Clinical Guideline

Level of Care; Admission and Transfer Criteria for Neonates

Sites where Clinical Guideline applies	All Newborn Service sites in HNELHD
This Clinical Guideline applies to:	
1. Adults	No
2. Children up to 16 years	No
3. Neonates – less than 29 days	Yes
Target audience	Clinicians in neonatal units in HNELHD
Description	Provides information for neonatal clinicians regarding admission and transfer criteria for infants requiring higher levels of care in Hunter New England Health Tiered Neonatal Network

Hyperlink to Guideline

Keywords	Neonate, newborn, NICU, SCU, neonatal intensive care, special care unit, maternity, transfer, level of care, service capability, admission, escalation
Document registration number	HNELHD CG 18_13
Replaces existing document?	Yes
Registration number and dates of superseded documents	Newborn Services: Level of Care, Admission and Transfer Criteria for newborns in HNELHD CG 18_13 Version One from 22 March 2018

Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics:

- NSW Health Guideline GL2016_018 NSW Maternity and Neonatal Service Capability Framework
- NSW Health Guide to the Role Delineation of Clinical Services (NSW Health, 2016)
- NSW Health Policy Directive PD 2020_018 Recognition and management of patients who are deteriorating
- NSW Health Guideline GL2018_016 Maternity - Resuscitation of the Newborn Infant
- NSW Health Policy Directive PD2020_014 Tiered Networking Arrangements for Perinatal Care in NSW

Position responsible for Clinical Guideline Governance and authorised by	Dr Paul Craven, Executive Director, Children, Young People and Families Services
Clinical Guideline contact officer	Jo Davis, CNC, Newborn Services, JHCH
Contact details	Jo.davis1@health.nsw.gov.au
Date authorised	13 February 2018
This document contains advice on therapeutics	No
Issue date	6 May 2021
Review date	22 March 2022

Note: Over time links in this document may cease working. Where this occurs please source the document in the PPG Directory at: http://ppg.hne.health.nsw.gov.au/

PURPOSE AND RISKS

This document has been developed to provide support and guidance to the health clinician to provide high quality, safe and timely care for newborn infants who require specialised care. Staff will collaborate to ensure the infant receives the appropriate level of care based on their clinical need.

The risks are:

- Families are displaced from their local health provider
- Patient flow and bed management issues
- Infants requiring higher level of care are not identified or appropriately escalated

These risks are minimised by:

- Timely and inclusive communication and care planning between service providers and families
- Comprehensive clinical handover to ensure seamless transition between services
- Infants are provided care in the right place, and the right time

Any unplanned event resulting in, or with the potential for injury, damage or other loss to infants/staff/family as a result of this procedure must be reported through the Incident Management System and managed in accordance with the NSW Health Policy Directive PD2020_020: Incident Management Policy. This would include unintended injury that results in disability, death or prolonged hospital stay.

It is mandatory for staff to follow relevant: “Five moments of hand hygiene”, infection control, moving safely/safe manual handling, documentation practices and to use HAIDET for patient/carer communication: **H**and hygiene **A**cknowledge, **I**ntroduce, **D**uration, **E**xplanation, **T**hank you or closing comment.

Risk Category*:* Clinical Care & Patient Safety

CLINICAL PROCEDURE SAFETY LEVEL

Every clinician involved in the procedure is responsible for ensuring the processes for clinical procedure safety are followed. The following level applies to this procedure (click on the link for more information):

Level 1 procedure

CONTENT

LEVEL OF CARE SUMMARY

- The tertiary service is responsible for the advice, support and higher level of escalation pathways for lower level delineated services
- Escalation of care should occur via the Newborn and paediatric Emergency Transport Service (NETS)
- Lower level services play an important role in accepting women and their newborn infants back to facilities that are closer to their home, to ensure infants are in the right place at the right time

GUIDELINE

While not requiring mandatory compliance, staff must have sound reasons for not implementing standards or practices set out within guidelines issued by HNE Health, or for measuring consistent variance in practice.

