Scottish Neonatal AHP Workforce Review

Hilary Cruickshank on behalf of the National Neonatal Network AHP Forum

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Purpose of this Review

The Allied Health Professions (AHPs) are fundamental to providing the best possible neonatal care for babies who are admitted to a neonatal unit and their families. Through the Best Start implementation programme, Scottish Government funded a review of specialist neonatal AHP provision across Scotland to identify the level of existing provision, highlight any service gaps and develop recommendations for how these could be addressed.

Background / Strategic Context

(a) The Role of Specialist Neonatal AHPs

AHPs provide unique specialist care within neonatal services that deliver many benefits for families (an overview of each AHP role can be found in Appendix 2). Early intervention and early detection of deficit is key to achieving the best outcomes for the high-risk population looked after on neonatal units. Early intervention promotes better long-term outcomes and reduces the pressure on community services. Families whose babies most likely would have gone on to require multiple hospital admissions, or involvement from several community services over many years, are saved this added stress. In addition, the NHS is saved the additional cost.

In 2021 there were 44,616 singleton live births in Scotland, 10% of all live births will be admitted to a neonatal unit. Around 1 in 400 will suffer from cerebral palsy which equates to 111 new cases every year. Another 50-60 will receive therapeutic hypothermia to reduce the risk of cerebral palsy and will also require intense early intervention.

It is also important to take into account the babies requiring surgical intervention who may have longer term issues such as poor feed tolerance, longer term parenteral nutrition needs, feeding difficulties, growth concerns and tube feeding. The involvement of specialist neonatal AHPs is so vital to ensuring their optimal outcomes.

Notably the UK morbidity rate is not falling consistently, unlike other nations.[1] Expert early intervention starting on the neonatal unit and transitioning with families throughout their journey can provide a pathway towards reducing both, the overall morbidity rate and the severity of morbidity. With the average cost over a lifetime for a person with cerebral palsy estimated to be £750,000, reducing the morbidity through early intervention in neonatal care has significant potential to reduce lifetime costs to the NHS. In addition AHPs can, where appropriate, release

[1] iNeo Lui et al 2015

consultant time, e.g. in one centre AHPs have been successfully employed to release 3 sessions a week of consultant time. This is a much better use of resources and a significant financial saving given the cost difference between Band 7 AHP and consultant time.

It is very stressful to transfer a highly complex infant in need of ongoing expert AHP input to a unit with no AHP input, therefore putting the infant at risk of much poorer outcomes than had they continued their journey with the appropriate input.

In some cases we have delayed repatriation due to lack of appropriate staff which has then had an impact in our cot capacity.

(b) Scottish Policy Context

Ready to Act, published in 2016, was the first children and young people's service plan in Scotland to focus on the support provided by AHPs and demonstrate their essential role in the strategic planning, development and delivery of services.

One of the 5 ambitions of Ready to Act was committing to a systematic shift to early intervention and preventative strategies in service delivery, progressing the universal aspects of the Children and Young People (Scotland) Act 2014.

Every child in Scotland will have the best possible start in life, with AHP services using and asset based approach to aid prevention through universal services and supportive nurturing environments at home, nursery and school.

The Best Start, published in 2017, laid out a new model of neonatal and maternity care in Scotland. This recognised the role of AHPs within neonatal services as fundamental to effective and timely repatriation and discharge planning as well as transition to both hospital and community paediatric services.

Best Start also recognised the important contribution that an effective and highly specialist AHP service can make to improve outcomes for high-risk neonates. The report recommended (see recommendation 47) that a framework for consistent and equitable speciality AHP support be provided for neonatal units. It was also recommended that a national Framework for Practice should be developed which outlines clear pathways for newborn care and also supports the development of consistent and equitable specialty AHP outreach support for local neonatal units from larger units.

These recommendations are not currently being met across all AHP and neonatal services in Scotland.

UK Context

The British Association for Perinatal Medicine (BAPM) recommend that all neonatal units have access to specialist neonatal AHPs.

