Mid Essex Hospital Services NHS
NHS Trust

NEONATAL UNIT **CLINICAL OPERATIONAL POLICY**	**CLINICAL GUIDELINE** **Register number 09099** **Status: Public**

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Consulted With	**Post/Committee/Group**	**Date**
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1.0 Purpose

1.1 To give an overview of the services provided by the neonatal unit

2.0 Aims of the Service

2.1 To provide immediate resuscitation and stabilisation to infants delivered within MEHT and to further deliver ongoing high quality, evidence based Intensive, High dependency and Special care as required

2.2 To work in conjunction with other neonatal units in the Eastern Network to alleviate cot capacity issues.

2.3 To repatriate MEHT infants from other units as early as clinically possible to minimize the distress to parents.

2.4 To provide Intensive and high dependency care to infants who are readmitted from home within the first 10 days of life

3.0 Scope of the Service (Inclusion and Exclusion)

3.1 The unit cares for a wide range of conditions of both term and preterm infants. Babies are admitted at all gestations and can require all levels of care including intensive, high dependency and special care.
(Refer to Appendix 1- for Local Neonatal Unit criteria and threshold for transfer out; and guideline entitled 'Transfer of mothers and babies to different care settings'; register number 06026)

3.2 To provide a range of neonatal services to the population of Mid-Essex and those from the surrounding areas choosing to deliver at Broomfield. To also provide neonatal services to infants who may need to be transferred from neighbouring hospitals due to cot capacity issues.

3.3 The service is provided 24 hours per day, 7 days a week and 365 days a year maintaining the ability to provide resuscitation, stabilisation and intensive, high dependency and special care after birth.

3.4 To provide Intensive, high dependency or special care to Infants delivered at Broomfield Hospital consultant led maternity unit who require it.

3.5 To provide neonatal care to all infants referred to the NNU from the two Midwife led maternity units at Braintree and in Maldon.

3.6 The unit also takes admissions from the community of infants who are less than 10 days of age and the readmission of Mid Essex babies or babies within the Eastern Network.

3.7 The present unit has 2 intensive care cot (ITU), 4 High dependency cots (HDU) and 10 special care cots (SC).

3.8 The Neonatal unit is part of the Eastern Network with the level three unit at Cambridge as its hub; infants requiring high levels of intensive care or prolonged intensive care are routinely transferred to level three units.

3.9 Two bedrooms are available for the parents of very sick infants or for parents to room in and care for their infants prior to discharge home. The parent accommodation all has en suite facilities.

3.10 Written information leaflets are available for parents and given on admission.

3.11 To provide initial stabilisation for extremely premature infants prior to their transfer to a regional unit for their continuing intensive care, returning to Broomfield for ongoing intensive care, high dependency care or special care once their condition has stabilised.

3.12 To provide stabilisation of infants who have conditions requiring surgical intervention prior to their transfer to a regional neonatal surgical centre.

3.13 The transfer of intubated or unstable infants is undertaken by dedicated neonatal or paediatric transport teams. The continuing care of the infant is handed over to the team on their arrival and they continue to stabilise the infant prior to transfer.

3.14 If an infant requires palliative care we follow national guidance and standards such as BAPM Palliative Care (Support and End of life care) Framework for clinical practice (2010) and A Neonatal Pathway for Babies with Palliative Care Needs (ACT 2009).

3.15 The unit admits approximately 10% of the live births within Mid Essex. This includes deliveries in the consultant unit and two midwife led units.

4.0 Work Flows

4.1 Infants are admitted directly from the labour ward, the Postnatal Ward or Midwifery-Led Units.

4.2 Regional or specialist cardiac/surgical cots are located by the regional cot service who telephones each unit twice daily to confirm cot status, they work with the Acute Neonatal Transport team (ANTS) and are contacted when an infant needs to be moved, they will then ring and secure a cot and pass on the patient details to allow staff in the NNU to continue to care for the infant without needing to ring around for a bed. The Neonatal Transport Service (NTS) provides the same service in London neonatal cots and the Children's Acute Transport Team (CATS) also provide transport services.

