The Yorkshire and Humber Neonatal Operational Delivery Network

NHS

Yorkshire & Humber Neonatal ODN (South) Clinical Guideline

Title: **Admission of the Newborn to the Neonatal Unit**

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This clinical guideline has been developed to ensure appropriate evidence-based standards of care throughout the Y&H Neonatal ODN (South). The appropriate use and interpretation of this guideline in providing clinical care remains the responsibility of the individual clinician. If there is any doubt discuss with a senior colleague.

A. Summary

1. Aim

To provide an overview to the admission management of a new-born to the neonatal unit.

2. Summary

- Every maternity service must have approved documentation for the admission process for the new-born to the neonatal unit, guided by an agreed list of criteria for admission.
- Roles and responsibilities of staff, neonatal or midwifery, should be clear e.g. who should attend deliveries of different risk categories.
- The admission procedure is outlined.
- References to relevant network guidelines are listed.
- The importance of legible, accurate documentation and good communication is emphasised.

B. Full guideline

1. Background

A certain proportion of new-born infants will need referral for specialist medical treatment and continuing specialist care. This cannot always be anticipated, but the risks can be reduced if robust evidence based arrangements are in place with appropriate care pathways including for transitional care. [1, 2]

It is a minimum requirement for a maternity service to have **approved documentation** which describes the admission of a sick newborn to a local neonatal unit (LNU), neonatal intensive care unit (NICU) or special care unit (SCU).

2. **Aim**

This guideline aims to provide an overview of admission management.

3. **Areas outside remit**

The guideline does not give a detailed guide to every aspect of treatment which may be required.

4. Core guideline

4.1 Criteria for Admission

The following criteria for admission of a newborn are for guidance only; if in doubt consult with nurse in charge or consultant.

Admit babies to the neonatal unit:

- Gestational age below 35 weeks (may be to transitional care area)
- Less than 1.8kg (may be to transitional care area)
- Infants who have had a prolonged resuscitation (Apgar <7 at ten minutes)
- Infants with a severe congenital abnormality that will require urgent management (including cardiac conditions)
- Babies who need continued respiratory support at 10 minutes
- When either stabilisation or continuous monitoring is required prior to referral to Embrace
- Haemolytic disease (or severe hyperbilirubinaemia) when exchange transfusion is likely
- Jaundice not responding to phototherapy
- Respiratory distress or infants needing respiratory support from whatever cause

that requires either monitoring or treatment
- Clinically unwell infants with suspected septicaemia or meningitis
- Hypoglycaemia not responding to ward protocol
- Need for intravenous fluids
- Specific concerns from midwives (e.g. choking when feeding)
- Encephalopathy or seizures
- Any baby requiring monitoring or treatment that cannot be delivered on the postnatal ward
- Infants identified through the antenatal alert system as requiring admission
- Bile stained vomiting
- Babies with neonatal abstinence syndrome requiring treatment
- Where there are immediate safe-guarding issues ***without other*** safe alternatives
- As part of a safe-guarding plan

Caution: avoid separating mother and baby where possible

4.2 Transport arrangements

Individual units will have their own risk-assessed transport arrangements for the movement of a sick newborn either from labour ward, postnatal ward, home birth or midwifery-led unit to the neonatal unit.

4.3 Roles and Responsibilities

Tier 1 doctors must be assessed within their own unit and accompanied for all deliveries until competence is proven.

Tier 2 doctors should be assessed within their own unit to define the level of competence at which they can be expected to perform.

4.3.1 Who should attend the delivery?

The recommendations below are minimum requirements and local unit staffing and individual competencies should be taken into consideration when deciding team composition e.g consultant may be required to attend deliveries at higher gestations.

Deliveries should be attended by:

Consultant* with neonatal team (doctors and nurses) when:

- Prematurity < 27 weeks *Occasionally when a delivery is imminent during out of hours, with consultant on-call being off-site, the consultant may not be able to attend to the initial resuscitation. It is therefore imperative to notify the consultant on-call of high risk imminent deliveries as soon as possible.

- Premature multiple deliveries
    - Twins <28 weeks
    - Triplets <32 weeks

- Life threatening congenital malformation such as congenital diaphragmatic hernia or other conditions where skilled acute care may be needed e.g. hydrops fetalis, suspected pulmonary hypoplasia.

- Any condition or situation where it may be necessary to make decisions on whether or not full supportive care should be provided or continued.

Tier 2 doctor/tier 2 ANNP with neonatal team when:

- Gestation less than 33+6 weeks.

- Anticipated fetal depression e.g. prolonged fetal bradycardia or fetal acidosis

- Major congenital abnormality not expected to be life threatening (e.g. anterior abdominal wall defect)

- Recommended in antenatal reporting system

- Shoulder dystocia

Tier 1 Doctor /ANNP when:

- When recommended in antenatal reporting system
- Fetal distress
- Preterm delivery > 34 weeks
- Meconium staining of liquor
- Abnormal presentations
- Instrumental deliveries except lift out with no fetal distress

Neonatal nurses

Best practice is that a neonatal nurse should be requested to attend all deliveries at < 32 weeks' gestation, when fixation of a ET tube is required or when admission to the neonatal unit is necessary.

