EtD 23. Should continuous feeds or bolus feeds be used in preterm infants who require enteral feeding?

POPULATION:	Preterm infants who require enteral feeding
INTERVENTION:	Continuous feeds
COMPARISON:	Bolus feeds
MAIN OUTCOMES:	**Critical outcomes** Mortality Necrotising enterocolitis Time to full enteral feeds Duration of initial hospital stay Adverse effects **Important but not critical** Fully breastfed or breastmilk feeding at hospital discharge Faltering growth/body composition Sepsis: proven or suspected Neurodevelopmental impairment Bronchopulmonary dysplasia Retinopathy of prematurity Anaemia of prematurity 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
BACKGROUND:	Enteral feeding practices such as continuous feeding or bolus (or compressed/pump) feeding, are used to optimise nutrient delivery and support growth while minimising the risk of complications like necrotising enterocolitis and feed intolerance. Continuous feeding involves delivering milk at a constant rate over a 24-hour period, mimicking a more gradual nutrient delivery to the immature gut, such as the swallowing of amniotic fluid in *utero*. This approach is thought to reduce the stress on the gastrointestinal and respiratory systems and may improve feed tolerance. Continuous feeding is also hypothesised to lower the risk of necrotising enterocolitis by avoiding large volumes entering the stomach at one time, which could overstimulate the gut. In contrast, bolus or compressed feeding delivers milk at specific intervals, typically over a short duration, mimicking the natural intermittent feeding pattern seen in healthy term infants. Bolus feeding may promote cyclical gut motility and hormonal responses, supporting gastrointestinal maturation. However, it has been associated with a higher risk of feeding intolerance in some preterm infants due to the larger, intermittent volume. Compressed or pump feeding delivers milk or over

	an extended period (e.g. a 2 hourly bolus feed over 60 minutes) using an electronic enteral feeding pump and can be used as a transition between continuous and bolus feeds. Evidence comparing these feeding methods is limited and inconsistent. Some studies suggest that continuous feeding may improve feed tolerance and reduce the time to achieve full enteral feeding, while others indicate no significant difference between continuous and bolus feeding in terms of necrotising enterocolitis incidence or overall clinical outcomes.
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	Evidence based on a Cochrane systematic review [1]. We also present evidence from 2 recent RCTs [2,3] and a cohort study [4]. **Duration of initial hospital stay:** RCT: No significant reduction in days to discharge compared to intermittent feeding (MD 1.55 days lower; 5.13 lower to 2.02 higher). Single RCT: No difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for median (IQR) length of hospital stay, respectively (44 (29.5-62.5); 50 (32.5-70); 43 (26-64.7) Days; n=146 infants) [Important]. **Adverse effects -** Feeding intolerance: RCT: No significant reduction in number of days of feeding interruptions for continuous feeding (MD 3.00 days lower, 9.50 lower to 3.50 higher). Single RCT: The number of occurrences in which gastric residual volume exceeded 50% was significantly lower in the slow infusion feeding group compared with intermittent bolus feeding (1.12 ± 1.56 vs. 2.15 ± 1.4, *p* = 0.01, n=106). Single RCT: The proportions of infants who developed feeding intolerance in continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups were similar (*n* [%]: 21 [51.2%], 20 [52.6%], and 22 [64.7%], respectively, n=146 infants) [Critical]. **No faltering growth/body composition:** RCT: Weight: Little or no effect in days to regain birthweight for continuous feeds (MD 0.38 days lower; 1.16 lower to 0.41 higher). The test for subgroup differences did not suggest variation in effect according to birthweight. Single RCT: The time to gain birthweight was significantly shorter in the slow infusion feeding group compared with intermittent bolus feeding (10.8 ± 3.2 versus 12.7 ± 4.17; *p* = 0.01, n=106). Single RCT: No difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for median time to regain birthweight (IQR), respectively (9 (6-12); 11 (6.5-13); 10 (7-12) Days; n=146 infants). Little or no effect on rate of gain in weight between groups (standardised mean difference (SMD) 0.09 Standard deviation (SD), 0.27 lower to 0.46 higher). The result of the test for subgroup differences suggests there may be a variation in effect between birthweight categories (p=0.01, I2 = 72.4%). However, since only one trial (93 infants) provided data stratified by birthweight	**Population information for included evidence** Population comprised infants <1500 g [1] Turkey [2]: RCT: Preterm infants with a gestational age between 24 + 0 and 31 + 6 India [2,3]: RCT: Preterm infants ≤32 weeks and ≤1,250 g South Korea [4]: Cohort study: Birthweights <1,500 g or gestational ages <32 weeks' Premji 2021: Type(s) of milk feeds varied, including breastmilk (either mother's own milk or pasteurised donor breastmilk), preterm formula, or mixed feeding regimens. In some instances, preterm formula was initially diluted. Earlier studies also used water to initiate feedings. Kumar 2024 reported no differences in reported outcomes for infants ≤1,000 g.