The 'Getting It Right First Time' (GIRFT) workforce report demonstrated there is significant pressure on the neonatal workforce with shortages in AHP input across neonatal services in England. The current workforce model was seen as not fit for purpose and major workforce transformation is required, with consideration of new roles, recruitment strategies and a focus on improving education, training and career development across all staff groups. Currently, there is significant regional variation in access to funding. Development of career pathways and training standards for nursing and AHP staff are essential. An education package for neonatal AHPs has now been developed by Health Education England (HEE) with the first set of modules launched in May 2022. This education is accessible UK-wide, including to AHPs working in NHSScotland. As such, access to training is not a barrier to developing the specialist neonatal AHP workforce going forward.

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Approach and Methodology

Following an initial gap analysis in February 2021 by the AHP Forum of the National Neonatal Network to investigate current neonatal AHP provision in Scotland, funding

was secured from Scottish Government for a detailed review of AHP workforce levels in Neonatal Units across Scotland. Funding consisted of 1 day a week for each specialty and ½ a day a week for a project lead. In November 2021, the lead roles for Dietetics and Physiotherapy were appointed as was the project lead. Speech Therapy and Occupational Therapy were recruited in December 2021.

The data was gathered from January to April 2022 using a variety of methods, with each profession being contacted by the lead for their profession. Video and telephone calls were the main method used to collate information from each AHP team in addition to some by email questionnaires. Staffing recommendations made in this review are based on recommended staffing levels defined by the individual AHP professional associations, in line with BAPM recommendations. Please see Appendix 1 for a summary of these staffing recommendations. It is of note that they only account for management of inpatients for all AHP groups, apart from Physiotherapy which has some contingency for outpatients. The staffing recommendations for neonatal services in Scotland presented in this report are calculated using the cot numbers for each unit, which were verified by the National Neonatal Network.

Data Analysis

Figure 1 summarises the current level of funded Scottish provision of neonatal AHP resource as a percentage of recommended staffing levels for each profession. This highlights significant gaps in funded neonatal AHP provision for Scotland in each profession, ranging from 6% (occupational therapy) to 25% (physiotherapy) of the recommended staffing levels. In other words, even in the best-provisioned profession (physiotherapy) Scottish neonatal services currently lack 75% of the AHP staff that are required to meet professional recommendations.

Figure 1: National Neonatal AHP Staffing Levels (relative to Professional Recommendations)

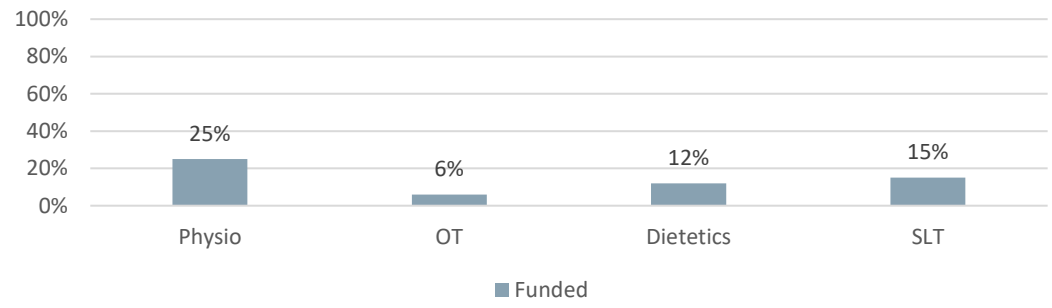
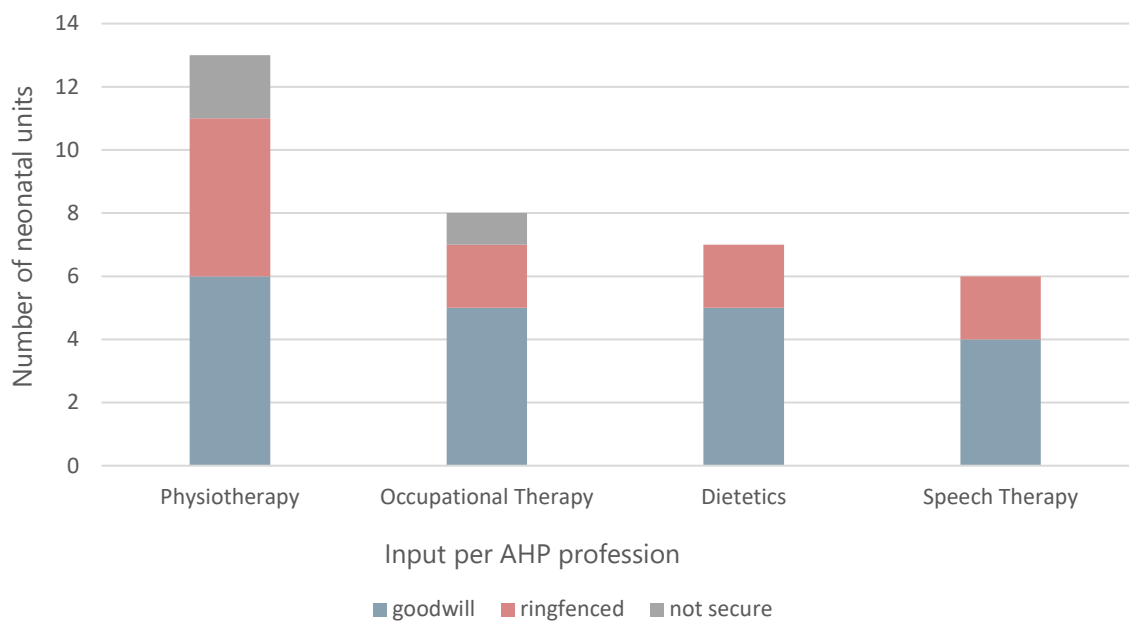


