NHS SCOTLAND

Criteria to Define Levels of Neonatal Care including Repatriation within NHS Scotland

A Framework for Practice

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Criteria to Define Levels of Neonatal Care Including Repatriation within NHS Scotland: A Framework for Practice

The Perinatal Sub-group of the Implementation Programme Board of "Best Start"

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1. Background/Context

Well-organised and effective neonatal care can make a lifelong difference to families and their babies. The NHS has a responsibility at all levels to ensure that neonatal care is of high quality, effective and well-integrated with maternity, paediatric and family services. To optimise outcome, modern neonatal services should be provided in variety of clinical environments, selected according to the interventions and level of care required for the baby, supported by a dedicated national Neonatal Transport Service which transfers babies between neonatal units as their care demands.

Neonatal care is highly technical and has rapidly evolved over the last three decades with advances that have improved outcomes for both sick and very premature infants. National and international evidence has identified that the delivery of care for those premature babies born before 27 weeks of gestation, and care for infants in other higher-risk categories (e.g. more mature babies requiring prolonged intensive care), should be concentrated in a smaller number of tertiary care centres in order to:

- Optimise clinical outcomes.
- Ensure that expert and experienced staff treat a sufficient number of cases to maintain skills to allow the delivery of high-quality clinical care.
- Maximise the utilisation of specialist staff, associated equipment and facilities.

The importance of care pathways that facilitate the birth of extremely premature infants in tertiary units has been further consolidated by recent data from the UK, which have demonstrated a clear relationship between birth in a non-tertiary unit, either with or without early postnatal transfer, and an increased risk of death before discharge and/or severe brain injury. This aligns with recommendations in the updated British Association of Perinatal Medicine (BAPM) Framework on the Perinatal Management of Extreme Premature Infants Before 27 Weeks of Gestation. Such births should be managed whenever possible within a maternity unit co-located with a Neonatal Intensive Care Unit (NICU), and *in-utero* transfer to a NICU is the optimal pathway of care for threatened preterm births prior to this gestational age.

Across NHS England, the Department of Health centralised specialist neonatal care provision in 2003. This service redesign has resulted in an increased proportion of babies born under 27 weeks delivering in a NICU in 2015-16 compared to 2006

(73%vs. 56%, NNRD data) and its success has been validated by a variety of publications including the Neonatal Critical Care Specifications NHS England 2013. Their definitions of levels of care are utilised by Neonatal Operational Delivery Networks (ODNs) throughout NHS England and are unchanged in the context of NHS England's on-going Neonatal Transformation programme "Better Newborn Care". Whilst commissioning processes are not directly transferrable to NHS Scotland, the criteria and definitions utilised to define models of neonatal care in NHS England align with the clinical recommendations which underpin "Best Start". These include aligning nomenclature of units with BAPM definitions to facilitate benchmarking and redesigning Neonatal Services within NHS Scotland to ensure that the smallest and sickest babies are treated in a smaller number of intensive care units with full support services, experienced staff and a critical mass of activity, returning near to home as soon as clinically appropriate for on-going care.

Criteria to assist in determining the most appropriate care location for babies requiring on-going and/or complex intensive care have been implemented across NHS England and have been utilised in this framework to align the proposed care pathways for NHS Scotland with those utilised by Neonatal ODNs across NHS England. On-going care will be provided in Local Neonatal Units (LNUs), or in a Special Care Unit (SCUs) as and when clinically appropriate.

2. Purpose

The purpose of this document is to describe a clear service delivery framework across NHS Scotland for:

- The management of babies who require Intensive Care, High Dependency Care or Special Care.
- The safe and efficient transfer of babies to the most appropriate care facilities for their clinical requirements.
- The safe and effective repatriation of babies to the appropriate care facility nearest to home as soon as clinically appropriate.

To provide neonatal care in this manner requires a nationally agreed approach supported by Health Boards who are responsible for the delivery of services in their respective areas. Neonatal services are closely integrated with maternity services and as such the engagement of maternity and obstetric services in aligned perinatal pathways is pivotal to delivering this model of neonatal care. Staff providing neonatal care across NHS Scotland must be aware of the criteria that define each level of care, and the locations where each level of care can be provided, so as to ensure the right care can be delivered at the right time at a location as close to home as possible for each baby.

