JHCH_NICU_01.01

John Hunter Children's Hospital
CHILDREN, YOUNG PEOPLE AND FAMILIES

GUIDELINE

SUBJECT: **Admission of babies to NICU, HDU and SCN**

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PERSON RESPONSIBLE FOR MONITORING AND REVIEW:
Jennifer Ormsby CNC Newborn Services (Relieving)
COMMITTEE RESPONSIBLE FOR RATIFICATION AND REVIEW:
NICU Management Advisory Committee

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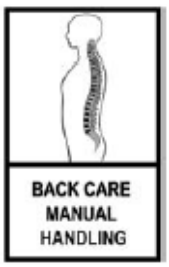
S.W.P.



Rationale

Women with high risk pregnancies should receive obstetric care at a tertiary centre to ensure a primary care team of skilled health professionals (neonatologist, medical officer, nurse practitioners, and assistants with specific and sophisticated biomedical and social skills) are available for immediate assessment and management of the infant (World Health Report,2008).

Otherwise critically ill or preterm newborn infants who are delivered outside the tertiary centre are retrieved by the Newborn Emergency Transport Service (NETS) and brought to a designated neonatal intensive care or high dependency bed.

Outcomes

Newborn infants meeting the criteria for admission to the Neonatal Unit will be assessed and admitted safely and effectively. Parents will be welcomed and will receive appropriate and timely support and information. Babies will be transferred within the Neonatal Unit between Intensive Care, High Dependency and Special Care as their condition merits. Babies will be transferred to a special care unit closest to their home as soon as they meet the criteria for transfer (see document -Transfer of Care).

Background

The Neonatal Unit at John Hunter Children's Hospital is comprised of:

Neonatal Intensive Care Unit (NICU) = 13 cots

High Dependency (HD) = 5 cots

Special Care Nursery (SCN) = 24 cots

Communication between Delivery Suite John Hunter Hospital and the Neonatal Unit involves a "pink slip' being brought to the unit along with a discussion about the imminent birth. This includes who will attend the birth for the resuscitation and assessment of the newborn. Babies meeting Intensive Care or High Dependency criteria will have a Neonatologist/ Fellow/ Nurse Practitioner or Registrar at the birth. Babies meeting the criteria for Special Care admission will have a Resident or any one of the above at the birth.

Babies meeting the following criteria require admission to the Neonatal Unit

1. Gestation less than 35 weeks or weight less than 2.2 kg
2. Babies who required major resuscitation
3. Encephalopathy or suspected or confirmed seizures
4. Respiratory distress
5. Cyanosis
6. Apnoea
7. Abnormal cardiac rhythm
8. Initiating antibiotic therapy for suspected sepsis
9. Inability to suck adequate volume of feeds

10. Bile stained or persistent vomiting
11. Hypoglycaemia requiring tube feeds or IV fluids
12. Jaundice requiring treatment
13. Investigation and management of suspected anaemia, thrombocytopenia and bleeding
14. Major congenital anomalies
15. Need for surgery
16. Assumption of care
17. Boarder babies where mother or family are unable to care for the baby
18. Hypothermia (an axilla temperature of 36.3 or less despite attempts to rewarm)

> Note: Babies from home who present to the hospital may be reviewed by the Neonatologist and admitted to the Neonatal Unit if further care and management is required - if they are 28 days post term or less with no respiratory or gastro intestinal infection.

Newborn infants and NETS transfers will be admitted into the Neonatal Unit section that meets their needs and acuity requirements as follows:

Criteria for babies requiring management in NICU

- <29 weeks and/ or <1000g requiring CPAP
- <29 weeks and/or <1000g off CPAP <96 hours of age
- Mechanical ventilation
- <24 hours post extubation
- CPAP for significant RDS e.g. <32/40 gestation on CPAP 40% or >32/40 gestation CPAP 50% oxygen
- Major surgery e.g. Diaphragmatic hernia/ gastroschisis
- Inotropes or Prostaglandins infusion
- Insulin infusion
- Congenital anomalies requiring intensive care support
- Exchange or partial exchange transfusion
- Cooling for Hypoxic Ischaemic Encephalopathy
- Intercostal catheter
- Central Venous Line / PICC/ Umbilical venous line (on day of insertion)
- Umbilical Arterial Catheter in situ or required
- Active seizures, being monitored and treated