Figure 2 below provides a breakdown of the level of input from each profession available to the 15 neonatal units in Scotland. Again, this shows significant gaps in provision as physiotherapy is the only profession where the majority of units (13 out of 15) have a degree of support. In the case of dietetics and speech and language therapy less than half of neonatal units (7 out of 15 and 6 out of 15, respectively) have any level of input.

In addition, for the majority of neonatal units AHP input is not based on dedicated and secure neonatal AHP funding but rather are provided on a "goodwill" basis, i.e. it is provided ad hoc by staff from within the general AHP workforce if and when they happen to have a neonatal interest and spare capacity. This is a very fragile and likely unsustainable situation whereby neonatal AHP provision is largely not secured and therefore cannot be relied upon to consistently provided the appropriate level of care to all babies. This precarious staffing situation also renders systematic neonatal AHP workforce and succession planning extremely challenging.

Also, the frequent use of short term funding to provide dedicated neonatal AHP support is not conducive to a healthy working environment for staff who are not able to make longer term future plans for their role due to short term contracts. In addition, this makes it very difficult to recruit and retain appropriate highly skilled staff.

Figure 2: Number of Neonatal Units and Level of AHP Input



Appendix 1 gives individual Health Board level reports of current provision including an outline of the investment that would be required to achieve recommended staffing levels for the Board.

Recommendations

As shown by data above, current funding for neonatal AHPs in Scotland falls significantly short of the national staffing recommendations. It is of concern that there are few appropriately qualified AHP staff and there is no capacity within the currently funded posts to support staff in smaller units. This raises critical questions about who supports the family once repatriated from specialist centres, who continues to adapt and change the intervention as appropriate, and who follows these high-risk infants up to continue and develop the early intervention strategies. With this level of understaffing, it will be very challenging to sustainably deliver on the model of neonatal care described by Best Start. Investment is required to develop and support AHP input to neonatal units. This must include an analysis of how to support training and education to sustainably fill the workforce gaps that have been identified. A list of recommendations is laid out below in Table 3.