It is anticipated that all units will implement these criteria and pathways. However some flexibility may be needed for units who wish to further restrict their unit criteria thresholds. Examples of this are: a unit which has been designated as a Special Care Unit (SCU) may wish to provide care for babies > 34 weeks of gestation rather than 32 weeks. A Local Neonatal Unit (LNU) may wish to have a ceiling of care criteria of 28 weeks rather than 27 weeks. The need for this flexibility may be due to demographics, staff expertise and/or facilities available.

Whilst this document provides a brief summary of staffing and services required by neonatal services, current guidance and existing publications from national bodies should be referred to for specific detail. The remit of this document is not to describe individual unit specifications.

3. Scope

This document is applicable to all Maternity Services, Neonatal Units and Neonatal Transport Services within NHS Scotland.

4. Areas beyond the Remit of this Document

This document focuses on the delivery of *postnatal* clinical care for babies. This document does not aim to provide guidance for *in-utero* transfers or antenatal care; separate national guidance is under development for these aspects of care. However, *in-utero* transfer arrangements and antenatal care are integral to the delivery of effective Neonatal, Obstetric and Midwifery services and should be organised to align with the criteria laid out in this document, thereby facilitating the delivery of cohesive perinatal care.

5. Definitions

The definitions described within this framework document aim to facilitate the overarching recommendation of “Best Start”, such that the smallest and the sickest babies are treated in a smaller number of intensive care units with full support services, experienced staff and a critical mass of activity, whilst transferring to the appropriate unit closest to home for on-going care as soon as their clinical status allows. The framework of care outlined in this document is fully aligned with BAPM definitions and descriptors for levels of neonatal care.

5.1 Definition of a Neonatal Intensive Care Unit (NICU)

5.1.1 Clinical Care Provision

A NICU should:

- Be co-located with specialist Obstetric and Fetal Medicine services.
- Be co-located with a Maternity service organised to accept criteria-appropriate *in utero* transfers from Maternity services attached to LNUs and SCUs. To ensure the smallest and sickest babies are delivered in the optimal centres, a NICU Maternity service should implement pathways to facilitate acceptance of these highest acuity *in utero* transfers. This will be supported by reciprocal pathways for criteria-appropriate *in utero* transfers from a NICU centre to a LNU/SCU centre.
- Usually provide the range of medical neonatal care to their local population, balancing available capacity with the ability to accept high acuity *in-utero* referrals as per agreed pathways.
- Meet optimal clinical activity demographics as recommended by BAPM:
    - Care for a *minimum* of 100 very low birth weight (VLBW) admissions per annum.
    - Provide a *minimum* of 2000 respiratory care days per annum.
- Accept babies of any gestational age for complex low-volume highly specialised care (HFOV, iNO, total body hypothermia, complex and/or prolonged ITU support) from LNUs and SCUs.

- Provide ITU care for babies and their families referred from LNUs and SCUs in line with the national referral criteria for NHS Scotland and with NHS England commissioning criteria:
    - Singletons < $27^{+}0$ weeks.
    - Birth weight < 800 grams.
    - Multiples < $28^{+}0$ weeks.
    - Complex and/or prolonged intensive care of more mature babies
        - Complex is defined as “support of more than one organ in addition to respiratory support with a endo-tracheal (ET) tube”.
        - Prolonged is defined as ITU support of more than 48 hours and not improving.
    - Therapeutic hypothermia in line with BAPM recommendations.

5.1.2. Staffing

- Be staffed in accordance with BAPM recommendations at each tier of medical staff:
    - Specifically NICUs must ensure on-site Consultant presence for a minimum of 12 hours per day.
    - For NICUs with > 4000 intensive care days per annum consensus recommends a Consultant presence 24 hours/day.
    - Medical Staff within a NICU must not have simultaneous clinical responsibilities outside the neonatal service.
- Be staffed with nursing staff and allied health professionals specifically trained to deliver NICU level care:

  (A) Nursing Staff

    - NICUs should have sufficient nursing staff to deliver care in accordance with the BAPM recommended Nurse: Patient ratios (1:1 Intensive Care, 1:2 High-Dependency Care and 1:4 Special Care).
    - Staff will exercise professional judgment supported by national capacity guidance to allow flexibility to accommodate further admissions where required.

