



British Association of
Perinatal Medicine



The British Association of Perinatal Medicine Service and Quality Standards for Provision of Neonatal Care in the UK

November 2022

The British Association of Perinatal Medicine

BAPM wishes to thank members of our Executive Committee and others for their contribution to a draft revision of our '*Service Standards for Hospitals Providing Neonatal Care 2010*' and '*Neonatal Service Quality Indicators 2017*' which was further revised following member and stakeholder consultation. We are grateful to all who took time to respond to the consultation.

Recommendations are correct at the time of publication; we recommend checking for updates via the associated hyperlinks.

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Foreword

It is 12 years since BAPM last revised its Service Standards document in its entirety, and five years since our late President Gopi Menon was instrumental in publication of the BAPM Neonatal Service Quality Indicators (NSQI). It is a testament to Gopi's foresight that what in 2017 was, at least in part, an aspirational document now describes standards relating to structures and processes supporting quality and patient safety in neonatal services which are familiar to us all. With this in mind, we have amalgamated these two documents to produce BAPM Service and Quality Standards for the Provision of Neonatal Care in the UK.

Advice and recommendations pertaining to many aspects of this document have been published and/or updated in the past twelve years. The document is not intended to replace any of the plethora of national standards and guidelines around neonatal care, but rather to complement them and provide a consensus view of Service and Quality Standards for the provision of neonatal care in the UK.

Neonatology is a vibrant, progressive specialty and services will continue to change, both in terms of organisation and workforce. Outcomes for babies and families in our care improve year on year and although in many neonatal units facilities for parents are less than optimal, the role of parents as partners in their baby's care is rightly gaining widespread acceptance in UK neonatal practice.

The Covid pandemic of the past two and a half years has presented unprecedented challenges for everyone working in neonatal care and caused many of us to reflect on what is truly important for babies, their families and our multi-professional staff; this experience has helped to shape revision of the Service Standards and Neonatal Service Quality Indicators documents. BAPM is immensely grateful to all those who took the time to contribute to this document.

Helen Mactier
BAPM President
September 2022

Executive Summary

Organisational Structure of Neonatal and Perinatal care

- **Neonatal care in the UK should continue to be provided under a network model**, with centralisation of care for the smallest and sickest babies.
 - Close and co-operative working between neonatal units (NNUs) within networks is essential to maintain skills for all members of the neonatal workforce, to optimise cot capacity, streamline flow and help manage the workforce, especially when acute staffing issues arise.
 - It is essential that **core activity** levels are maintained in both neonatal intensive care units (NICUs) and local neonatal units (LNUs):
 - NICUs (formerly Level 3 units) should admit at least 100 very low birth weight (VLBW) babies per year and undertake at least 2000 intensive care (IC) days per annum.
 - LNUs (formerly Level 2 units) should admit at least 25 VLBW infants and perform at least 500 combined IC and high dependency (HD) days per annum. It is further recommended that all LNUs work towards providing at least 1000 combined IC and HD days.
 - Special care units (SCUs) (formerly Level 1 units) should anticipate admitting no more than 25 VLBW infants and/or undertaking fewer than 500 combined IC and HD days per annum.
- **Perinatal collaboration:** Neonatal networks must operate in close collaboration with maternity services, ideally as one perinatal network, to ensure that babies predicted to require a higher level of neonatal care than can be provided in the local maternity unit are moved *in utero* whenever possible.
 - Women who are threatening preterm labour or at high risk of delivering at <27⁺⁰ weeks' gestation in a singleton pregnancy or <28⁺⁰ weeks' gestation for multiple pregnancies and/or predicted birth weight <800 grams, as well as other women/fetuses outside of agreed pathways of care for LNUs/SCUs should, where possible, be transferred antenatally to maternity units with a co-located NICU.
 - Maternity services must be configured to support robust and sustainable implementation of this model. Maternity services with co-located NICU services should be appropriately resourced normally to operate an **"open door" policy** for their linked LNUs and SCUs, supported by reciprocal agreements in LNU/SCUs to receive appropriate *in-* or *ex-utero* transfers.
 - Where *in-utero* transfer is not possible, *ex-utero* transfer of these high-risk infants should follow predefined pathways with agreed exception reporting where transfer is not felt to be necessary. Trusts, Health Boards and regional perinatal groups should review these cases to look for potential avoidable/modifiable factors to improve the pathway.
- **Access to a specialised neonatal transport service** is essential for each neonatal network. The transport service should facilitate not only the uplift transfer of babies needing urgent specialist support but also enable timely repatriation of babies to a suitable NNU closer to home as soon as possible.
 - The implementation of a joint maternity bed-finding and cot locator service to facilitate timely identification of an appropriate neonatal cot is strongly recommended.

- **Neonates requiring surgical care** should be managed in a combined medical/surgical NICU, ideally co-located with maternity services to minimise unnecessary mother-baby separation and predictable early neonatal transfers.
- Where new capital developments are being planned, maternity, neonatal intensive care and neonatal surgical services should be co-located.
- Where possible, neonatal surgical services should also be co-located with children's specialised services.

Multi-Disciplinary Perinatal Team

- **Excellence in neonatal care is achieved through effective multidisciplinary team (MDT) working** – NNUs should ensure that their perinatal MDT works together, meets regularly to discuss issues and has access to inter-professional education to drive improvements in both safety and quality of care.
- **All NNUs should practise family centred care** and be working towards family integrated care.
 - Each NNU should have arrangements to provide **Neonatal Transitional Care** for appropriate babies, thus minimising parent-baby separation.
 - All NNUs should have **Neonatal Outreach Services**, to facilitate earlier discharge and to provide ongoing support for more vulnerable babies in the community. Ideally Neonatal Outreach services will be available seven days per week.
 - Good communication between NNUs and community-based professionals is essential in ensuring smooth transition from hospital to community care.

Training and Education

- All NNUs, of whatever designation, must provide facilities for the care of unexpectedly sick or preterm newborn infants.
 - All maternity and neonatal medical and nursing staff should be familiar with the principles of preterm optimisation and newborn resuscitation and receive regular training updates.
 - Simulation training in conjunction with maternity and obstetric colleagues should be an integral part of all NNU activity.

Quality Improvement

- **Data** recorded as part of clinical care should contribute to local and national audit, service evaluation and benchmarking as well as commissioning and research, to inform improvements in neonatal care and service organisation/delivery.
 - All neonatal services should contribute to a single UK national neonatal database, with data inputted once and accessible for multiple purposes.
 - Services must work to ensure communicability between different IT systems with no duplication of data entry.
- **Neonatal Service Quality Indicators (NSQI)** define the features of a high-quality neonatal service relating to structures and processes supporting quality and patient safety. NNUs should use the NSQI to review their performance and define improvement priorities in a Quality Strategy which is shared freely within their network and accessible to families and commissioners.

- Parents and commissioners should expect to have access to information about the performance of perinatal services against the Service and Quality Standards described in this document.

Research

- **Every NNU should have a research strategy** which includes developing the role of all perinatal staff in promoting, supporting and delivering research.
- All NNUs should be able to inform families about ongoing studies and give them the opportunity to participate in research.
- Staffing support for neonatal research should be additional to the clinical requirement of the service.

1. Introduction

Neonatal care has developed hugely over the last 60 years. Many aspects of neonatal practice are now evidence-based but there remain some significant gaps in our knowledge. Where there is lack of scientific evidence, practice tends to be based on guidelines informed by clinical experience; we must remain mindful of the need to adopt an open and enquiring mind and embrace change as new evidence emerges.

Using the evidence available at the time, BAPM working groups in consultation with the membership and stakeholders prepared the first three editions of this document in 1996, 2001 and 2010. Each described the clinical and pastoral needs of sick and vulnerable babies and their families at the time and set a standard against which the quality of neonatal care could be appraised. The 2010 edition was aligned with the 2009 Department of Health Toolkit for High Quality Neonatal Services ⁽¹⁾.

