR 2.1** (0.2 to 19.0)	Study population	
				20 per 1,000	**22 more per 1,000** (16 fewer to 360 more)
Sepsis: proven or suspected: RCT assessed with: Culture-proven late-onset sepsis	532 (1 RCT)	⨁◯◯◯ Very low[a,b]	-	3/269 for parenteral nutrition and 1/263 for 10% glucose	
Sepsis: proven or suspected: RCT assessed with: Probable late-onset sepsis	532 (1 RCT)	⨁◯◯◯ Very low[a,b]	-	3/269 for parenteral nutrition and 1/263 for 10% glucose	
Bronchopulmonary dysplasia - not measured	-	-	-	-	-

Necrotising enterocolitis	532 (1 RCT)	⨁◯◯◯ Very low[a,b]	-	1/269 for parenteral nutrition and 0/263 for 10% glucose	
Retinopathy of prematurity - not measured	-	-	-	-	-
Faltering growth/body composition: RCT assessed with: Time to regain birthweight (days)	90 (1 RCT)	⨁◯◯◯ Very low[a,c,b]	-	The mean faltering growth/body composition: RCT was **12.3 days**	Adj ratio of means **0.8 higher** (0.7 higher to 0.9 higher)
Anaemia of prematurity - not measured	-	-	-	-	-
Faltering growth/body composition: RCT assessed with: Day 7: Weight z score	493 (1 RCT)	⨁⨁◯◯ Low[a, e]	-	The mean faltering growth/body composition: RCT was **-0.92 points**	Adj MD **0.11 higher** (0.07 higher to 0.15 higher)
Faltering growth/body composition: RCT assessed with: Day 14: Weight z score	428 (1 RCT)	⨁⨁◯◯ Low[a,e]	-	The mean faltering growth/body composition: RCT was **-0.97 points**	Adj MD **0.09 higher** (0.04 higher to 0.14 higher)
Faltering growth/body composition: RCT assessed with: Day 21: Weight z score	309 (1 RCT)	⨁⨁◯◯ Low[a,e]	-	The mean faltering growth/body composition: RCT was **-0.93 points**	Adj MD **0.1 higher** (0.03 higher to 0.18 higher)
Faltering growth/body composition: RCT assessed with: Weight gain from birth to day 21, g/d	92 (1 RCT)	⨁⨁◯◯ Low[c,e]	-	The mean faltering growth/body composition: RCT was **14.8 g/day**	Adj MD **4.4 higher** (1.9 higher to 7 higher)
Faltering growth/body composition: RCT assessed with: Day 28: Weight z score	182 (1 RCT)	⨁◯◯◯ Very low[a,d]	-	The mean faltering growth/body composition: RCT was **-0.77 points**	Adj MD **0.11 higher** (0.01 lower to 0.22 higher)
Faltering growth/body composition: RCT assessed with: Discharge: Weight z score	524 (1 RCT)	⨁⨁⨁◯ Moderate[a]	-	The mean faltering growth/body composition: RCT was **-0.80 points**	Adj MD **0.07 higher** (0.01 higher to 0.14 higher)

