GIG CYMRU NHS WALES

All Wales Neonatal Standards
Third edition

Approved: Neonatal Network Steering Group
19 September 2017

Acting on behalf of Local Health Boards in Wales in the Planning and Securing of Specialised Services

CONTENTS

Forward

The All Wales Neonatal Standards are designed to ensure high quality neonatal care is available for the people of Wales. The first edition published in 2008 was part of a series of standards for specialised services for children and young people in Wales. These standards were updated in 2013.

In this third edition, we aim to build on the previous standards using the latest evidence and best practice guidelines. Many of the new standards are influenced by neonatal developments across the UK, using recommendations from prestigious authorities such as the British Association of Perinatal Medicine (BAPM), Neonatal Audit Programme (NNAP), Royal College of Paediatric and Child Health (RCPCH), Bliss or based upon standards in England and Scotland.

The standards incorporate the increasingly important role of the Neonatal Network and Units, working together to share learning, maintain expert skills and continually improve services.

Each Health Board is responsible for planning and delivering care in line with these standards. The Neonatal Network has the responsibility for monitoring compliance with the Standards and supporting the units to improve.

Introduction

The All Wales Neonatal Standards outline the requirements for delivery of high quality, person centred, safe and effective care. They are designed to provide a framework for units to assess quality service provision at local level and also to benchmark across other units in Wales.

The Standards are intended to be applied at unit level, however it is recognised that on occasions, units may need to look to neighbouring units for support.

The Neonatal Network, through its advisory and monitoring responsibility, will undertake assessments of each neonatal unit using a variety of means:

- Self assessment at unit level
- Evaluation of national audit data
- Peer review (when resourced and established)

Within Wales there are three different types of unit, as follows:

Special Care Units (SCU) These provide special care for their own local population. Depending on arrangements, they may provide some high dependency care.

Local Neonatal Units (LNU) these units provide special care and some high dependency care with a locally agreed small volume of initial intensive care. Babies who require complex or longer term intensive care will be transferred to a Neonatal Intensive Care Unit.

Neonatal Intensive Care Units (NICU) these are larger units that provide the whole range of medical and sometimes surgical neonatal care for their local population, along with additional care for babies and their families referred from the Health Community in which they are based. NICUs are specialist centres of expertise and experience for the sickest infants. NICUs will work closely with the LNUs, SCUs paediatric and obstetric services.

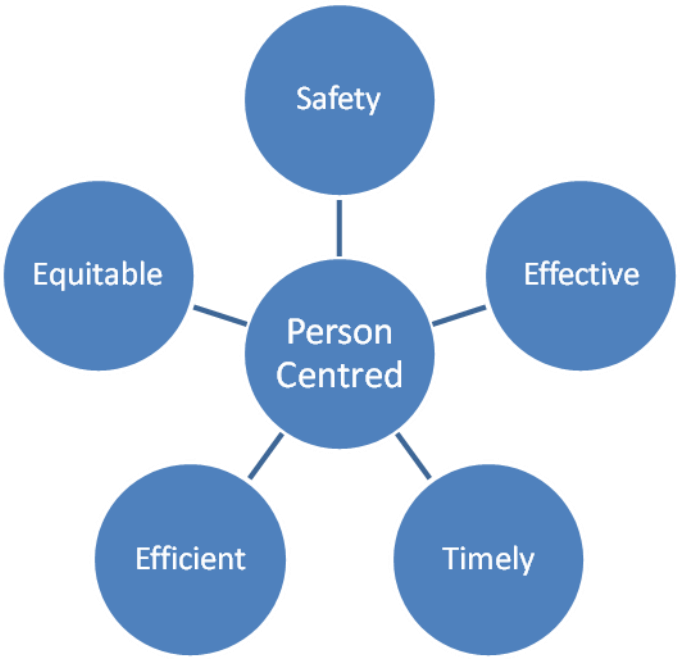
The role of transitional care is increasingly recognised as important to provide high quality and safe care whilst keeping mothers and babies together and reducing unintended harm caused by unnecessary separation.

The Standards are based on the premise that the babies and families we care for should be at the heart of everything we do. The Quality Improvement Guide: Improving Quality Together (2014) identifies that patient centred care can lead to improved quality,

reduced waste, better experiences and better use of resources. The All Wales Neonatal Standards follow the six domains of quality healthcare as follows:

- Patient Centred
- Safety
- Effective
- Timely
- Efficient
- Equitable

PATIENT CENTRED CARE



Domain 1: Patient Centeredness and care of baby and family [7-11]

Rationale: The baby and the family will receive family centred, high quality care as close to home as possible, with ease of access to specialist centres when this care is required. Family centred care is an approach which places parents at the centre of their baby's care and is hugely beneficial to babies and parents. It can lower a baby's stress levels, promote better health, shorten hospital stays and reduce hospital readmissions. It helps parents to bond with their baby and improves confidence as a parent. It helps families whose baby is in a neonatal unit cope with the stress, anxiety and altered parenting roles that accompany the baby's condition. It puts the physical, psychological and social needs of the baby and family at the heart of all care given.

The care pathway will be seamless across the various professions who are involved in the care. Excellent communication between groups of professionals who care for the baby and parents is essential. Parents will be supported to be fully involved in caring for their baby, and fully informed on their baby's condition so they can make appropriate, informed decisions about their ongoing care.

Domain 1a – Communication and seamless care	**Responsible organisation**
Parent information leaflets will be available at all antenatal facilities regarding post natal and neonatal service provision.	LHBs
Neonatal medical staff will discuss options and care pathways with parents who are expecting a baby requiring neonatal care. These discussions are to be documented in the mother's notes.	LHBs
Where time allows prior to birth, parents will be offered an opportunity to visit the neonatal unit to which their baby is likely to be admitted.[2]	LHBs
All parents will be fully inducted on entry to the Neonatal Unit, so they can orient themselves with routines and are aware of the different equipment, monitoring and alarms within the unit.[2]	LHBs
Written information will be provided to parents upon their baby's admission in languages and formats appropriate to their needs. This will cover as a minimum: • Admission to hospital, including travel, parking and information on local amenities	LHBs

• Transfer service and repatriation • Discharge service and arrangements for going home • National and local support groups available • Who to contact in the hospital with queries or for advice • Where to go for further information and support, including sources of financial support and useful websites[12] • How to access financial support (regardless of length of stay)[12] • Services to which a baby is being transferred, including a named contact and telephone number • Condition/diagnosis • Treatment options available • Likely outcomes/benefits of treatment • Possible complications/risks • Circumstances requiring consent.	
Parents will be offered access to appropriate communication/ translation and advocacy services to support them, while their babies are receiving neonatal care, in their participation in ward round discussions, clinical care decision making, palliative care planning and end of life care if required.[2,8]	LHBs
Domain 1b – Duty of candour	**Responsible organisation**
All staff will be reminded of duty of candour during the staff induction programme for each unit/health board.[14]	LHBs
Domain 1c - Parents' participation in decision making and the care of their baby[5,7-11]	**Responsible organisation**
Every effort will be made to keep the mother and her baby/babies in the same hospital. [5]	LHBs
Parents will be offered the opportunity to be present when care and other medical interventions are delivered if clinically appropriate.[5,7]	LHBs
Every baby will be treated as an individual with dignity and respect: • Clinical interventions will be managed to minimise stress, avoid pain and conserve energy • Noise and light levels will be managed to minimise stress • Appropriate clothing is used at all times, taking into account parents' choice • Privacy will be respected and promoted as	LHBs

