Yorkshire and Humber Neonatal ODN Clinical Guideline

Title: Triggers for Transfer

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This clinical guideline has been developed to ensure appropriate evidence based standards of care throughout the Yorkshire and Humber Neonatal ODN. 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.

1. Background

The Neonatal Toolkit requires all Neonatal Networks to have defined indications for inter-hospital transfers[1].

The NHS England Service Specifications for Neonatal Critical Care provide guidance for nationally agreed pathways. These documents are evidence-based and inform the process to ensure the most appropriate care can be delivered in the right place.[2]

The indicators within this guideline provide a baseline for responding to any individual baby's clinical condition. They are evolving criteria, which are anticipated to adapt in response to local audit, advances in clinical care and increasing capacity in tertiary centres.

Indicators for transfer are described as well as clinical indicators, which should prompt local clinicians to consider discussion with the Network Lead Neonatal Unit Consultant.

Please note these are guidelines. Occasionally on an individual patient basis, they will not be appropriate. However, units are encouraged to have discussion with the Neonatal intensive care unit (NICU, level 3).

2. Aims

The Yorkshire and Humber Neonatal ODN aims to provide high quality care for all babies within the network. This sometimes requires the transfer of babies, both between network hospitals, and to hospitals outside of the network for some specialist services. Our aim is to continue to ensure that the right baby receives the right care in the right place at the right time.

This guideline aims to support the continued improvement of neonatal care in our network by:

1. Defining indications for transfer to a NICU or Local Neonatal Unit (LNU, Level 2) dependant on care required.
2. Using clinical trigger points to increase early consultation and advice between network units. This will not always result in transfer of the patient to a NICU or LNU.
3. Ensure that early transfer is facilitated in infants where the early use of other treatment modalities (such as High Frequency Oscillation Ventilation (HFOV) and inhaled nitric oxide) will be beneficial as these interventions are less efficient when there is a delay in initialising.
4. Promoting feedback on the management of neonates who require transfer.

3. Areas outside pathway

The focus is upon postnatal clinical indicators. Therefore, this document does not include guidance for *in utero* transfers, transfer due to capacity problems or criteria for appropriate back transfer.

Indications for Neonatal Transfer

Any baby in an LNU meeting any one of the following criteria should be transferred to a NICU centre for continuation of care. The urgency of transfer will be determined by assessment of each individual case.

LNU

1. **Gestational age at birth**

    a. **Less than 27^{+0} weeks singleton.**
    b. **Less than 28^{+0} weeks multiples.**

    Ideally this group of patients will be transferred *in utero* to an appropriate centre. However, there will continue to be occasions where this is not possible and early transfer should be performed as soon as possible after delivery.

2. **Birth weight less than 801g, any gestational age.**

3. **Any baby requiring ventilation and other organ support eg inotropes or chest drains (unresolving pneumothorax).**

4. **Any baby requiring ventilation for more than 48 hours, units are required to have a conversation either direct with tertiary consultant or via Embrace, this may or may not result in a transfer (see LNU algorithm).**

5. **Babies with hypoxic-ischaemic encephalopathy requiring total body cooling or assessment for total body cooling.**
   Please refer to the Network guideline for more details. Rectal temperature monitoring should be used and TOBY protocols for passive cooling followed.

6. **Surgical conditions requiring specialist assessment**
   For example, necrotising enterocolitis not responding to medical management, perforation, suspected malrotation and volvulus, gastroschisis, diaphragmatic hernia, encephalocele etc.

7. **Cardiac conditions requiring specialist assessment**
   For example, duct-dependent lesions, cardiac arrhythmia etc.

Any baby in a Special Care Baby Unit (SCBU, Level 1) meeting any one of the following criteria should be transferred to an appropriate LNU or NICU centre for continuation of care. The urgency of transfer will be determined by assessment of each individual case.

SCBUs

1. **Gestational age at birth**

    a. **Less than 32 weeks singleton.**
    b. **Less than 34 weeks multiples.**

2. **Birth weight less than 1000grams, any gestational age.**

    Ideally this group of patients will be transferred *in utero* to an appropriate centre. However, there will continue to be occasions where this is not possible and early transfer should be performed as soon as possible after delivery.

3. **Babies requiring any respiratory support, ventilation CPAP or High Flow.**

4. **Babies requiring PN due to birthweight less than 1250g or other indication (BAPM, 2016).**

5. **Requiring an umbilical venous catheter or any central line.**

6. **Babies meeting criteria for uplift from LNU.**

Indications for seeking advice from a NICU centre

The following clinical indicators should be used to prompt early discussion and advice from a Consultant Neonatologist within a NICU centre. Such discussions may, or may not, result in transfer of the infant. In certain cases, additional specialist advice will also be required, for example, from a paediatric cardiologist, paediatric surgeon or neurosurgeon.