- A minimum of 80% of the nursing workforce establishment within a NICU should hold a current Nursing and Midwifery Council (NMC) registration.
- A minimum of 70% of the registered Nursing workforce establishment within a NICU should hold an accredited post-registration qualification in specialised neonatal care (Qualified in Speciality (QIS)).
- Babies requiring Intensive or High-Dependency Care should be cared for by staff who have completed accredited training in specialised neonatal care, or who while undertaking such training, are working under the supervision of a QIS-trained Registered Nurse.
    - A minimum of 1:1 or 1:2 staff: patient ratio should be provided at all times.
- Babies requiring Special Care should be cared for with a minimum of 1:4 staff: patient ratio at all times, by either a Registered Nurse or a non-registered member of staff who has attained the appropriate competencies and skills, working under the supervision of a QIS-trained Registered Nurse.

(B) Allied Health Professionals (AHPs):

AHPs are fundamental to providing the best possible neonatal care for babies who are admitted to a neonatal unit and their families. AHP staffing should be provided in line with national recommendations and Scottish Neonatal AHP workforce development plans.

- Dietetics:
    - Neonatal Dietetic provision Guidance
- Physiotherapy:
    - Neonatal Physiotherapy recommendations are available at: Neonatal Staffing Recommendations | Association of Paediatric Chartered Physiotherapists (csp.org.uk).
- Speech and Language Therapy (SALT):
    - SALT recommendations are available at: neonatal-speech-and-language-therapy-staffing-level-recommendations.pdf (rcslt.org).

- Occupational Therapy (OT):
    - OT recommendations are available at: Microsoft Word - Occupational therapy staffing on neonatal units 22.08.18 (rcot.co.uk)
- Psychological Support:

  NICUs should have access to specialised Neonatal Psychology services, provision within NHS Scotland is detailed in: Delivering Effective Services: Needs Assessment and Service Recommendations for Specialist and Universal Perinatal Mental Health Services (www.gov.scot)
- Neonatal Pharmacy:

  Requirements are described in NPPG Neonatal – Pharmacist staffing recommendations published September 2022.

- A NICU requires to interface with other services to meet the care requirements of babies across a neonatal admission:
    - Support provision of Transitional Care (TC) in line with the BAPM 2017 Framework and ensure the clinical model utilises the clinical criteria detailed within the BAPM Framework. TC should link seamlessly to community care, facilitating early discharge and appropriate post-discharge support for families.
    - Provide a dedicated Community Liaison/Outreach Service to facilitate earlier supported discharge where clinically indicated. Local service delivery will require to be tailored to meet local geographical needs although the criteria and principles of such services should follow the recently launched national framework (describing principles of discharge planning, community liaison and follow up).
    - Provide a multi-disciplinary team trained in neuro-developmental assessment and therapy for high–risk infants that aligns with recommendations from NICE.
- Provide support and advice to Local Neonatal Units (LNUs) and Special Care Units (SCUs) within NHS Scotland.
- In line with BAPM standards provide support for parents and families with appropriate facilities and accommodation for those travelling to NICUs remote from their home but also for parents who might need accommodation close to the hospital for other reasons.

- Ensure all families experiencing neonatal care have access to financial support available via the [Young Patients Family Fund.](#)
- Repatriate babies as soon as their clinical condition stabilises to receive the appropriate level of care at a unit as close to home as possible.