appropriate to the baby's condition.[2,5,8]	
Every parent will have unrestricted access to their baby, unless there are safeguarding restrictions imposed.[2,5,8,36]	LHBs
Parents will be encouraged to be present on, and be an active part of, every ward round.	LHBs
Parents who are unable to visit their baby will be able to access an electronic means of maintaining audiovisual contact with the baby, in line with Health Board Information Governance Policies.	LHBs
Every unit will have free WIFI available to parents to enable access to digital information.	LHBs
Parents will be offered opportunities to discuss their baby's diagnosis and care with a senior clinician within 24 hrs of admission, or following a significant change in condition.[2,5,8,36]	LHBs
Parents will be actively encouraged, and provided with the necessary teaching and supervision to participate in all aspects of the daily care of their babies.	LHBs
Up to date, documented care plans will be used to direct care and are formulated in discussion with, and input from, parents where appropriate.[2,8]	LHBs
Whenever possible transfers of babies should be planned in collaboration with the parents.	LHBs
Staff will provide assistance to parents in making travel and accommodation arrangements.	LHBs
Parents will be given information on how to contact national and local support groups and where to get further information, including advice on financial support and useful websites.	LHBs
If required, palliative care planning and end of life decisions will be made in partnership with parents and professionals, in a suitable environment. All available, clinically appropriate options will be explored.[2,8,15,34]	LHBs
Parent will be offered the opportunity to feedback their experiences of the service during their stay via Parent Satisfaction Surveys, parent stories or follow up phone calls.[8,14,51]	LHBs
Domain 1d - Professional support	**Responsible organisation**
It is vital that timely access to psychological support is available to prevent any impact on a parent's	

mental health, which in turn can have an impact on the whole of the family.[7,8,13,53] Each unit will ensure there are enough psychologists, counsellors and other mental health workers available so that parents, siblings and staff have access to psychological support.[8,9,53] In addition access to the following support services is also required: • Social worker • Spiritual advisor • Bereavement counsellor • Breast feeding support staff • Occupational Therapist (providing psycho-social intervention) • Multi-ethnic health advocates and translators.[2,4,5]	LHBs
Domain 1e - Facilities for parents	**Responsible organisation**
All future designs for new Neonatal Units will comply with the Welsh Health Building Note 09-03: Neonatal units (2016) and with the Disability and Equality act (2010).	LHBs
Transitional care[44] will be recognised as part of the full spectrum of neonatal care. Units will plan to develop transitional care facilities in order to reduce the need to separate (near term and term) babies from their mothers.	LHBs
Dedicated facilities will be available for parents and families of babies receiving neonatal care. As a minimum there is: • One room per intensive care cot located within 10 – 15 minutes' walking distance of the unit in a NICU • At least two rooms for 'rooming in' prior to discharge will be available within or adjacent to the Unit (with gas and air supply points to be available). All rooms should be free of charge and with bathroom facilities • Arrangements for secure and readily accessible storage of parents' personal items • Non–secure storage for baby's personal items (e.g. baby clothes) at the cot-side • A parents sitting room • Access to hot drinks and food outside normal hours	LHBs

• A toilet and washing area • A changing area for other young children • A play area for siblings of babies receiving care • Access to a telephone and internet connection within the hospital • A room set aside and furnished appropriately for counselling where dignity, privacy and respect is maintained • Where car parking is not free, parents will be informed of the cost and any local arrangements for reimbursement.[5,7,8,9,11]	
Local and special care units will ensure that there are parent rooms available to accommodate any parent who wishes to stay close to their baby.[53]	LHBs
Parents will have access to Family Friendly outpatient facilities including: • An appropriate area to feed baby • Changing area • Access for prams • Consulting room large enough for baby, parents and siblings • Play area • Appropriate toys available.[5,7]	LHBs
Units will actively participate with the Bliss Baby Charter audit tool to assess the quality of family-centred care they provide and identify areas for improvement.[7]	LHBs
Domain 1f – Breast feeding	**Responsible organisation**
All units will have an Enteral Feeding Guideline; either the All Wales Enteral Feeding Guideline for Preterm Infants or local feeding policy.	LHBs
Health Boards and neonatal units will be able to evidence that they are actively working towards improving breast feeding rates. Breast feeding promotes health benefits for the mother and baby throughout their lives. Maternity and neonatal services will encourage breastfeeding and the expression of milk through the provision of information and dedicated support, including: • All units will have a breast feeding policy in place that promotes skin to skin, bonding, breast feeding or expressing	LHBs

• All units will have a medical and nursing lead, with dedicated time, who works to improve breast feeding rates and educate staff and parents • Support to initiate breastfeeding as soon as possible after birth • When necessary, support to start expressing within 1 hour if mother's condition allows or if not, as soon as possible after that, to maximise the benefit of colostrum and optimise milk production • There will be enough breast pumps and associated equipment for every mother who requires them • Mothers will be shown how to make the best use of techniques such as double pumping and skin to skin • Mothers will be requested to keep a record of volumes expressed so that problems with expression may be identified and addressed early • Availability of a comfortable, dedicated and discreet area for feeding or expressing. This could be at the cot-side • Mothers will be actively encouraged and supported to breast feed throughout the stay by neonatal staff (medical and nursing) and breast feeding supporters/advisors. All staff involved in this aspect of care will receive training on the benefits of breastfeeding on the health of both the mother and baby throughout their life spans • Supporting breastfeeding as part of the discharge process • Promotion of safe and hygienic handling, labelling, storage and administration of breast milk in line with national and local guidelines [47] • Access to donor breast milk, as clinically indicated [18] • Parents will be given information on donor milk (admission packs/notice board) and there will be a process for consent. [18,47] Written information on breast feeding is to be provided at key stages. Where possible this should be in different languages. This includes: • Pregnancy • Antenatal consultation with the neonatal team • Initiation and maintenance to around 34 weeks • Transitioning to feeding at the breast • Maintenance of breast feeding at home	LHBs

Units and postnatal wards should display information showing their own breast feeding rates. [5,7,17,19-26]	
Parents will have access to information and support on alternative feeding practices e.g. bottle feeding. Both mothers and fathers will be supported and shown how to make feeds and sterilise bottles and teats.[7]	LHBs
Standard 1g - Developmental care	**Responsible organisation**

Effective developmental care results in less stress for babies, shorter hospital stays and better long terms outcomes. Parents feel more involved in the care of their babies and relationships between hospital staff and parents are strengthened.[1,2,5,7]
• A multi-disciplinary developmental care group is established on each unit
• There will be unit guidelines for delivery of developmental care, supported by education and training of staff
• Each unit will have a guideline and scoring system to aid recognition and treatment of pain in the neonate
• Parents will be encouraged and supported to participate in their baby's care at the earliest opportunity, including:
  • Regular skin-to-skin
  • Providing comforting touch and comfort holding, particularly during painful procedures
  • Feeding
  • Day-to-day care, such as nappy changing
  • Handling and positioning of their baby.
• Parents will be educated in family centred developmental care (in admission packs, information in the unit and discussion with staff)
	LHBs

Domain 1h -Equipment on neonatal units	**Responsible organisation**
Appropriate, safe equipment will be available on all neonatal units. [1,2]	LHBs
Resources will be available to purchase and maintain equipment for the level of neonatal care being delivered.	LHBs
Joint working arrangements will be in place with the local Medical Technical Department responsible for equipment safety and maintenance.	LHBs

The blood gas analyser will be maintained in line with point of care testing protocols and infection prevention and control (IPC) standards.	LHBs
24-hour laboratory services will be available which are orientated to neonatal needs.[1]	LHBs
Each Neonatal Unit will have access to the following equipment: • Resuscitaire and difficult airway box • Blood gas analysis with facilities for measuring lactate and Haemoglobin • Syringe/infusion pumps • Phototherapy units • Transillumination by cold light • Portable x-ray machine • Ultrasound scanner to be available 24/7 • Internal hospital transport equipment (including mechanical ventilation) • Cerebral function monitor • Non-invasive blood pressure measurement • Instant photographs • Specialist equipment to support discharge home. [1,2]	LHBs
Each intensive care cot (including stabilisation cot) will be equipped with the following equipment: • Ventilator • Incubator • CPAP and or high flow machine • Cardio- respiratory monitor with facilities to measure ECG, respiration, temp x2, Saturation X2, invasive and non invasive blood pressure • A pressure limited resuscitation device with air oxygen blender e.g. a neopuff • Data point • A breast milk pump • A suitable light source for clinical procedures e.g. insertion of lines. [1,2]	LHBs
Neonatal intensive care units will have facilities to provide: • Inhaled Nitric Oxide • Whole body cooling • High Frequency Oscillation. [1,2]	LHBs
Domain 1i –Research Consent	**Responsible organisation**
Clinical research activity on neonatal units is extremely important in order to advance knowledge	LHBs

and improve care. Counselling and Randomisation will be undertaken only by clinicians who have completed the course and use the principles of 'Good Clinical Practice' guidelines.[43]	
All efforts will be made to include families and their baby in appropriate clinical research activity: • Families and carers are informed about all research that their baby is eligible to participate in by using appropriate leaflets, inserts in maternity notes and inserts in Unit induction packs • When a baby becomes eligible for a research study during their admission parents and carers are informed of this, and provided with regular, appropriate updates • Each Unit supports families and carers during the research process by providing regular updates after a baby has been recruited to a study • Families and carers are informed that they can withdraw from research trials at any time without compromising the care of their baby.	LHBs