4.3 Infants who require ophthalmology services are screened weekly on the Neonatal Unit with clear pathways in place for screening referrals and treatment.
(Refer to the guideline entitled 'Screening for Retinopathy of Prematurity'; register number 13010)

4.4 Transporting infants to other hospitals may be undertaken by NNU staff if a transport team is unable to attend. Outpatient appointments in regional centres may also require local staff and ambulance service.

4.5 Repatriations are admitted from other neonatal units usually transported by the ANTS dedicated transport team. These may be premature infants, surgical or cardiac infants

4.6 Referrals' for admission are taken from the community midwives, GPs and from the Accident & Emergency department. These admissions are transported to the unit by ambulance or in the parents own cars.

4.7 Specialised tests such as MRI, EEG or Ultrasound require the infant to be transported to another part of the Broomfield site accompanied by a nurse or doctor.

4.8 All stock items of stores are delivered on a weekly basis under the control of commercial services. Non stock items are processed via authorised signatories to commercial services and are delivered directly to the unit.

4.9 Elective admission are identified by an alert form system which informs the NNU of at risk infants who have been identified during the ante-natal period. These are actioned by the Midwifery team and allow for the provision of a treatment or action plan in advance.

5.0 Key Operational Requirements to Deliver the Service

5.1 Key Personnel

- Paediatricians
- Neonatal qualified Nurses
- Paediatric Pharmacist
- Portering services
- Radiographer
- Laundry facilities
- Hotel Services
- Community midwifery support for mothers
- Community paediatric nurses
- Ward administrator
- House Keeper
- Hearing Screener
- Ophthalmologist

5.2 Key Equipment

The equipment required for each neonatal cot depends on the level of care to be given.

5.2.1 Each intensive or high dependency cot requires

- Incubator capable of giving humidity/intensive care centre
- Ventilator with humidity
- Suction
- Infusion pump
- Syringe pumps
- Multiparameter monitoring
- Access to a blood gas machine, and laboratory results

- Access to X-ray and cranial ultrasound
- Neopuff for resuscitation
- Phototherapy lights for treatment of jaundice
- Access to equipment and stores to stabilise their condition such as chest drains.

5.2.2 **Each special care cot requires**

- Basinet type cot with base
- Saturation monitor
- Apnoea alarm
- Resuscitation equipment
- Neopuff

5.2.3 **Other equipment needed by the unit**

- Scales
- Cold light
- Blood glucose and urine monitoring
- Blood pressure monitoring
- Transport incubator with ventilation facilities and monitoring
- Heated cots
- Suction apparatus
- Ambu bag
- Cerebral function monitor
- Bilibed
- Biligun
- Ultrasound Scanner
- ECG machine
- Portable X-Ray machine
- Ophthalmoscope
- Flow meters

The unit also requires adequate supplies of disposables such as NG tube and syringes, cannula, ventilator circuits, Oxygen, air and suction.

5.3 Key Relationship with other Departments

5.3.1 Good communication with the maternity department is essential with the obstetric team contacting the unit early with details of at risk women or women in preterm labour.

5.3.2 Ante-natal clinic informs the unit of all pregnancies where there is an identified risk of the infant requiring neonatal care.

5.3.3 Radiographers from the X-ray department perform portable x-rays on the unit for a variety of reasons. Referrals are also made for ultrasound examination of in patients.

5.3.4 Paediatric pharmacists are available and visit the unit. Hearing screeners also visit the unit on a daily basis.

5.3.5 There is access to the EEG and MRI departments at Broomfield Hospital

5.3.6 The clinical technicians supply support for the blood gas machine

5.3.7 Notes are available from the paediatric satellite library for infants who are readmitted from regional units

5.3.8 The unit works closely with the paediatric community nursing team to facilitate the early discharge of infants. A referral form is sent and further communication given to provide information on the babies care plan ahead of discharge. Arrangements are made with the community team to meet the parents on NNU or at home prior to discharge.