Table 3: Recommendations to reduce variation and improve equity of service and quality of patient care

Issue	Current Practice	Recommendation
Address unwarranted variation in neonatal AHP provision	Recommended staffing levels are not being met in any AHP service in Scotland	A plan for the structure of the neonatal AHP workforce using a networked approach should be developed within 12 months.
	Pump priming and temporary funding, leaving services at risk.	All staffing recommendations should be funded sustainably within long term neonatal and/or AHP service workforce models.
Training and education for new workforce	Limited number of staff available with the appropriate level of skills and experience.	Link with NES to host webinars. Link via NES with HEE to access their Neonatal AHP training modules
		Establish formal peer support systems
		Link with already established AHP specialist groups and BAPM
Coordinate services and training	No coordination at present	The National Neonatal Network should develop standardised resources to improve consistency and equity of service and set up mechanisms to facilitate coordination of the right input for the right family, in the right place and the right time.

As mentioned, Appendix 1 describes current provision, minimum neonatal AHP staffing levels (based on the level of neonatal unit and cot numbers) and the investment required to meet these minimum staffing levels. Given the small size of

many neonatal units in Scotland, for many Boards the minimum staffing recommendations equate to very small whole time equivalents for each profession, at a level below which developing and maintaining a highly skilled specialist AHP workforce would be viable. Investment in increased neonatal AHP staffing should therefore be looked at in terms of a regional staffing model, centred around larger tertiary neonatal units that host a full complement of neonatal AHP staff and provide outreach support to linked smaller neonatal units in a hub-and-spoke model.

It is anticipated that this model would best be built around the three neonatal intensive care units in Scotland that are proposed within the new Best Start model of neonatal care for Scotland. At the point of publishing this report, the location of the three units has not yet been announced. To be able to provide indicative numbers for how such a regional hub-and-spoke neonatal AHP staffing model might look, an approximation using the areas defined by the NHS Scotland regional planning groups is given below.

North of Scotland (neonatal units in: NHS Grampian, NHS Highland)

	Physio	OT	Dietetics	SLT
Current WTE	1.1	0.5	0	0
Recommended WTE	3	2.95	2.68	1.82
Investment required (WTE)	**1.9**	**2.45**	**2.68**	**1.82**

South-East Scotland (neonatal units in: NHS Borders, NHS Fife, NHS Lothian, NHS Tayside)

	Physio	OT	Dietetics	SLT
Current WTE	1.51	0.5	0.8	0.7
Recommended WTE	5.98	6.1	4.7	3.9
Investment required (WTE)	**4.47**	**5.6**	**3.9**	**3.2**

West of Scotland (neonatal units in: NHS Ayrshire and Arran, NHS Dumfries and Galloway, NHS Forth Valley, NHS Greater Glasgow and Clyde, NHS Lanarkshire)

	Physio	OT	Dietetics	SLT
Current WTE	2.2	0.2	1.2	1.52
Recommended WTE	10.1	10.8	8.75	5.82
Investment required (WTE)	**7.9**	**10.6**	**7.55**	**4.3**

Appendix 1 – Summary of Staffing Recommendations

Below is a summary of neonatal AHP staffing recommendations developed by the respective professional bodies.

Dietetics

- Staffing levels are calculated based on number of cots and the intensity of the cots.
- Number of ICU cots X 0.1= WTE of Dietetic provision
- Number of HDU cots X 0.05= WTE of Dietetic provision
- Number of SCU cots X 0.033= WTE of Dietetic provision
- Network Role 0.1 for every 10,000 births=WTE of Dietetic provision

https://www.bda.uk.com/uploads/assets/ab614d3e-e095-4e4f-96ae1458204e8810/BDA-Formatted-Staffing-Recc.pdf

Occupational Therapy

- Staffing levels are calculated on the number of cots and the intensity of the cots.
- Number of ICU cots X 0.1=WTE of OT provision
- Number of HDU cots X 0.05= WTE of OT provision
- Number of SCU cots X 0.05= WTE of OT provision
- Network Role 0.2 for every 10,000 births=WTE of OT provision

Microsoft Word - Occupational therapy staffing on neonatal units 22.08.18 (rcot.co.uk)

Physiotherapy

- Staffing levels are calculated based on unit cot numbers
- Number of cots X 0.05=WTE of Physiotherapy provision
- Neonatal Follow up Number of clinics per week X 0.15=WTE of physiotherapy provision
- Network Role 0.2 for every 10,000 births=WTE of physiotherapy provision