Domain 2: Safe Care

Rationale: Assurance regarding quality and safety of care will be supported by a robust clinical governance framework. Each unit will monitor and act upon data and information gathered from quality outcome measures, clinical outcomes and other methodologies and demonstrates a culture of continuous improvement. Care will be where possible, evidence based and provided in line with approved patient pathways by appropriately skilled staff, treating babies in units with appropriate facilities. Staff should undertake regular audit of practice and receive the required training and updating of their skills.

Domain 2a – Designation of units and appropriate activity	**Responsible organisation**
Neonatal care will be commissioned to meet the local and national population needs of Wales based on up to date and accurate data. [1,2,5,6]	WHSSC
Each neonatal unit in Wales will be designated according to the BAPM criteria (Intensive Care unit, Local neonatal unit or Special care unit) for intensity, facilities and workforce.[1,2,5,6] It is recognised that there will be a Sub Regional Neonatal Intensive Care Centre in North Wales.	Network
A baby thought likely to require specialist care or intensive care after birth, (including babies with prenatally diagnosed conditions) should, wherever possible, be delivered in a unit with the associated specialist service or intensive care service, to avoid unnecessary postnatal transfer.[1,2,29] Each unit will manage babies in line with the agreed service specifications.	WHSSC
Domain 2b – Midwifery led care	**Responsible organisation**
Midwifery led units (MLUs) including free standing should have in place the following clear clinical governance arrangements to ensure safe pathways for neonatal care.[50] • A program of regular neonatal training for midwifery staff which includes resuscitation, newborn examination, and common neonatal problems • Clear pathways for both emergency neonatal	LHBs

care and common neonatal problems e.g. jaundice, hypothermia, respiratory distress • Audit and data collection • Case reviews which involve neonatal clinicians of any adverse outcomes, incidents or near misses • Records of all of the above which can be reviewed.	
Domain 2c – Working relationships between neonatal units	**Responsible organisation**
Each special care or local neonatal unit will be aligned to a NICU. Agreement on frequency and nature of ward rounds will be determined and documented in the unit's service specification. This will encourage: • Ward rounds from NICU consultants at LNUs and SCUs • Regular participation on NICU ward rounds of all consultants from non NICUs who contribute to their neonatal unit on call rota in order that their knowledge is current and to maintain their skills.	LHBs
For each NICU / SURNICC there will be at least 2 consultant led ward rounds per day. For each local neonatal unit or special care unit in Wales there will be at least one consultant ward round per day.	LHBs
Each unit will have in place robust procedures for clinical handover for both medical and nursing staff to maintain patient safety in line with Health Board policy.	LHBs
Across the network there will be agreed pathways of care for repatriation of babies.	Network
There will be a process in place whereby a consultant working on a special care unit or LNU will access advice from their associated NICU 24/7. All units outside of a NICU / SURNNIC will be required to have 24/7 Consultant to Consultant discussion on babies who fit the following criteria: • Newborn <1500g • Newborn <32/40 or 34/40 for multiple pregnancy • Any ventilated baby • Non-invasive ventilation (CPAP / High Flow) requiring FiO2 > 0.4, or rising FiO2 requirement • A baby with a pneumothorax requiring intervention	LHBs

• Any baby with an abnormality diagnosed in the antenatal period and a plan to deliver in a tertiary centre • Seizures • Abdominal distension and feed intolerance • Suspected NEC • Refractory or unanticipated symptomatic hypoglycaemia • Persistent metabolic acidosis • Any baby requiring therapeutic cooling • Any other baby who is causing concern.	
All units providing care for babies outside of their agreed gestational age for delivery will exception report to the Neonatal Network.	Network
Domain 2d- Resuscitation	**Responsible organisation**
The Standards for neonatal resuscitation are set out in the Neonatal Life Support Manual (4th Ed 2016) which is issued under the auspices of the Resuscitation Council (UK) and reflect current opinion published by the International Liaison Committee on Resuscitation (ILCOR).	Network
Personnel	
Each unit will ensure that all doctors and nurses caring for critically ill neonates receive Newborn Life Support (NLS) training and maintain NLS certification.[27]	LHBs
Health Boards and Welsh Ambulance Services Trust will ensure that staff attending deliveries in midwifery led units and home births, including paramedics, are suitably trained in Newborn resuscitation and stabilisation and maintain their certification.[1,2]	LHBs WAST
All obstetric delivery units involved in the care of babies will have associated neonatal staffing arrangements for the prompt, safe and effective resuscitation and stabilisation of babies. Ongoing stabilisation may be necessary until retrieval to a unit able to provide ongoing care at the appropriate level.	LHBs
Equipment	
Resuscitation equipment will comply with the latest Resuscitation Council Guidelines and be available in any area where neonates receive care, including	LHBs

Midwifery led Units.[27,28]	
Clinical Management	
Every Neonatal Unit will have an agreed protocol for the resuscitation and/or management of the extremely preterm infant.[3,4]	LHBs
When delivery of a baby at <32 weeks gestational age is anticipated, a consultant or career grade/training grade doctor or ANNP with middle grade equivalent neonatal training and experience will also be present.[1,2]	LHBs
If the decision after resuscitation is that the baby should remain with the mother, a clear management plan will be documented including the frequency of required observations and specified time for review.	LHBs
Domain 2e - Infection prevention and control (IPC)	**Responsible organisation**
All neonatal units will have a detailed written guideline regarding infection prevention and control (IPC) practices, based on their own Health Board and Public Health Wales IPC policies. See Appendix 1 for guidance. The guideline will be updated in line with best practice.[49,58] Staff will need to be familiar with the guidelines and follow the recommendations. There will include details of: • Standard infection control precautions • Prevention of infection • Admission screening • Hand Hygiene • Enhanced precautions • Control of the environment • Cleaning schedule • Management of blood and body fluid spillages • Safe disposable of waste • Safe disposable/cleaning of linen and laundry • Sink and water policy • Management of care equipment • Avoidance of contamination and decontamination • Isolation Precautions • Personal Protective Equipment (PPE) • Management of outbreaks or suspected outbreaks including liaison with the network.	LHBs