Discussion should be at a consultant to consultant level. Although at times for training, a trainee could undertake these discussions under direct consultant supervision.

Early discussion aims to:

- Support the care of neonates in a unit local to their home.
- Increase support for staff working in Special care and Local Neonatal Units.
- Potentially reduce the number of transfers.
- Facilitate early transfer where other treatment modalities may be required as there is improved efficacy when these modalities are started earlier.
- In infants who do require transfer ensure this occurs at the 'right time' to reduce potential harm to the infant and improve outcomes.
- Allow transport and network wide capacity considerations.

The on-call Consultant can be accessed directly see Appendix 1. or via Embrace (0845 1472472).

Clinical indicators for seeking advice

Consultant to Consultant discussion with the Network Lead Centre should be considered in the following clinical circumstances.

Any infant

1. Who is not progressing as anticipated.

2. Respiratory
   Respiratory status not responding to appropriate interventions. These infants may potentially benefit from HFOV or inhaled nitric oxide therapy.

Consider infants with:

a. progressively worsening or persistently poor blood gases (pH <7.22) on 3 consecutive blood gases over a six-hour period.
b. increasing oxygen requirements or persistently high oxygen requirements > 60% for 6 hours.
c. increasing pressure requirements or persistently high (≥26 cmH_20)pressure requirements for 6 hours.
d. Infants requiring ventilation and chest drain that are not improving.
e. Mechanically ventilated infants with airway anomalies e.g. cleft palate.
f. Meconium aspiration requiring mechanical ventilation.

3. Cardiovascular

a. Cardiac arrhythmia.
b. Cyanosis despite oxygen therapy.
c. Hypotension unresponsive to initial volume and first-line inotropic support.

4. Any infant requiring specialist assessment, investigation or treatment which is not available in the local unit e.g. renal, metabolic disease, MRI scan and exchange transfusion (if the infant requires an immediate exchange transfusion, units will be expected to undertake this procedure without delay).

Audit Criteria

- Indications for neonatal transfer.
- Infants ventilated for more than 48 hours in a Local Neonatal Unit.
- Outcome/location of care for infants meeting the criteria.

References

1. Toolkit for High-Quality Neonatal Services, Department of Health 2009.
2. NHS England Service Specifications. Neonatal Critical Care E08/S/a.

Appendix 1 Referral and Transfer Pathways in Yorkshire & Humber
Appendix 2 SCBU Algorithm Pathway
Appendix 3 LNU algorithm Pathway

Appendix 1 - Referral and Transfer Pathways in Yorkshire & Humber

All NICU's will provide:

- **General neonatal medicine**
- **HFOV**
- **Nitric Oxide**
- **Ophthalmology**

	Level 3 Unit	Surgical referrals	Cardiac Referrals
Barnsley Bassetlaw Chesterfield Doncaster Grimsby Rotherham Scunthorpe	Jessop Wing, Royal Hallamshire Hospital	Following clinical discussion: < 1.5kg Jessop Wing >1.5kg Sheffield Children's Newborn Surgical Unit/PICU	Leeds General Infirmary
Airedale Calderdale	Bradford	Leeds General Infirmary	Leeds General Infirmary
Scarborough York	Hull Royal Infirmary	Following clinical discussion: Hull Royal Infirmary (general surgery only) or Leeds General Infirmary	Leeds General Infirmary
 Harrogate Pinderfields St James Hospital, Leeds	Leeds General Infirmary	Leeds General Infirmary	Leeds General Infirmary