A networked model of neonatal care was first promoted in the 2001 edition of the BAPM Service Standards, adopted in 2003 in England and formally changed to become Operational Delivery Networks (ODNs) in 2013. Northern Ireland now has a Neonatal Network, and both Scotland and Wales have established Perinatal Networks ^(2,3). Neonatal care should continue to be provided under this model, with centralisation of care for the smallest and sickest babies ⁽⁴⁾.

The recommendations that follow represent a professional view of the current best practice principles as they apply to neonatal care and are consistent with the Neonatal Critical Care Review (NCCR) ^(4,5). Recognising some differences in the organisation of services between the devolved nations, BAPM Service and Quality Standards are intended to be applicable throughout the UK ^(1,4,6-8).

The Neonatal Service Quality Indicators (NSQI) are based on professional consensus about what defines a high-quality neonatal service. They aim to prompt voluntary self-review by neonatal services and to stimulate a move towards making quality the main driver for future development. Neonatal units (NNUs) should use the NSQI to review their performance and define improvement priorities in a Quality Strategy which is shared freely within their network and accessible to families and commissioners.

2. Organisational Structure of Neonatal and Perinatal Care

Three types of NNU are described ^(1,6):

- **Neonatal Intensive Care Unit (NICU) (formerly known as Level 3 Unit):** These NNUs provide the whole range of medical neonatal care for their local population as well as additional care (including sometimes surgical and/or cardiac services) for babies and their families referred from the network in which they are based. Babies may also be referred from other networks to deal with peaks of demand or for very highly specialised services. NICUs should have close working arrangements with all relevant paediatric sub-specialties. All women and their babies expected to deliver <27 weeks of gestation and/or of birthweight <800 grams as well as multiple pregnancies <28 weeks of gestation should receive perinatal and early neonatal care in a maternity service with a co-located NICU facility ⁽⁴⁻¹⁰⁾.
- **Local Neonatal Unit (LNU) (formerly known as Level 2 Unit):** These provide SC and high dependency (HD) care together with a restricted volume of intensive care (IC). Babies predicted to require complex or longer-term IC would be transferred to a NICU, ideally *in utero* ^(4,10).
- **Special Care Unit (SCU) (formerly known as Level 1 Unit):** These provide SC for their own local population. They may also provide, by agreement with their network/Health Board, some HD services. All SCUs must be able to provide stabilisation and/or resuscitation for newborn babies of all gestations.

Additionally, each NNU should have arrangements to provide **Neonatal Transitional Care (NTC)** as appropriate, thus minimising parent-baby separation ⁽¹¹⁾. It is important to remember that NTC is a service not a location; some hospitals have provision to offer NTC in individual ensuite rooms on the NNU, whilst others facilitate NTC on the maternity ward. Additional support for the mother in caring for her baby should be provided by a midwife and/or healthcare professional trained in delivering elements of neonatal SC but not necessarily with a specialist neonatal qualification. Maternity care for newly delivered women must be provided by a midwife. Joint working between maternity and neonatal services is essential to provide good quality, safe NTC in line with the [BAPM framework](#).

All NNUs should develop **Neonatal Outreach Services** to facilitate earlier discharge of babies and provide ongoing support for more vulnerable babies in the community. Support may include (but is not limited to) nasogastric tube feeding for well preterm infants, home oxygen therapy and home phototherapy. Good communication between hospital and community-based professionals will help to ensure smooth transition.

2.1 Neonatal Networks

2.1.1 Network Activity and Capacity

The size of individual networks will vary depending on population needs and local geography, but it is essential that core activity levels are maintained in both NICUs and LNUs. Survival as well as longer term outcomes are improved when the most vulnerable babies are cared for in NNUs with greater activity ^(12,13).

Each network must use accurate data to demonstrate and predict activity and capacity for each provider within the network as well as for the network as a whole. When local geography and/or cot capacity influence decisions about which babies should be transferred and which can be cared for locally, any compromises in the pattern of service should be monitored carefully using established performance measures and exception reporting.

When NNUs close, either because of lack of available cots or lack of nursing or medical staff or when babies cannot be accepted because of lack of maternity capacity, there must be clearly defined pathways for declaring unit closure and subsequent review of these incidents at network level.

2.1.2 Network Pathways

Neonatal networks must operate in close collaboration with maternity services to ensure that babies predicted to require a higher level of neonatal care than can be provided in the local delivery unit are moved *in-utero* whenever possible. Ensuring that implementation of the NCCR and other national review recommendations ^(4,5,9) remains coordinated with maternity service change should be an important part of national, regional and local planning and neonatal network boundaries should mirror those of local maternity systems as much as possible.

Maternity services must be configured such that *in-utero* transfer of babies predicted to require neonatal IC is not hampered by lack of availability of maternity beds. Maternity services with co-located NICU services ('tertiary services') should normally operate an 'open door' policy for their linked LNU/SCUs, supported by reciprocal agreements in LNU/SCUs to receive appropriate *in-* or *ex-utero* transfers. Similarly, a NICU should normally accept admissions from the co-located maternity unit.

Networks should have oversight of care pathways for high risk and sick babies, particularly those that involve *in-utero* and *ex-utero* transfers and specialist care. There should be network guidelines, on optimal location of delivery, neonatal care and referral and transfer for preterm babies born at different gestations, babies with suspected perinatal hypoxia-ischaemia, babies with congenital abnormalities and other babies requiring specialist input. Antenatal multidisciplinary team (MDT) meetings as appropriate should be part of the decision-making process.

2.1.3 Neonatal Transport Services

Access to a specialised transport service with adequate training and equipment is essential for each network. The transport service should facilitate not only 24-hour uplift transfer of babies needing urgent specialist support but also enable timely repatriation of babies to a suitable NNU closer to home as soon as possible ⁽¹⁴⁾. The implementation of a joint maternity bed-finding and cot locator service to facilitate timely identification of an appropriate *in-* or *ex-utero* transfer location is strongly recommended.

2.1.4 Staffing

Networks should monitor the extent to which they are able to comply with recommended staffing levels and, especially during periods when these cannot be met, review performance closely against associated quality performance standards.

Close and co-operative working between NNUs within the network is essential to maintain skills for all members of the neonatal workforce, to optimise cot capacity, streamline flow and help manage the workforce, especially when acute staffing issues arise. Networks should consider periodic secondment of neonatal unit staff to other NNUs within the network to share experience, promote understanding and maintain skills. Simulation training, in conjunction with midwifery and obstetric colleagues as appropriate should be an integral part of all NNU activity ⁽¹⁵⁻¹⁷⁾.

2.1.5 Assuring Quality

The network lead team should work towards NSQI outlined in section 4 of this document:

- Having **up-to-date, easily accessible guidelines** is an integral part of an effective clinical service, particularly in the context of shift working, and relatively inexperienced and/or non-permanent staff delivering care.
- NNUs should practise, or be working towards, **family integrated care (FiCare)**, a model and philosophy of care within which families are enabled to be primary caregivers to their babies in partnership with clinical teams as outlined in the Bliss Baby Charter^(18,19). All NNUs should aim to achieve Unicef Baby Friendly accreditation⁽²⁰⁾.
- **Data** recorded as part of clinical care should contribute to local and national audit, service evaluation and benchmarking as well as commissioning, to inform improvements in neonatal care and service organisation/delivery. All neonatal services should contribute to a single UK national neonatal database, with data inputted once and accessible for multiple purposes.
- Each network should have a **research strategy** which includes developing the role of all perinatal staff in understanding research governance, and promoting, supporting and delivering research in accordance with their seniority, training and professional responsibilities. All NNUs should be able to be able to inform families about ongoing studies and give them the opportunity to participate in research. Staffing support for research should be additional to the clinical requirement of the service.