All staff will receive IPC training during their induction programs with mandatory annual updates.	LHBs
Infection prevention control practices are audited in line with local policy, with feedback provided to staff and service users.	LHBs
Domain 2f - Fire Safety	**Responsible organisation**
All units will have a written policy on fire prevention and actions to be taken if a fire should develop on the unit. An area for continuation of care, if evacuation is necessary, will be identified.	LHBs
All staff will have undertaken Fire Safety as part of their induction and maintain updates.	LHBs
All staff will be aware of the policy and there will be regular fire drills and scenarios acting out evacuation plans.	LHBs
Domain 2g - Safe guarding	**Responsible organisation**
All units will have systems, policies and procedures in place to support their staff in safeguarding babies effectively. These will reflect local (Health Board, Regional safeguarding Children Board) professional (RCN, GMC) and national guidance (AWCPP 2008). [32,33,39-42]	LHBs
Each unit will identify a lead professional for safeguarding to provide other staff with support and advice on safeguarding issues, updates on safeguarding developments and information on training.	LHBs
All neonatal staff will undertake training on safeguarding appropriate to their role and in line with Health Board policy. Neonatologists and neonatal nurses are expected to be at Level 3 training. [32,33,39,40,41]	LHBs
All staff will take action if a baby is identified as being at risk in line with the safeguarding policy.	LHBs
Where safeguarding concerns are identified, staff will ensure that details of interactions with the parents are comprehensively documented in the baby's records.	LHBs
Information will be shared appropriately amongst multi professional agencies and there will be active engagement with the primary care team of GP,	LHBs

midwife, Health visitor and social care worker where appropriate.	
Each unit will have agreed pathways of care in place for the management of a baby where the parent has a known history of substance misuse or other safeguarding concerns have been identified.	LHBs
Domain 2h - Case reviews	
Each unit will have in place a protocol for post mortem consent supported by appropriate staff training. The findings at post mortem must be shared at a later date with the parents.	LHBs
Each Health Board will undertake a detailed case review following the death of every baby using a specified tool, by a consultant least involved in the case. There will also be a detailed review of every baby who requires cooling. [59]	LHBs
Each unit will have in place a process whereby the outcome of this review is presented at a unit meeting. In addition an external peer review clinician will be invited to participate in the case presentation to give independent advice. Lessons learnt should be fed back to all relevant staff at unit level.[59]	LHBs
The neonatal network will set up network mortality review meetings at which individual deaths can be reviewed and a more detailed review undertaken when necessary. If a more detailed review is required this should be done by a multidisciplinary team involving midwifery, obstetrics, neonatal medical and neonatal nursing colleagues with appropriate input from any other involved specialists[59]. All units must participate in this process, so that when a baby is born in one unit and transferred to another, the care can be discussed openly across the baby's pathway. Lessons learned will be shared with all units in Wales.	Network LHBs
Domain 2i - Incident reporting	**Responsible organisation**
All units will have in place effective mechanisms for reporting and investigation to Welsh Assembly Government (WAG) serious untoward incidents (based on the "never events" list). [60]	LHBs

There will be at unit level effective mechanisms for reporting and investigating untoward incidents with any identified lessons communicated effectively to staff. Lessons learnt will be shared at network level. If a baby is involved parents need to be fully informed and involved.	
If a member of staff is involved in, or witnesses an untoward incident, whether as a staff member or as the transport team, they will report this to their line manager, in accordance with the Health Board reporting and investigation process. The parents will also be informed.	LHBs
If a transport team member is involved in an untoward incident, they will report the incident and discuss with their line manager. They will also inform the consultant who is caring for the baby, and parents will be informed. If this is not possible at the time (because of the nature of the transport service) arrangements will be made to meet the parents at a later time or delegate the responsibility to the receiving consultant. This will be documented.	LHBs
The neonatal network will be informed if a baby requiring NICU care is unable to be transferred due to capacity reasons. An incident report will also be generated.	LHBs Network

Domain 3: Effective Care

Rationale: A high quality service with an effective governance structure will demonstrate the use of quality indicators to monitor and improve outcomes and will produce an annual report evidencing the planning and delivery of continuous improvement in the service. This will be supported by active engagement with staff at all levels

Domain 3a – Leadership and Management	**Responsible organisation**
The Neonatal Network will have in place clinical leadership with time dedicated to the role.[1,2]	Network
All neonatal units will have a leadership team which consists of a medical lead, a nurse lead and a Directorate manager.	LHBs
The neonatal unit medical lead will have 2 sessions per week in their job plan devoted to the management role. This is in addition to the sessions in their job plan devoted to clinical care and continual professional development (CPD).	LHBs
All units will have an office/ward manager who can work clinically when required.[1,2]	LHBs
All units will have a nursing co-ordinator/team leader on every shift; who can work clinically when required.[5]	LHBs
The Neonatal unit providing surgical services will have a nurse with neonatal surgical experience who has clinical leadership responsibility for nursing care of babies needing surgery.[5]	LHBs
Domain 3b - Data reporting and benchmarking	
• All units will participate in data collection through the following agreed systems • Badgernet • Vermont Oxford Network • MBRRACE • National Neonatal Audit Project NNAP • CARIS.[36,57,59]	LHBs
In order to maintain data quality, completeness and troubleshooting, all units will be allocated senior staff responsible for each of the data bases.	
All units will review themselves against the current BAPM Neonatal Service Quality Indicators and publish information about their current status and	LHBs

future plans in their Annual Report. [72]	
Units will have training and monitoring plans to ensure accurate data entry in both a local and national context.	
All units will generate an Annual Report including key performance indicators and benchmarking. The Neonatal Network will generate an All Wales Annual Report.	LHBs Network
All units will provide effective staff feedback on outcomes, including published reports and any remedial steps required.	LHBs
Domain 3c – Evidence based guidelines	**Responsible organisation**
Units will use evidence based guidelines such as those published by the Clinical Guideline Group (CGG).	LHBs
Domain 3d - Cooling	**Responsible organisation**
Infants fulfilling criteria for therapeutic hypothermia (TH) will be looked after in a NICU or SURNICC in line with the All Wales Cooling Guideline. [54-56]	LHBs
If born in a LNU or a SCBU, contact will be made with the Cymru inter Hospital Acute Neonatal Transfer Service (CHANTS) team and NICU in line with the All Wales Cooling Guideline.	LHBS
All surviving infants undergoing therapeutic hypothermia will have an MRI brain scan between postnatal days 5 to 14.	LHBs
Domain 3e- The newborn Examination	**Responsible organisation**
The newborn examination will only be undertaken by clinicians who have been trained in the technique and who maintain their practice[46]. Clinicians will perform at least 30 examinations per year to maintain their skills. Refresher training will be provided with an experienced neonatal clinician and this training will include at least three satisfactory supervised newborn examinations. The newborn examination includes: • Cardiovascular system examination (including assessment of oxygen saturation) • Eye examination • Hip examination • In male infants examination for the presence of	LHBs

testes in the scrotal sac • Examination of the soft palate using a tongue depressor and torch.	

Pathways will be put in place to ensure prompt referral and treatment when abnormalities are detected [46]. These pathways include:
• Hip USS scan should by 6 weeks:
  ○ if there is a family history (first degree relative) of hip problems requiring treatment with a splint, harness or operation in infancy
  ○ if there was a history of breech presentation at or after 36 weeks gestation. In the case of multiple births, if any of the babies is breech after 36 weeks gestation, all babies should receive an USS
• If the clinical examination of the hips is abnormal, USS scan will be done within 2 weeks
• If a cataract is suspected on examination of the eyes, the baby will be seen by a specialist ophthalmologist within two weeks of age
• For babies with bilateral undescended testes the baby will be seen by a consultant neonatologist +/- specialist endocrinologist within 24 hours after birth to rule out life threatening endocrine disease.	

Domain 3f - Screening pathways	**Responsible organisation**
There will be agreed screening pathways for • ROP screening of high risk infants [64] • Hearing screening [65] • Newborn blood spot. [66]	PHW LHBs
Protocols will be in place for management of • Those infants requiring BCG • Those infants requiring hepatitis b vaccination • Infants born to mothers with HIV infection.	Network LHBs
Domain 3g – Vaccinations	**Responsible organisation**
Babies will receive their childhood immunisations according to the latest JCVI Green Book recommendations.	LHBs
Palivizumab to be offered to a select group of neonates as recommended in the latest JCVI Green Book and in line with local policy.	LHBs
Vaccinations to be given by a clinician trained to	LHBs

immunise. Immunisation administrators to undertake a yearly update in line with local policy.	
Domain 3h- Neuro-developmental follow up	**Responsible organisation**
All Health Boards should ensure that they take responsibility for their babies' neurodevelopmental follow-up pathways. As a minimum, babies in the following categories will receive an appropriate neurodevelopmental assessment at 2 years of age with data entry into Badgernet: • Less than 32 weeks (corrected) • Less than 1500g • All babies who received therapeutic hypothermia.[61,67]	LHBs