5.2 Definition of a Local Neonatal Unit (LNU)

5.2.1. Care Provision

Local Neonatal Units should:

- Meet optimal activity levels as recommended by BAPM (2018):
    - Admit a minimum of 25 infants < 1500 grams.
    - Perform a minimum of 365 respiratory care days per annum.
- Provide all levels of clinical care (including transitional care and outreach support) for the majority of babies delivered at ≥ 27 weeks of gestation within their own local catchment area including:
    - Singletons ≥ 27 weeks
        - For some LNUs this may be tailored to $\geq 28^{+0}$ weeks of gestation based on activity, clinical expertise and/or facilities.
    - Multiple births ≥ 28 weeks.
    - Birth weight ≥ 800 grams.
    - Babies requiring short periods of intubated ventilator support and intensive care in accordance with agreed pathways that are specific and tailored to each LNU.
        - Dialogue should take place with the regional NICU team at 48 hours or sooner if clinically indicated and 24 hourly thereafter if intensive care support continues to be clinically indicated at the LNU. Dialogue should follow the agreed communication process between units and be recorded to allow audit.
- Receive transfers from other services within NHS Scotland if these fall within the agreed framework for practice tailored to individual units, noting the priority of keeping families as near as possible to their unit of booking.

- LNUs can receive babies from SCUs for continuing HDU or ITU care (of short anticipated duration) after initial stabilisation in SCUs.
- Provide continuing care following repatriation from NICUs.

5.2.2. Staffing

- Meet national recommendations for staffing levels:
  - Medical staffing in accordance with BAPM 2018 recommendations for LNUs (Tier 1 to 3):
    - LNUs should have immediately available at least one resident Tier 1 practitioner (ST1 equivalent or ANP) dedicated to providing emergency care for the neonatal service 24/7.
    - LNUs should ensure the presence of a Tier 2 Practitioner dedicated solely to the neonatal service at a minimum during the busiest period for a co-located paediatric service i.e. 0900-2200 hrs.
    - LNUs undertaking either > 400 IC days annually or > 1000 RC days should consider providing a 24/7 resident Tier 2 dedicated to the neonatal unit and entirely separate from paediatrics.
    - LNUs delivering either > 600 Intensive Care (IC) days per annum or > 1500 Respiratory Care Days (RC) days per annum must ensure an immediately available dedicated resident Tier 2 practitioner 24/7.
    - LNUs providing > 2000 RC days or > 750 IC days per annum should provide a separate Tier 3 Consultant rota for the neonatal unit.
    - All LNUs should ensure that all Consultants on-call for the unit also have regular weekday commitments to the neonatal service. This is best delivered by a “Service week/Attending System” and no consultant should undertake < 4 service weeks per annum.
    - New appointments to cover LNUs at Consultant level/Tier 3 should have a CCT in Neonatal Medicine or be a General

Paediatrician with a Special Interest in Neonatology or have equivalent neonatal experience and training.

- Nursing staff numbers in accordance with BAPM guidance:
  - A minimum of 80% of the nursing workforce establishment within a LNU should hold a current Nursing and Midwifery Council (NMC) registration.
  - A minimum of 70% of the registered nursing workforce establishment within a LNU should hold an accredited post-registration qualification in specialised neonatal care (QIS).
  - Babies requiring intensive or high dependency care should be cared for by staff who have completed accredited training in specialised neonatal care or who, while undertaking this training, are working under the supervision of a registered nurse (QIS). A minimum of 1:1 or 1: 2 staff-to-baby ratios should be provided at all times.
  - Staff will exercise professional judgment supported by national capacity guidance to allow flexibility to accommodate further admissions where required.
  - Babies requiring special care should be cared for with a minimum of 1:4 staff-to-patient ratio at all times by either a registered nurse or a non-registered member of staff with the appropriate competencies and skills, working under the supervision of a registered nurse (QIS trained).
- Allied Health Professionals
  - Provision of AHP service recommendations are provided within the following publications:
    - Dietetics: Neonatal Dietetic provision Guidance
    - Physiotherapy: Neonatal Staffing Recommendations | Association of Paediatric Chartered Physiotherapists (csp.org.uk).
    - SALT: neonatal-speech-and-language-therapy-staffing-level-recommendations.pdf (rcslt.org).

    - OT: Microsoft Word - Occupational therapy staffing on neonatal units 22.08.18 (rcot.co.uk)
    - Psychological Support: Perinatal Service Provision: The role of Perinatal Clinical Psychology - The British Psychological Society (bps.org.uk), recognising palliative care may be supported nearer to home and psychological support is important throughout the neonatal journey.
    - Neonatal Pharmacy Requirements are described at NPPG Neonatal – Pharmacist staffing recommendations published September 2022.