2.2 Neonatal Intensive Care Units (NICUs)

BAPM recommendations for NICUs are contained within a [Framework for Practice](#), updated in 2021⁽¹⁶⁾. Consistent with the recommendations of the [NCCR](#)⁽⁴⁾, NICUs should admit at least 100 very low birth weight (VLBW) babies per year and undertake at least 2000 IC days per year.

NICUs should be co-located with fetal and maternal medicine services so that women whose babies are likely to require IC are managed in centres which can provide appropriate facilities for both mother and baby. These centres must provide facilities for families to be resident, for prolonged periods if necessary. Multidisciplinary consultation for families with a pregnancy complicated by fetal anomalies should be available from experienced neonatologists, obstetricians, paediatric surgeons and/or other specialists where appropriate.

2.3 Local Neonatal Units (LNUs) and Special Care Units (SCUs)

BAPM published [recommendations for LNUs and SCUs in 2018](#) based on contemporaneous data⁽²¹⁾.

LNUs should admit at least 25 VLBW infants and perform at least 500 combined IC and HD days per annum. LNUs should be working towards providing at least 1000 combined IC and HD days^(4,21).

SCUs should anticipate admitting no more than 25 VLBW infants and/or undertaking fewer than 500 combined IC and HD days per annum⁽²¹⁾. Where activity is very low, the network should reflect upon both the safety and sustainability of the SCU.

2.4 Neonatal Surgical Services

Maternity and neonatal surgical services should ideally be co-located to avoid unnecessary mother-baby separation and predictable early neonatal transfers. Where new capital developments are being planned, maternity, neonatal intensive care and neonatal surgical services should be co-located. Where possible, neonatal surgical services should also be co-located with children's specialised services.

In some regions a large volume of neonatal surgical care is provided in stand-alone children's hospitals. This has advantages in terms of availability of specialised children's services and expertise, but the disadvantage of being separate from maternity and fetal medical care.

Neonatal surgical care provided in stand-alone children's hospitals should include provision for safe transfer from medical NICUs and/or maternity units as well as appropriate postnatal care of the mother with support for initiation and continuation of lactation/breast feeding by trained healthcare professionals and/or lactation consultants.

Neonatologists and paediatric surgeons should care jointly for newborn infants with surgical problems, whether these babies are managed in neonatal surgical units or NICUs. The preferred configuration is a combined medical/surgical NICU.

All neonatal surgical services should participate in collection of data for national audit and provide the same level of care and neonatal specialist expertise as would be expected in a medical NICU.

3. Care of the Sick or Preterm Newborn Infant

All maternity units, of whatever designation, must provide facilities for the care of unexpectedly sick or preterm newborn babies. Ensuring that all staff are familiar with the principles of newborn resuscitation ⁽²²⁾ and receive regular training updates is key. The importance of support for the mother and her family must be recognised at all times.

3.1 Prior to delivery

When it is anticipated prior to delivery that a baby may require IC or HD care and this is not available locally, every attempt should be made to facilitate safe *in-utero* transfer to an appropriate facility. Measures to optimise preterm birth should be instigated prior to transfer ⁽²³⁾, the reasons for transfer explained to parents and appropriate information offered including directions to the receiving unit. Each network must have clearly established 24/7 arrangements to facilitate such transfers including opportunity for conference calls with relevant senior practitioners to formulate plans on an individual basis. BAPM has developed a [framework for *in-utero* transfers](#) to assist networks in developing such transfer arrangements ^(23,24).

- Women who are at risk of preterm labour <27⁺⁰ weeks' gestation in a singleton pregnancy or <28 weeks' gestation for multiple pregnancies and/or predicted birth weight <800 grams, as well as other women/fetuses outside of agreed pathways of care for LNU/SCUs should be transferred antenatally to maternity units with a co-located NICU and/or neonatal surgical centre, as appropriate.
- Every woman should be given the opportunity to discuss all places of birth including the benefits and contraindications/risks. Supporting informed choice is essential; when birth is booked in a midwife-led unit (MLU) or at home, information in an appropriate format must be provided to the woman and her family which provides a balanced view of the options available ⁽²⁵⁾.
- Where *in-utero* transfer is not possible, Trusts, Health Boards and regional perinatal groups should review these cases to look for potential avoidable/modifiable factors to improve the pathway.
- Where *in-utero* transfer has not occurred, *ex-utero* transfer of these high-risk infants should follow predefined pathways with exception reporting where transfer is not felt to be necessary.
- For the most extreme preterm births, fully informed decision making with parents should involve the most senior clinician(s) available prior to transfer as per BAPM guidance ⁽¹⁰⁾.

3.2 In the Delivery Room

Every maternity and newborn service must have clearly established arrangements for the prompt, safe and effective stabilisation and resuscitation of newborn babies and for the care of babies who require continuing support, either in the maternity unit or the NNU. Appropriate stabilisation and ongoing care should be provided until more expert neonatal help arrives or until the baby can be safely transferred to a more appropriate facility. The required duration of stabilisation will vary depending on the anticipated response time; sick or preterm babies born in maternity units remote from neonatal services should be transferred as an emergency ⁽²⁵⁾.

In critical situations where active decision-making is required at the time of delivery, such as whether to continue resuscitation for an extremely preterm baby or a baby with a major congenital anomaly, an experienced paediatrician/neonatologist (normally a consultant) should be immediately

available for discussion and in attendance as soon as possible. Preterm perinatal stabilisation and management should follow the principles outlined in the [BAPM Extreme Preterm Framework](#) and [Perinatal Optimisation QI Toolkits](#) ^(10,21).

3.3 Need for On-going Additional Neonatal Care

All babies needing on-going additional neonatal care should have access to the appropriate level of care as close to home as possible. Key elements must include:

- Established networked care pathways.
- Adequate assessment of need and provision of appropriate capacity.
- Appropriate inter-professional training of relevant healthcare professionals.
- A specialist neonatal transport service.

4. Neonatal Service Quality Indicators

The Neonatal Service Quality Indicators presented here relate to the six original domains of Quality defined by the Institute for Healthcare Improvement, namely effectiveness, safety, patient (family) experience, efficiency, timeliness and equity ⁽²⁶⁾.

4.1 NSQI 1 Evidence based care

Rationale: Easy access to current guidelines is an integral part of an effective clinical service, particularly in the context of shift working and staff rotations. Structures and processes of care and some outcomes can be improved with the use of evidence-based guidelines ⁽²⁷⁻²⁸⁾.

- All NNUs should have a set of readily accessible evidence-based guidelines relevant to all commonly encountered clinical conditions and interventions. These should be in line with BAPM Frameworks for Practice and Optimisation Toolkits.
- Units should also have a rolling programme of guideline development and review informed by regular audits assessing compliance with guidelines, aligned with the unit's quality improvement strategy.
- Networks should have oversight of the appropriateness of the care pathways for high risk and sick babies, particularly those that involve *in-* and *ex-utero* transfers and specialist care.
- There should be network guidelines on optimal location of delivery, neonatal care and referral and transfer for preterm babies born at different gestations, babies with suspected perinatal hypoxia-ischaemia, babies with congenital abnormalities and other babies requiring specialist input.

4.2 NSQI 2 Team working and communication

Rationale: There is considerable evidence that team working within organisations leads to an improvement in safety as well as productivity ⁽²⁹⁻³²⁾. Neonatal staff work in a stressful environment and effective team working is key to delivering high quality care. Effective communication of threats to patient safety is an increasing challenge in the multispecialty shift-based workplace, and several tools and resources can be used to address this ⁽¹⁵⁾.

- Neonatal services should have mechanisms in place to improve team working and communication across specialties to support quality of care and patient safety ^(15,32,33).
- Developing a perinatal culture is essential: focus should include joint decision making including all perinatal specialties, quality of handovers and safety briefing or 'huddles'. Team debriefs following significant events are essential to provide an opportunity to defuse stress, learn from team experiences and develop strategies for future events ⁽³¹⁾.
- Neonatal services should regularly engage with staff about their experience in the workplace, and particularly the way in which it relates to patient safety.
- There should be ready access to specialist input for preterm babies or babies with complex conditions, and planning and delivery of care should be shared by all relevant specialists.