Domain 4: Equity

Rationale: The service will be of a uniform high standard wherever the patient lives within Wales. Every effort will be made to secure timely access to the most appropriate care. Units will have sufficient capacity to ensure that where appropriate, all babies receive the care they need as close to home as possible, depending on the condition of the baby.[6]

Domain 4a – Access and capacity	**Responsible organisation**
Neonatal care is commissioned to meet the local and national population need based on an adequate assessment of need undertaken at least once every year. [1,2,5,57]	WHSSC
Agreed out of network activity e.g. cardiac surgery, ECMO, specialist surgery and agreed cross border flow will be maintained in line with agreed commissioning.	WHSSC
Average cot occupancy will not exceed 70% for critical care and 80% for special care.[1,2,3]	WHSSC
There will be sufficient surgical capacity in the neonatal surgical centre to accommodate those babies who require access for surgical care.	WHSSC
Domain 4b – System of network review	**Responsible organisation**
The All Wales Neonatal Network will have in place a clinical lead who has sessions dedicated to the role and enable support to be provided equally to North and South Wales as required. [1,2]	Network
Within the Network leadership arrangements will be in place for: • Workforce • Education and Training • Quality & Safety • Guideline development • Audit • Family Centred Care/Developmental Care • Transport.	Network
Domain 4c – Staffing	**Responsible organisation**
Medical workforce **Neonatal intensive care units**	

At **Tier 3**, all consultants will be full time neonatal specialists. There will be a neonatal consultant 24/7 on-call rota, separate from general paediatric cover with a minimum of 7 Staff. All consultants will have CCT in Paediatrics, Neonatal Medicine or equivalent training.	LHBs
Neonatal consultant staff will be available on site in all NICUs for at least 12 hours a day and for units undertaking more than 4000 intensive care days per annum consideration will be given to 24 hour consultant presence. [16]	LHBs
NICUs undertaking more than 2500 Intensive care (IC) days per annum will provide at least two consultant led teams during normal hours.[16]	LHBs
At **Tier 2** there will be a separate neonatal rota 24/7 with a minimum of 8 staff, made up from the following: • Paediatric ST4-8 • Specialty doctors • Other non training grade doctors • ANNPs (with appropriate additional skills and training) • Resident neonatal consultants.	LHBs
NICUs undertaking more than 2500 Intensive care (IC) days per annum will augment their tier 2 medical cover by providing a second trained doctor or suitably trained ANNP or resident consultant.[16]	LHBs
At **Tier 1** there will be a separate neonatal rota with a minimum of 8 staff, made up from the following: • Paediatrics ST1-3 • ENNPs • ANNPs • Specialty doctors.	LHBs
Units with more than 7000 deliveries will augment their tier 1 medical support by providing extended nurse practice or a second junior doctor/ ANNP. [16]	LHBs
Neonatal surgical services – University Hospital of Wales	**Responsible organisation**
Neonatal surgery is performed by specialist paediatric and neonatal surgeons, or surgeons with a specialist interest and complimented by specialist paediatric and neonatal anaesthetic support. [35]	LHBs

A specialist paediatric surgeon is on call 24/7 for the neonatal surgical service and to provide advice to referring centres. [35]	LHBs
The surgical service requires 24/7 paediatric radiology support either locally delivered or within a network. In the absence of a 24/7 service the local provider will ensure that efficient and clear processes are in place to mitigate any risks and to Offer the best possible care to the baby. [35]	LHBs
Local Neonatal Units [1,2,3]	**Responsible organisation**
At **Tier 3** the LNU has a minimum of 7 consultants on the on-call rota. There should be one consultant who has a designated leadership role in neonatology and is responsible for the direction and management of the Unit, with a minimum of 2 sessions identified in the job plan for this role. This is in addition to the recommended sessions for CPD and clinical work.	LHBs
There will be 24-hour 7 day availability of a paediatric/ neonatal consultant who can demonstrate expertise in neonatal care (based on training, experience, CPD and ongoing appraisal).[3]	LHBs
Tier 2 the LNU may have a shared rota with paediatrics, with minimum staff needed to meet British Association of Perinatal Medicine (BAPM) and Wales Deanery requirements.* Staff will have the training and experience to resuscitate and stabilise babies unexpectedly requiring short term Intensive care. Staffing will be made up from the following: • Paediatric ST3-8 • Specialty doctors • Other non training grade doctors • ANNPs • Resident paediatric/neonatal consultants.[3] * Where LNUs regularly provide intensive care and/or have a very busy paediatric service and/or have a neonatal and paediatric services that are a significant distance apart the above staffing should be enhanced. Such enhanced measures would include separate Tier 2 rotas 0900 until 2400 each day or, depending on an assessment of patient safety, throughout the 24 hours.	LHBs
At **Tier 1** the LNU will have a separate neonatal rota with the minimum staff needed to meet BAPM and Wales Deanery requirements who do not cover general paediatrics in addition at any time of day or night, made up from the following:	LHBs

• ANNP's • tier 1 trainees • non training grade doctors • specialty doctors.	
Special Care Units [1,2]	**Responsible organisation**
At **Tier 3** there will be a minimum of 7 consultants on the on-call rota with a minimum of one consultant with a designated lead interest in neonatology and responsible for the direction and management of the unit.	LHBs
At **Tier 2** there will be a shared rota with paediatrics with the minimum staff needed to meet BAPM and Wales Deanery requirements.	LHBs
At **Tier 1** the rotas will be EWTD compliant with the minimum staff needed to meet BAPM and Wales Deanery requirements who may cover paediatrics in addition, made up from the following: • Paediatric ST1-2 • GPST1 or FY2 • Specialty doctors • ANNPs • Non training grade doctors. In some settings Tier 1 and 2 may be able to merge where appropriate skilled nursing support exists.	LHBs
Nursing Workforce [30,31]	**Responsible organisation**
A nursing ratio of 1:1 is provided for babies requiring Neonatal Intensive care. The named nurse is Qualified in Speciality (QIS) and will have no other managerial responsibilities during the clinical shift. The nurse may be involved in the support of a less experienced nurse working alongside in caring for the same baby.[3]	LHBs
A nursing ratio of 1:2 is provided for babies requiring High Dependency care. The named nurse is Qualified in Speciality (QIS). More stable and less dependent babies may be cared for by registered nurse not QIS, but who are under the direct supervision and responsibility of a neonatal nurse.[3]	LHBs
A nursing ratio of 1:4 is provided for babies requiring Special Care. Registered nurses and non-registered clinical staff will be under the direct supervision and responsibility of a neonatal nurse QIS.[3]	LHBs

NICUs will have a minimum of 80% and local and special care units a minimum of 70% of the workforce establishment holding a current Nursing and Midwifery Council (NMC) registration.[5]	LHBs
The unit can provide evidence that the nursing establishment is correct for the number of commissioned cots and are calculated to include an uplift of 27% to accommodate expected leave. [2 63]	LHBs
Staffing records will evidence that units have a minimum of two registered nurses on duty at all times, of which at least one is Qualified in Speciality (QIS).[5]	LHBs
Identified nurses, acting as Champions for the quality of practice within each unit will have dedicated time to support[5]: • Transport • Bereavement support and palliative care • Discharge Planning • Health, safety & risk management • Infection control • Equipment.	LHBs
All units will have a dedicated supernumerary neonatal outreach team additional to the nursing staff providing direct acute care. The size of the team will depend on local criteria and geographical area.	LHBs
Support staff	**Responsible organisation**
All units will ensure that adequate clerical and support staff are in post.	LHBs
Allied Health Professionals	**Responsible organisation**
All Neonatal units will have appropriately funded • Dietetic care provided by a highly specialist paediatric dietician with specialist knowledge, training and experience of complex neonatal and surgical dietetics • Physiotherapy care provided by highly specialist physiotherapists with knowledge, training and experience to provide neurological and neurodevelopmental assessment and intervention • Occupational therapy provided by highly specialist Occupational therapists with knowledge, training and experience to provide	LHBs

