EtD 54. Does access to a specialist neonatal dietitian vs. no access improve preterm infant outcomes?

POPULATION:	Preterm infants
INTERVENTION:	Access to a specialist neonatal dietitian
COMPARISON:	No access
MAIN OUTCOMES:	**Critical for making a decision** Mortality Neurodevelopmental impairment Adverse effects Faltering growth/body composition Fully breastmilk feeding at hospital discharge **Important but not critical** Fully breastfeeding at hospital discharge Duration of initial hospital stay Time to full enteral feeds Bronchopulmonary dysplasia Necrotising enterocolitis (NEC) 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:	Neonatal care
PERSPECTIVE:	Clinical recommendation
BACKGROUND:	Preterm infants are born with increased nutritional needs due to interrupted in-*utero* growth and immature organ function. They are at high risk of faltering growth, feeding intolerance, nutrient deficiencies and long-term neurodevelopmental impairment. Meeting these needs through individualised, timely and carefully balanced nutrition is critical to improving both short- and long-term outcomes. Despite this, the availability of specialist neonatal dietitians varies widely across Aotearoa New Zealand, contributing to inconsistent care and widening inequities. Neonatal dietitians are trained to assess nutritional requirements, monitor feeding progression and support breastmilk feeding, the safe use of fortifiers, supplements and specialised formulas. Their involvement leads to more accurate nutrient delivery, earlier achievement of full enteral feeds, reduced rates of complications such as necrotising enterocolitis, and improved growth and neurodevelopment. The inclusion of a dietitian means there is consistent team member whose focus is nutrition which also strengthens team decision-making, supports culturally responsive care and helps guide parents through complex feeding journeys. International standards recommend minimum staffing ratios to ensure consistent care across neonatal units. The absence of these roles in some hospitals highlights a gap in service delivery that may contribute to avoidable harm. Addressing this gap through equitable, national implementation of neonatal dietitian services has the potential to significantly improve outcomes for preterm infants and their whānau.
CONFLICT OF	The following Guideline Development Group members are neonatal dietitians: Barbara Cormack and Tanith Alexander.

INTERESTS:	