4.3 NSQI 3 Parental partnership in care

Rationale: Single centre cohort studies and multi-centre randomised controlled trials of the FICare model consistently demonstrate improved short-term outcomes for babies and their families ⁽³⁴⁾. Parents, with their unique perspective on the care provided by neonatal units, play an essential role in informing the process of quality improvement and service development as a whole.

- NNUs should work towards a model and philosophy of care within which families are enabled to be primary caregivers to their babies in partnership with clinical teams. This will involve applying the principles set out in the [BAPM Family Integrated Care Framework for Practice](#) ⁽¹⁸⁾, Bliss Baby Charter ⁽¹⁹⁾ and Unicef UK's Baby Friendly accreditation for Neonatal units ⁽²⁰⁾. FICare must be equitable and meet the needs of all families.
- NNUs should ensure that from birth (or antenatally in high-risk pregnancies anticipated to result in neonatal admission) families are supported and encouraged to be comfortable providing care for their babies. Starting with delivery room cuddles whenever possible, families should be facilitated to be actively involved in ward rounds, daily care planning and decision-making. Skin to skin should be encouraged.
- All families should have opportunities to give feedback about their baby's care while on the unit and after discharge.
- Feedback from parents should be shared with families and staff and used to guide quality improvement. The network parent advisory group should be involved in steering this process.
- NNUs should provide family facilities to maximise the time families can spend with their baby and help to reduce stress. Consideration should be given to reducing the financial burden on families, with appropriate signposting ⁽¹⁹⁾.
- Provision of family support after discharge is essential; NNUs must consider how best to facilitate this.
- An interpretation service should be available 24 hours a day, 7 days a week, and used whenever communication may be impaired by a language barrier. It is important always to consider other potential communication barriers, including (but not exclusively) low- literacy and hearing or vision impairment, and seek to address these.

4.4 NSQI 4 Audit and benchmarking

Rationale: Benchmarking is an important way that neonatal services can assess themselves against national and international standards. There are rigorous processes for UK-wide neonatal audit and benchmarking, as well as international systems for this. Healthcare audit and benchmarking data, when linked to collaborative quality improvement (QI) initiatives, are powerful drivers for improvement.

- All perinatal services and NNUs should have systems in place to report data which are accurate and complete. Staff should have time in their job plans to support data collection and reporting.
- Data recorded as part of clinical care should contribute to local and national audit, service evaluation and research to inform improvements in neonatal care and service organisation/delivery. Networks require ringfenced specialist data analyst time for this.
- All perinatal services, NNUs and networks should continuously review their performance for relevant clinical and outcome measures.
- All NNUs should be part of the National Neonatal Audit Programme (NNAP), Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK (MBRRACE-

- UK) and any other mandatory national benchmarking processes.
- NNUs and networks should have documented evidence of action plans to address negative outlier status.
- NNUs and networks should collaborate to share outstanding practices if they have achieved positive outlier status.

4.5 NSQI 5 Patient Safety

- Incident reporting systems must be embedded in comprehensive safety programmes including the implementation of standards, checklists, compulsory regular training, and the development of a safety culture based on just culture principles ^(29,35-39).
- Perinatal services should have a formalised approach for systematic review of adverse events with selected escalation to serious adverse event review, including external input to reviews when required, and arrangements for dissemination of learning.
- Perinatal services must ensure that perinatal professionals have recognised time in job plans with formally designated programmed activities (PAs) to allow meaningful and high-quality participation in risk and governance processes.
- Moderate and serious incidents should be managed in line with statutory Duty of Candour.
- Parents should be fully involved in and encouraged to provide their perspective(s) to reviews and must be informed of review outcomes and learning that have been generated.
- Perinatal services should have a formalised approach for joint perinatal mortality reviews of every perinatal death. These should utilise the Perinatal Mortality Review Tool (PMRT) ⁽⁴⁰⁾. Perinatal professionals must have sufficient recognised time in job plans to allow high quality PMRT reviews, including the opportunity to provide and receive external input to PMRT.
- Staff involved in the PMRT process should be aware of the potential stress and distress for parents and families and should have the training and skills to provide care and communication in a trauma informed and compassionate way.

4.6 NSQI 6 Quality Improvement

Rationale: QI must be embedded at the core of health care to support professionals to deliver the very best care and patient outcomes possible. A multidisciplinary quality group engaged with QI, properly trained and provided with appropriate ringfenced time is essential for this.

- Perinatal Services should use these NSQI as a basis for QI, publishing their plans for this in an annual Quality Strategy.
- Perinatal Services should have medical and nursing Quality Leads, with job planned time for leadership and implementation of QI.
- Perinatal services should have a multidisciplinary Quality Group which takes the role of developing, publicising and overseeing the unit's Quality Strategy.
- BAPM, NHS England MATNeoSIP and the NHS Scotland Maternity and Children Quality Improvement Collaborative provide training and support for QI, and these should be the routes of choice for accessing training in these ⁽⁴¹⁻⁴³⁾.

- Parents' voices and experiences should inform both safety and quality improvement and there should be opportunities, e.g., Maternity and Neonatal voices partnerships, for these to be heard.
- Similarly, staff voices and experiences should inform both safety and quality improvement and there should be opportunities for their ideas to be considered and implemented with feedback.
- Positive working, either clinically or otherwise including cultural and behavioural patterns that are examples of good or excellent practice should be acknowledged, shared and rewarded through an appropriate system, e.g. Greatix, Learning from Excellence ^(44,45), to highlight safe, quality care.

4.7 NSQI 7 Education and training

Rationale: Multi-professional shared learning within an organisation is important in maintaining professional performance and skills. It promotes team culture and optimised human factors and can help to ensure a common understanding and set of values and goals ^(15,32).

- Perinatal services should have a culture that supports education and training, with regular training opportunities for all staff both at the bedside and in the classroom. This should include multidisciplinary simulation training.
- Appropriate induction including mandatory training in Quality and Patient Safety should be undertaken by all staff.
- Networks should provide regular education about Quality and Patient Safety and foster collaboration to share good practice.
- Just as importantly as clinical management, education and learning for all staff must address factors essential for good perinatal culture and teamworking including communication, team building and human factors ^(15,32).

4.8 NSQI 8 Research

Rationale: Involvement in research by healthcare providers improves the delivery and scrutiny of care and may improve the outcomes of healthcare, even when the patient receives a placebo. Parents also perceive units that have a significant research programme as offering high quality clinical care to their baby ^(46,47).

- All neonatal services and networks should engage in national / local research activities appropriate to their size and activity.
- Each NNU should have a research strategy which includes developing the role of all perinatal staff in understanding research governance and promoting, supporting and delivering research in accordance with their seniority, training and professional responsibilities. Appropriate dedicated staff resource is crucial.

5. Neonatal Nurse Staffing

The Toolkit for High Quality Neonatal Services, the NCCR, Getting it Right First Time (GIRFT) reports and other documents produced within the devolved nations describe the anticipated pattern of medical, nursing and allied health professional staff cover in different types of NNU^(1,4,8). These recommendations have been further developed within the BAPM Frameworks for Practice for NICUs, LNUs and SCUs^(16,20).

The chance of survival of the smallest and most preterm babies relates not only to nurse staffing ratios but also to the specialist levels of education and experience of nurses delivering care⁽⁴⁸⁻⁵⁰⁾.

The nursing role has, through enhanced skills and both advanced and consultant practice status, become increasingly integrated with the work of doctors. Networks should ensure that demand for training and development of specialist, enhanced and advanced neonatal nurse practitioners is met and workforce planning secure.

Specialised neonatal nursing requires specific knowledge and skills. All new nurses and midwives should undertake an induction programme which relates specifically to the care of the neonate and their family within a neonatal service. All nurses attending deliveries and/or involved in direct clinical care of the neonate should have undertaken a Newborn Life Support course appropriate to their role as recommended by the Resuscitation Council UK⁽²²⁾ and receive regular training updates.