neurodevelopmental, behavioural and psychosocial assessment, intervention and anticipatory guidance to the infant and their family/care giver, to support the development of parenting co- occupations and baby occupations • Speech & Language Therapy (SLT) care by a highly specialist SLT with knowledge, training and experience of the feeding and developmental care needs of complex neonates. [3,4,5] Additional staffing will be needed to support follow up care including assessment, intervention and anticipatory guidance in the community.	
All NICUs & LNUs will provide: • A minimum of 0.05 – 0.1 WTE highly specialist paediatric dietician, Physio, Occupational and Speech and Language Therapist per intensive care cots • A minimum of 0.025-0.05 WTE highly specialist paediatric dietician, Physio, Occupational and Speech and Language Therapist for high dependency cots • A minimum of 0.017-0.033 WTE highly specialist paediatric dietician, Physio, Occupational and Speech and Language Therapist WTE for special care cots. [3,4,5,68,69] For highly specialist paediatric dieticians providing advice to neighbouring LNUs and SCUs additional capacity will be required in the job plans to provide this advice and support to the Network. All neonatal units will have appropriate access to paediatric/neonatal pharmacists with the appropriate skills, knowledge and experience in neonatal intensive care.	LHBs
Domain 4d – Training of Staff **Medical Staff**	**Responsible organisation**
Medical staff are expected to possess skills and knowledge appropriate to their role.	LHBs
Each unit will have a training plan in place that fulfils the requirements of the Educational Contract for Wales Deanery post graduate trainees or other training grade posts.	LHBs

Neonatal consultants working at tier two or tier three are identified neonatal specialists. Their skills, knowledge and clinical CPD must be assessed at annual appraisal. Any deficiencies need to be rectified as soon as possible with agreement from their clinical lead or appraiser.	LHBs
General paediatricians and others such as associate specialists, specialty doctors or other non-training grades who provide cover to neonatal units also need to maintain appropriate skills and knowledge. In general terms, the time spent in neonatal CPD should be proportional to their neonatal work. The neonatal element of the CPD would be assessed at annual appraisal with remedial action taken promptly in agreement with the clinical lead, or appraiser if concerns were apparent. Those working on LNU's or SCU's are encouraged to spend time on a NICU either as a secondment or as fixed sessions in order to further develop their skills and learning.	LHBs
Each unit will have a training plan in place that fulfils the requirements of the Educational Contract for Wales Deanery post graduate trainees or other training posts.	LHBs
All staff should possess the appropriate skills required to resuscitate and stabilise sick infants pending arrival of the transport team	LHBs
Registered and non registered nursing staff	**Responsible organisation**
Each unit to have a continual professional development nurse/team (minimum 1 WTE) with protected time dedicated to providing teaching and education at the cot-side.	LHBs
All nurses involved in direct clinical care will have undertaken a newborn life support course, appropriate to their role, as recommended by the Resuscitation Council UK.[27]	LHBs
Registered staff will achieve the competencies identified within the All Wales Education Pathway for Neonatal Nurses within recognised timescale.	LHBs
All staff will be supported to participate in continuing professional development of relevance to their role	LHBs

on the unit or in the community.[5,34]	
All staff will be formally reviewed on an annual basis through appraisal and e-KSF or other appropriate performance management process.[5,34]	LHBs
Robust training records will be maintained for all levels of staff within the neonatal unit.[5,34]	LHBs
Nurse post registration neonatal education is readily available based on the Matching knowledge and skills for Qualified in Speciality (QIS) Neonatal Nurses competency framework.[30]	WG Network
A minimum of 70% of the registered nursing workforce establishment hold an accredited post registration qualification in specialised neonatal care Qualified in Speciality (QIS).[5]	LHBs
Non registered clinical staff (including nursery nurses) will complete the child specific Credit Qualification Framework Wales (CQFW) level 3 training within 1–5 years of appointment.[3,4,30] This group of non-registered clinical staff must have their roles clearly defined within hospitals, and be included appropriately in established numbers. [4]	LHBs
For nurses QIS working in roles with enhanced practice skills (ENNP), a defined level of competency for the theoretical and practical assessment of new skills needs to be agreed with local higher education institutions (HEI). [3]	LHBs Network
Clear tiers of responsibility and accountability will be put in place for staff working in Advanced Neonatal Nurse Practitioners (ANNPs) roles based on the 4 pillars of Advanced Practice.[4]	LHBs
Allied Health Professionals	**Responsible organisation**
All Therapists involved in neonatal care will be suitably trained and experienced and as a minimum: • Dietitians/specialist neonatal Dietitian – will have completed the British Dietetic Association Paediatric masters module two/five or equivalent levels of knowledge and skills and achieved competencies • Speech & Language Therapists – will demonstrate competences at least to level C with support from a SLT working at level D • Pharmacists – will have successfully completed the Centre of Postgraduate Pharmacy Education	LHBs

paediatric learning pack or have equivalent levels of skills and knowledge. • Occupational therapists - will have competency and postgraduate training in neuro developmental, behavioural and psychosocial assessment, intervention and anticipatory guidance to the infant and their family/care giver, to support the development of parenting co-occupations and baby occupations • Physiotherapists - will demonstrate competencies in line with the requirements of the Association of Paediatric Chartered Physiotherapists neonatal competence framework. [68,69]	
Therapists involved in neonatal care will have access to post graduate training appropriate to their service and should be supported to participate in continual professional development specific to their role.	LHBs
Therapists involved in neonatal care will have their performance reviewed annually according to their Health Board requirements for appraisal based within their professional department and in line with the requirements of their professional bodies.	LHBs
Domain 4e - Cross site working	**Responsible organisation**
Local arrangements will be in place to ensure staff working across sites and Health Boards have the appropriate contractual arrangements.	LHBs
Contractual arrangements need to be in place to support the rotation of nursing staff between NICUs and LNUs/SCUs in order to maintain their Qualified in Speciality (QIS) intensive care skills and competencies.	LHBs

Domain 5: Timeliness

Rationale: Neonates will be cared for in the right place, at the right time and by the right people with the right skills. A high quality neonatal service will demonstrate timely provision of clinical care, minimise delays in emergency transfer and access to care; effective deployment of teams for planned transfers; a sustainable transport infrastructure to support the service and timely communication with obstetric staff.

Domain 5a - Preterm labour	**Responsible organisation**
A preterm labour pathway will be in place to support: • A single course of antenatal steroids when the baby is expected to deliver between 23 weeks and 37 weeks gestation[37] • Mothers who deliver babies < 30 weeks gestation will where time allows be given Magnesium sulphate for neuro protection of their infant in the 24 hours prior to the delivery.[38]	LHBs
Domain 5b – Transport	**Responsible organisation**
24 hours neonatal transport services are planned and commissioned on an All Wales basis.[5,52,53]	WHSSC
There is a robust clinical governance framework including an ongoing risk assessment and reporting of clinical incidents and near misses with feedback of any lessons learned to all members of the team.	WHSSC LHBs
All units referring or receiving neonates have 24 hours access to timely and appropriately staffed and equipped neonatal transport services 365 days a year. [5,52,53]	WHSSC
The Network is responsible for monitoring neonatal transfers in line with UK Neonatal Transport Group. The transport service will contribute data to the National minimum data set and produce an annual report. To enable this, transport teams will enter every transport episode into the Badgernet system within 3 weeks of the transfer event.	Network
Staff working within the transport teams are in addition to those of the clinical inpatient team.[1,2,5,52,53]	LHBs