Telephone numbers for Embrace and Level 3 Centres

Embrace Transport **0845 1472472**

Bradford Royal Infirmary

Switchboard **01274 542200**
Neonatal Unit **01274 364523**

Hull Royal Infirmary

Switchboard **01482 328541**
Neonatal Unit **01482 604391**

Leeds General Infirmary

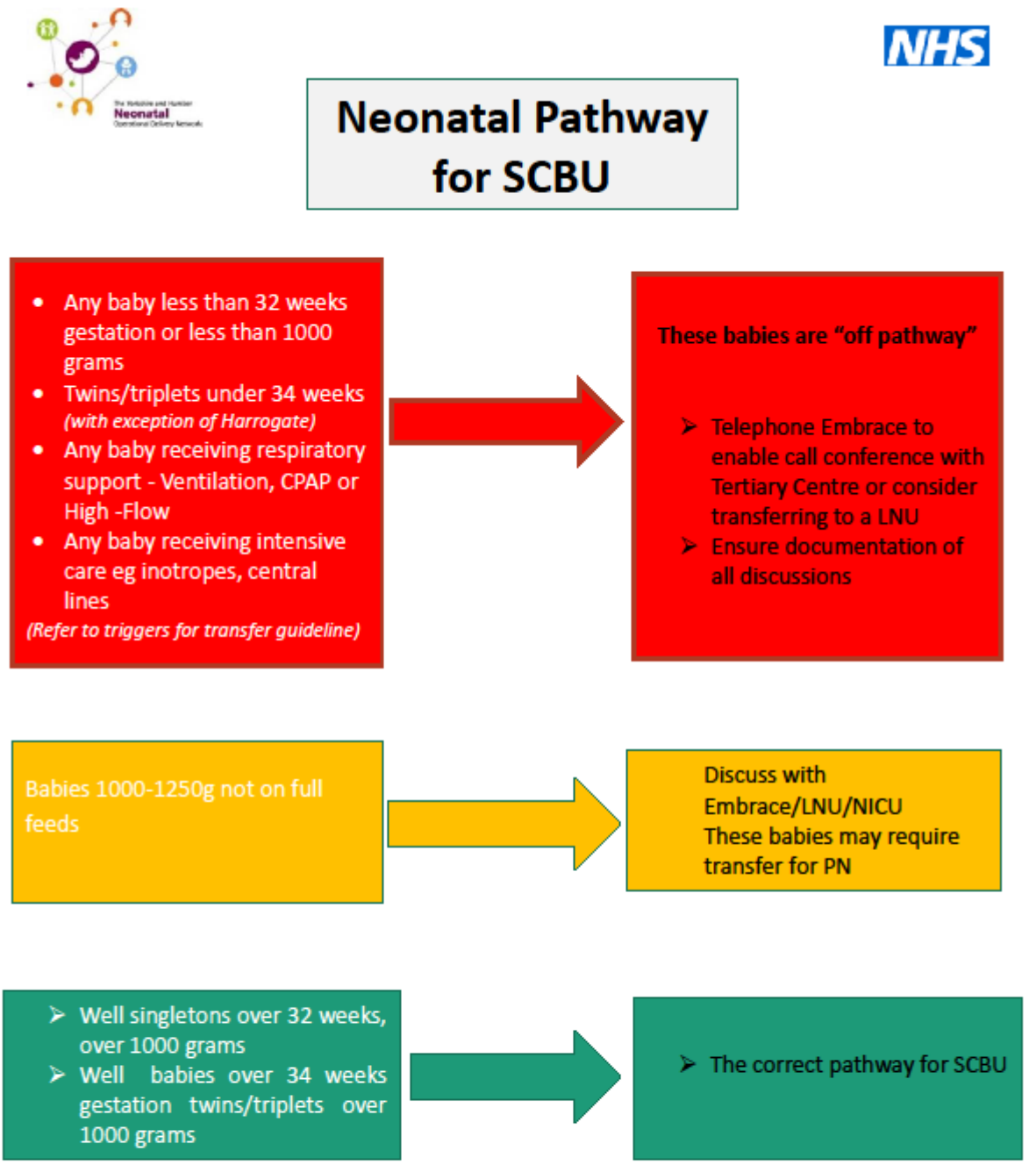
Switchboard **0113 2432799**
Neonatal Unit **0113 3927443**

Jessop Wing Royal Hallamshire Hospital

Switchboard **0114 2711900**
Neonatal Unit **0114 2268456**

Sheffield Children's Hospital
Switchboard **0114 2717000**
Neonatal Surgical unit **0114 2717324**

Appendix 2 - SCBU Algorithm Pathway



Reference

- **Toolkit for High Quality Neonatal Services 2009**
- **NHS England Service Specifications for Neonatal Critical Care.**

LNU Pathway Algorithm - (Appendix 2 Triggers for Transfer)			
LCr/Img	Ratified Mar 19	Next Review Jan 21	V1.4

Appendix 3 - LNU Algorithm Pathway

Neonatal Pathway for LNUs

Any baby requiring a NICU including:

- <27+0 weeks
- Multiples <28+0 weeks
- < 801 grams
- Requires therapeutic hypothermia (exception Calderdale)
- For surgical or cardiac opinion
- Ventilated baby who is unstable/high pressure/high FiO2
- Ventilated requiring other organ support e.g. inotropes or chest drain (unresolving pneumothorax)

(Refer to triggers for transfer guideline for further detailed information)

→ **These babies are "off pathway".** Telephone Embrace to enable call conference and transfer.

Stable baby:

- Ventilated approaching 48 hours or soon after.
- If chest drains present please discuss sooner.

(Discussion during the day i.e. 08:00 - 17:00 hours)

→ In the first instance, these babies are required to be discussed with Local Tertiary Consultant for advice and formulate a plan.

- For transfer, telephone Embrace to enable call conference.
- Please document all conversations.

Reference

- Toolkit for High Quality Neonatal Services 2009
- NHS England Service Specifications for Neonatal Critical Care.

LNU Pathway Algorithm - (Appendix 3 Triggers for Transfer)			
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