Neonatal Staffing Recommendations | Association of Paediatric Chartered Physiotherapists (csp.org.uk)

Speech and Language Therapy

- Staffing levels are calculated depending on unit level and cot numbers
- NICU Level 3 tertiary centre: Number of cots X 0.04 = WTE of SLT provision
- An additional 0.02 per transitional cot
- LNU Level 2 unit : Number of cots X 0.03 = WTE of SLT provision required
- An additional 0.02 per transitional cot
- SCU Level 1 unit: Number of cots X 0.02 = WTE of SLT provision required
- An additional 0.02 per transitional cot
- Network Role 0.3 for every 10,000 births=WTE of SLT provision

neonatal-speech-and-language-therapy-staffing-level-recommendations.pdf (rcslt.org)

Appendix 2 – Health Board Neonatal AHP Provision Report Cards

The tables below give the current WTE staffing numbers in each Health Board per profession, along with the recommended staffing levels calculated on the basis of their cot numbers and unit levels. In larger Boards with multiple neonatal units, figures are given separately for each unit.

NHS Ayrshire and Arran

	Physio	OT	Dietetics	SLT
Current WTE	0	0	0	0
Recommended WTE	1.15	1.25	1.06	0.8
Investment required (WTE)	**1.15**	**1.25**	**1.06**	**0.8**

NHS Borders

	Physio	OT	Dietetics	SLT
Current WTE	0	0	0	0
Recommended WTE	0.48	0.4	0.3	0.24
Investment required (WTE)	**0.48**	**0.4**	**0.3**	**0.24**

NHS Dumfries and Galloway

	Physio	OT	Dietetics	SLT
Current WTE	0	0	0	0
Recommended WTE	0.6	0.55	0.47	0.27
Investment required (WTE)	**0.6**	**0.55**	**0.47**	**0.27**

NHS Fife

	Physio	OT	Dietetics	SLT
Current WTE	0	0	0	0
Recommended WTE	1.15	1.2	0.96	0.8
Investment required (WTE)	**1.15**	**1.2**	**0.96**	**0.8**

NHS Forth Valley

	Physio	OT	Dietetics	SLT
Current WTE	0	0	0	0
Recommended WTE	1.1	1.1	0.88	0.57
Investment required (WTE)	**1.1**	**1.1**	**0.88**	**0.57**

NHS Grampian

	Physio	OT	Dietetics	SLT
Current WTE	0.5	0.5	0	0
Recommended WTE	2	2.15	1.95	1.4
Investment required (WTE)	**1.5**	**1.65**	**1.95**	**1.4**

NHS Greater Glasgow and Clyde

Royal Hospital for Children

	Physio	OT	Dietetics	SLT
Current WTE	0.9	0	1.2	1.12
Recommended WTE	2.8	3.5	2.96	2
Investment required (WTE)	**1.9**	**3.5**	**1.76**	**0.88**

Princess Royal Maternity

	Physio	OT	Dietetics	SLT
Current WTE	0.4	0	0	0.4
Recommended WTE	1.7	1.6	1.1	0.7
Investment required (WTE)	**1.3**	**1.6**	**1.1**	**0.3**

Royal Alexandra Hospital

	Physio	OT	Dietetics	SLT
Current WTE	0.3	0	0	0
Recommended WTE	1.1	0.95	0.78	0.48
Investment required (WTE)	**0.8**	**0.95**	**0.78**	**0.48**

NHS Highland

	Physio	OT	Dietetics	SLT
Current WTE	0.6	0	0	0
Recommended WTE	1	0.8	0.73	0.42
Investment required (WTE)	**0.4**	**0.8**	**0.73**	**0.42**

NHS Lanarkshire

	Physio	OT	Dietetics	SLT
Current WTE	0.6	0.2	0	0
Recommended WTE	1.65	1.85	1.5	1
Investment required (WTE)	**1.05**	**1.65**	**1.5**	**1**