5.1 Neonatal Nursing Staff – Qualified in Specialty (QIS)

Achievement of neonatal nurse qualification in speciality (QIS), and consequent competency in practice, should include the following:

- Registered nurse (adult or children's) or midwife.
- Period of preceptorship including defined foundation learning within the speciality.
- Completion of a programme of post registration education.

BAPM supports the recommendations of a review of Neonatal Qualified in Specialty (QIS) Education and Training published by Health Education England (HEE) in July 2021⁽⁵¹⁾ which complements other national guidance⁽⁵²⁾:

- One agreed standard across all regions in terms of: course content, educators (in terms of skill/neonatal background), skills and competencies to be developed. This standard should undergo both academic and clinical assessment.
- More practical experience (and an agreed minimum level of practical experience within QIS courses) structured to consolidate learning and ensure sufficient experience across different levels of unit.
- Introduction of a formal reporting mechanism (using a nationally agreed training evaluation model and metrics) between trusts/networks and education providers to ensure quality and consistency when reviewing and developing future QIS education and training.
- Introduction of a skills and competency 'toolkit' as a standardised way for neonatal nurses to record their education and training (including QIS and other continuous professional development (CPD) training activities).

5.2 Nurses QIS Working in Roles with Enhanced Practice Skills (ENNP)

Enhanced practice roles exist where QIS nurses have undergone additional training and education, based on theory and specific skills acquisition, *e.g.*, intravenous cannulation, to allow them safely to take added responsibilities for practice and clinical decision making.

The roles of ENNPs within the total neonatal workforce may overlap with elements of the traditional medical role as part of a comprehensive multi-professional staffing structure; nurses working in roles using enhanced skills should have their time acting in these roles defined over and above the nursing workforce of neonatal nurses QIS.

Networks must agree a defined level of competency for ENNPs through theoretical and practical assessment of new skills which fit their individual workforce needs.

5.3 Advanced Neonatal Nurse Practitioners (ANNPs)

ANNPs are now highly valued and indispensable members of most neonatal teams. The [BAPM ANNP Capability Framework](#) details development in seniority across four pillars of practice ⁽⁵³⁾.

5.4 Neonatal Nurse Consultant Role

The nurse consultant role may progress from either the specialist, enhanced or advanced roles. It is likely to include involvement in education, training and support of members of the neonatal team across a network as well as designing and delivering audit and clinical research projects with a specialist expertise in one area of practice ⁽⁵⁴⁾.

5.5 Other Clinical Staff Undertaking Nursing Roles

Other clinical staff, including (but not exclusively) nursery nurses and maternity care assistants support neonatal nurses within SC areas. This group of clinical staff must have their roles clearly defined within hospitals and be included appropriately in established numbers. It is recommended that appropriate training for these roles occurs within 12 months of appointment.

5.6 Additional Nursing Roles

Day to day management of nursing care provision on NNUs should be undertaken by a senior nurse (generally Band 7 level) who has no clinical commitment during the shift (often referred to as the **shift coordinator**). This role may also include supporting other nurses during periods when additional workload impacts on their bedside caring time, *e.g.*, during the acute period of admissions or the internal and external transfer of babies.

Identified nurses acting as champions for the quality of practice within each unit should have protected time and responsibility in the following areas:

- Infant feeding
- Family care.
- Developmental care.
- QI in perinatal optimisation.
- Safeguarding children.
- Bereavement support and palliative care.
- Discharge planning and outreach nursing.

- Risk, governance and patient safety.
- Infection control.
- Education and practice development.

Neonatal nurses may undertake aspects of care not covered in their initial training, but which do not require education and training to enhanced practice level, *e.g.*, pre and post-surgical care, transport, community care. Nurses enhancing their practice in this way should undertake specific education programmes.

5.7 Neonatal Nurse Staffing Levels for Direct Patient Care

The following recommendations are based on professional consensus. They outline the numbers of nursing staff that should be available on each shift. Variations in the time available to each baby may occur, *e.g.*, during nursing staff breaks or over the initial period of admission of a baby.

Because of the acute nature of neonatal practice and the difficulty of predicting patient activity, there will be times when recommended [nurse staffing levels are not able to be met](#), and conversely time when the nursing staff provision is more generous. It is essential that the *average* nurse:patient ratio meets recommended standards. During periods of high activity, it will be necessary to consider multiple factors in deciding if the available nursing staff complement is safe, or if the NNU needs to close ⁽⁵⁵⁾. Periods of relatively less intense NNU activity should be seen as an opportunity for neonatal nursing staff to undertake self-directed learning or participate in unit-based teaching, *e.g.*, simulation sessions.

Individual networks must undergo defined workforce planning to determine the established numbers of neonatal nurses at all levels required to support service demands. This should include a 25% uplift for nursing time over and above direct clinical care for education and training, professional development, annual leave, sickness, maternity leave and non-clinical commitments including (but not exclusively) governance, QI, research and safeguarding. The Neonatal Nursing Workforce Tool (2020) provides a standardised tool to support units and networks to understand their nurse staffing requirements based on their activity ⁽⁵⁶⁾.

i) Intensive Care

Due to the complex needs of both the baby and their family the ratio of neonatal nurses QIS to baby should be 1 nurse: 1 baby. This nurse should have no other managerial responsibilities during the time of clinical care but may be involved in the support of a less experienced nurse working alongside them in caring for the same baby.

ii) High Dependency Care

The ratio of neonatal nurses QIS responsible for the care of babies requiring HD care should be 1 nurse: 2 babies. More stable and less dependent babies may be cared for by registered nurses not QIS, but who are under the direct supervision and responsibility of a neonatal nurse QIS.

iii) Special Care

The ratio of nurses looking after SC babies should be at least 1 nurse: 4 babies. Registered nurses and non-registered clinical staff may care for these babies under the direct supervision and responsibility of a neonatal nurse QIS. Staffing in SC must be sufficient to ensure that discharge is properly planned and organised, including adequate support for parents.

iv) Neonatal Transitional Care

The ratio of staff looking after NTC babies should be at least 1 staff: 4 babies. Non-registered clinical staff may care for these babies under the direct supervision and responsibility of a registered nurse or midwife ⁽¹¹⁾. Staffing in NTC must be sufficient to ensure support for parents with all care for their baby including enteral tube feeding, low flow oxygen administration and any other additional needs.

v) Neonatal Outreach

Additional nursing staff to support parents at home must be resourced to achieve the national benchmark of reducing separation of mother and baby. Robust provision of outreach services has potential significantly to reduce in-patient stays. Formalised standards for neonatal outreach services have not been developed to date but we recommend that this should be available 7 days per week.

In addition to the calculated number of neonatal nurses required, there should be a shift coordinator for every shift, as described in **5.6 Additional nursing roles**.

6. Traditional Medical Roles

6.1 Definitions

Tier 1 trainee roles (indicative not exhaustive):

- Attendance at deliveries and provision of basic newborn life support.
- Admission and hour to hour support of infants.
- Immediate investigation/acute ventilator management according to pre-agreed parameters
- Basic practical procedures.
- Recording progress, observations and examinations, including electronic record data entry and preparation of discharge summaries.
- Presentation of progress on ward rounds.
- Routine examination of the newborn (NIPE). This should normally be undertaken by appropriately trained midwifery staff, but all paediatric trainees should do a number of newborn checks until they are competent to recognise abnormalities and identify normal variants.
- Communication with other professional groups and parents appropriate to level of experience.
- To obtain training, experience and maintenance of skills.

Staff groups appropriate for this role:

- Medical staff at FY2 & ST1-3, GPST 1-2 level (training and non-training).
- Specialty doctor (up to threshold 1).
- ENNPs.
- ANNPs.
- Physician Associates.