- A LNU should interface with other services to meet the care requirements of babies across a neonatal admission:
    - Support the provision of Transitional Care (TC) in line with the BAPM Framework and ensure the clinical model utilises the clinical criteria detailed within the BAPM framework. TC should link seamlessly to community care, facilitating early discharge and appropriate post-discharge support for families.
    - Provide a dedicated community liaison/outreach service to facilitate earlier supported discharge. Whilst services must be tailored to local geographical needs the criteria and principles of such services should follow the agreed national framework.
    - Provide a multi-disciplinary team trained in neuro-developmental assessment and therapy for high–risk infants that aligns with recommendations from NICE.
- LNUs should provide support for parents and families with appropriate facilities and accommodation in line with BAPM standards.
- Ensure all families experiencing neonatal care have access to financial support available via the Young Patients Family Fund
- Repatriate babies as soon as their clinical condition stabilises to receive the appropriate level of care at a unit as close to home as possible.

LNU care is **not recommended** for:

- Babies who require transfer to a NICU as per agreed national criteria and consistent with their unit-specific criteria:

- Babies delivered at > 27 weeks of gestation who require complex and/or prolonged intensive care i.e. support of more than 48 hours without improvement.
- Babies anticipated to deliver at < 27 weeks of gestation and/or at a birth weight of < 800 grams should aim to be transferred *in-utero* for delivery in a NICU (for some LNUs this will be agreed at < 28 weeks of gestation).

5.3 Definition of a Special Care Unit (SCU)

5.3.1 Care Provision

A Special Care Unit (SCU) should:

- Meet the BAPM 2018 recommendations for a SCU with respect to clinical activity and respiratory care days per annum:
  - Care for up to 25 VLBW babies per year.
  - Deliver up to 365 Respiratory care days /annum.
- Provide care for babies of 32^{+0} weeks gestation and upwards.
- Some SCUs may with prior agreement care for babies > 30^{+0} weeks of gestation, recognising that local geography is an important consideration in decisions within NHS Scotland. However this is dependent on appropriately trained staff and evidence of the SCU being able to demonstrate consistently good outcomes for such infants.
- Provide care for those babies with additional care needs who do not meet either Intensive Care or High Dependency care criteria.
- Provide Transitional Care, working in collaboration with postnatal services subject to the local integrated service model, ensuring this is in line with the BAPM TC Framework.
- TC should link seamlessly to community care, facilitating early discharge and appropriate post-discharge support for families.
- Provide a unit appropriate community liaison/outreach service recognising the service model will be dependent on geographical and personnel constraints. Liaison services should be aligned with the principles within the agreed National Framework for discharge planning and follow-up.

- Ensure all families experiencing neonatal care have access to financial support available via the Young Patients Family Fund.
- Provide developmental follow up services in line with NICE recommendations
- Provide on-going care for local babies following repatriation from a LNU or NICU in accordance with the agreed national framework.

5.3.2. Staffing

- Meet national recommendations for staffing levels within a SCU
    - Medical staffing (Tier 1 to 3) in accordance with the BAPM 2018 recommendations:
        - SCUs should provide a resident Tier 1 practitioner dedicated to the neonatal service in daytime hours on weekdays and a continuously immediately available resident Tier 1 practitioner to the unit 24 hours per day, seven days every week.
        - SCUs should provide a resident Tier 2 to support the Tier 1 in SCUs admitting babies requiring respiratory support.
        - In SCUs there should be a Lead Consultant for the neonatal service and all Consultants should undertake a continuing professional development (a minimum of 8 hours CPD in Neonatology) per annum.
    - Nursing staff numbers in accordance with BAPM guidance:
        - Babies requiring special care should be cared for with a minimum 1:4 staff-to-patient ratio at all times by either a registered nurse or a non-registered member of staff with the appropriate competencies and skills, working under the supervision of a registered nurse (QIS trained).
        - A minimum of 70% of the workforce establishment within a SCU should hold a current Nursing and midwifery Council registration.
        - A minimum of 70% of the registered nursing workforce establishment within a SCU should hold an accredited post-registration qualification (QIS).

