British Association of Perinatal Medicine

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

DRAFT for Consultation

August 2022

The British Association of Perinatal Medicine

BAPM wishes to thank members of our Executive Committee and others for their contribution to this combined draft revision of our *'Service Standards for Hospitals Providing Neonatal Care 2010' and 'Neonatal Service Quality Indicators 2017'.*

The document may be further revised following member and stakeholder consultation.

Contents

Foreword

It is twelve years since BAPM last revised our 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 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
August 2022

Executive Summary

Organisational Structure of Neonatal & 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** is maintained in both neonatal intensive care units (NICUs) and local neonatal units (LNUs):
        - NICUs 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 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) 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 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 normally operate **an "open door" policy** for their linked LNUs and SCUs, supported by reciprocal agreements in LNU/SCUs to receive *in-* or *ex- utero* LNU/SCU appropriate capacity from the NICU centres.
    - Where *in-utero* transfer is not possible, *ex-utero* transfer of these high-risk infants should follow predefined pathways with exception reporting where transfer is not felt to be necessary. Trusts 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 clinically possible.
    - The implementation of a cot locator service to facilitate timely identification of an appropriate neonatal cot as required 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 possible, neonatal surgical services should also be co-located with children's specialised services.

Multi-Disciplinary Neonatal Team

- **Excellence in neonatal care is achieved through multidisciplinary team working** – NNUs should ensure that their perinatal multidisciplinary team works together to drive improvements in both safety and quality of care.

- **All NNUs should practise family centred care** and be working towards family integrated care (FICare).
  - Each NNU should have arrangements to provide Neonatal Transitional Care for less dependent babies whilst 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.

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 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, 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.
  - All neonatal networks should have a dedicated data analyst with skills & experience to allow meaningful and comprehensive neonatal data analysis to support continuous quality improvement.

- **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 give families the opportunity to participate in research.

1. Introduction

Neonatal care has developed hugely over the last sixty 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 [(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. We suggest that neonatal units (NNUs) 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]:

- **Special Care Unit (SCU) (formally known as Level One Unit):** These provide special care (SC) for their own local population. They may also provide, by agreement with their ODN, some high dependency (HD) services. All SCUs must be able to provide stabilisation and/or resuscitation for babies of all gestations.
- **Local Neonatal Unit (LNU) (formally known as Level Two 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* [4,9].
- **Neonatal Intensive Care Unit (NICU) (formally known as Level Three 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].

Additionally, each NNU should have arrangements to provide **Neonatal Transitional Care (NTC)** for less dependent babies, whilst 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 en-suite 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 not exclusively) nasogastric tube feeding for well preterm infants, home oxygen therapy and home phototherapy.

2.1 Neonatal Networks

The size of individual networks will vary depending on population needs and local geography, but it is essential that core activity is 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].

Access to a specialised transport service 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 clinically possible [14]. The implementation of a cot locator service to facilitate timely identification of an appropriate neonatal cot is strongly recommended.

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.

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.

When NNUs close, either because of lack of available cots or lack of nursing or medical staff, there must be clearly defined pathways for declaring unit closure and subsequent review of these incidents at network level.

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 [15,16].

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 Neonatal Critical Care Review (NCCR) and other national review recommendations [4,9] 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.

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 *in-* or *ex-utero* LNU/SCU appropriate capacity from the NICU centres.

Networks should have oversight of the appropriateness of the 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.

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 **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 [17,18].
>
> **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.

- All neonatal networks should have a dedicated data analyst with skills & experience to allow meaningful and comprehensive neonatal data analysis to support continuous quality improvement.

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 give families the opportunity to participate in research.

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 counselling for families with a pregnancy complicated by fetal anomalies should be available from experienced neonatologists, 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 [19]. These included consensus recommendations for NNU activity as well as medical staffing. There was close correlation between respiratory care days (RCDs) and IC days with the intersections for 1000 and 2000 RCDs lying close to 400 and 750 IC days respectively and 365 RCDs equivalent to 500 combined IC and HD days.