Faltering growth/body composition: RCT assessed with: 4 months corrected age: Weight z score	401 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **-0.07 points**	Adj MD **0.08 higher** (0.1 lower to 0.26 higher)
Faltering growth/body composition: RCT assessed with: Day 7: Length z score	469 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **-0.20 points**	Adj MD **0.04 higher** (0.06 lower to 0.14 higher)
Faltering growth/body composition: RCT assessed with: Day 14: Length z score	415 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **-0.32 points**	Adj MD **0.1 higher** (0.01 lower to 0.21 higher)
Faltering growth/body composition: RCT assessed with: Day 21: Length z score	299 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **-0.35 points**	Adj MD **0.08 higher** (0.06 lower to 0.21 higher)
Faltering growth/body composition: RCT assessed with: Day 28: Length z score	178 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **-0.49 points**	Adj MD **0.17 higher** (0.02 lower to 0.37 higher)
Faltering growth/body composition: RCT assessed with: Discharge: Length z score	495 (1 RCT)	⨁⨁⨁◯ Moderate[e]	-	The mean faltering growth/body composition: RCT was **-0.20 points**	Adj MD **0.06 higher** (0.06 lower to 0.18 higher)
Faltering growth/body composition: RCT assessed with: Length gain to discharge (mm/d)	87 (1 RCT)	⨁⨁⨁◯ Moderate[c]	-	The mean faltering growth/body composition: RCT was **1.0 mm/day**	Adj MD **0.3 higher** (0 to 0.5 higher)
Faltering growth/body composition: RCT assessed with: 4 months corrected age: Length z score	401 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **0.48 points**	Adj MD **0.15 higher** (0.05 lower to 0.35 higher)
Faltering growth/body composition: RCT assessed with: Day 7: Head circumference z score	472 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **-0.27 points**	Adj MD **0.08 higher** (0.02 lower to 0.18 higher)

Faltering growth/body composition: RCT assessed with: Day 14: Head circumference z score	420 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **-0.24 points**	Adj MD **0.06 higher** (0.04 lower to 0.17 higher)
Faltering growth/body composition: RCT assessed with: Day 21: Head circumference z score	299 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **-0.16 points**	Adj MD **0.07 higher** (0.06 lower to 0.19 higher)
Faltering growth/body composition: RCT assessed with: Day 28: Head circumference z score	178 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **-0.01 points**	Adj MD **0.11 higher** (0.07 lower to 0.3 higher)
Faltering growth/body composition: RCT assessed with: Discharge: Head circumference z score	500 (1 RCT)	⨁⨁⨁◯ Moderate[d]	-	The mean faltering growth/body composition: RCT was **0.04 points**	Adj MD **0.04 higher** (0.06 lower to 0.14 higher)
Faltering growth/body composition: RCT assessed with: Head circumference to discharge (mm/d)	86 (1 RCT)	⨁⨁◯◯ Low[c,d]	-	The mean faltering growth/body composition: RCT was **0.9 mm/day**	Adj MD **0.1 higher** (0.1 lower to 0.2 higher)
Faltering growth/body composition: RCT assessed with: 4 months corrected age: Head circumference z score	401 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **0.75 points**	Adj MD **0.01 lower** (0.2 lower to 0.17 higher)
Faltering growth/body composition: RCT assessed with: Discharge: Fat mass z score	173 (1 RCT)	⨁◯◯◯ Very low[a,d,e]	-	The mean faltering growth/body composition: RCT was **-0.3 points**	Adj MD **0** (0.2 lower to 0.2 higher)
Cost: cost of intervention, cost of neonatal care and life-long cost - not measured	-	-	-	-	-
Time to full sucking feeds: RCT assessed with: Days	519 (1 RCT)	⨁⨁◯◯ Low[a,e]	-	The mean time to full sucking feeds: RCT was **22.5 days**	Adj HR **1.06 higher** (0.81 higher to 1.37 higher)

a. Downgraded one level for indirectness as evidence is based on a single study
b. Downgraded two levels for imprecision as result has very low or no events
c. Downgraded one level for concerns for risk of bias
d. Downgraded one level for imprecision with confidence intervals crossing the line of no effect
e. Downgraded one level for imprecision due to wide confidence intervals or low sample numbers

Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
● Trivial ○ Small ○ Moderate ○ Large ○ Varies ○ Don't know	**Undesirable effects for Māori** Pēpi Māori transitioned off IV fluids more quickly than other ethnicities but were less likely to achieve a successful transition to mother's own milk only (43%) than Pacific (74%, p= 0.02) and Caucasian (70%, p= 0.03) infants. Pēpi Māori received alternative nutrition earlier than infants of other ethnicities (p= 0.007); by day 3, 55% of Māori, 22% of Pacific, 20% of Caucasian, and 28% of Asian infants were receiving alternative nutrition that was not mother's own milk.	