Introduction

The provision of quality and safe neonatal care requires consultation, referral and/or transfer to a higher level of care. Tiered Neonatal Services need to:

- Support the seamless transfer of care for newborn infants between services based on their individual clinical need ensuring the right care in the right place at the right time, including;
  - Non-emergency transport for transfer to higher level services and return transfers
  - Systems for joint care planning and sharing of information about care
- Ensure that lower delineated services are well supported in relation to consultation; referral and/or transfer; leadership; clinical support and guidance; and the education and training of staff

Higher role delineated services (Level 3/4/5/6) support the neonatal services of lower delineated services including accepting transfers of newborn infants assessed as requiring higher level care. Staff in higher delineated services should be aware of facilities in the LHD and their capacity in caring for newborn infants; and their obligations and responsibilities with regards to education, equipment supply and clinical support.

Lower role delineated services (Level 1/2) play an important role in accepting women and their newborn infants back to facilities that are closer to their home, once the level of care required can be provided by the local service. Staff with lower delineated neonatal service should be aware of the pathways for communication and consultation with the higher level service.

**Note; any newborn infant requiring higher level of care or intensive care treatment should always be discussed via NETS, for advice and/or retrieval planning*

Level 1 Neonatal Service

Top

Provides

- Immediate care for infants ≥ 37 weeks gestation (where the mother had no identified risks)
- Ongoing care of preterm and convalescing infants ≥ 35 weeks corrected age (CGA) and having full care by the mother/family

Escalates

When additional care required, for example:

- Hyperbilirubinemia (jaundice)
- Hypoglycaemia
- Respiratory distress

- Sepsis
- Or any signs of clinical deterioration

Requirements for a Level 1 Neonatal Service

- Access to equipment required for resuscitation and stabilisation of sick newborn infants
- Consultation with a higher level service for newborn infants with common problems
- Blood collection for neonatal screening
- Access to a transcutaneous bilirubinometer (TCB)
- Arrangements for blood collection for serum bilirubin testing
- Point of care glucose testing (PCOT)
- Access to paediatric specialty services for advice/referral
- Access to routine hearing screening and audiology services
- Education and support for parents regarding attachment, feeding and lactation
- Written information for parent/s using community and child health supports
- Breastfeeding advice and support consistent with Baby Friendly Health Initiative (BFHI)
- Referral pathways to relevant aboriginal programs and services

Level 2 Neonatal Service

Top

Provides

- Immediate care for infants ≥ 37 weeks gestation (where the mother had no identified risks)
- Short term care for simple neonatal problems, for example:
    - Jaundice requiring single light phototherapy (phototherapy blanket only)
    - Short term/intermittent tube feeding
    - Hypoglycaemia treated with occasional supplemental feeds (short-term intravenous dextrose infusions may be considered, when under the supervision of a Paediatrician or Neonatologist at a higher role delineated service, with the understanding that transfer will be required if no improvement occurs)
    - Mild respiratory distress that settled quickly (< 4 hours)
- Ongoing care of preterm and convalescing newborn infants ≥ 35 weeks corrected age requiring minimal ongoing care, noting;
    - The infant should not require routine monitoring
    - The infant should not exceed occasional tube feeds

Escalates

When additional care required, for example:

- Hyperbilirubinemia (jaundice), requiring more than single light
- Hypoglycaemia, requiring ongoing intravenous dextrose infusion or more
- Respiratory distress; requiring ongoing respiratory support
- Sepsis
- Or any signs of clinical deterioration

Requirements for level 2 Neonatal Service

- Clinicians competent to provide full resuscitation service
- Access to a clinician competent in advanced life support and diagnostic examination of the newborn infant
- Access to equipment required for resuscitation and stabilisation of sick newborn infants
- Consultation with a higher level service for newborn infants with common problems (e.g. hyperbilirubinaemia, respiratory distress, sepsis and hypoglycaemia)
- Clinicians competent to provide short term tube feeding
- Onsite neonatal bilirubin measurement/testing

- Equipment for short-term ventilation (< 6 hours) of newborn infants awaiting transfer to higher level of service
- POCT
- Access to paediatric specialty services for advice/referral
- Access to routine hearing screening and audiology services
- Education and support for parents regarding attachment, feeding and lactation
- Written information for parent/s using community and child health supports
- Breastfeeding advice and support consistent with BFHI
- Referral pathways to relevant aboriginal programs and services
- Audit in the event of perinatal mortality and morbidity in consultation with the tertiary service