All the above will be supported by and are accountable to the Tier 2 and Tier 3 staff.

Tier 2 (competent on-site clinician) roles:

- Attendance at complex deliveries and provision of advanced newborn resuscitation.
- Oversight and support of all Tier 1 staff on shift-by-shift basis.
- Accountability for immediate care.
- Management of more complex infants.
- Learning and supervised undertaking of complex or infrequent practical procedures.
- Communication with other professional groups and parents to a more detailed level appropriate to their knowledge and training.
- Obtaining and delivering training, gaining experience and maintenance of skills, discharge planning.

Staff groups appropriate for this role:

- Medical staff at ST3-8 level (training and non-training).
- Specialty doctor (post threshold 1).
- ANNPs.
- Trained neonatal medical staff (Certificate of Completion of Training (CCT) holders).

In general, all the above staff will be accountable to the Tier 3 consultant. Where the role is undertaken by trained medical staff appointed to a resident consultant post these individuals should

be considered resident consultants, not Tier 2; they are independent practitioners within the care team and will be accountable to the individual Trust or Health Board arrangements for consultant staff.

Before an ANNP acts on the middle grade rota, they should be able to demonstrate that they have had sufficient training and experience to meet the competencies described above.

Tier 3 (expert) roles (indicative not exhaustive):

- To carry out twice (or more frequent) daily neonatal ward rounds.
- To be accountable for overseeing patient care under their management.
- To teach, train and support the Tier 2 and Tier 1 staff.
- To undertake compassionate communication with families both antenatally and postnatally for cases of all levels of complexity.
- To work within a team to provide leadership and oversee all management aspects of the neonatal department's functions.
- To liaise with other consultants in other disciplines and other Trusts or Health Boards as required.
- To maintain their own skills.

For all levels of NNU it is not appropriate for a consultant to provide out of hours cover to two geographically separate sites simultaneously. Similarly, where a consultant or CCT holder is resident and there are less Tier 2 staff as a result, another consultant should provide Tier 3 cover (*i.e.* a single consultant cannot simultaneously cover at Tier 2 and Tier 3 if such cover is normally provided by two separate clinicians of appropriate training and experience).

The need for a second Tier 3 doctor to be routinely available out of hours will be dictated by the predicted likelihood of requiring two senior clinicians simultaneously and would normally only apply to the busiest NICUs.

6.2 Physician Associates

The role of the physician associate is gradually being established in many specialties, and it is anticipated that physician associates will become a regular part of the NNU team ⁽⁵⁷⁾.

6.3 Requirements for a Special Care Unit (SCU)

Departments will usually be linked with a general paediatric department. Tier 1 staff must be trained in resuscitation of the newborn and be appropriately supported. The overall team should constitute a group of staff who can safely meet the needs of newborn babies from low-risk pregnancies and unexpected neonatal emergencies, as defined by the local network.

Recommended numbers of staff for a SCU:

- Tier 1: Rotas should be European working time directive (EWTD) compliant ⁽⁵⁸⁾ and have a minimum of 8 whole-time equivalent (WTE) staff who may additionally cover paediatrics if this does not reduce safety and quality of care delivery.
- There should be a resident Tier 1 practitioner dedicated to the neonatal service during weekday day-time hours and an immediately available resident Tier 1 practitioner 24/7.
- Tier 2: Shared rota with paediatrics comprising a minimum of 8 WTE staff.
- Tier 3: A minimum of 7 WTE consultants on the on-call rota with a minimum of 1 consultant with a designated lead interest in neonatology.

Tiers 1 and/or 2 may be able to be covered by appropriately skilled nursing staff.

Tier 3 consultants should have a Certificate of CCT in paediatrics or Certificate of Eligibility for Specialist Registration (CESR) in paediatrics or an equivalent overseas neonatal or paediatric qualification. They must demonstrate knowledge, skills and CPD appropriate for the level of neonatal care through annual appraisal. Minimum of 1 consultant with a designated lead interest in neonatology, who should have completed a special interest (SPIN) module in Neonatology*.

* if this was available during training.

6.4 Requirements for a Local Neonatal Unit (LNU)

It is anticipated that teams at each tier will be made up from the following groups:

- Tier 1: Rotas should be EWTD compliant and have a minimum of 8 WTE staff who do not cover general paediatrics in addition.
- Tier 2: Shared rota with paediatrics as determined by a Trust or Health Board's annual NNU activity, comprising a minimum of 8 WTE staff.
- Tier 3: A minimum of 7 WTE neonatal paediatricians/neonatal consultants on the on-call rota. Minimum of 1 consultant with a designated lead interest in neonatology.

Tier 3 consultants should have a CCT in paediatrics or CESR in paediatrics or an equivalent overseas neonatal or paediatric qualification and substantial exposure to tertiary neonatal practice at least the equivalent of neonatal SPIN. At least one LNU Tier 3 consultant should have either a CCT in neonatal medicine or neonatal SPIN module*. All consultants covering the service must demonstrate expertise in neonatal care (based on training, experience, CPD and on-going appraisal).

Where LNUs have a very busy paediatric/neonatal service and/or have neonatal and paediatric services that are a significant distance apart, the above staffing levels should be enhanced. The threshold should be judged and monitored on clinical governance grounds such as the ability consistently to attend paediatric or neonatal emergencies immediately when summoned. Units with more than 7000 deliveries should have more than one Tier 1 medical support.

6.5 Requirements for a Neonatal Intensive Care Unit (NICU)

- Tier 1: Rotas should be EWTD compliant and have a minimum of 8 WTE staff*.
- Tier 2: EWTD compliant rota with a minimum of 8 WTE staff*.
- Tier 3: Consultant neonatologists. Minimum of 7 WTE consultants on the on-call rota with 24/7 availability of a consultant neonatologist*.

*All staffing roles should be limited to neonatal care at all levels, *i.e.* no cross cover with general paediatrics.

- Units with more than 7000 deliveries should have more than one Tier 1 medical support.
- NICUs undertaking more than 2500 IC days per annum should augment their Tier 2 medical cover (more than one staff member per shift) and provide two consultant led teams during normal working hours.

- Neonatal consultant staff should be available on site in all NICUs for at least 12 hours a day, generally expected to include two ward rounds/handovers.
- For units undertaking more than 4000 IC days per annum, consideration should be given to 24-hour consultant presence.
- All NICU consultants appointed from 2010 should have CCT in Neonatal Medicine.

Trusts that have more than one NNU providing IC or HD care should have separate cover at all levels of medical staffing appropriate for each level of unit.

7. Allied Health Professionals

Allied health professionals (AHPs) have a range of common core skills alongside their unique clinical skills and play an essential role in the neonatal MDT. Timely intervention with advanced knowledge and skills in a complex and vulnerable population impacts positively on length of stay and improves neurodevelopmental and other health outcomes as well as family experiences ⁽⁵⁹⁻⁶¹⁾.

Each AHP speciality has developed staffing recommendations and competencies which provide a model for embedded service provision as part of the wider neonatal team. AHPs and psychological professionals working at network level are supported by NHS Long Term Plan funding (from April 2021); these network roles will review local service provision and help develop business cases for embedded AHP and psychology service provision. Commissioners should ensure that neonatal tariffs for neonatal IC, HD and SC recognise and reflect the contributions of AHPs.

AHP neonatal specialist groups along with HEE are developing a framework for neonatal AHP workforce training and progression in the form of eLearning for Health training with core skills for AHPs and discipline specific modules. The foundation level was published in 2022 and the other modules are being developed ⁽⁶²⁾.

Not specifically covered in this document, but of equal importance to all neonatal services are the roles of paediatric radiology/radiography, medical and clinical physics, respiratory therapists and phlebotomists as well as administrative, secretarial, domestic, catering and cleaning services.