	category, the difference between subgroups may be due to chance. Single RCT: No difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for mean (SD) weight growth velocity (g/kg/day), respectively (13.6 (3.3); 13.2 (3.6); 14.1 (2.9); n=146 infants) [Important]. **No faltering growth/body composition:** RCT: Length: Little or no difference in rate of gain in length compared with intermittent feeding (MD 0.02 cm/week, 0.04 lower to 0.08 higher). The test for subgroup differences did not suggest variation in effect according to birthweight (P = 0.54, I2 = 0%). Single RCT: No difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for mean (SD) length increment (cm/week), respectively (0.73 (0.17); 0.75 (0.17); 0.77 (0.17); n=146 infants) [Important]. **No faltering growth/body composition: R**CT: Head circumference. Little or no difference in rate of gain in head circumference compared with intermittent feeding (MD 0.01 cm/week, 0.03 lower to 0.05 higher). The test for subgroup differences did not suggest there may be variation in effect according to birthweight (P = 0.72, I2 = 0%). Single RCT: No difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for mean (SD) head circumference, respectively (0.66 (0.12); 0.61 (0.14); 0.62 (0.14) cm; n=146 infants) [Important]. **Sepsis:** Suspected or proven: No difference in late-onset sepsis for continuous feeds versus intermittent feeds (28% vs. 28.3%) [Important]. **Desirable effects for Māori** No additional evidence available	

Outcomes	№ of participants (studies) Follow-up	Certainty of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects* (95% CI)	
				Risk with bolus feeds	Risk difference with and EG 2.1 continuous feeds
Mortality: RCT	146 (1 RCT)	⨁⨁⨁◯ Moderate [a]	-	There was no difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for n (%) mortality respectively (4 (8.2%); 7 (14.3%); 5 (10.4%); n=146 infants).	
Necrotising enterocolitis: RCT	372 (5 RCTs)	⨁◯◯◯ Very low [b,c,d]	**RR 1.19** (0.67 to 2.11)	Study population	
				96 per 1,000	**18 more per 1,000** (32 fewer to 107 more)
Necrotising enterocolitis: RCT	146 (1 RCT)	⨁⨁⨁◯ Moderate [e]	-	There was no difference in necrotizing enterocolitis ≥ stage 2 n (%) between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups (1 (2%); 2 (4.1%); 2 (4.2%), n=146 infants).	
Time to full enteral feeds: RCT assessed with: Age at full enteral feedings days)	628 (7 RCTs)	⨁◯◯◯ Very low [a,b,f,]	-	The mean time to full enteral feeds: RCT was **27.65 days**	MD **0.84 higher** (0.13 lower to 1.81 higher)
Time to full enteral feeds: RCT	103	⨁◯◯◯	-	The time to achieve full enteral feeding was similar between slow infusion feeding	