	Pēpi Māori were significantly less likely to receive exclusively breastmilk at discharge compared with Caucasian infants [OR= 0.2 (0.1–0.6), p < 0.01]. No additional evidence available	

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	Low to very low certainty of evidence overall mainly due to the body of evidence being from a single trial, albeit well conducted. **Certainty of evidence for Māori:** No additional evidence available	

Outcomes	Importance	Certainty of the evidence (GRADE)
Mortality	CRITICAL	⨁◯◯◯ Very low
Neurodevelopmental impairment - not measured	CRITICAL	-
Fully breastfed or breastmilk feeding at hospital discharge: RCT	CRITICAL	⨁⨁⨁◯ Moderate
Fully breastfed or breastmilk feeding at hospital discharge: Cohort	CRITICAL	⨁◯◯◯ Very low
Adverse effects: RCT assessed with: Hypoglycaemia requiring treatment	IMPORTANT	⨁◯◯◯ Very low
Time to full enteral feeds: RCT assessed with: Days	IMPORTANT	⨁⨁⨁◯ Moderate
Duration of initial hospital stay: RCT assessed with: Days	IMPORTANT	⨁⨁◯◯ Low
Sepsis: proven or suspected: RCT assessed with: Culture-proven late-onset sepsis	IMPORTANT	⨁◯◯◯ Very low
Sepsis: proven or suspected: RCT assessed with: Probable late-onset sepsis	IMPORTANT	⨁◯◯◯ Very low
Bronchopulmonary dysplasia - not measured	IMPORTANT	-
Necrotising enterocolitis	IMPORTANT	⨁◯◯◯ Very low
Retinopathy of prematurity - not measured	IMPORTANT	-

Anaemia of prematurity - not measured	IMPORTANT	-
Faltering growth/body composition: RCT assessed with: Day 7: Weight z score	IMPORTANT	⨁⨁◯◯ Low
Faltering growth/body composition: RCT assessed with: Day 14: Weight z score	IMPORTANT	⨁⨁◯◯ Low
Faltering growth/body composition: RCT assessed with: Day 21: Weight z score	IMPORTANT	⨁⨁◯◯ Low
Faltering growth/body composition: RCT assessed with: Day 28: Weight z score	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Discharge: Weight z score	IMPORTANT	⨁⨁⨁◯ Moderate
Faltering growth/body composition: RCT assessed with: 4 months corrected age: Weight z score	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Day 7: Length z score	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Day 14: Length z score	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Day 21: Length z score	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Day 28: Length z score	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Discharge: Length z score	IMPORTANT	⨁⨁⨁◯ Moderate
Faltering growth/body composition: RCT assessed with: 4 months corrected age: Length z score	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Day 7: Head circumference z score	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Day 14: Head circumference z score	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Day 21: Head circumference z score	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Day 28: Head circumference z score	IMPORTANT	⨁◯◯◯ Very low

Faltering growth/body composition: RCT assessed with: Discharge: Head circumference z score	IMPORTANT	⨁⨁⨁◯ Moderate
Faltering growth/body composition: RCT assessed with: 4 months corrected age: Head circumference z score	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Discharge: Fat mass z score	IMPORTANT	⨁◯◯◯ Very low
Cost: cost of intervention, cost of neonatal care and life-long cost - not measured	IMPORTANT	-
Time to full sucking feeds: RCT assessed with: Days	NOT IMPORTANT	⨁⨁◯◯ Low

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 uncertainty or variability in how much people value the main outcomes **Values for Māori:** No additional evidence available	

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	**Parenteral nutrition compared with 10% glucose - low certainty evidence** Uncertain effect on fully breastfed or breastmilk feeding at hospital discharge Quicker time to full enteral feeds Increase in growth/body composition (day 7, 14, 21 and discharge weight z-score) **Parenteral nutrition compared with 10% glucose - very low certainty evidence** No difference for mortality	

comparison ● Probably favours the intervention ○ Favours the intervention ○ Varies ○ Don't know	Uncertain effect for duration of initial hospital stay, NEC, sepsis, faltering growth/body composition (4 months corrected age weight z score; day 7, 14, 21, 28, discharge and 4 months corrected age length z score) Increase in growth/body composition (day 28 weight z-score) **Balance of effects for Māori:** No additional evidence	