Criteria for babies requiring management in High Dependency

- <29 weeks CGA and/or <1000g and off CPAP >96 hours of age
- <30 weeks CGA if no criteria for Intensive care
- <32 weeks on day of birth

- Total Parenteral Nutrition
- Central venous Line (CVL or UVC)
- >48 hours post-operative until recovery
- Recurrent apnoea
- Evaluation of suspected seizures with an aEEG
- Peripheral Intra Arterial line
- MRI scan day (until completed)
- Any baby on CPAP for 4 hours or longer

Criteria for babies requiring admission and management in SCN

- 32weeks – term gestation (on day of birth) and no criteria for ICU/ HD and/or requiring CPAP
- >1000g and no ICU or HD criteria
- Birth weight <2.2kg
- Hypoglycaemia requiring treatment
- Hyperbilirubinaemia requiring phototherapy
- Suspected or confirmed sepsis being treated with intravenous antibiotics
- Requiring tube feeds
- Minor surgery e.g. hernia repair
- Newborn abstinence syndrome requiring Morphine dose stabilization/management
- Chronic lung disease on nasal cannula oxygen
- CPAP –any baby requiring CPAP for up to 4hrs-if CPAP required for >4hrs infant should be considered as high dependency patient
- Baby for adoption

Babies may board in SCN if: the mother is in ICU and no family member available to care for baby OR *the* Department of Community Services Assumes care

Procedure: Admission to Intensive Care and High Dependency

NOTE: is the infant eligible for research study? Has consent been obtained?

<u>Requirements</u>

- Giraffe bed- 35 degrees temp setting/ nappy in bed (weighed with weight written on it)
- Neopuff- checked and ready
- Suction equipment checked and ready
- Ventilator checked and on standby (water will be put into ventilator immediately before use)
- CPAP circuit checked and ready for use (water will be put into CPAP circuit immediately before use). Prongs available on CPAP trolley.
- ECG leads,

- Oximeter lead and prepared foam wrap
- Monitor on standby
- Tape measure
- Fluids/ lines ready to be opened
- ELBW box, including cling wrap for extreme premature infant– to be taken to birth
- If required, Exogenous surfactant -as per guideline **(Surfactant Administration in NICU 5.1.19**) –warmed at room temperature
- Size 8fg feeding tube
- Gloves and PPE
- Admission book

Admission to NICU

When the call has come for the resuscitation team to attend the birth the nurse on the floor will begin the final preparation for this admission.

- Equipment required for sterile insertion of lines will be at the bedside for infants who will require umbilical arterial and venous catheters. (See UVC/UAC box L3.)
    - the fluids and attachments for UVC/UAC will be present but unopened.
    - syringe pumps.
- The suction will be checked and ready for use.
- The Neopuff will be turned on and the mask attached for the expected size of the baby.
- If required, the exogenous surfactant will be at room temperature- equipment will be prepared according to guideline **(Surfactant Administration in NICU 5.1.19**).

On arrival to NICU –

- assess the infant's condition while listening to handover
- Introduce yourself to the family member accompanying the baby and provide an explanation of the initial admission expected events. Obtain consent or check for antenatal consent, for HEP B and konakion.
- Transfer the infant from the resuscitation bed (Neopuff and Giraffe bed are ready)
- Assess respiratory support and provide Neopuff™ as necessary
- Weigh the baby using the giraffe bed scales
- Measure head circumference whilst colleague is providing respiratory support via Neopuff™
- Attach Oximeter probe to infant (preferably pre-ductal on right hand), attach ECG leads to baby (away from chest x-ray area), attach a temperature probe to the baby (probe next to skin under the axilla then Mepitac™ to cover probe, then silver reflective disc and measure axilla (PA) temperature. When baby admitted into a Giraffe cot it is necessary to follow the comfort zone option –refer to CPG-Giraffe™ Omnibed in NICU JHCH_NICU_04.01, page 4.
- Admit and place lines in an open care radiant environment with baby on servo.