assessed with: Days to achieve full enteral feeding	(1 RCT)	Very low[a,b,ff,g]		and intermittent bolus feeding (13.6 ± 8.05 vs. 16.2 ± 12.3 *p* = 0.20, n=103 infants).	
Time to full enteral feeds: RCT	146 (1 RCT)	⨁⨁⨁◯ Moderate[f]	-	In a trial of 146 infants, the time to reach full feeds in continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity were not significantly different (median [interquartile range]: 13 [10–16], 11.5 [9–17], and 13 [9.5–14.2] days, respectively, *p* = 0.71).	
Duration of initial hospital stay assessed with: Days to discharge	264 (4 RCTs)	⨁◯◯◯ Very low[b,c,d,]	-	The mean duration of initial hospital stay was **62 days**	MD **1.55 lower** (5.13 lower to 2.02 higher)
Duration of initial hospital stay: RCT	146 (1 RCT)	⨁⨁⨁◯ Moderate[f]	-	There was no difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for median (IQR) **length of hospital stay** respectively (44 (29.5-62.5); 50 (32.5-70); 43 (26-64.7); n=146 infants).	
Adverse effects – feed intolerance: RCT assessed with: Number of days of feeding interruptions	171 (1 RCT)	⨁◯◯◯ Very low[a,b,d]	-	The mean adverse effects – feed intolerance: RCT was **13 days**	MD **3 lower** (9.5 lower to 3.5 higher)
Adverse effects – feed intolerance: RCT	106 (1 RCT)	⨁◯◯◯ Very low[a,b,f]	-	The number of occurrences in which gastric residual volume exceeded 50% was significantly lower in the slow infusion feeding group compared with intermittent bolus feeding (1.12 ± 1.56 vs. 2.15 ± 1.4, *p* = 0.01, n=106).	
Adverse effects – feed intolerance: RCT	146 (1 RCT)	⨁⨁◯◯ Low[a,f]	-	The proportions of infants who developed feeding intolerance in continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups were similar (*n* [%]: 21 [51.2%], 20 [52.6%], and 22 [64.7%], respectively, n=146 infants).	
Fully breastfed or breastmilk feeding at hospital discharge - not measured	-	-	-	-	-
Faltering growth/body composition: RCT assessed with: Days to regain birthweight	610 (10 RCTs)	⨁◯◯◯ Very low[b,c,d]	-	The mean faltering growth/body composition: RCT was **14.51 days**	MD **0.38 lower** (1.16 lower to 0.41 higher)
Faltering growth/body composition: RCT assessed with: Time to regain birthweight (Days)	106 (1 RCT)	⨁◯◯◯ Very low[b,f,h]	-	The time to gain birthweight was significantly shorter in the slow infusion feeding group compared with intermittent bolus feeding (10.8 ± 3.2 versus 12.7 ± 4.17; *p* = 0.01, n=106).	
Faltering growth/body composition: RCT assessed with: Time to regain birthweight (Days)	146 (1 RCT)	⨁⨁⨁◯ Moderate[f]	-	There was no difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for median time to regain birthweight (IQR) respectively (9 (6-12); 11 (6.5-13); 10 (7-12); n=146 infants).	
Faltering growth/body composition: RCT assessed with: End of intervention: rate of gain in weight	433 (8 RCTs)	⨁◯◯◯ Very low[b,c,d,]	-	The mean faltering growth/body composition: Not applicable	Standardised MD **0.09 Standard Deviation higher** (0.27 lower to 0.46 higher)
Faltering growth/body composition: RCT assessed with: Weight growth velocity (g/kg/day)	146 (1 RCT)	⨁⨁⨁◯ Moderate[f]	-	There was no difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for mean (SD) weight growth velocity (g/kg/day) respectively (13.6 (3.3); 13.2 (3.6); 14.1 (2.9); n=146 infants).	
Faltering growth/body composition: RCT assessed with: End of intervention: rate of gain in	433 (8 RCTs)	⨁◯◯◯ Very low[b,c,d]	-	The mean faltering growth/body composition: RCT was **0.86 cm/week**	MD **0.02 higher** (0.04 lower to 0.08 higher)