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 [4,19].

SCUs should anticipate admitting no more than 25 VLBW infants and/or undertaking fewer than 500 combined IC and HD days per annum [19].

2.4 Neonatal Surgical 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.

Maternity and neonatal surgical services should ideally be co-located to avoid unnecessary mother-baby separation and predicable early neonatal transfers. Where possible, neonatal surgical services should also be co-located with children's specialised services.

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.

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 and receive regular training updates is key.

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, where appropriate, be instigated prior to transfer [(20)]. 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 [(21)].

- Women who are threatening preterm labour or at high risk of delivering at <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 LNUs/SCUs should be transferred antenatally to maternity units with a co-located NICU and/or neonatal surgical centre, as appropriate.
- Where *in-utero* transfer is not possible, trusts and regional perinatal groups should review the case 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.

3.2 In the Delivery Room

Every maternity unit must have clearly established arrangements for the prompt, safe and effective stabilisation and resuscitation of babies and for the care of babies who require continuing support, either in the maternity unit or in a 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; all sick or preterm babies born in maternity units remote from neonatal services should be transferred urgently [(22)]. The nature of these arrangements (especially when specialised neonatal expertise is not available on site) should be made clear to women when they make their choice for place of delivery.

In critical situations where active decision-making is required at the time of delivery, such as whether or not to continue resuscitation for an extremely preterm baby or a baby with a major congenital anomaly, an experienced paediatrician/neonatologist (usually 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 Extremely Preterm Framework and Perinatal Optimisation QI Toolkits [(10,20)].

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 [23].

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. There is some evidence that structures and processes of care and some outcomes can be improved with the use of evidence-based guidelines [24,25].

- All NNUs should have a set of readily accessible evidence-based guidelines relevant to all commonly encountered clinical conditions and interventions seen in their practice. 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 productivity, both in quantity and quality [26-28]. 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 a number of tools and resources can be used to address this [15].

- Neonatal services should have mechanisms in place to improve perinatal team working and communication across specialties to support quality of care and patient safety [29]. Focus should include joint perinatal decision making including all perinatal specialties, quality of handovers, safety briefing or 'huddles', team debriefs following significant events to provide an opportunity to defuse stress, learn from team experiences and develop strategies for future events.
- 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 Family Integrated Care (FICare) model consistently demonstrate improved short-term outcomes for babies and their families. Parents, with their unique perspective on the care provided by neonatal units, can play a useful role in informing the process of quality improvement and service developments 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 [(17)] & Bliss Baby Charter [(18)].
- NNUs should ensure that from admission (or before in high-risk pregnancies anticipated to result in neonatal admission) families are supported and encouraged to be comfortable providing care for their babies. Families should be facilitated to be actively involved in ward rounds, daily care planning and decision-making.
- Families should have opportunities to give feedback about their baby's care while on the unit and after discharge.
- Feedback from parent surveys 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 as well as any financial burden they may face.
- 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.

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 now 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 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 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 neonatal networks should have a dedicated data analyst with skills & experience to allow meaningful and comprehensive neonatal data analysis to support continuous quality improvement.
- 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

- 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 PA(s) to allow meaningful and high-quality participation in risk and governance processes.
- Serious incidents should be managed in line with statutory Duty of Candour. Parents should be encouraged to provide their perspective(s) to reviews and should be informed of review outcomes and learning that has 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) [30]. Perinatal services must ensure that perinatal professionals have recognised time in job plans to allow high quality PMRT reviews, including the opportunity to provide and receive external input to PMRT.
- There should be a mechanism at network level for reviewing serious adverse events, including deaths, and dissemination of learning.

4.6 NSQI 6 Quality Improvement

Rationale: Quality Improvement (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 quality improvement and provided with appropriate ringfenced time, and training in QI 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 [31-33].

4.7 NSQI 7 Education and training

Rationale: Multi-professional shared learning involving 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 [15,34].