5.3.9 There is access to hearing screeners on a daily basis so that all infants are screened prior to discharge home.

5.3.10 Ophthalmologists attend the unit to undertake screening for retinopathy of the newborn in the at risk neonatal population. See guideline on Screening for Retinopathy of Prematurity (Policy No. 13010).

5.3.11 Other specialities within Mid Essex such as plastic surgery or ENT liaise with the unit to review infants as requested

5.4 Key Requirements for Facilities Management (F.M.)

5.4.1 Hotel services supply a cleaner, who is responsible for cleaning the ward environment

5.4.2 Specialised milk formulas and sterile water bottles are supplied from the kitchens.

5.4.3 Equipment maintenance is supplied by BME on site, except where a service contract is in place in which case engineers will visit the unit

5.4.4 Daily hard facilities support is provided by the Estate and Facilities department

5.5 Environmental Requirements

5.5.1 The lighting is both main and dimmable with emergency corridor lighting in case of fire.

5.5.2 All surfaces are durable and washable.

5.6 Way finding

5.6.1 The way to the Neonatal unit is identified on all signage around the Broomfield Hospital site.

5.6.2 The location of the NNU is known to the ambulance services and transport teams

5.7 Security Requirements

5.7.1 Notes are stored in a doctors trolley kept at the nurses station and nursing charts are kept at each bed side. Other patient data is stored on the electronic neonatal database (BadgerNet Platform) which is a secure database.

5.7.2 The doors to the Neonatal unit are secure with a separate door buzzer and camera entry for each. Staff within the unit can open the doors having identified the visitor on the camera. No visitor is allowed into the NNU without a parent present and all visiting social/health care professionals must show identification before they are admitted.

5.7.3 There is an emergency buzzer at each cot side including the patient rooming in rooms.

5.7.4 A Panic alarm is available at the nurses' station.

5.7.5 All staff wears Mid Essex ID badges which are required to gain entry to the unit

5.8 Manual Handling

5.8.1 The service will be delivered in accordance with and compliance to the Trust's Manual Handing Policies.

5.9 Fire Safety

5.9.1 The service will be compliant with the Trust's Fire Safety Policy, Fire Evacuation Policy and other local fire plans and procedures."

5.9.2 (The detail of these items will then be developed as part of the separate Fire Safety Work Program, as led by the Trust's Fire Officer.)

5.10 ICT Requirements

5.10.1 The Neonatal Unit has IT access to

- Lorenzo
- Results review
- PACS system to review X-rays and scan results.
- Electronic Neonatal Database (BadgerNet Platform) to store patient data
- IT link between the blood gas analyser and the clinical technicians.
- Intranet and internet
- Photocopying, printing and faxing
- Switchboard
- Pagers
- Computers
- MAPS

5.10.2 Only encrypted mobile media that has been provided by the trust will be used by staff on the unit.

5.10.3 Staff will not use any ICT equipment that has not been approved by the Trust IT Department and logged on the IT Asset Register

5.11 Documentation

5.11.1 On admission all infants will have an allocated patient ID number and national health number.

5.11.2 The movement of notes is recorded using the tracking procedure. Paediatric notes are stored in the paediatric satellite library

5.11.3 When a patient episode has ended the notes must be made available for coding as soon as possible and a Badger discharge summary completed and forwarded to the GP and Health visitor. Transitional care babies that are cared for on the PNW have an electronic discharge letter completed on Lorenzo.

5.11.4 All staffs are responsible for the ensuring that all infants are admitted onto Badger and that the daily infant records are updated.

5.11.5 All staff must comply with professional bodies' standards of record keeping and MEHT clinical record keeping guidelines.

6.0 Staffing

6.1.1 A national framework of clinical quality standards was introduced by the British Association of Perinatal Medicine (BAPM). These standards and their classifications were revised in 2010 and 2011. The report recommended a more structured and collaborative approach to caring for sick neonates within a system of Managed Clinical Networks with the aim that these would provide. The British Association of Perinatal medicine (BAPM) guidance details every aspect of the delivery of neonatal care. All neonatal units must be compliant with these recommendations. The levels of nursing staff required to be compliant are 1:1 for ITU babies, 1:2 HDU babies and 1: 4 SC babies. See appendix 2 for the BAPM Categories of Care.