Assessment

Desirable Effects

How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
● Trivial ○ Small ○ Moderate ○ Large ○ Varies ○ Don't know	A non-systematic search found a rapid review [1] and two implementation studies [2,3] exploring the effect of the introduction of a multidisciplinary team that included a registered dietitian in the neonatal intensive care unit (NICU). Note that the two implementation studies were also included in the rapid review. **No faltering growth/body composition**: Pre-post implementation study: Weight gained per day from birth to discharge was significantly greater in the 2004 group (24 g; 95%CI 22 to 25) compared with the 2001 group (20 g; 95%CI 19 to 21; P <0.05). Weight gain/day from birth to start of enteral feeds was significantly higher in the 2004 group (1.29 g; 95%CI 0.08 to 1.6) compared with the 2001 group (-8 g; 95%CI -5 to 0.0; P < .05). Weight gain/day from birth to full feeds was significantly higher in the 2004 group (17 g; 95%CI 13 to 20) compared with the 2001 group (6 g; 95%CI 3 to 9; P < .05). There was no difference in total length growth (2001: 8 cm; 95%CI 6 to 10 vs. 2004: 9 cm; 95%CI 8 to 11). Total head circumference growth was higher in the 2004 group (8 cm; 95%CI 7 to 9; P < .05) compared with the 2001 group (6 cm; 95%CI 5 to 7; P < .05). Another study reported a borderline significant decrease of weight Z-scores change between discharge and admission in the post-implementation period (−1.13 ± 0.99 vs.−0.91 ± 0.74, p= 0.055) [Critical] **Duration of initial hospital stay:** Pooled analysis from four studies (n=785) showed no difference in length of Neonatal Intensive Care Unit stay (MD 2.58 days; 9.04 less to 14.20 more) [Important]. **Time to full enteral feeds**: Pooled analysis from three studies (n=680) showed no difference in time to oral or enteral feeding (MD 16.43 days; 14.29 fewer to 47.15 more) [Important]. **Bronchopulmonary dysplasia**: Pre-post implementation study: No difference in bronchopulmonary dysplasia between pre-implementation (39/107; 37.5%) and post-implementation (49/122; 41.5%) [Important]. **Necrotising enterocolitis (NEC)**: Pre-post implementation study: No difference in NEC (2001: 2/42 (5%) vs. 2004: 2/63 (3%). A second study also found no difference in NEC between pre-implementation (7/107; 10.7%) and post-implementation (11/122; 9%) [Important].	[1] UK; Rapid review: Infants admitted to Neonatal Intensive Care. The review included four non-randomised studies that included infants with gastroschisis, short bowel syndrome or very low birthweight. [2] USA: Implementation study. Infants with birthweights ≤1500g. Charts were reviewed for 42 infants in 2001 and 63 infants in 2004. [3] South Korea: Implementation study. Infants <30 weeks' gestation or <1250 g. Charts reviewed for 107 infants pre-intervention and 122 post-intervention. **Key benefits of specialist neonatal dietitians:** **Improved nutrient intakes:** Neonatal dietitians ensure infants receive the appropriate nutrients through strategies like breastmilk fortification, optimal macronutrient composition and tailored feeding plans. **Enhanced growth and development:** Early and optimal nutrition support, guided by dietitians, can lower the risk of adverse health outcomes and improve cognitive development in later life. Dietitians play a key role in detecting, diagnosing, and treating malnutrition and other nutritional issues in neonates. **Reduced length of stay and costs:** By optimising nutrition support, dietitians help to reduce the need for parenteral nutrition, decrease prescription errors and shorten hospital stays, leading to cost savings. **Standardised practice and improved research:** In Aotearoa New Zealand, there is substantial variation in neonatal nutrition practice. Neonatal dietitians contribute to the development of standardised practices and the improvement of the quality of research in neonatal nutrition, leading to more effective and equitable care for all infants. **Expert nutrition support for parents and healthcare teams:** Dietitians provide consistent, holistic support to parents and other members of the multi-disciplinary team, ensuring they have the

	Sepsis: Pre-post implementation study: No difference in sepsis between pre-implementation (26/107; 24.3%) and post-implementation (36/122; 29.5%) [Important]. **Retinopathy of prematurity:** Pre-post implementation study: No difference in retinopathy of prematurity requiring surgery between pre-implementation (23/107; 21.5%) and post-implementation (25/122; 21.4%) [Important].	knowledge and resources to provide optimal care. **Addressing variations in practice:** Neonatal dietitians help identify and address variations in neonatal nutrition practice, leading to more consistent and effective care. **Early intervention:** Early administration of optimal nutrition can significantly improve outcomes for preterm infants, lowering the risk of long-term health problems.

Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
● Trivial ○ Small ○ Moderate ○ Large ○ Varies ○ Don't know	**Mortality**: Pooled analysis from four studies (n=785) showed no difference in mortality (0 fewer per 1,000; 37 fewer to 93 more) [Critical].	

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	Overall certainty of evidence is very low. However, the importance of the neonatal dietitian is increasingly recognised in international guidance: **National Institute for Health and Care Excellence (NICE 2022)** clearly state that dietitians should be established members of the neonatal nutrition care team, with responsibilities that include the provision and management of parenteral nutrition (NICE NG154), 2020 [4]; NICE QS205, 2022) [5]. These roles are essential not only for ensuring high standards of nutritional care but also for improving outcomes and reducing variation across neonatal services. **National Health Service (NHS) England and NHS Improvement (2021:** In their neonatal transformation review) [6], the NHS acknowledged the essential role of specialist neonatal dietitians and highlighted the need to address under-resourcing in many neonatal units. The British National Health Service, National Quality Board recommends “all units have access to a neonatal or paediatric dietitian competent in neonatal nutrition and who can access a specialist neonatal dietitian if required”.	