- Perinatal services should have a culture that supports education and training, with regular training opportunities for medical and multidisciplinary staff both at the bedside and in the classroom. This should include multidisciplinary simulation training.
- Perinatal services must ensure that all staff are familiar with the principles of newborn resuscitation and receive regular training updates.
- Appropriate induction, 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.

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 [35-37].

- 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.

5. Neonatal Nurse Staffing

The Toolkit for High Quality Neonatal Services, the NCCR, GIRFT report 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 [1,4,5,8,16]. These recommendations have been further developed within the BAPM Frameworks for Practice for NICUs, LNUs and SCUs [18,19].

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 [38-40].

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 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.

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 HEE in July 2021 [41] which include:

- 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 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 ODN workforce may overlap with elements of the traditional medical role as part of a comprehensive multi-professional staffing structure, however 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 [(42)].

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, designing and delivering audit and clinical research projects with a specialist expertise in one area of practice [(43)].

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 neonatal units 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 and family care.
- Developmental care.
- Quality improvement 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 [44]. 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 should 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, quality improvement, 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 [45].

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 her 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 special care 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 transitional care 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. 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.

In addition to the calculated number of neonatal nurses required, there should be a shift coordinator for every shift, as described in ***4.6 Additional nursing roles***.

6. Traditional Medical Roles

6.1 Definitions

Tier 1 (junior) 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.
- Communication with other professional groups and parents appropriate to level of experience.
- To obtain training, experience and maintenance of skills.
- 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.

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 (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 (CCT holders) 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 arrangements for consultant staff.

Before an ANNP acts on the middle grade rota, s/he should be able to demonstrate that s/he has 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 counselling 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 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 (PA) is gradually being established in many specialties, and it is anticipated that PAs will become a regular part of the NNU team [46].

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 emergencies, as defined by the local network.

Recommended numbers of staff for a Special Care Unit:

- Tier 1: Rotas should be EWTD compliant and have a minimum of 8 staff who may cover paediatrics in addition.
- Tier 2: Shared rota with paediatrics comprising a minimum of 8 staff.
- Tier 3: A minimum of 7 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 CCT in paediatrics or CESR (via article 14) in paediatrics or an equivalent overseas neonatal or paediatric qualification. They must demonstrate knowledge, skills and continuing professional development (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 SPIN module in Neonatology.

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 staff who do not cover general paediatrics in addition.
- Tier 2: Shared rota with paediatrics as determined by a Trust's annual unit activity comprising a minimum of 8 staff.
- Tier 3: A minimum of 7 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 (via article 14) in paediatrics or an equivalent overseas neonatal or paediatric qualification. 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 regularly provide IC and/or have a very busy paediatric 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.

6.5 Requirements for a Neonatal Intensive Care Unit (NICU)

- Tier 1: Rotas should be EWTD compliant and have a minimum of 8 staff*.
- Tier 2: EWTD compliant rota with a minimum of 8 staff*.
- Tier 3: Consultant neonatologists. Minimum of 7 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 to allow for a greater volume of activity.
- 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 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.
- Individual NICUs should be assessed on a patient safety basis to determine the numbers of Tier 1, 2 and 3 persons required.

Trusts that have more than one neonatal unit 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 multidisciplinary team (MDT) within neonatology. 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 [47-49].

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 & psychologists 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 & psychology service provision.

AHP neonatal specialist groups along with Health Education England (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 [50].

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 [51] and optimising nutrition reduces risk of comorbidities including necrotising enterocolitis, retinopathy of prematurity and bronchopulmonary dysplasia [52].

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) [53]. Dietitians also play a key role in the wider MDT, supporting the team to make clinically effective feeding decisions, particularly in 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 [54].

7.1.2 Staffing recommendations

Service standards for embedded neonatal dietetic inpatient services are set by the BDA NDiG [55]. 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 of two year MDT follow up programmes as recommended by NICE (2017) [56].

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 [57]. 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 [50].