Level 3 Neonatal Service

Top

Provides

- Immediate care for infants ≥ 34 weeks gestation (with an expected birth weight of at least 1800 grams)
- Ongoing care for preterm and convalescing infants ≥ 32 weeks CGA

In the event of an unexpected birth of an infant at 32 to 34 weeks gestation, with good weight with no requirements for intensive care support, this infant may be able to stay at a Level 3 neonatal service, following discussion and care planning with the tertiary service

Escalates

When additional care required, for example:

- More than 50% head box oxygen
- More than 4 hours of Continuous Positive Airway Pressure (CPAP) support
- FiO_2 > 40% on CPAP or Humidified High Flow Nasal Cannula (HHFNC) at any time
- More than 12.5% dextrose to maintain normal sugar levels
- Any intensive care intervention

Requirements for Level 3 Neonatal Service

As per Level 2 plus:

- Management of common problems of the newborn e.g. hyperbilirubinaemia, hypoglycaemia
- Clinicians competent in providing continuous cardiorespiratory monitoring
- Clinicians competent in advanced neonatal life support
- Clinicians competent in initiating and maintaining intravenous therapy
- Clinicians competent in delivery and monitoring of continuous oxygen therapy in consultation with a higher level of service
- Able to provide mobile chest/abdomen x-ray 24 hours a day
- Clinicians competent in collecting, processing and analysis of arterial blood gas results (< 30 minutes)
- Close access to blood gas machine 24 hours a day (for POCT)
- Capacity to process electrolyte full blood count and blood group and direct anti-globulin test results within 4 hours
- Clinicians competent to provide CPAP and short term ventilation (<6 hours mechanical ventilation)
- Clinicians with ability to provide initial management of pneumothorax
- Clinicians competent to provide HHFNC
- 24 hour on-site paediatric medical cover with neonatal experience

Level 3 Neonatal Services work in collaboration with Level 5/6 Neonatal Tertiary Service at the Neonatal Intensive Care Unit (NICU) at John Hunter Children's Hospital (JHCH) to ensure newborn infants and their families are transferred closer to home as soon as possible, so infants are in the right service at the right time.

Level 4 Neonatal Service

Top

HNELHD currently has no Level 4 Neonatal Services.

Level 5/6 Neonatal Service

Top

Provides:

- Supports and advice to Level 2-6 services for their local population
- Surgical services (general, no cardiac)
- Provides non-surgical cardiac service
- Provides a comprehensive service for all aspects of neonatal care, including;
    - Intensive care for critically ill newborn infants
    - Ventilation management (invasive and non-invasive)
    - Central line access and parenteral nutrition
    - Care for complex congenital abnormalities of the newborn (excluding cardiac surgery and metabolic diseases)
- Collaborative multidisciplinary care
- Acts as part of NETS team for emergency neonatal transport
- Participates in perinatal mortality and morbidity meetings, engaging and including lower level services within the Tiered Network

Admission Criteria for Special Care Units

Top

Agreed admission criteria for Special Care Units (Level 3 Neonatal Services) for HNELHD include:

- Newborn at > 32 weeks gestation, of good weight with no requirements for intensive care support, may be able to stay at a Level 3 Neonatal Service, following discussion with the tertiary service
- Convalescence care of > 32 week CGA infants considered stable by referring neonatal service
- < 35 week gestation
- < 2.2kg (weight at birth)
- IV fluid management
- IV antibiotics (only required for initial assessment/monitoring and antibiotic commencement)
- Respiratory Distress and/or cyanosis
- Jaundice
    - requiring more than single light phototherapy
    - Jaundice (< 24 hours)
- Unstable Neonatal Abstinence Syndrome (NAS) babies requiring more than single pharmacological intervention (i.e. more than morphine)
- HIE requiring cooling to commence
- Suspected seizures
- Apnoea/s
- Mother admitted to intensive care (where family unable to provide necessary care)
- Assumption of care; short term (can be paediatric ward admission)
- Major congenital abnormalities requiring airway, breathing or circulatory support or observation
- Red zone on standardised neonatal observation chart (SNOC)