NHS Lothian

Royal Infirmary of Edinburgh

	Physio	OT	Dietetics	SLT
Current WTE	1.3	0.5	0.8	0.6
Recommended WTE	2.55	2.55	1.98	1.64
Investment required (WTE)	**1.25**	**2.05**	**1.18**	**1.04**

St. John's

	Physio	OT	Dietetics	SLT
Current WTE	0.01	0	0	0
Recommended WTE	0.45	0.5	0.46	0.3
Investment required (WTE)	**0.44**	**0.5**	**0.46**	**0.3**

NHS Tayside

	Physio	OT	Dietetics	SLT
Current WTE	0.2	0	0	0.1
Recommended WTE	1.15	1.45	1	0.92
Investment required (WTE)	**0.95**	**1.45**	**1**	**0.82**

Appendix 3 – The Role of Specialist Neonatal AHPs

AHP practice in the neonatal period is fundamentally different to practice in older children and adults, demonstrating the need for AHP's with specific skill sets. Neonatal Services differ from adult and paediatric provision. Services are designed to meet the needs of every infant cared for on the neonatal unit and do not rely upon individual referrals. Universal services are required to support embedding principles of care that optimise outcomes for all infants. Targeted services identify groups for whom specific pathways are relevant. Specialised services are required for infants with complex needs who require individualised care plans.

As a consequence of medical advances being made within the field of neonatology (BAPM (British Association of Perinatal Medicine) 2019) more immature, smaller and infants with more complex co-mobidity are surviving. However, without the input of AHPs these infants will be at increased risk of more severe and long-term health implications.

Current evidence supporting interventions to optimise neurodevelopment look collectively at the infant's experience of their immediate environment (Soni et al 2021) and neuro-protective measures (Altimier et al 2016). Interventions supporting skin to skin contact, positioning and handling, communication, breast milk, breast feeding and nutrition, non-pharmacological methods of pain relief and reducing stress are domains relevant to the AHP team. The team can bring a consistent approach to ensure that all staff and families on the neonatal unit are supported to provide the best possible environment for all infants to optimise short, medium and long-term outcomes.

Dietitians have a specialist role in the complex nutritional care needs of neonates and specialist knowledge of the potential barriers for managing nutritional interventions. The need for optimum nutritional support is paramount as evidence points to short- and long-term adverse consequences of poor nutrient intake and growth in this population. Dietitians have specialist knowledge of the complex nutritional problems arising from medical issues due to prematurity such as gastro-oesophageal reflux disease, necrotising enterocolitis, chronic liver disease and congenital heart disease. They are specialists in designing nutrition practice protocols and monitoring tools. They enhance clinical effectiveness in nutrition, which reduces complications such as NEC and postnatal growth restriction. Dietitians assess and understand the indication for use of, and apply current clinical practices for, parental and enteral feeding strategies to meet the complex needs of neonates. They have extensive knowledge of the use of breast milk in preterm infants and support establishing and maintenance of lactation and the transition to breastfeeding. They understand the composition and use of breast milk fortifier (BMF), specialist preterm and term formula to supplement nutrition as needed. Dietitians play a key role in

supporting MDTs to make clinically effective feeding decisions, taking into account gastrointestinal disorder/surgical intervention. They are integral to embedding UNICEF Baby Friendly Initiative (BFI) neonatal standards, FICare and the Bliss Baby Charter.

Occupational therapists (OTs) have a lead role in working with the multidisciplinary team to promote a neuro-protective developmental care environment, as well as individualised grading of environmental input to provide supportive care and recommendations for caregivers during neonatal care. 29 NICE (2017) NG72, Developmental follow-up of children and young people born preterm 36 Preterm infants are at increased risk of developing emotional and behavioural problems later in life.30, 31 OTs, trained in both physical and mental health, support and educate parents on promoting developmentally appropriate sensory experiences for their baby and development of successful psychological and practical coping strategies for families. OTs also provide therapeutic interventions such as positioning for optimal neurobehavioural regulation enabling protected sleep, and optimal positioning and supportive regulation for positive feeding experiences. OTs also focus on enabling parents to feel confident and competent in reading their infant's neurobehavioural cues and equip them with sensitive and contingent strategies to support their neonate's development and regulation post discharge home.