6.1.2 There is named lead Nurse for NNU and a named Lead Neonatal Consultant. See organogram of NNU department in Appendix 3.

6.1.3 Each staff member has a link role which they are responsible for.

6.2 Nursing Staff

6.2.1 Staffing level is funded to ensure we are BPAM compliant. Each shift is 12 $^{1}/_{2}$ hours and staffs rotate between nights and days.

6.2.2 Advanced Neonatal Nurse Practitioners band 8a, who works within the medical rota.

6.2.3 The unit has practice facilitators on a separate rota responsible for the training and development of staff.

6.3 Medical staff

6.3.1 Paediatric Consultants
Associate Specialist
Tier 2 Doctors
Tier 1 Doctors

There is a dedicated hot week neonatal consultant that works Monday-Friday as well as a paediatric/neonatal hot week consultant with 24 hour cover, 7 days a week. There is Tier 1 and 2 doctors also covering NNU 24 hours, 7 days per week.

6.4 Administrative and clerical staff

6.4.1 There is Admin support 7 days a week.

6.5 Allied Health Professionals

6.5.1 Paediatric pharmacist
Paediatric dietician
Neonatal speech and language therapist
Psychotherapist
Outreach physiotherapist
Ophthalmologist
Safeguarding midwife
Hearing screeners

6.6 Training and Education

- Mandatory training
- Domestic Violence
- Child protection
- Neonatal life support (NLS)
- Neonatal high dependency and intensive care course
- Neonatal Transitional and special care course
- Mentorship (MIPS)
- Enhanced Neonatal Practice.
- IV Cannulation and administration
- Advanced neonatal nurse practitioner training (MSc Advanced clinical practice neonatal studies)

6.7 Facilities

6.7.1 Staff have access to a changing room. There is a fully equipped staff room with tea and coffee making facilities and a microwave oven which supports the needs of the staff for working 12 $^{1}/_{2}$ hour shifts. There are lockers available for secure storage of personal items.

6.7.2 Prior to discharge home parents can have use one of the two bedrooms which has connected shower room and toilet. These rooms contain divan beds and are also used for parents of unwell infants who wish to remain on the unit.

6.7.3 There is a separate breastfeeding room for mothers to express their breast milk or breastfeed their infant. Portable expressing pumps are also available for bedside use should they wish. Curtains are provided around each special care nursery space for privacy.

6.7.4 Parents have access to a sitting room, waiting room and kitchen. The kitchen has hot drink and snack making facilities. The waiting room has a child friendly play and seating area. Free parking for parents is also offered from admission. Non secure personal items are stored in the draws under the cots or incubators.

6.7.5 There is a designated room for medical staff to share sensitive information with parents or provide counselling.

7.0 Infection Prevention

7.1 The service will be delivered in accordance with and compliance to the Trust's Infection Prevention Policies.

8.0 Equality and Diversity

8.1 Mid Essex Hospital Services NHS Trust is committed to commit to the provision of a service that is fair, accessible and meets the needs of all individuals.

9.0 Contingency

9.1 Multiple birth plans for number greater than twins.

9.2 Escalation policy for bed and staffing shortages.

9.3 Use of Equipment library if equipment shortage.

9.4 Battery operated ventilator available on the transport incubator if power should fail.

9.5 Back up generator.

9.6 All monitoring, pumps and infusion devices have battery back ups

9.7 If PACS was unavailable, hard copies of x-rays may be available.

9.8 Blood gas machine available on labour ward.

10.0 Auditing, Monitoring and Governance

10.1 Audit of compliance with this guideline should be considered on an annual basis in accordance with the Clinical Audit Strategy. As part of the directorate audit work plan planning process, the directorate audit lead will liaise with appropriate staff to prioritise audit activity including audit of compliance with clinical guidelines. Where patient safety incidents or complaints highlight non-compliance with this document, the directorate audit lead should be informed and where appropriate an audit undertaken.