    - Allied Health Professionals:
        - Meet national recommendations for AHP provision, recognising that AHP and Psychology support is important throughout the neonatal care journey. Pathways should exist for guidance and support from AHP services within the aligned NICU/LNUs to ensure continuity of care and consistency of advice to parents for repatriated babies.

SCU care is **not recommended** for:

- Babies anticipated to deliver below $32^{+}0$ weeks:
    - Such cases should be transferred *in-utero* to an appropriate LNU or NICU.
    - Some SCUs may with prior agreement care for babies > 30^{+0} weeks, recognising that local geography is an important consideration in decisions within NHS Scotland. However this is dependent on appropriately trained staff and evidence of the SCU being able to demonstrate consistently good outcomes for such infants.
- Any baby requiring Intensive Care or High Dependency care on an on-going basis:
    - Such cases should be transferred following initial stabilisation.
- Babies requiring anything other than short-term respiratory support *e.g.* for delayed transition:
    - Cases requiring a longer duration of respiratory support require direct communication with the linked LNU/NICU team to determine the most appropriate place of on-going care and whether transfer is indicated.

5.4 Definition of a Referring Hospital

A 'Referring Hospital' is defined either as the hospital from where the mother is being transferred out with her baby *in–utero,* or the local hospital where the *ex-utero* neonate was delivered.

5.5 Definition of a Receiving Hospital

A ‘Receiving Hospital’ is defined as either the destination hospital for maternal *in-utero* transfers, or the destination hospital for *ex-utero* transfers of a baby requiring specialist care or local care following repatriation.

6. Repatriation

‘Repatriation’ involves the timely return of a baby to their booking unit or to the closest appropriate unit meeting their current care requirements. Repatriation is integral to the effective delivery of integrated Neonatal care across NHS Scotland:

- All service users of Neonatal Care in Scotland should receive standardised written information at the time of initial admission or antenatally where neonatal care is anticipated. This information explains how Neonatal Care is delivered in NHS Scotland, the concept of the Neonatal Network, a description of the different types of units and the anticipation of planned repatriation to local units as soon as care requirements allow.
    - Parents should be prospectively informed by medical staff at the time of admission to a NICU/LNU that planned repatriation will occur at a later stage when clinical condition has stabilised.
    - Staff members should consistently document discussions on repatriation as an integral part of the delivery of care.
    - Throughout the period of stay in a NICU or LNU families should be reminded that repatriation to their booking unit or nearest appropriate unit is a normal and anticipated component of the planned care for all babies in NHS Scotland.
- Repatriation planning should commence when the baby meets eligibility criteria for the next level of unit for 48-hours and should occur within 48-hours of this decision that repatriation is appropriate being made.
- Individualised assessments of readiness for repatriation must be specific to each baby, recognising the clinical needs, available expertise and facilities and the unit-specific criteria in the preferred LNU/SCU.
- Planning should include referral to the Neonatal Transport Team at least one working day before anticipated repatriation to facilitate planning and workload

prioritisation. Referral should follow the agreed national process for arranging such transfers. “Same day” repatriation requests should be reserved solely for capacity emergencies and should be the exception rather than standard practice.

- A clear record of when repatriation eligibility criteria have been met should be recorded in a consistent manner to facilitate audit.
- Robust handover processes for the transfer of clinical information are mandatory to underpin this model of Neonatal care. Direct communication between clinical staff in both units should occur during this time period to:
    - facilitate the exchange of clinical information.
    - Identify any outstanding investigations.
    - clearly document plans for follow-up.
    - summarise the knowledge and expectations parent/carers/family.
- Families should be involved in repatriation discussions occurring between units:
    - Once repatriation has been agreed and scheduled, families should be provided with information about the destination unit and a designated contact. The possibility that a return to the NICU may be required if their baby’s care needs escalate during their remaining stay in neonatal care should be highlighted prior to repatriation as this may occur and parents must appreciate this is not a reflection of an inappropriate initial repatriation.
- Other than for specific subspecialist follow-up (Cardiac, Surgical or Paediatric sub-speciality) the unit of booking will remain responsible for providing and arranging local follow-up.
- LNUs and SCUs have a responsibility to create the downstream capacity to facilitate the repatriation of a baby within 48-hours of the initial request, to protect NICU capacity for the sickest babies and to ensure that families are moved closer to home as soon as possible:
    - Once a baby does not meet NICU criteria, the relevant LNU or SCU are responsible for delivering the next stage of their care.
    - An inability to accept a repatriation transfer within the agreed timeframe and the reason why (unit capacity, staffing, infection control issues)