Resources required

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Large costs ○ Moderate costs ● Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ○ Don't know	Assuming clinician time to prescribe standardised parenteral and enteral nutrition and nursing time to administer and may be similar for both. **Costs for parenteral nutrition:** Glucose, amino acid and electrolyte standard solution (aqueous phase) Aqueous solution: Company A approx. $140 (used for 48 hours) Company B $118 (used for 96 hours) = $29.50 to $70 per day SMOFLipid including vitamins per syringe: approx. $51 to $71 (used for 48 hours) = $25.50 to $35.50 **Total $55 to $105 per day** plus catheter, giving sets and IV pump **Costs for 10% glucose: $7.00 for 500 mL bag of 10% glucose** plus catheter, giving sets and IV pump Blood tests for parenteral nutrition monitoring, etc Courier delivery may be required for regional centres **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	Costs are known. **Certainty of evidence of required sources for Māori:** No additional evidence available	

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	There are no studies that assess the specific cost-effectiveness of parenteral nutrition versus 10% glucose whilst waiting for mother's own milk, particularly in the context of preterm infants. However, the costs are reasonably certain. **Cost effectiveness for Māori:** No additional evidence 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** Influenced by the effects of colonisation, pēpi Māori are more likely to be born preterm, admitted to NICU, born at extremely low birthweight and fewer survive. There is also a greater burden for Māori of morbidities associated with nutrition practices such as intraventricular haemorrhage, sepsis, bronchopulmonary dysplasia and neurodisability. Pēpi Māori may also experience different nutritional transitions in early life. In one recent Aotearoa New Zealand study, pēpi Māori transitioned off parenteral fluids more quickly than other ethnicities but were less likely to achieve a successful transition to mother's own milk only, with just 43% reaching this compared to 74% of Pacific and 70% of European infants. By day three, 55% of pēpi Māori had received alternative nutrition that was not mother's own milk, which was substantially higher than Pacific at 22%, European at 20% and Asian at 28%. Furthermore, pēpi Māori were significantly less likely to be exclusively breastmilk fed at discharge compared with European infants. Implementing standardised parenteral nutrition practices in Aotearoa New Zealand will help address these inequities by supporting equitable nutrition and feeding outcomes for preterm pēpi Māori and their whānau. **Equity for Pacific families** Implementing standardised parenteral nutrition practices in Aotearoa New Zealand will contribute directly to reducing health disparities across all ethnicities and under-represented groups. While Pacific infants were more likely to successfully transition to mother's own milk only by comparison to Māori and European pēpi, 74% versus 43% and 70% respectively, they still had a high rate of receiving alternative nutrition by	If recommended but not implemented in rural settings this would reduce equity.

	day three, with 22% affected. These findings highlight that variation in early nutrition practices affects all groups and addressing these differences through consistent care will promote more equitable outcomes for all preterm pēpi and their families. **Equity for underrepresented groups** Families from underrepresented backgrounds may struggle to understand complex feeding options during a critical and emotional time. Without timely, accessible explanations, parents may feel excluded from decisions. Equity requires culturally responsive guidance and clear communication to ensure all families are supported while awaiting breastmilk and making early nutritional choices.	

Acceptability
Is the intervention acceptable to key interest-holders?

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

Feasibility
Is the intervention feasible to implement?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ○ Probably yes ○ Yes ● Varies ○ Don't know	Feasibility would vary depending on the hospital location.	An urgent need for quality initiatives to support and encourage mothers of moderate- and late-preterm infants in their lactation.

Summary of judgements

	JUDGEMENT						
DESIRABLE EFFECTS	**Trivial**	Small	Moderate	Large		Varies	Don't know
UNDESIRABLE	**Trivial**	Small	Moderate	Large		Varies	Don't know

	JUDGEMENT						
EFFECTS							
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

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
o	•	o	o	o

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