10.2 The risk management lead will review all risk event forms and complaints. Any immediate training or educational issues relating to lack of compliance with this guideline will be addressed on a one to one basis.

10.3 The findings of the audit will be reported to the Risk Management Group and an action plan developed to address any identified deficiencies. Performance against the action plan will be monitored by this group on a monthly basis.

10.4 There are clinical governance processes in place such as:

Women and Children's Divisional Governance meeting- monthly
Perinatal meetings – monthly
Mortality and Morbidity meeting – monthly (Feed into quarterly)
Trust Patient Safety meeting- monthly
Paediatric Audit meeting – quarterly
Unplanned Admissions to NNU meeting – ad hoc
Safety Huddle meeting – daily
Executive Review Group – ad hoc

10.5 Representation attends quarterly Clinical Oversight Group meetings which includes network governance.

11.0 Guideline Management

11.1 Clinical guidelines are in place for the care and management of babies on NNU. Guidelines are consistent with current network and national guidelines. They can be found on the trust Intranet site.

11.2 As an integral part of the knowledge, skills framework, staff are appraised annually to ensure competency in computer skills and the ability to access the current approved guidelines via the Trust's intranet site.

11.3 Quarterly memos are sent to line managers to disseminate to their staff the most currently approved guidelines available via the intranet.

11.4 Guideline monitors have been nominated to each clinical area to ensure a system whereby obsolete guidelines are archived and newly approved guidelines are now downloaded from the intranet. 'Spot checks' are performed on all clinical guidelines quarterly.

12.0 Communication

12.1 A quarterly ' newsletter' is issued and available to all staff including an update on the latest 'guidelines' information such as a list of newly approved guidelines for staff to acknowledge and familiarise themselves with and practice accordingly.

12.2 Approved guidelines are published monthly in the Trust's Staff Focus that is sent via email to all staff.

12.3 Approved guidelines will be disseminated to appropriate staff quarterly via email.

12.4 Regular memos are posted on the 'Risk Management' notice boards in each clinical area to notify staff of the latest revised guidelines and how to access guidelines via the intranet or clinical guideline folders.

13.0 Responsibilities

13.1 The Neonatal Team will remain professionally accountable for their actions. They will work in conjunction with the Clinical Director and Lead Nurse to ensure that the service is delivered within the confines of the agreed budget and operational requirements.

13.2 The ward manager and Lead Nurse have the day to day responsibility for delivering the service.

14.0 References

Association for Children's Palliative Care (ACT), A Neonatal Pathway for Babies with Palliative Care Needs, 2009

British Association of Perinatal Medicine (BAPM), Service standards for hospital providing neotnal care. 3rd edition, August 2010

British Association of Perinatal Medicine (BAPM), Categories of care, August 2011.

Department of Health (2009) Toolkit for High Quality Neonatal Services. Available online http://www.neonatal.org.uk/documents/4650.pdf

National Service Framework for Children, Young People and Maternity Services October 2004.

Palliative Care (Supportive and End of Life Care). A Framework for Clinical Practice in Perinatal Medicine. Report of the Working Group, August 2010