The neonatal transport team will have facilities for conference calls to enable a 3 way discussion between referring unit, transport team and receiving unit to optimise the care of the baby and initiate a timely transfer.	LHBs
A dedicated vehicle specifically designed to support the transfer of babies between units will be available. The specification and suitability of this vehicle will be reviewed annually.[1,2,5,52,53]	WAST
Each Neonatal Unit will keep a detailed log of all neonatal transfers including unmet requests with the reasons. This information will be included as part of Unit and Network Annual Reports.	LHBs Network
Neonatal units will ensure parents are involved in the possible transfer of their baby, including: • Involving them in discussion on transfers • Giving them comprehensive information on transfers • Encouraging them to visit a new unit in advance of the transfer where possible • Making sure parent know who to talk to at the new unit, for example, the nurse in charge • Supporting the family to make alternative travel arrangements for the family if they are unable to travel with their baby.	LHBs
Parents will be offered the opportunity, where appropriate, to travel in the ambulance with their baby if this has been agreed with the transport team.	LHBs
Arrangements will be in place between maternity and neonatal Units for the timely transfer of the mother (in-utero transfer) when a high-risk situation is anticipated in line with the All Wales In–Utero Transfer Guideline and of the mother post delivery as soon as her condition allows.	LHBs WAST
Each Maternity Unit will keep a detailed log of all in-utero transfers of mothers whose babies are likely to need neonatal care, and all those where requests are refused with reasons.[1,2]	LHBs
The transport service may request the assistance of Emergency Medical Retrieval and Transfer Service (EMRTS) to enable safe and timely transport in the following situations:	LHBs

• Responding to a time critical referral where arrival by road transport will not provide a timely response • Long distance transfers of a baby where a road travel is anticipated to be in excess of 2.5 hrs (baby journey).	
Babies born at home or at an MLU who require transfer to hospital will be transferred [70] safely with appropriate monitoring (including saturations and temperature), observations recorded, airway control, ventilation or oxygen administration as required, and safely secured on a trolley in the supine position with appropriate arrangements to keep the baby's temperature at 37◦C.	LHBs
Domain 5c – Discharge Planning	**Responsible organisation**
The discharge planning process will be commenced at the point of admission to facilitate safe and effective discharge.[1,2,8] This will include: • Parents will be involved in the multi-disciplinary discharge planning from the point of admission. Health and social care plans will be continually reviewed • A named member of staff will be responsible for co-ordinating a multi-agency discharge process. • High risk neonates and those with complex on-going needs will have a multi-disciplinary Discharge Planning Meeting • Parents will have access to rooming-in so they can stay with their baby and develop confidence in day-to day care prior *t*o discharge • Families will have appropriate education, information and training (e.g. home oxygen, naso gastric tube feeding) prior to discharge • Families will have resuscitation training (including information on Sudden Infant Death Syndrome (SIDs) offered before discharge home • Parents will have the opportunity to meet the neonatal outreach team prior to discharge if they are to be involved in their baby's future care • Parents will be given copies of correspondence such as antenatal care plans and baby's discharge summary on or before the day of discharge. This may be accompanied by an explanation from a clinician.	LHBs

All units will have a local neonatal outreach team[1-5] who co-ordinate the multi-agency care of the neonate post discharge. • As a minimum all 'high risk' neonates (<32wks, <1.5kg, HIE) will be followed up by the neonatal outreach team. • Where there is a need for continuing care or palliative care, the responsibility for meeting those additional needs will rest with a workforce skilled in delivering neonatal care in the community[4,6,15] • Bereavement support will be offered to families whose baby has passed away in the neonatal unit[1,2,15] • Plans will include support and monitoring for vulnerable families to safeguard and promote the welfare of the baby[39-42] • For those babies who need long term community care and support, the neonatal team will arrange appropriate and timely transfer of care to children's services • Where there is no requirement for neonatal outreach, the responsibility for ongoing health monitoring will be transferred to the primary care team.	LHBs
The baby and family will have their ongoing needs at home co-ordinated and met by health professionals appropriately skilled in delivering neonatal care and support in the community	LHBs
Neonatal follow-up will be provided as close to the family home as possible. • Local follow-up will be arranged and communicated to parents prior to discharge • High risk neonates will have a 6 month and 2 year corrected neurological and developmental assessment.	LHBs
The will be a process in place whereby a baby discharged from a neonatal unit or postnatal ward and readmitted to hospital within 72 hours will be reviewed in order to determine whether the discharge was appropriate.	LHBs

Domain 6: Efficiency

Rationale: The services will provide value for money. Staff will be appropriately trained and skilled to undertake the tasks required in an efficient manner to reduce any wastage. The network will aim to achieve units working together efficiently to avoid any unnecessary duplication of services and using most efficient practices.

Domain 6a – Reducing term admissions	**Responsible organisation**
Where a baby > 37 weeks gestation (excluding those admitted because of congenital surgical problems) is admitted to the neonatal unit, a case review will be conducted involving obstetricians and neonatologists of the whole care pathway including the antenatal management to see if the admission could have been prevented.	LHBs
Postnatal wards and transitional care units will have arrangements in place for regular clinical observations. This will include the use of a trigger tool to identify an appropriate review by a clinician when there are concerns (BAPM or similar). [48] There should be pathways in place for the management of babies with the following conditions: Jaundice Risk of hypoglycaemia [71,45] Respiratory concerns	LHBs
Postnatal wards and transitional care units will have a guideline in place to identify babies of high risk of neonatal hypoglycaemia and will have means of accurate measurement of blood glucose levels which is essential for diagnosis and management of neonatal hypoglycaemia. The ward based blood gas analyser should be considered the reference standard for measuring blood glucose based on accuracy and speed of result availability. [71]	LHBs
Domain 6b – Avoidance of unwanted variation in practice	**Responsible organisation**
The network and neonatal units will work together to reduce unwanted variation in practice in order to ensure prudent and effective care through the development of pathways of care.	LHBs Network

Domain 6c – Length of stay	Responsible organisation
Length of stay at various gestations will be benchmarked against those of similar units and information will be reported to units and health boards by the Network.	LHBs Network

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Appendix 1

Infection Prevention and control practices – Template for neonatal units to develop guidance

The Infection Prevention and Control Neonatal Advisory Group (IPCNAG) is a subgroup of the Wales Neonatal Network. Its remit is to advise neonatal units and Health Boards to develop a consistent high quality approach to neonatal infection prevention and control (IPC) practices. Advice is based on the latest National guidance including that of Public Health Wales, and National neonatal standards such as those of Neonatal network, British Association of Perinatal Medicine (BAPM), and Royal College of Paediatric and Child Health (RCPCH).

The IPCNAG and Wales Neonatal Network Guidance is described below

Every neonatal unit should have a detailed written guideline regarding IPC practices, based on their own Health Board IPC policy and Public Health Wales evidence based guidance. This guideline should be frequently up dated in line with best practice.

Staff should be familiar with the guidance and follow the recommendations, embedded into practice.

The guideline should include details of the following.

Standard infection control precautions (SICP's) including Hand hygiene

Visitors and staff must have clear guidance on hand hygiene and the use of Protective Personal Equipment (PPE) on entry and exit from the unit. There should be a clear visiting policy.

In addition there should be clear hand hygiene guidance relating to the 'five moments for hand hygiene' (before touching a patient, before a clean/ aseptic procedure, after body fluid exposure, after touching a patient, after touching patient's surroundings) There should be appropriate use of the alcohol hand rub (AHR) by staff and visitors which is provided at every cot space .

It must be ensured that hand washing is also done after contact with equipment e.g. blood gas analysers and ultrasound scanners

as these can become sources of infection for other babies if contaminated.
Staff and visitor hand washing is to be audited regularly, with feedback to include publication of results on notice boards and verbal feedback at meetings.

There will be strict adherence to uniform policy with all staff and visitors, 'bare below elbow' while in the clinical area.

There must be strict asepsis in procedures used for insertion of long lines, peripheral arterial lines, umbilical lines and handling of any giving sets or fluids infused through these lines. All staff performing such procedures must be trained and assessed in the principles of Aseptic Non Touch Technique (ANTT) in accordance with Welsh Government requirements.

Single-use gloves and aprons must be worn for all care and cleaning activities in the patient room/cohort area. Consideration should be given to colour coding of aprons per cot/incubator to reduce as control measure.

Transmission based precautions :

SICPs will be applied for every patient and additional PPE used depending on the route of transmission of the organism. All staff on the neonatal unit will need to be 'fit tested' to use FFP3 respirator masks. All staff will undergo 'fit testing' annually or sooner if changes to individual or equipment are made on the neonatal unit. There should be a designated neonatal 'fit tester' and records should be maintained of those fit tested

- **Contact precautions**: for infections that spread via direct contact with the patient's skin/mucous membranes or indirectly from the patient's immediate care environment (including care equipment). This is the most common route of cross infection and SICP will apply.