However, the benefits of neonatal nurse attendance at the delivery of a wider group of infants cannot be under-estimated for example:

- maintaining normothermia and facilitating early feeding in late preterm infants being admitted to transitional care
- as part of the resuscitation team for neonatal crash calls

It would be appropriate for the Tier 1 doctor/ANNP to be informed within 1 hour of delivery for the following:

- Infants requiring antibiotics due to risk factors as per infection – see Y&H O DN early onset neonatal guideline
- Birth weight <2.5 kg
- Hepatitis B immunisation required
- Known maternal HIV infection (to ensure prescription of anti-retroviral drugs and appropriate investigations)
- Maternal substance misuse
- Other safeguarding issues

It would be appropriate for other matters such as minor congenital abnormalities, immunisation or discussion about vitamin K to be dealt with by the postnatal ward team.

Refer to Yorkshire & Humber Neonatal ODN guidelines on relevant conditions eg. Early care, meconium aspiration, PPHN.

4.4 Admission procedure

Give as much notice as possible to nursing staff if admission is expected. Remember that not all babies need investigations (such as blood culture) or even treatments (such as iv fluids). It may be more appropriate to commence feeds if the clinical condition allows rather than site a cannula. Refer to the Yorkshire & Humber ODN Feeding guideline.

On admission:

- Weigh and measure head circumference, plot on growth chart
- Attach monitor leads if monitoring is required
- Check temperature and record clearly (and exact time taken)
- Label baby as per local unit policy
- Humidification from birth where indicated
- Consider early capillary blood gas if indicated e.g. difficult ventilation
- Measure and record blood pressure
- Blood glucose if indicated
- Umbilical line(s) if indicated
- For hypoglycaemic infant place iv line first
- Where indicated for risk of infection, take cultures and administer antibiotics as soon as possible and within one hour. Antibiotics can be given via a sampling UVC (or UAC in some circumstances e.g. no other iv access in a baby with suspected sepsis) prior to x-ray confirmation.
- Vitamin K if not already given
- Admission bloods (FBC, U&E, CRP, SBR) if indicated, and other samples where applicable (blood culture, group and save, DCT, LFTs,)
- Take new-born blood spot
- Surface swabs (Throat and Ear) as local policy
- MRSA swabs (Nose Umbilicus Groin) dictated by Trust policy
- Examination when clinically stable
- Commence PN as soon as adequate long line or UVC position is confirmed on x-ray in line with National guidance [4,]
- Complete and print Badger summary

- Senior member of team to update parents and document

On admission (postnatal transfer from another hospital) complete as above and:

- Check line positions on x-ray and document in medical notes
- Check and document that fixation of central lines (UAC/UVC/long line) is secure and appropriate (e.g. long line dressing not circumferential or peeling off)
- Prescribe drugs and administer if due/not received during transfer

Refer to Yorkshire & Humber Neonatal ODN guidelines for further information on management of respiratory support, central lines, fluids and feeding.

4.5 Further management – general principles

- Allow nurses to complete the observations; this is a good time to prep for line insertion

- If the admission temperature is low, ensure appropriate thermal control in place to warm the baby during line insertion

- If an arterial line is indicated, then it must be placed as soon as possible

- If the CO_2 is too low or the baby is too cold, it may be more difficult to place lines
- Pay attention to heat loss during any procedures, aim to keep temperature 36.5-37.5ºC

- Do not spend hours struggling with a procedure; it is not in the baby's interest. Ask someone else to help.

- If the baby is not stable during the procedure then stop, re-assess and only continue if the baby becomes more stable

- Always scrupulously maintain a sterile field when placing central lines
- Make sure you carefully check and document the position of central lines. Incorrectly placed lines are dangerous

- Consider limiting yourself to 2 attempts at peripheral IV cannulation and one attempt at arterial or central line placement before referral to colleague

4.6 Who undertakes the procedures e.g. central line insertion/intubation?

The smallest and sickest babies need the most expert attention. An escalation policy should be in place and all staff aware of appropriate contact when needed.

Birth Weight	**Who manages?**
Sick/unstable baby	Tier 2 /consultant
<750 g	Tier 2 / Consultant
750 – 1500g	Tier 2
>1500 g	Experienced or supervised Tier 1

4.7 Who gets what?

The summary table below gives guidance as to which lines a baby is likely to need given their weight and how unwell they are. For further information refer to:

Yorkshire & Humber Neonatal ODN (South) Early Care guideline/umbilical lines guideline and summary table below.