7.1 Dietetics

7.1.1 Roles

Dietitians are highly trained professionals skilled at assessing, diagnosing and managing the nutritional care needs of neonates. The inclusion of a dietitian in the neonatal team results in significant improvement in early nutrition, increased weight gain and reduced length of stay ⁽⁶³⁾ and optimising nutrition reduces risk of comorbidities including necrotising enterocolitis, retinopathy of prematurity and bronchopulmonary dysplasia ⁽⁶⁴⁾.

A dietitian should be a core member of the NNU Nutrition Care Team, alongside a consultant neonatologist and neonatal pharmacist with responsibility for the provision and management of parenteral nutrition (PN) ⁽⁶⁵⁾. Dietitians also play a key role in the wider MDT, supporting the team to make clinically effective feeding decisions, particularly with regard to the management of infants with gastro/surgical conditions, feed types, feeding methods and the transition from PN to enteral feeding. A neonatal dietitian should also be integral to the embedding of Unicef BFI neonatal standards, FICare and the Bliss Baby Charter.

7.1.2 Competencies and training

The British Dietetic Association Neonatal Dietitians Interest Group (BDA NDiG) has published a set of competencies for dietitians to reflect the advanced practice level and specialist nature of working within the neonatal setting. It also offers valuable guidance on the training of dietitians in the field of neonatal care ⁽⁶⁶⁾.

7.1.3 Staffing recommendations

Service standards for embedded neonatal dietetic inpatient services are set by the BDA NDiG ⁽⁶⁷⁾. There are currently no workforce recommendations for NTC and outreach services; this needs to be acknowledged and accommodated when planning neonatal dietetic service provision. Consideration should be given to provision of enhanced nutritional support for at risk infants after discharge.

7.2. Physiotherapy

7.2.1 Roles

Physiotherapists provide highly specialised observation, assessment and 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. Physiotherapists work alongside families during their neonatal journey and beyond, supporting physical interaction and neurodevelopmentally appropriate postural and movement activities to optimise infant brain development as well as supporting strong parent infant relationships.

Respiratory physiotherapy plays a smaller but important role in the neonatal population where neonatal physiotherapists support the wider MDT to optimise respiratory function through evidence-based care practices focusing on positioning, optimal humidification and hydration and effective airway clearance.

Physiotherapists are also an essential component both of two and four year MDT follow up programmes as recommended by NICE (2017) ⁽⁶⁸⁾.

7.2.2 Competency and training

In 2020, the Association of Paediatric Chartered Physiotherapists (APCP), the paediatric body of the Chartered Society of Physiotherapy, published the Guidance for Good Practice for Physiotherapists Working in Neonatal Care ⁽⁶⁹⁾. This consensus document provides a resource for learning about physiotherapy assessment and management in neonatal care and guides the user through expectations for foundation level and advanced level knowledge and skills base. The existing HEE eLearning for Health modules are relevant and there is planning for further modules in enhanced and advanced practice to provide a structured education pathway to support career development within the field of neonatal physiotherapy ⁽⁶²⁾.

7.2.3 Staffing service standards

Service standards for neonatal physiotherapy services have been published by the APCP ⁽⁷⁰⁾.

7.3 Occupational Therapy

7.3.1 Roles

Occupational Therapists (OTs) are specialists in supporting parent infant co-occupations, infant neuro-behavioural regulation and sensory development. Use of specialist skills, knowledge of infant neuro-behavioural and neuro-motor development and analysis of the impact of the physical/sensory/psychosocial environment will help to optimise infant development and enable the delivery of FiCare ^(71,72).

Occupational Therapy also has a key role in the delivery of neuro-developmental follow up and early intervention services to support the development of infant occupations around self-care, learning and play.

7.3.2 Competency and training

The Royal College of Occupational Therapy (RCOT) Neonatal Occupational Therapy Professional Development framework is currently in development and due for publication in 2022. It will provide guidance on the training required to move through levels of clinical expertise (foundation, enhanced, advanced/ACP and expert levels).

7.3.3 Staffing service standards

Service standards for neonatal OT services are set by RCOT and provide calculations for an embedded service provision model ⁽⁷²⁾.

7.4 Speech and Language Therapy

7.4.1 Roles

Speech and Language Therapists (SLTs) are specialists in feeding, swallowing and early communication. They support the assessment and management of sucking and swallowing difficulties in complex neonates and their expertise in early communication development supports parents and the MDT to maximise early language development and long-term communication outcomes ⁽⁷³⁻⁷⁵⁾. A neonatal speech and language therapist should also be integral to the embedding of Unicef BFI neonatal standards, FiCare and the Bliss Baby Charter, ideally supported by a lactation consultant.

These roles include:

- Optimising early feeding experiences and the development of feeding skills.
- Assessment of readiness for suck feeding and the transition from tube to suck feeding.
- Providing training and support to the wider MDT in optimising neonatal feeding and communication development and practices.
- Supporting parents and caregivers to develop responsive early feeding and communication interaction and become partners in their baby's developmentally supportive care.
- Conducting and evaluating feeding and swallowing assessments in the medically complex child.
- Reducing the incidence of suck feeding difficulties such as delayed nasogastric tube weaning, sensory based feeding difficulties leading to food refusal and difficulties progressing with weaning onto solids.
- Involvement with preterm infants in the neonatal unit and as part of their two- and four-year neurodevelopmental follow up ⁽⁶⁸⁾.

A growing number of neonatal SLTs have a dual qualification as lactation consultants.

7.4.2 Competency and training

The Royal College of Speech and Language therapists (RCSLT) has published competencies for SLTs working within the neonatal setting ⁽⁷⁶⁾. The competencies outline the essential knowledge and skills needed by an SLT working within neonates and provide a framework of how to achieve these. It also offers valuable guidance on the training of SLTs into the field of neonatal care, an integral part of succession planning within all NNUs. Work is ongoing with RCSLT and HEE to develop a career pathway and matching neonatal competency and education framework to support progression through foundation, enhanced, advanced clinical practice and expert consultant levels.

7.4.3 Staffing service standards

Service standards for neonatal speech and language therapy services are set by the RCSLT ⁽⁷⁶⁾. These provide calculations for an embedded service provision model.

AHP Staffing Recommendations are summarised in Table 1.

Table 1.

AHP Speciality						
	WTE per designated NICU cot	WTE per designated HDU cot	WTE per designated SCBU cot	WTE per designated TC cot	Additional WTE for follow up/ outpatient/ community outreach	Network Roles WTE per 10,000 live births
Dietetics	0.1	0.05	0.033	0.033	0.15 per 1/2 day clinic and/or as per follow up service required	0.2
Physiotherapy	0.05	0.05	0.05	0.05	0.15 per 1/2 day clinic	0.2
Occupational Therapy	0.05	0.05	0.05	0.02	0.15 per 1/2 day clinic	0.2
	WTE per unit designation NICU	WTE per unit designation LNU	WTE per unit designation SCU	additional WTE per TC cot		
Speech & Language Therapy	0.04 per cot	0.03 per cot	0.02 per cot	0.02		0.3

Details are correct as of October 2022; please refer to current individual professional staffing recommendations and competency documents. Support on development of unit/LMNS service models can be sought from Neonatal Network AHP teams.

8. Specialised Lactation Support

An extensive body of literature supports the benefits of maternal breast milk for all infants, particularly those born most preterm, but increasing breast feeding rates for both term and preterm infants has proven challenging. Every NNU should be able to provide specialist lactation support as required for all breastfeeding mothers, over and above that routinely offered by all members of the perinatal team.

9. Pharmacy

9.1 Roles

Neonatal pharmacists play a role in the optimisation of drug therapy in the critically ill neonate, including prescription monitoring, provision of advice on the use of off-label and unlicensed medicines and therapeutic drug monitoring. Neonatal pharmacy expertise is critical for adverse drug reaction prevention, treatment, monitoring and reporting as well as minimising the potential for medication errors through guideline development, provision of medicines information, teaching of other healthcare professionals and drug interaction prevention. A neonatal pharmacist is an essential member of both the NNU PN and antibiotic stewardship teams.