- Temperature < 36°C despite attempt to warm (including skin to skin)
- Bile stained vomiting
- Extensive resuscitation
    - Ongoing ventilator support > 5 minutes
    - Need for cardiopulmonary resuscitation and/or adrenaline
    - Cord pH < 7.0

Newborn infants requiring care by Paediatric team (may be on postnatal ward)

- 2.2 kg but < 2.4 kg
- > 4.5 kg
- Needing occasional tube feeds
- Monitoring babies with atypical antibodies known to cause haemolytic jaundice
- Jaundice treatment with single light phototherapy (via blanket)
- Weight loss > 10% with a management plan
- Newborn infants at risk of NAS requiring morphine single pharmacological therapy (i.e. morphine)
- Yellow zone on SNOC

Criteria for Escalation to Higher Level of Care

Top

- Any premature infant < 34 weeks gestation
  **Note; an infant born in Level 3 Neonatal service between 32-34 weeks that is of good weight and clinically stable may able to stay in consultation with tertiary service*
- Respiratory distress
    - More than 4 hours of CPAP support
    - FiO_2 > 40% on CPAP or HHFNC at any time
    - FiO_2 > 50% in head box oxygen
    - Need for additional ventilatory support
    - 2 L/min nasal cannula oxygen
    - No onsite medical cover with newborn requiring CPAP (> 4 hours)
    - Or any other intensive care intervention
- Hypoglycaemia requiring > 12.5% dextrose infusion to maintain normal blood sugar levels
- Any neonatal surgical issue
- Need for intravenous infusions (i.e. insulin, inotropes or prostaglandin)
- Congenital anomalies requiring intensive care support
- Exchange or partial exchange transfusion
- Cooling for hypoxic ischaemic encephalopathy
- Need for or presence of a central venous or arterial line
- Neonatal seizures (including suspected)
- Bile stained vomiting
- Need for parental nutrition
- Pneumothorax treated with needle aspiration or intercostal catheter
- Recurrent apnoea/s (despite treatment with caffeine)
- Suspected cyanotic congenital heart disease, or 2 failed oximeter ‘screens’ with no respiratory causation identified
- Requires input from tertiary or quaternary paediatric or neonatal service in neonatal period

Neonatal Transfers

Top

Escalation of care

For advice on the care of any sick newborn infants, that will potentially need transfer or escalation of care to a higher level service call NETS. NETS can offer immediate advice and activate a time critical retrieval service, and the NETS consultant can link with consultants in higher level facilities in HNELHD to discuss the case, provide advice and arrange appropriate transport as well as an accepting destination.
For advice that is not requiring transfer, call the Paediatrician (level 3) and/or the Neonatologist (level 5/6) service.

Agreed Back transfer criteria for Level 3 Neonatal Service

- 32 weeks gestation and stable
- Off respiratory support i.e. off CPAP or mechanical ventilation and deemed stable by neonatal team (generally at least 48 hours off pre-transfer, unless very short period of support e.g. TTN)
- < 750ml of nasal cannula oxygen or as discussed between consultant staff
- No ongoing requirement for > 12.5% dextrose
- Jaundice requiring only phototherapy
- Congenital anomalies including cardiac anomalies deemed stable by level 4-6 unit staff
- No significant apnoea
- Feeding and/or IV fluids (parental nutrition not included)
- No central line/s
- Infants that fulfil admission criteria for Level 3 Neonatal Service

Communication

Top

When looking to transfer a baby closer to home in their regional area, the first line of communication is for the team leader or unit manager from the tertiary service to contact the unit manager at the regional maternity or newborn services to assess bed availability. If beds are available a nursing handover must be completed, and the transfer booked through NETS/NEPT by the team leader/or unit manager from the referring tertiary site. Following on from this a medical handover must be completed by the medical staff from the referring service (Registrar, Nurse Practitioner, Fellow or Consultant) to the on service Paediatrician onsite, as a professional courtesy this call should be made following confirmation of the proposed transfer with unit managers.