Speech and language therapists (SLTs) have a specific role in the early identification, assessment and management of oral feeding and swallowing difficulties in neonates. SLTs are specialists in providing pre-oral feeding support and assessment of readiness for oral feeding, evaluation of breastfeeding and bottle feeding. They understand the complexities of oral feeding especially with regards to respiratory devices and are often trained in instrumental objective assessment such as video fluoroscopy swallow studies (VFSS). SLTs provide individualised feeding recommendations and strategies to help support safe and effective oral feeding and nutrition. In addition, SLTs provide training and support to the wider multidisciplinary team in oral feeding practices and are integral in embedding UNICEF BFI neonatal standards, FICare and the Bliss Baby Charter. SLTs have a role in reducing the risk of known prolonged feeding difficulties such as delayed nasogastric tube weaning, oral aversion and future difficulties progressing with weaning onto solids. SLTs also have expertise in early communication and how to maximise the opportunities for supporting speech, language and communication development through supporting parents with their neonates in the unique neonatal unit environment.

Physiotherapists (PT) provide highly-specialised observation, assessment, intervention in movement, gross motor and postural control in the rapidly changing physiology and behavioural stability of neonates. Early identification of motor problems ensures that neonates can receive diagnostic-specific intervention, which shapes the musculoskeletal system and motor organisation to optimise brain development. Neurodevelopmental physiotherapists support families and educate parents to optimise their baby's brain development during their neonatal stay as well as supporting parent infant relationships. Respiratory physiotherapy plays a small but important role in the neonatal population where physiotherapists assess the need for intervention and balance that against the physiological cost, energy expenditure and developmental needs of the infant. It is however important to optimise respiratory function to enable growth and development.

What is early intervention?
The goal of early intervention is to minimise nutritional deficit, cognitive, motor and socioemotional impairments in young children disadvantaged by biological or environmental risk factors.

Early intervention typically refers to a programme beginning within the first year of life for which the aim is to enhance infant development. The early years are critically important for cognitive and motor development. The timing of therapeutic approaches that support developmental acquisition during this period reflects the most dynamic period of neuroplasticity with the highest potential for ameliorating the negative sequelae associated with high-risk infants (Morgan et al 2016; Hadders-Algra et al 2017).

With that in mind the goal of early intervention is "to promote child health and well-being, enhance emerging competencies, minimise developmental delays, remediate existing or emerging disabilities, prevent functional deterioration and promote adaptive parenting and overall family function" (Shonkiff, cited in Spittle & Treyvaud 2016).

Extensive research also highlights the critical importance of mutually responsive interactions between carers and young children starting in infancy. Studies indicate that greater dyadic tuning and increased attunement between a parent and their infant, and more responsive, positive, warm and sensitive parenting is associated with better developmental outcomes at preschool and school age. Mutually responsive interactions between carers and young children starting in infancy seem critical for optimal development.

AHPs are critical to early intervention and family support, no other members of the neonatal team can provide level of specialist input. With expert knowledge specific to

early nutrition, early communication, motor development and sensory system processing as well as infant parent bonding. AHPs are also highly skilled at working as part of a multidisciplinary team ensuring the whole family unit is assessed and supported.

Family Integrated Care (FICare) is a model of neonatal care which promotes a culture of partnership between families and staff; enabling and empowering parents to become confident, knowledgeable and independent primary caregivers. The FICare model ensures that they can be a family as soon as possible; creating space for necessary medical care whilst facilitating the nurturing bond and love that only they can provide for their baby. This sits directly with the Best Start philosophy of keeping mothers and babies together. This does not come from ticking boxes and investing in practical resources – it evolves from the FICare innovators supporting, educating, and empowering their team, and leading by example. Neonatal AHPs are ideally placed to support and empower parents as they have skills to teach parents the how to read their babies cues, how best to feed them, teaching parents tube feeding while supporting skin to skin care, showing families how best to handle their potentially fragile infant from containment holding to moving them out of the incubator for skin to skin care or even a bath.