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	

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	**Access vs. no access to a specialist neonatal dietitian on infant outcomes - very low certainty evidence** Probable increase in head circumference Uncertain effect on mortality, weight gain, length, duration of hospitalisation, time to reach full enteral feeds, bronchopulmonary dysplasia, NEC, sepsis, retinopathy of prematurity	Evidence is based on two implementation studies. There are unlikely to be randomised trials of access to a specialist neonatal dietitian versus no access. Providing access to a specialist neonatal dietitian is aligned with national and international best practice, is cost-effective and supports health equity across regions and ethnic groups. The role enhances multidisciplinary care and ensures safe, consistent and culturally respectful nutrition for our most vulnerable infants.

Resources required

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Large costs ● Moderate costs ○ Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ○ Don't know	**Neonatal Dietitian Salary** Advanced Practitioner $130,295 to $151,410 Advanced Clinician $119,995 to $127,720 Optimal neonatal dietetic staffing levels can be calculated using recommendations published by the neonatal specialist subgroup of the British Dietetic Association (BDA), which have been endorsed by the British Association of Perinatal Medicine (BAPM) and by the Australasian Neonatal Dietitians Network (ANDiN).	Resources such as job descriptions, specifications for neonatal dietitian skill requirements according to unit level and an *Australasian Neonatal Dietitians Network (ANDiN) Neonatal Dietitian Mentoring and Training* pathway already exist.

	https://www.bapm.org/resources/service-and-quality-standards-for-provision-of-neonatal-care-in-the-uk **British Dietetic Association guidelines recommend:** 0.1 full-time equivalent (FTE) per intensive care cot (Level 3) 0.05 FTE per high-dependency cot (Level 2) 0.033 FTE per special care/transitional cot (Level 1)	

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 **Certainty of evidence of required resources 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	No studies assessed the cost-effectiveness of neonatal dietitians. As an integral member of the neonatal team, the specialist neonatal dietitian plays a vital role ensuring the delivery of consistent, individualised nutritional care, supported by evidence-based protocols and robust monitoring tools. This specialist input contributes to enhanced clinical effectiveness and reduces the risk of nutrition-related complications, which in turn is associated with shorter hospital stays and cost savings for healthcare services. **Cost effectiveness for Māori** No additional evidence available	Savings result from: Fewer days on parenteral nutrition Improved growth trajectories Reduced need for surgical or specialist follow-up for nutrition-related complications

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	A 2020 survey in Aotearoa New Zealand neonatal units [7] showed access to a neonatal dietitian was inconsistent. This has not changed. Evidence also shows that neonatal units with access to a dedicated specialist neonatal dietitian deliver more consistent and proactive nutritional care. Dietitians provide a clear point of consistent daily oversight for tracking nutritional progress and are more likely to implement early, optimal nutrition strategies and regular growth monitoring, improving the overall quality and safety of care. Rural hospitals and lower-resourced units are less likely to have access to specialist neonatal dietitians. Implementation of standard staffing across all units, supported by telehealth and equity-based workforce development, can help reduce disparities experienced by Māori, Pacific peoples and other underrepresented families.	

Acceptability

Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ○ Probably yes ● Yes ○ Varies ○ Don't know	Families and clinicians value early, consistent feeding guidance and support. Dietitians contribute to culturally responsive care, improve team confidence and ensure safer feeding practices. Their role is well-accepted by parents and professionals alike. **Acceptability for Māori** No evidence available	

Feasibility

Is the intervention feasible to implement?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ● Probably yes ○ Yes ○ Varies ○ Don't know	Potential implementation challenges include: Initial cost of employing new staff Integration into existing clinical teams Ensuring equitable access to training and resourcing across smaller or rural hospitals These challenges are outweighed by substantial benefits to patient outcomes and system-level efficiency.	

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
O	O	O	●	O

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