	<750 g Need for PN and likely need for respiratory support	Need for PN <31+0	≥31+0
UVC	Double lumen UVC sited above liver	Double lumen UVC sited above liver	If ventilated or surgical condition requiring PN or unlikely to reach full feeds by Day 5 Double lumen UVC sited above liver
UAC	Usually 3.5 Fr	If ventilated: Consider 5 Fr UAC	If ventilated (e.g. severe HIE/meconium aspiration/diaphragmatic hernia) 5 Fr UAC
Peripheral iv	If urgent need for antibiotics or glucose	If urgent need for antibiotics or glucose	If no need for UVC/LL and need for glucose or antibiotics
Long line	If unable to site UVC	If unable to site UVC	If meet criteria for UVC but unable to site

4.8 Infections and antibiotics

The infection screen for early onset infection is different for late onset infection. Please refer to the infection guideline. Antibiotics (penicillin and gentamicin) should be given after first taking appropriate blood cultures. The blood culture should be at least 1 mL and should be obtained in a sterile manner. Once prescribed it is important that the antibiotics are given within one hour. If there is a high risk of infection do not delay the administration of antibiotics while awaiting central lines or other blood specimens. Antibiotics can be given via a sampling umbilical venous (or in some circumstances arterial catheter e.g. No other iv access in baby with suspected sepsis) prior to x-ray confirmation of the line position.

4.9 Fluids and drugs

Please see the detailed fluid guideline; the rates of administration are dependent on the infant's birth weight. For infants < 31+0/40, start PN once central access has been established. For infants <1 kg electrolytes should be measured frequently over the first few days of life.

4.10 Feeding

Breast feeding should be discussed antenatally. Mothers intending to breast feed should have antenatal education. Where labour is progressing or a caesarean section is planned antenatal expression of breast milk should be considered for both term and preterm infants anticipated to need admission to the neonatal unit.

It is recommended that, when indicated and clinically possible, mothers express breast milk within two hours of delivery with an aim to provide colostrum to the infant within 6 hours of birth and always within 24 hours.[6]

4.11 Documentation and Communication

The admission needs to be accurately documented and all admission documentation must be fully completed at the time. It may be difficult to get access to all information at a later date.

Ensure contemporaneous and complete data entry into BADGER.

Unanticipated admissions to the neonatal unit must be reported and shared with the relevant parties on a regular basis.

4.12 Care of the Family

- If at all possible, create the opportunity for parent(s) to visit the neonatal unit prior to a planned/anticipated admission of their baby.
- Breast feeding should be discussed antenatally. Mothers intending to breast feed should have antenatal education. Where labour is progressing, or a caesarean section

is planned, antenatal expression of breast milk should be considered for both term and preterm infants anticipated to need admission to the neonatal unit.

- Where possible, parent(s) should have the opportunity to discuss the admission of their baby prior to delivery.

- All parents should have the opportunity to discuss the management of their infant with appropriate members of the neonatal team when admission is anticipated. The details of the discussion, particularly if there is specific reference to prognosis or outcome, should be completed in maternal notes if antenatal discussion with a copy in the neonatal notes when available.

- Parent(s) should have the opportunity to see their baby in the unit at the earliest possible time after admission, and given appropriate explanation of their baby's condition and treatment.

- Parent(s) should also be introduced to the neonatal unit staff, provided with practical information about the unit and hospital e.g. regarding residence, visiting details, car parking, availability of food, plus relevant written information if available.

- Once admitted there should also be a discussion with the family and a senior member of the neonatal team (Tier 2 or 3 doctor, ANNP working on the Tier 2 rota) within 24 hours of admission (ideally as soon as possible after admission) and details should be recorded in the neonatal notes including the time of discussion. The discussion can be by telephone if necessary. This is an NNAP standard.

Audit criteria

Relevant NNAP standards eg. Admission temperature/parent update
ATAIN audit
Admission documentation

- Frequency of audit and number or percentage of health records dependent on unit
- Minimum required compliance dependent on unit

References

1. Toolkit for High Quality Neonatal Care DH 2009
2. CNST Maternity Clinical Risk Management Standards 2012-2013, 2021
3. Family Integrated Care. www.bliss.org.uk
4. NICE guideline NG154 Neonatal parenteral nutrition 2020 https://www.nice.org.uk/guidance/ng154
5. BAPM Maternal breastmilk toolkit: Optimising early maternal breast milk for preterm infants: a quality improvement toolkit 2020 https://www.bapm.org/pages/196-maternal-breast-milk-toolkit

Appendix 1. Guidance on lines required

	<750 g Need for PN and likely need for respiratory support	<31/40 Need for PN	≥31/40
UVC	Double lumen UVC sited above liver	Double lumen UVC sited above liver	If ventilated or surgical condition requiring PN or unlikely to reach full feeds by Day 5 Double lumen UVC sited above liver
UAC	Usually 3.5 Fr	If ventilated: Consider 5 Fr UAC	If ventilated (e.g. severe HIE/meconium aspiration/diaphragmatic hernia) 5 Fr UAC
Peripheral iv	If urgent need for antibiotics or glucose	If urgent need for antibiotics or glucose	If no need for UVC/LL and need for glucose or antibiotics
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