- **Droplet precautions**: For infections spread over short distances (less than 3 feet (1 metre)) via droplets (>5µm) from the respiratory tract of one individual directly onto a mucosal surface or conjunctivae of another individual. Droplets penetrate the respiratory system to above the alveolar level. Use repellent surgical mask and eye protection for close contact.

- **Airborne precautions**: For infections spread without necessarily having close patient contact via aerosols (<5µm)

from the respiratory tract of one individual directly onto a mucosal surface or conjunctivae of another individual. Aerosols penetrate the respiratory system to the alveolar level. Need an FFP3 respirator and eye protection. If staff are not FFP3 trained, a powered hood and respirator belt will be required.

Avoidance of contamination and decontamination

Plans for new builds or to refurbish existing neonatal units should conform to the latest all Wales Health Building Notes (HBN) and regulations for neonatal units, particularly with respect to cot space, number of hand hygiene sinks, work surfaces, fabric, furnishing and ventilation etc. Where units do not conform, urgent plans must be drawn up to address the environmental issues with given timescale for actions.

Where possible, single use e.g. disposable laryngoscope blades and handles or single patient use equipment e.g. saturation probes, BP cuffs used in accordance with MHRA and manufacturer guidance.

There should be robust processes for decontaminating all specific re-usable medical devices and equipment that comply with manufacturer's instructions. Good practice includes the use of 'I am clean' labels or stickers and audits of cleanliness.

When purchasing new equipment, the ability to clean effectively should be an important consideration e.g. computer keyboards, ultrasound machines and it is important that the advice of the IPC to be obtained before purchase.

Specific procedures and protocols for the decontamination of specialist equipment e.g. blood gas analyser, transport incubator and transport equipment should follow manufacture or All Wales advice

Sinks and Water Policy

Hand hygiene sinks must conform to HBN and used only in accordance with HBN 04.01 (addendum) **only to be used** for hand washing. They are not to be used for disposal of waste e.g. baby wash water, humidifier drainage, IV fluids or blood.

Hand hygiene sinks must not be used to source water for washing babies, or drinking water.

Compliance is to be monitored and issues are to be addressed immediately.

The HB/Trust Water Safety Group (WSG) will determine the frequency and type of routine monitoring of water quality in line with HSG for Legionella and Pseudomonas. Abnormal results will be reported to the unit manager in a timely and manner so that actions can be taken and advice sought from IP&C team. The IP&C lead will advise on requirements for water testing outside of monitoring in response to increased incidence or outbreak/investigation of infection.

Cleaning schedule

There should be robust written guidelines on environmental cleaning processes that have been agreed with operational services/cleaning manager and the IP&C team. This will include the management and type of cleaning equipment, technology and products used. Cleaning schedules for the unit should detail: the frequency of cleaning of the environment including the floors, sanitary areas, food preparation areas and all surfaces.

The frequency of audits of compliance against the Nationals Standards of cleanliness will be detailed (ideally weekly). The reporting mechanism and processes for improvement or managing poor compliance is to be agreed.

There should be dedicated trained domestic cleaner/housekeeper for the unit.

Waste disposal – There should be specific guidance for staff and visitors to the unit that reflects:

HB policy for safe handling and disposal into correct colour coded waste streams

Safe and prompt handling and disposal of soiled nappies into appropriate bins or sluice

Safe and prompt disposal of sharps and sharp items used for neonates into correct colour coded sharps containers

Safe and prompt disposal of other clinical waste related to nutrition, infusion, ventilator circuits, PPE etc

Linen/Laundry – there should be processes in place to ensure:

Clean linen and baby clothing is safely handled and stored on the unit that prevents cross contamination.

Used or soiled linen is safely segregated and stored to be sent for laundering in accordance to HB/Trust policy.

Guidance is available for parents on providing clothing for their child and how to safely manage used clothing or soiled items when taken home.

All on site/unit laundering procedures for neonatal clothing is in compliance with HSG95 (18).

Isolation Precautions – Units should have clear guidelines and processes to ensure:

1. That staff understand the principles of isolation precautions in relation to a baby with known or suspected infection/colonisation and to protect non infected neonates.

2. That staff recognise potential infectious risk and take action to isolate or cohort babies appropriately.

3. That a baby is isolated immediately if suspected of having a respiratory viral illness, possibly be harbouring a MDRO eg MRSA, CPE's such as parents with a history of admission to hospital (in the last 12 months) in another country (outside the UK). In particular, a history of admission in a country or UK region with a known high prevalence of Carbapenemase Producing Enterobacteriaceae (CPE) or known to have previously been positive for (CPE) (or a confirmed contact, parent or sibling). Presenting with symptoms of diarrhoea and/or vomiting for which an infectious cause cannot be definitively excluded. Known or suspected to have an infectious agent that is transmitted via the airborne or droplet route

4. Additional precautions are instituted according to infection transmission route for staff and visitors and additional processes for decontamination, environmental cleanliness, waste/linen disposal etc will be commenced.

Training is an essential requirement so that staff have the necessary knowledge skills to prevent and control infection on the unit and therefore:

Staff will be compliant in mandatory infection prevention and control training as detailed Health Board/Trust policy.

Unit training will include applied standard isolation precautions and transmission based precautions for ALL STAFF for neonates.

Appropriate use of infection prevention control measures caring for babies including personal protective equipment (PPE) (donning, removal, disposal).

Environmental Management: to ensure the general neonatal environment is safe:

The unit manager will seek IP&C advice on any planned or unplanned building or refurbishment work **before it commences** so that adequate preventative measures for dust or service disruption etc are managed.

Surveillance

- There should be microbiological surveillance of all blood stream infections, antibiotic resistance patterns and infection outbreaks
- There should be a policy for screening of babies for MRSA. If a baby is positive, baby should be isolated, and extra precautions put in place when parents visit.
- Each unit should have a guideline for screening parents and babies at risk of colonisation or infection with carbepenem resistant enterobacteriaciae CRE.
- There should be surveillance of long line sepsis rates and late onset sepsis rates.
- In an outbreak or suspected outbreak there must be early involvement of the IPC team.
- There should be a procedure for barrier nursing and isolation of babies. Infants at risk of MDRO's are to be nursed with barrier precautions and in isolation if possible.

Prevention of infection

Written protocols should be in place to prevent infection in infants born to mothers who have a blood borne virus e.g. HIV, Hepatitis B or C infection

Written protocols should be in place for infants born to mothers

who develop chicken pox in late pregnancy or following the birth.

Written protocols should be in place for the management of outbreaks of influenza, RSV or other viral outbreaks on the unit.

Written protocols should be in place for the management of infants with diarrhoeal infections e.g. rotavirus, C.diff, salmonella etc.

Antibiotic stewardship

Units should monitor their antibiotic use and take appropriate steps to reduce it.

Education

All staff should receive IPC training during their induction programs There should be a mandatory annual update for staff on IPC measures. A record should be kept for audit purposes

Communication

Information leaflets and posters for parents should clearly describe the practices expected of the parents with respect to infection control practices eg dress code, hand washing, behaviour etiquette and visiting policy.

All positive culture results should be clearly recorded in the baby's notes. If this is a multi-drug resistant strain this should be clearly recorded along with a plan for antibiotic therapy if the baby should become unwell.

Handover should include communication on all infection issues relating to all babies.

The All Wales guidance form on positive cultures should be completed for all babies or mothers undergoing transfer.

In the event of an outbreak or suspected outbreak there should be clear communication

- To the neonatal network
- To the Health Board Executive
- To the parents via meetings and a written handout. In serious outbreaks, a parents help line may need to be established
- To the communications department of the health board.

Management of outbreak or suspected outbreak

There should be early communication with the IPC team when there is an outbreak or suspected outbreak.

Units should have a written guideline in place for dealing with an outbreak or suspected outbreak.