must be escalated by the LNU/SCU to Senior Hospital management and will be recorded by exception reporting at Network level.

7. Criteria for Transfer and Repatriation between Neonatal Units

The transfer and repatriation of mother and babies is a normal component of neonatal care provision in Scotland, ensuring babies receive the most appropriate care at the correct time.

Transfer and repatriation decision will always be guided by the general principle of providing care as close to home as possible but it is important to recognise that in some cases timely access to the clinically most appropriate unit may require a transfer to a unit further afield.

7.1 Neonates Requiring Specialist Medical, Surgical, Sub-Speciality or Cardiac Assessment

Several National Services are only delivered at the Royal Hospital for Children (RHC), Glasgow. These national services include:

- National Cardiac services.
- National Airway service.
- Extra-Corporeal Life Support (ECLS) service.

Babies anticipated antenatally to require these specialist services should be planned for delivery at the RHC Glasgow, being transferred *in-utero* whenever possible, following liaison with the Fetal Medicine team.

For those deliveries where antenatal assessment has identified the likelihood of a requirement for specialist review after delivery, from either surgical or subspecialist teams, the optimal place of delivery should be determined before delivery. This should be clearly documented and communicated to the team. In some cases the optimal location to deliver care requirements will only become apparent following delivery; for such cases transfer should be arranged to the nearest appropriate NICU following birth as determined by the specific requirement for speciality review (e.g. ENT, Renal, Metabolic).

7.2 Neonates Requiring Transfer from an LNU to a NICU

Decisions about the best place of care and timing of transfers between units must be underpinned by regular structured and effective two-way communication between units. In line with the national framework, a Local Neonatal Unit (LNU) would not be expected to provide continuing care for the following categories of babies:

- Singletons delivered at < 27^{+0} weeks (for some LNUs this will be < 28^{+0})
  - where possible transfers should occur *in-utero.*
- Multiples births delivered at < 28^{+0} weeks
  - where possible transfers should occur *in-utero.*
- Birth weight below 800g
  - *In-utero* transfer should be considered when birth weight is anticipated to be below 800g.
  - Urgency of transfer *ex-utero* will be dependent on the clinical status and stability of the baby and it may be that a consensus decision between units is reached if the baby is marginally below this weight and clinically stable. This highlights the importance of discussion between units at senior clinical level.
- Neonates > 27 weeks of gestation in the following categories:
  - who receive ventilation for > 48 hours and/or whose condition is deteriorating:
    - Those who are unwell and anticipated to require ventilation for > 48 hours should be discussed with the relevant NICU regarding transfer on Day 1.
    - Ventilated babies whose clinical condition is stable and/or improving after 48 hours should be discussed on a daily basis with the relevant NICU.
  - Requiring complex and/or prolonged intensive care:
    - Complex is defined as “support of more than one organ in addition to respiratory support with an endo-tracheal (ET) tube” e.g. multiple inotropic support, respiratory support with HFOV/iNO.

        - Prolonged is defined as ITU support of more than 48 hours and not improving.
- Babies with cardiac and surgical conditions requiring specialist assessment and diagnosis where this is not available locally, including all babies requiring prostaglandin infusion.
    - When an antenatal diagnosis has been made an *in-utero* transfer for elective delivery within a NICU should occur in cases where time-critical surgical or specialised intervention is required postnatally.