length (cm/week)					
Faltering growth/body composition: RCT assessed with: Length increment (cm/week)	146 (1 RCT)	⨁⨁⨁◯ Moderate[f]	-	There was no difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for mean (SD) length increment (cm/week) respectively (0.73 (0.17); 0.75 (0.17); 0.77 (0.17); n=146 infants).	
Faltering growth/body composition: RCT assessed with: End of intervention: rate of gain in head circumference (cm/week)	433 (8 RCTs)	⨁◯◯◯ Very low[b,c,d]	-	The mean faltering growth/body composition: RCT was **0.75 cm/week**	MD **0.01 higher** (0.03 lower to 0.05 higher)
Faltering growth/body composition: RCT assessed with: Occipitofrontal circumference (cm/week)	146 (1 RCT)	⨁⨁⨁◯ Moderate[f]	-	There was no difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for mean (SD) head circumference (cm/week) respectively (0.66 (0.12); 0.61 (0.14); 0.62 (0.14); n=146 infants).	
Neurodevelopmental impairment - not measured	-	-	-	-	-
Sepsis: proven or suspected: RCT assessed with: Late onset sepsis	103 (1 RCT)	⨁◯◯◯ Very low[a,b]	not estimable	Study population	
				28.3 %	**28%**
Sepsis: proven or suspected: RCT assessed with: Late onset sepsis	146 (1 RCT)	⨁⨁⨁◯ Moderate[a]	-	There was no difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for n (%) late-onset sepsis respectively (25 (51%); 23 (46.9%); 20 (41.7%); n=146 infants)	
Bronchopulmonary dysplasia	146 (1 RCT)	⨁⨁⨁◯ Moderate[a]	-	There was no difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for n (%) bronchopulmonary dysplasia (8 (16.3%); 10 (20.4%); 8 (17.4%) n=146 infants).	
Retinopathy of prematurity assessed with: ROP requiring treatment	146 (1 RCT)	⨁⨁⨁◯ Moderate[a]	-	There was no difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for n (%) ROP requiring treatment (3 (6.1%); 4 (8.2%); 1 (2.2%) n=146 infants).	
Anaemia of prematurity - not measured	-	-	-	-	-
Cost: cost of intervention, cost of neonatal care and life-long cost - not measured	-	-	-	-	-
Time to full sucking feeds (<0.5 days) - not measured	-	-	-	-	-

a. Downgraded one level for indirectness as the evidence is only reported in a single study
b. Downgraded one level due to concerns about risk of bias
c. Downgraded one level for indirectness as studies include a mixture of orogastric and/or nasogastric feeding regimes and infants of differing birthweights
d. Downgraded one level for imprecision with confidence intervals crossing the line of no effect indicating both potential harm and benefit
e. Downgraded one level as there are very small event rates
f. Downgraded one level due to imprecision
g. Downgraded two levels for imprecision with very wide confidence intervals crossing the line of no effect indicating both potential harm and benefit
h. Downgraded one level for inconsistency
i. Downgraded one level for heterogeneity between I2 = 60-80%

Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
● Trivial ○ Small ○ Moderate ○ Large ○ Varies ○ Don't know	Evidence based on a Cochrane systematic review [1]. We also present evidence from 2 recent RCTs [2,3] and a cohort study [4]. **Mortality** Single RCT: No difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for n (%) mortality respectively (4 (8.2%); 7 (14.3%); 5 (10.4%); n=146 infants) [Critical]. **Necrotising enterocolitis (NEC)**: RCT: No significant reduction on the risk of NEC (any stage) compared with intermittent feeding (18 per 1,000 more; 32 fewer to 107 more). Single RCT: No difference in necrotising enterocolitis ≥stage 2 n (%) between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups (1 (2%); 2 (4.1%); 2 (4.2%), n=146 infants) [Critical]. **Time to full enteral feeding:** RCT: No significant effect for increased time to reach full enteral feeding for infants receiving continuous feeding (MD 0.84 days; 0.13 lower to 1.81 higher). The test for subgroup differences did not suggest there may be variation in effect according to birthweight (P = 0.09, I2 = 54.4%). Single RCT: The time to achieve full enteral feeding was similar between slow infusion feeding and intermittent bolus feeding (13.6 ± 8.05 vs. 16.2 ± 12.3 p = 0.20, n=103 infants). Single RCT: The time to reach full feeds in continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity were not significantly different (median [interquartile range]: 13 [10–16], 11.5 [9–17], and 13 [9.5–14.2] days, respectively, p = 0.71) [Critical]. **Bronchopulmonary dysplasia:** Single RCT: No difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for n (%) bronchopulmonary dysplasia (8 (16.3%); 10 (20.4%); 8 (17.4%) events n=146 infants) [Important]. **Retinopathy of prematurity:** Single RCT: No difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for n (%) retinopathy of prematurity requiring treatment (3 (6.1%); 4 (8.2%); 2 (2.2%) events; n=146 infants) [Important]. **Sepsis:** Suspected or proven: Single RCT: No effect of continuous feeds on risk of sepsis compared with intermittent feeds (14/50; 15/53 respectively). Single RCT: No difference between continuous infusion, intermittent bolus infusion, and intermittent bolus by gravity groups for n (%) late-onset sepsis, respectively (25 (51%); 23 (46.9%); 20 (41.7%) events; n=146 infants) [Important]. **Undesirable effects for Māori** 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	The certainty of the evidence is moderate to very low. For some outcomes there are only a small number of events. **Certainty of evidence for Māori** No additional evidence available	

Outcomes	Importance	Certainty of the evidence (GRADE)
Mortality: RCT	CRITICAL	⨁◯◯◯ Very low
Necrotising enterocolitis: RCT	CRITICAL	⨁◯◯◯ Very low
Necrotising enterocolitis: RCT	CRITICAL	⨁⨁⨁◯ Moderate
Time to full enteral feeds: RCT assessed with: Age at full enteral feedings days)	CRITICAL	⨁◯◯◯ Very low
Time to full enteral feeds: RCT assessed with: Days to achieve full enteral feeding	CRITICAL	⨁◯◯◯ Very low
Time to full enteral feeds: RCT	CRITICAL	⨁⨁⨁◯ Moderate
Duration of initial hospital stay assessed with: Days to discharge	CRITICAL	⨁◯◯◯ Very low

Duration of initial hospital stay: RCT	CRITICAL	⨁⨁⨁◯ Moderate
Adverse effects – feed intolerance: RCT assessed with: Number of days of feeding interruptions	CRITICAL	⨁◯◯◯ Very low
Adverse effects – feed intolerance: RCT	CRITICAL	⨁◯◯◯ Very low
Adverse effects – feed intolerance: RCT	CRITICAL	⨁⨁◯◯ Low
Fully breastfed or breastmilk feeding at hospital discharge - not measured	IMPORTANT	-
Faltering growth/body composition: RCT assessed with: Days to regain birthweight	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Time to regain birthweight	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Time to regain birthweight	IMPORTANT	⨁⨁⨁◯ Moderate
Faltering growth/body composition: RCT assessed with: End of intervention: rate of gain in weight	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Weight growth velocity (g/kg/day)	IMPORTANT	⨁⨁⨁◯ Moderate
Faltering growth/body composition: RCT assessed with: End of intervention: rate of gain in length (cm/week)	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Length increment (cm/week)	IMPORTANT	⨁⨁⨁◯ Moderate
Faltering growth/body composition: RCT assessed with: End of intervention: rate of gain in head circumference (cm/week)	IMPORTANT	⨁◯◯◯ Very low
Faltering growth/body composition: RCT assessed with: Occipitofrontal circumference	IMPORTANT	⨁⨁⨁◯ Moderate
Neurodevelopmental impairment - not measured	IMPORTANT	-
Sepsis: proven or suspected: RCT assessed with: Late onset sepsis	IMPORTANT	⨁◯◯◯ Very low
Sepsis: proven or suspected: RCT assessed with: Late onset sepsis	IMPORTANT	⨁⨁⨁◯