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Appendix 1

THRESHOLD FOR TRANSFER OUT

ADDENBROOKES CLUSTER NETWORK UNITS

	Unit	ADDENBROOKES	PETERBOROUGH	PAH HARLOW	CHELMSFORD	COLCHESTER	WEST SUFFOLK	HINCHINGBROOKE
	Designation	NICU	LNU	LNU	LNU	LNU	SCU	SCU
Inborn criteria	GA singleton	ALL	<27^{+0} weeks	<27^{+0} weeks	<27^{+0} weeks	<27^{+0} weeks	<30^{+0} weeks	<30^{+0} weeks
	GA for Twins	ALL	<28^{+0} weeks	<28^{+0} weeks	<28^{+0} weeks	<28^{+0} weeks	<32^{+0} weeks	<32^{+0} weeks
	Weight	ALL	800gm	800gm	800gm	800gm	1000gm	1000gm
Respiratory support	HFOV	YES	NO	NO	NO	NO	NO	NO
	Nitric	YES	NO	NO	NO	NO	NO	NO
	Ventilation[1]	LONG TERM	SHORT PERIODS	SHORT PERIODS	SHORT PERIODS	SHORT PERIODS	TERTIARY DISCUSSION	TERTIARY DISCUSSION
	CPAP	ALL	ALL	ALL	ALL	ALL	STABLE	STABLE
	TPN	YES	YES	YES	YES	YES	YES	YES
	Cooling centre	YES	NO	NO	NO	NO	NO	NO
	Surgery	GENERAL AND NEURO	NO	NO	NO	NO	NO	NO

[1] ***Short periods*** are expected but must be discussed with tertiary centre at 48 hours and every 24 hours after if remain ventilated
Tertiary discussion for SCU's for all ventilated patients (daytime hours if stable)

This chart gives guidance about which babies it is expected will be transferred to a tertiary centre.
Tertiary centre discussions should normally occur in daytime hours but this does not preclude clinicians seeking referral earlier if required

Categories of Care

Appendix 2

INTENSIVE CARE

General principle
This is care provided for babies who are the most unwell or unstable and have the greatest needs in relation to staff skills and staff to patient ratios.

Definition of Intensive Care Day

- Any day where a baby receives any form of mechanical respiratory support via a tracheal tube
- **BOTH** non-invasive ventilation (e.g. nasal CPAP, SIPAP, BIPAP, vapotherm) and PN
- Day of surgery (including laser therapy for ROP)
- Day of death
- Any day receiving any of the following:

    - Presence of an umbilical arterial line
    - Presence of an umbilical venous line
    - Presence of a peripheral arterial line
    - Insulin infusion
    - Presence of a chest drain
    - Exchange transfusion
    - Therapeutic hypothermia
    - Prostaglandin infusion
    - Presence of replogle tube
    - Presence of epidural catheter
    - Presence of silo for gastroschisis
    - Presence of external ventricular drain
    - Dialysis (any type)

HIGH DEPENDENCY CARE

General principle

This is care provided for babies who require highly skilled staff but where the ratio of nurse to patient is less than intensive care.

Definition of High Dependency Care Day

- Any day where a baby does not fulfill the criteria for intensive care where any of the following apply**:**
- Any day where a baby receives any form of non-invasive respiratory support (e.g. nasal CPAP, SIPAP, BIPAP, HHFNC)
- Any day receiving any of the following:

    - parenteral nutrition

- continuous infusion of drugs (except prostaglandin &/or insulin)
- presence of a central venous or long line (PICC)
- presence of a tracheostomy
- presence of a urethral or suprapubic catheter
- presence of trans-anastomotic tube following oesophageal atresia repair
- presence of NP airway/nasal stent
- observation of seizures / CF monitoring
- barrier nursing
- ventricular tap

SPECIAL CARE

General principle
Special care is provided for babies who require additional care delivered by the neonatal service but do not require either Intensive or High Dependency care.

Definition of Special Care Day

• Any day where a baby does not fulfill the criteria for intensive or high dependency care and requires any of the following:

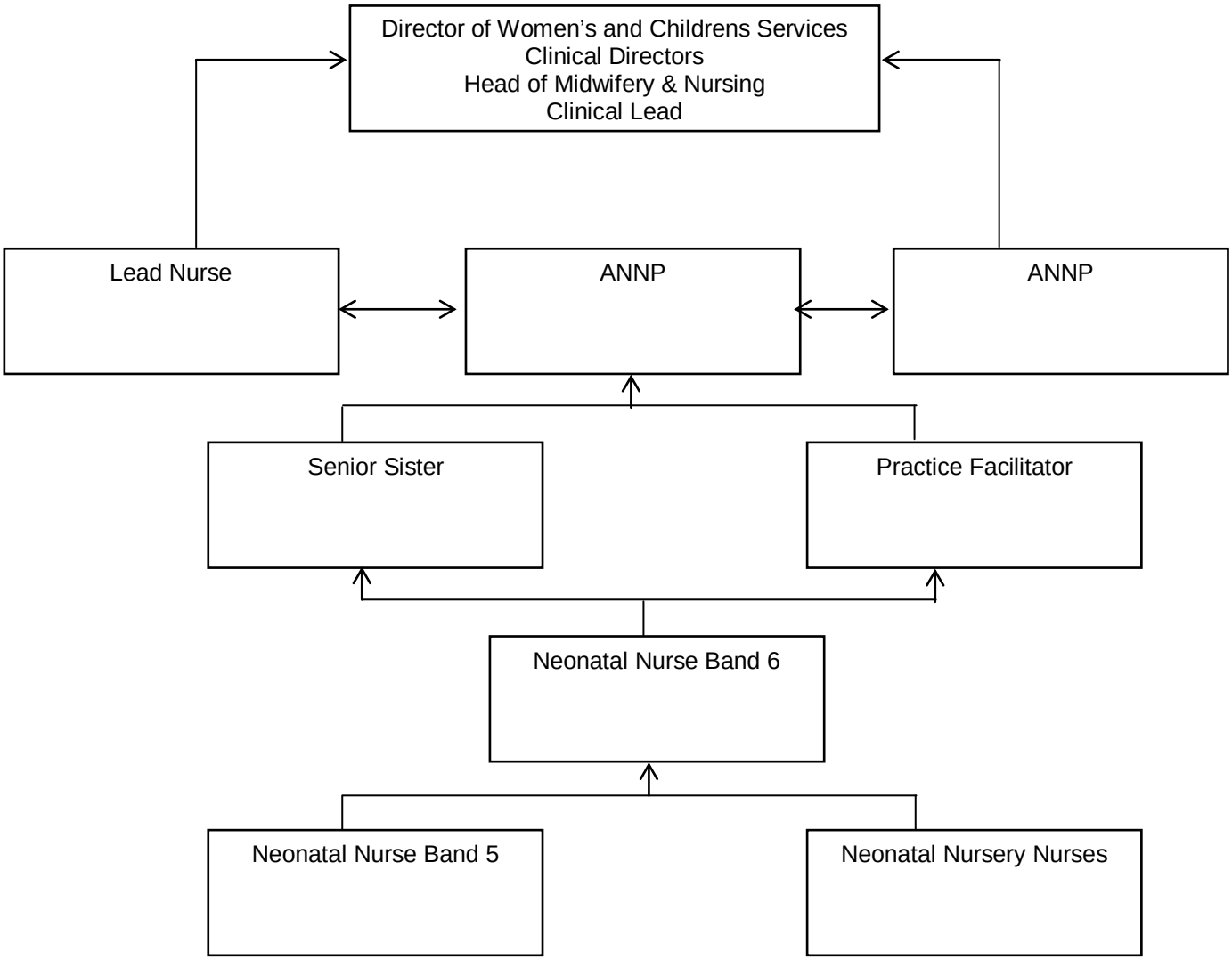
- oxygen by nasal cannula
- feeding by nasogastric, jejunal tube or gastrostomy
- continuous physiological monitoring (excluding apnoea monitors only)
- care of a stoma
- presence of IV cannula
- baby receiving phototherapy
- special observation of physiological variables at least 4 hourly

TRANSITIONAL CARE

General principle
Transitional care can be delivered in two service models, within a dedicated transitional care ward or within a postnatal ward. In either case the mother **must be resident with her baby and providing care**. Care above that needed normally is provided by the mother with support from a midwife/healthcare professional who needs no specialist neonatal training. Examples include low birth-weight babies, babies who are on a stable reducing programme of opiate withdrawal for Neonatal Abstinence Syndrome and babies requiring a specific treatment that can be administered on a post-natal ward, such as antibiotics or phototherapy.

Organogram of NNU Department

Appendix 3



Work Flow
Appendix 4