- Remove cling wrap (if it has been applied) after sterile plastic drapes have been applied for insertion of umbilical lines.
- Note: if the infant requires exogenous surfactant this should be the priority (**Surfactant Administration in NICU 5.1.19**)
- Apply respiratory support as required -CPAP or intubation/ventilation (**CPAP in NICU 5.1.23/Assisted ventilation in the Newborn 5.1.4a**)
- Insert oro-gastric tube and decompress stomach.
- Document- time of arrival, temperature (PA), respiratory rate, heart rate, saturations, blood pressure, blood gas and blood sugar level.
- Allow the baby to settle if possible until the next care time before applying further fixation such as Duoderm™ and Velcro™ (as per CPAP guideline: **CPAP in NICU 5.1.23**)
- Set up and assist with line insertion (**Aseptic Technique in NICU 2.2.9**)
- Provide explanation of events to family member and give them pamphlets and discuss house rules etc.
- Administer IM Hepatitis B vaccine and IV/IM Konakion as charted by MO (when parental consent obtained).
- Provide crib covers to reduce excessive light and noise.
- Monitor urine output for all admissions. Weigh nappies for more accurate measurement for all admissions to NICU in the first week of life.
- Continue to monitor blood glucose levels, blood gases, blood pressure as frequently as required for infants clinical condition (discuss with Neonatologist or representative if unsure) as well as hourly heart rate, respiratory rate, oxygen saturations and 4^{th} hourly temperature.
- Observations will be more frequent if they are not within the normal parameters.

Transfer to HD and SCN

The baby will be 'transferred' to HD when (s) he no longer meets the NICU criteria.
The baby will then be transferred to SCN when (s) he no longer meets the HD criteria.

Admission to SCN

The admission to SCN will be similar to the admission to NICU.

Requirements

- Open care bed/ closed bed/cot as required for individual admission- nappy in bed. If a closed incubator is used set the temperature according to the Temperature Neutral Zone (TNZ) chart in L2 or access the comfort zone on the Giraffe™ bed
- Neopuff™- checked and ready
- Suction equipment checked and ready
- CPAP circuit checked and ready for use (water will be put into CPAP circuit immediately before use). Prongs available on CPAP trolley.

- ECG leads
- Oximeter lead and foam wrap
- Monitor on standby
- Tape measure
- Fluids/ lines ready to be opened
- Size 8fg feeding tube (if commencing CPAP)
- Gloves and PPE
- Admission book

When the call has come for the resuscitation team to attend the birth the RMO will inform the team leader that (s) he is attending the birth and the nurse on the floor will begin the final preparation for this admission.

- The suction will be checked and ready.
- The Neopuff will be turned on and the mask attached for the expected size of the baby.

On arrival to SCN –

- assess the infant's condition while listening to handover
- Introduce yourself to the family member accompanying the baby and provide them with an explanation of expected admission events. Obtain consent or check for antenatal consent for Hepatitis B and Konakion™ immunisation. Discuss breast feeding intentions and obtain consent for administration of formula milk if appropriate.
- Weigh the baby (warm cloth nappy on scales). Use Giraffe bed scales if admitting in to one.
- Transfer the infant from the resuscitation bed (Neopuff™ and SCN bed are ready)
- Provide respiratory support if required
- Attach Oximeter™ probe to baby (pre ductal), ECG leads (away from chest x-ray area), attach leads to monitor, Baby may be nursed in an open bed or an incubator depending on size and gestation. See TNZ chart in L2 when setting incubator temperature. For example; the small for gestational age baby will require incubator and the large term baby may require and open care or Giraffe bed or if normothermic, may go in to a cot depending on reason for admission (e.g. boarders).
- Measure PA temperature
- Measure head circumference whilst colleague is providing respiratory support via Neopuff™ (if required)
- Apply CPAP if required
- Insert oro-gastric tube and decompress stomach if on CPAP.
- Document- Time of arrival, temperature, respiratory rate, heart rate, saturations, blood pressure, blood gas and blood sugar level.
- Allow the baby to settle if possible until the next care time before applying further fixation such as Duoderm™ and Velcro™ (as per CPAP guideline: **CPAP in NICU 5.1.23**)

- Assist with line insertion if required
- Provide explanation of events to family member and provide them with house rules pamphlet and the house rules.
- Administer IM Hepatitis B vaccine and IV/IM Konakion™ as charted (when parental consent obtained).
- Provide crib covers to reduce excessive light and noise (if in an incubator or closed giraffe bed).
- Monitor urine output.
- Continue to monitor blood glucose levels, blood gases, blood pressure as frequently as required for infants clinical condition (discuss with Neonatologist or representative if unsure) as well as hourly heart rate, respiratory rate, oxygen saturations and 4th hourly temperature.
- Observations will be more frequent if they are not within the normal parameters.

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AUTHOR: Shirley Graham NUM 2 NICU
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