		Moderate
Bronchopulmonary dysplasia	IMPORTANT	⨁◯◯◯ Very low
Retinopathy of prematurity assessed with: ROP requiring treatment	IMPORTANT	⨁◯◯◯ Very low
Anaemia of prematurity - not measured	IMPORTANT	-
Cost: cost of intervention, cost of neonatal care and life-long cost - not measured	IMPORTANT	-
Time to full sucking feeds (<0.5 days) - not measured	NOT IMPORTANT	-

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. **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 comparison ○ Probably favours the intervention ○ Favours the intervention ○ Varies ○ Don't know	**For continuous compared with intermittent feeding - Moderate certainty evidence** Little or no effect on NEC, time to full enteral feeds, duration of hospital stay, faltering growth/body composition (weight, length, head circumference), sepsis **For continuous compared with intermittent feeding - Low certainty evidence** Probably little or no effect on feeding intolerance **For continuous compared with intermittent feeding - Very low certainty evidence** Little or no effect on NEC, time to full enteral feeds, duration of hospital stay, faltering growth/body composition (weight, length, head circumference), sepsis, bronchopulmonary dysplasia, retinopathy of prematurity Probably no difference in mortality Shorter time to regain birthweight Probably less feeding intolerance **Balance of effects for Māori** No available evidence	The Cochrane review concludes (Premji 2021): The clinical risks and benefits of continuous and intermittent nasogastric tube milk feeding cannot be reliably discerned from current available randomised trials. Further research is needed to determine if either feeding method is more appropriate for the initiation of feeds. A rigorous methodology should be adopted, defining feeding protocols and feeding intolerance consistently for all infants. Infants should be stratified according to birthweight and gestation, and possibly according to illness.
Resources required		
JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
○ Large costs ○ Moderate costs ● Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ○ Don't know	Continuous feeds require enteral feeding pumps. Most NICUs in Aotearoa New Zealand have access to loan enteral feeding pumps ($1,000 to $2,000 each) and feeding equipment. Intermittent and continuous feeds use tubing that is replaced 24 hourly, but continuous feeds require slightly more costly equipment than bolus feeding and result in more plastic waste. Continuous feeds require less nursing time to administer.	
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	A formal assessment of the certainty of evidence of the cost was not undertaken. **Certainty of evidence of required resources for Māori.** No included studies on cost.	

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 continuous versus bolus feeds, particularly in the context of preterm infants. **Cost-effectiveness for Māori.** No included studies on cost.	

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** There is no evidence showing that pēpi Māori are systematically assigned to different feeding methods (e.g. continuous vs. bolus feeds) based on ethnicity. However, there is indirect evidence of systemic neonatal care inequities that may result in differential access or application of best-practice enteral feeding strategies, including those aimed at reducing NEC, accelerating time to full feeds and shortening NICU length of stay. Pēpi Māori receive fewer key interventions in NICU, which may impact on enteral feeding, such as antenatal corticosteroids, surfactant administration, and timely access to neonatal transport. This raises the possibility that pēpi Māori might have delayed progression to enteral feeds and receive less optimal feeding strategies, such as earlier transition to infant formula, which may be less well tolerated and delay full feeds. **Equity for Pacific families**	

	Variation in feeding methods across hospitals can lead to uncertainty for Pacific families, particularly if information is not communicated in culturally familiar ways. When families are not supported in understanding feeding methods, trust can be eroded. Equity means ensuring families are involved in discussions about feeding type and rationale. **Equity for underrepresented groups** Families with limited health literacy or English language proficiency may not be informed about the differences between feeding methods. Inconsistent explanations may affect their confidence in care. Equity requires inclusive communication and consistent feeding practices so that all families understand and support their infant's nutritional plan.	

Acceptability

Is the intervention acceptable to key interest-holders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ○ Probably yes ○ Yes ● Varies ○ Don't know	Families are less involved/engaged with continuous feeds but otherwise continuous feeds are generally acceptable to staff and families. **Acceptability for Māori** No data available	

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 already in widespread use in Aotearoa New Zealand neonatal units, so is feasible. **Feasibility for Māori** No additional evidence available	

Summary of judgements

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

	JUDGEMENT						
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

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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