9.2 Competency and training

Pharmacists providing neonatal care should be suitably trained and experienced and as a minimum, have successfully completed the Centre of Postgraduate Pharmacy Education paediatric distance learning pack or have equivalent levels of skills and knowledge. They must have a detailed knowledge of pharmacokinetics and dynamics in neonates and understand the development of the major metabolic pathways and how these may affect common paediatric medication. Pharmacists delivering care to SCU cots should be practising at a minimum of advanced stage 1 of the Royal Pharmaceutical Advanced Practice Framework (APF); pharmacists delivering care to HDU cots at a minimum of advanced stage 1 (but ideally working towards advanced stage 2 or Mastery level 3); and those working in NICU should be practising at a minimum of advanced stage 2 (but ideally working towards mastery level 3).

9.3 Staffing service standards

The Neonatal and Paediatrics Pharmacists Group (NPPG) recommend the following standards in relation to pharmacy staffing and pharmacy service provision for individual NNUs in the UK ⁽⁷⁷⁾. Additional pharmacy staffing resource is required to support Neonatal Transport Services.

- Every centre providing neonatal care must have access to a senior pharmacist practising in neonatology and, where necessary, with experience in the provision of parenteral nutrition.
- The lead senior pharmacist time should be funded at Agenda for Change Band 8A or equivalent as a minimum. Clinical pharmacist cover (and for NNUs with SC cots only, lead pharmacist time) can be provided by a Band 7 or equivalent with support from the higher-grade lead pharmacist. The neonatal pharmacist must have sufficient time allocated to fulfil their specialist role. In practice, a team of individuals is usually required to deliver the neonatal clinical pharmacy service. There should be a minimum of 0.12* WTE pharmacist time to deliver a 5-day (1.68 WTE to deliver a 7-day) clinical service for each funded IC cot,

for every two funded HD cots and for every four funded SC cots ⁽⁷⁸⁾.

*The specified WTEs include a 20% uplift to allow for maintenance of the service during planned and unplanned leave.

- The specified staffing resource is required to allow sufficient non-patient-facing time to support the full range of clinical pharmacist activities, including (but not limited to) guideline development, medicines governance, multidisciplinary education and training, development and maintenance of electronic prescribing and administration systems, as well as audit and quality improvement.
- Where the staffing resource falls short of the recommended level, direct patient care will be prioritised over other activities.
- A team-based approach helps to ensure service resilience, succession planning and provision of the necessary educational and professional support.
- The Pharmacist must attend daily multidisciplinary ward rounds.
- Pharmacists working in neonatal care should be encouraged to be active independent prescribers.
- Alongside Pharmacist provision, NNUs need suitable levels of pharmacy assistant and technician time to ensure access to medicines via the hospital dispensary 7 days a week, with regular stock top ups in accordance with demand, but no less than once a week.
- Ward-based Pharmacy Technicians can provide a valuable supportive role, assisting with activities such as medicines reconciliation, medicines management and expenditure reporting. This can release more time for medicines optimisation activities by clinical pharmacists. There are currently no benchmarking data to support a recommendation for ward-based technician staffing levels and therefore this should be assessed locally depending on the number of cots and the tasks that the technician would undertake.
- There should also be a minimum of 5-day access to an aseptic and centralised intravenous additive service where this is needed to provide bespoke PN or where there is substantial use of high-risk intravenous medications.
- In addition to considering staffing levels within individual centres, it is strongly recommended that dedicated network pharmacist posts are created. This will support standardisation of practice across a region, seamless transfer of care, co-ordination of implementation of recommendations from national reports regarding pharmacy and medicines use, development and review of network guidelines as well as regional audits of practice.

10. Psychological Support

10.1 Roles

Practitioner psychologists and other accredited psychological professionals with specialist expertise in neonatology are essential members of the neonatal team. Each NNU should have dedicated psychological support embedded within the neonatal MDT, with psychological professionals working alongside their medical, nursing and AHP colleagues.

Practitioner psychologists (including clinical psychologists) are key providers of evidence-based psychological assessments, formulation and interventions for infants, families, individual staff and teams. They bring an understanding of the significant psychological impact of serious and life-threatening illness on infants, parents and families, and of the key developmental and transitional needs of these groups in the perinatal period. They can provide consultation on complex cases, assess and support in situations where risk is present and support NNUs to become more psychologically and trauma informed. Practitioner psychologists and other accredited psychological therapists (including child and adolescent psychotherapists) have expertise in building relationships, understanding, intervening and working with families, teams and staff groups as well as across systems where there are high levels of emotions, trauma, stress and/or interpersonal conflict ⁽⁷⁹⁾. Accredited psychological professionals can contribute to the wellbeing of staff by supporting managers, developing and supporting teams, and by bringing expertise in training, consultation, reflective practice and pre/debriefs.

Clinical Psychologists and other accredited psychological professionals offer interventions to:

- **Infants**
focusing on infant mental health and the parent-infant relationship.
- **Parents and families**
focusing on family relationships, responses to distress, coping and adjustment, trauma, loss, making sense of their journey and supporting parents through admission and beyond.
- **Staff**
focusing on training and staff development, responding to and reflecting upon difficult incidents, staff wellbeing and unit functioning thus developing psychologically informed care for all. The development of psychologically informed network meetings and MDTs may be of particular benefit if a family has been on the unit a long time and/or where there are tensions or challenging relationships.

There is robust economic argument for resourcing psychological care in NNUs in addition to moral and ethical arguments for supporting families going through a neonatal admission. Supporting parents' mental health as well as the emotional development of infants and assisting clinical teams to deliver safe and effective care has ongoing cost savings to services and positively impacts both long-term parental health and infant/child outcomes. ⁽⁸⁰⁻⁸²⁾. Clinical psychologist input can also help to reduce rates of sickness absence and improve staff retention across NNUs ⁽⁸⁰⁾.

NNUs should be configured to include a quiet private room within which the psychology team can practice.

10.2 Competency and Training

The term practitioner psychologist refers to psychologists who have undergone certified training at doctoral level and are registered with the Health and Care professionals' Council and who have legally protected titles. This group includes clinical psychologists and counselling psychologists.

Child and adolescent psychotherapists must be accredited by their professional body. They are trained in close observation of the parent/infant relationship and considering the implications for the development of the child in the family and social context.

Clinical psychologists and child and adolescent psychotherapists specialising in neonatal care will have several additional competencies⁽⁸³⁾ and should have undertaken supplementary training in psychological therapies applicable to trauma, staff support and parent-infant work. A competency framework for those offering psychological support on NNUs is currently being written, which will allow services to appoint appropriately trained staff for these roles.

The wider range of psychological professionals able to offer valuable input to neonatal services includes (but is not limited to) family therapists, adult psychotherapists, bereavement midwives and counsellors. Each will bring a set of skills depending on their training and experience.

As 'psychotherapist' and 'counsellor' are not protected titles, care must be taken to ensure that any staff are suitably qualified and experienced to work in the complex neonatal environment.

10.3 Staffing Service Standards

Staffing standards have now been published for psychology staffing on NNUs⁽⁸²⁾.

There should be at least one full time band 8A psychological professional per 20 cots and for units with additional risk factors, this should be 1.2 WTE per 20 cots. Additionally, there should be 0.4 to 0.6 WTE senior psychological professional (Band 8B/C) per three units to provide leadership, clinical governance and supervision (with the level depending on additional risk factors). Mapping clinical psychology provision per 20 cots reflects the fact that some of the work of a clinical psychologist is for the benefit of the whole unit rather than individual families (*e.g.*, group provision, staff support and developing a psychologically informed environment, linking across to mental health services including maternal mental health and perinatal mental health teams).

11. Social Services

NNUs and networks should ensure that they have clear arrangements to facilitate close working with health visitors and with the relevant local children's social work teams. There should be a dedicated safeguarding lead in every NNU, and all staff should receive appropriate safeguarding training.

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