Babies who should be discussed with a NICU but for whom care may continue in a LNU after discussion with the NICU Consultant, and if no other criteria for NICU care are present, include those:

- Expected to be ventilated for > 48 hours but stable/improving
- Ventilated but improving and requiring a single inotrope that is being weaned
- Neonates who require Therapeutic Hypothermia (TH) as long as those babies are otherwise stable, with minimal physiological instability and not meeting other criteria for transfer to a NICU.

7.3 Neonates Requiring Transfer from a SCU to an LNU or NICU

In line with the national framework, a Special Care Unit (SCU) will not be expected to provide:

- Care beyond the initial stabilisation to babies less than 32^{+0} weeks gestation, unless prior agreement.
- Some SCUs may, with prior agreement, care for babies > 30^{+0} weeks recognising that local geography is an important consideration in decisions within NHS Scotland. However, this is dependent on the SCU having appropriately trained staff and being able to demonstrate consistently good outcomes for this category of infants.
- On-going Intensive Care or High Dependency Care for any baby apart from the period of initial stabilisation
- Babies requiring the following treatment and support:
    - Infusion of inotropes, insulin or prostaglandins
    - Inhaled Nitric Oxide, High Frequency Oscillatory Ventilation (HFOV)

- Requirement for a chest drain
- Exchange transfusion
- Therapeutic Hypothermia.

8. Processes to Support Implementation and Review of Pathways of Care

A standardised national exception reporting process will be developed by the National Neonatal Network to support the implementation and monitor the delivery of care under the new model described within this framework. Such a process will allow the National Neonatal Network, individual units and clinicians to review exceptions to the pathways, recognise areas of good performance and identify those areas requiring prioritisation for service change at a regional and/or national level.

8.1 Indications for Exception Reporting:

(i) If a NICU cannot accept an appropriate LNU transfer due to capacity issues within the NICU an exception report will be completed by the LNU and reported at Network level. It should be the expectation that the nearest geographical NICU should be able to accept and prioritise a LNU transfer request and if transfer is required beyond the nearest geographical NICU the reason for this should also be clearly recorded and reported at Network level.

(ii) To record babies meeting NICU criteria who deliver in a LNU or SCU, recognising that in some cases this will be unavoidable, including a review in a standardised manner of the obstetric and neonatal decision-making in each case.

(iii) To review clinical care episodes when babies receive on-going complex ITU care within a LNU > 48 hours, recognising that in some cases appropriate two-way clinical dialogue will have agreed this to be the most appropriate location of care (e.g. if a baby is improving and about to be extubated).

(iv) Delays in repatriation to the nearest clinically appropriate unit for non-clinical reasons (lack of capacity, lack of transport availability). Such examples would include the inability of a LNU or SCU to accept

repatriation transfer from a NICU or LNU where staff have appropriately followed the repatriation pathway.

9. Managing Capacity

Effective management of capacity and patient flow underpins the model of care described in this document and is the collaborative responsibility of all services. Health Boards must ensure they plan sufficient capacity (a composite of physical cots and available staff to provide care at the recommended ratios) to deliver the appropriate service for their booked maternity population and anticipated referrals detailed within this framework.

All units across NHS Scotland should follow agreed guidance to determine cot availability and national processes for sharing that information to facilitate coordination of transfers (currently in development through work Healthcare Improvement Scotland is undertaking to improve workload and workforce planning as part of the the healthcare staffing programme).

- Each unit will ensure they have sufficient capacity to deliver the appropriate service for their booked maternity population.
- Unit capacity must be planned in co-ordination with Maternity and Fetal Medicine services.
- Maternal bed capacity management must consider and plan for the need to accommodate high risk women transferred antenatally who may require care for a period of time, as well as additional postnatal bed capacity.
- Capacity planning should take account of:
    - Cot availability for each level of care provided at the unit
    - Anticipated transfers both *in-utero* and *ex-utero* based on agreed pathways of care
    - Anticipated discharges from the unit
    - Pathways for patient flow including efficient use of Transitional Care Services and supported discharge facilitated by Neonatal Community Outreach
    - National and regional activity and demographics.

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12. Review of this Document

This document should be reviewed within four to five years of publication, led by the Scottish Perinatal Network.

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