7.2.3 Staffing service standards

Service standards for neonatal physiotherapy services have been published by the APCP [58].

7.3 Occupational Therapy

7.3.1 Roles

Occupational Therapists 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 [59,60].

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 2022. It will provide guidance on the training required to move through levels of clinical expertise (foundation, enhanced, advanced/ACP and expert levels).

7.3.2 Staffing service standards

Service standards for neonatal Occupational therapy services are set by RCOT and provide calculations for an embedded service provision model [60].

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 [61-63]. 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 multidisciplinary team 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-year neurodevelopmental follow up [56].

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 [64]. 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 neonatal units. 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/ACP and expert consultant levels.

7.4.3 Staffing service standards

Service standards for neonatal speech and language therapy services are set by the RCSLT [64]. These provide calculations for an embedded service provision model.

8. Pharmacy

8.1 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 the NNU parenteral nutrition team.

8.2 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.

8.3 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 neonatal units in the UK [65]. Additional pharmacy staffing resource is required to support Neonatal Transport Services and ODN.

1. Clinical Pharmacists are essential practitioners within the neonatal MDT and are vital to the routine delivery of medicines optimisation in critical care. 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.

2. The lead senior pharmacist time should be funded at Agenda for Change (AFC) Band 8a or equivalent as a minimum. Clinical pharmacist cover 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 clinical pharmacy service to the Neonatal Service. There should be a minimum of 0.024* whole time equivalent (WTE) pharmacist per day for each funded IC cot, for every two funded HD cots and for every four funded SC cots [66]. Therefore, in line with national expectations regarding 7-day working, it would require 0.168 WTE pharmacist time to deliver a 7-day clinical pharmacy service for each funded IC cot, for every two funded HD cots and for every four funded SC cots. The specified WTEs include a 20% uplift to allow for maintenance of the service during planned and unplanned leave.

This 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 work.

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 provide the necessary educational and professional support.

3. The Pharmacist must attend daily multidisciplinary ward rounds.

4. Pharmacists working in neonatal care should be encouraged to be active independent prescribers.

5. 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.

6. 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 parenteral nutrition or where there is substantial use of high risk intravenous medications.

7. 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 is 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.

8. 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.

9. Psychological Support

9.1 Roles

Psychological therapists, including Clinical Psychologists are experts in building relationships, understanding, intervening and working with families, teams, staff groups and across systems where there are high levels of emotions, trauma, high stress and/or interpersonal conflict. There is robust economic argument for resourcing psychological care well as supporting parents' mental health and retaining staff has ongoing positive future savings to services [67,68] in addition to the moral and ethical argument for supporting families going through a neonatal admission.

Clinical Psychologist and Psychotherapists offer interventions to
1) Infants (focusing on infant mental health and the parent-infant relationship)
2) Parents and families (focusing on responses to distress, coping and adjustment, trauma, loss, making sense of their journey and supporting parents through admission and beyond)
3) Staff (focusing on training and staff development, responding to difficult incidents, staff wellbeing, unit functioning, developing psychologically informed care to and for all).

9.2 Competency and Training

Clinical Psychologists are trained to doctoral level (minimum 10 years training from undergraduate to doctoral level) and are equipped to work across the lifespan. Clinical Psychologists and Psychotherapists specialising in neonatal care will have several additional competencies [69] and will have undertaken supplementary training in psychological therapies applicable to trauma, staff support and parent infant work.

9.3 Staffing Service Standards

There should be at least one full time band 8A Clinical Psychologist per 20 cots and for units with additional risk factors, this should be more. There should also 0.6 wte of a Senior Clinical Psychologist (Band 8B/C) per 3 units to provide clinical governance and supervision. Rather than a per-cot recommendation, 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).

10. 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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We are a professional association of neonatologists, paediatricians, obstetricians, nurses, midwives, trainees, network managers and other health professionals dedicated to shaping the delivery and improving the standard of perinatal care in the UK.

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