*Note; in the instance the transfer is declined due to bed availability or staffing constraints, and the tertiary site is experiencing bed block, the call to transfer then needs to be escalated via Head of Newborn Services (medical) to the Director of Nursing for the regional site. This should be discussed with the local Unit Manager. Please remember any communication should follow the ISBAR format and be in accordance with the excellence framework.

IMPLEMENTATION PLAN

The clinical guideline will be:

- Circulated to General Managers and Cluster Managers.
- Circulated to the clinicians via the Tiered Neonatal Network/Newborn Services, Children, Young People and Families Services and the Women's Health and Maternity Network.
- Made available on the intranet (PPG) and HNEKids website.
- Presented at facility/unit meetings and tabled for staff to action.

MONITORING AND AUDITING PLAN

- The person or leadership team who has approved the clinical guideline is responsible for ensuring timely and effective review of the guideline.
- Evaluation will require a review of the most current evidence as well as consideration of the experience of HNELHD staff in the implementation of the clinical guideline.
- Data derived from incidents, monitoring and evaluation should inform the review of the clinical guideline either as required or scheduled.
- Implementation, education support and monitoring compliance be completed by local Clinical Educators and Managers.
- Amendments to the guideline will be ratified by the Manager and Head of Newborn Services & WHaM Network (where applicable) prior to final sign off by Children, Young People and Families Services.

CONSULTATION WITH KEY STAKEHOLDERS

AUTHOR: Jo Davis, CNC Newborn Services, JHCH

REVIEW & CONSULTATION:

Tiered Neonatal Network/Newborn Services HNELHD
Women's Health and Maternity Services Network
Children, Young People and Families Services
District Network & Streams Collaborative Committee

APPROVED BY: Manager Newborn Services, NICU JHCH
Head of Newborn Services, NICU JHCH
Executive Director, CYPFS

APPENDICES

1. Glossary & Abbreviations
2. Neonatal Services in HNELHD

REFERENCES

1. NSW Health Guideline GL2016_018 NSW Maternity and Neonatal Service Capability Framework
2. NSW Health Guide to the Role Delineation of Clinical Services (NSW Health, 2016)

FEEDBACK

Any feedback on this document should be sent to the Contact Officer listed on the front page.

APPENDIX 1

GLOSSARY & ABBREVIATIONS

Acronym or Term	Definition
BFHI	Baby Friendly Health Initiative
CGA	Corrected Gestational Age
CPAP	Continuous Positive Airway Pressure
HHFNC	Humidified High Flow Nasal Cannula
HNELHD	Hunter New England Local Health District
JHCH	John Hunter Children's Hospital
L/min	Litres Per Minute
mmol/L	Millimoles Per Litre
NEPT	Non-emergency Patient Transport
NETS	Newborn and Paediatric Emergency Transport Service
NICU	Neonatal Intensive Care Unit
POCT	Point of Care Testing
TCB	Transcutaneous Bilirubinometer

APPENDIX 2

NEONATAL SERVICES IN HNELHD

- John Hunter Children's Hospital, JHH (Level 6 Neonatal)
- Tamworth Rural Referral Hospital (Level 3+ Neonatal)
- The Maitland Hospital (Level 3+ Neonatal)
- Manning Base Rural Referral Hospital, Taree (Level 3+ Neonatal)
- Armidale Rural Referral Hospital (Level 3 Neonatal)
- Newcastle Private Hospital (Level 3 Neonatal)
- Singleton Hospital (Level 2 Neonatal)
- Muswellbrook Hospital (Level 2 Neonatal)
- Scott Memorial Hospital, Scone (Level 2 Neonatal)
- Gunnedah Hospital (Level 2 Neonatal)
- Narrabri Hospital (Level 2 Neonatal)
- Moree District Hospital (Level 2 Neonatal)
- Inverell Hospital (Level 2 Neonatal)
- Glen Innes Hospital (Level 2 Neonatal)
- Gloucester Hospital (Level 1 Neonatal)
- Belmont Midwifery Led Birthing Service (Level 1 Neonatal)
- Maitland Private Hospital (Level 1 Neonatal)