The Northern Neonatal Network
An Operational Delivery Network
Website - **www.nornet.org.uk**

Northern Neonatal Network – agreed clinical patient pathways (2017)

Background

These patient pathways have been agreed by the Northern Neonatal Network (NNN) and govern the flow of babies and/or mothers across the region it serves. They include both in and ex utero (ante and post natal) transfers to take account of the levels of care provided and facilities available at the 11 Units currently providing neonatal care within the NNN. In utero transfers will be arranged in close co-operation with obstetric and maternity services but for the sake of robust records and in order to monitor patient flows and bed/cot availability, the Northern Neonatal Transport Service (NNeTS) should be contacted and informed.

The Pathways also take account of the recommendations of the RCPCH Report[1] from 2015 that suggested changes to the management of babies requiring neonatal intensive care across the NNN and the first phase of this is reflected in these current Pathways, but these will continue to develop and be refined as changes in capacity at the NICUs are phased in.

The Network will be conducting ongoing audit and reporting of Pathway compliance and also working with the Maternity Clinical Network and Local Maternity Systems (LMS) across the region to monitor any exceptions and work with Providers to further improve compliance and thus the quality of care provided to mothers and babies in all Trusts providing it.

[1] RCPCH Invited Reviews Programme, Northern Neonatal Network / NHS England (August 2015)

Pathway #1.

Fetuses at any gestation which, as a result of prenatal investigations, are considered to require urgent assessment at the regional centre after delivery (for example, surgical, cardiac, renal, or metabolic conditions)

- **Preferred pathway:**

  Arrange for delivery in Newcastle.

- **Secondary pathway:**

  Deliver locally in a consultant-led unit, and arrange urgent postnatal transfer to Newcastle using the hot-line in discussion with the NNeTS team[2] and with specialist input as required e.g. prostin use for cardiac cases.

- **After completion of initial episode of specialist care**, transfer baby either back to the local facility, or discharge home, as appropriate.

Notes
The potential problem for this pathway is that the criteria for decisions regarding place of delivery may be fluid, and some deliveries might take place centrally that could appropriately and safely have taken place in either a nearer service with IC, or in a local hospital without IC.

North of Tyne residents in this category will normally have either a primary booking with Newcastle, or an early transfer of booking from NESECH, Cramlington.

Suggested audit metric
Number of deliveries in Newcastle of mothers not resident north of the Tyne at 36^{+} weeks gestation by category of need (cardiac, surgical, renal, other, multiple anomalies) by year.

[2] **NNeTS Hotline phone number - 0191 2303020**

Pathway #2.

Fetus at high risk of preterm delivery at less than 30 weeks in a hospital without neonatal IC (for example: severe maternal disease best managed by ending the pregnancy; pre-term rupture of membranes; fetal growth failure; adverse biophysical profile; positive fibronectin), where the mother is booked elsewhere than one of the 4 services providing IC.

- **Preferred pathway:**

  If it is possible to transfer mother safely, hot-line to arrange transfer of mother for delivery in the nearest of the 4 services providing IC[3].

- **Secondary pathway:**

  For situations where in-utero transfer is not possible, hot-line to arrange post-natal transfer to nearest of the 4 services providing IC[4].

- **On completion of intensive care**, transfer the baby to an appropriate level Unit closer to home for continuing care prior to discharge home might be possible and should be facilitated.

Note
The purpose of this pathway is to ensure that babies at most risk of complications receive at least their early care in a centre where they can receive optimal nutritional management by a team used to undertaking this, and management of any complications of prematurity.
Maternal safety is paramount – there needs to be extensive team discussions between local obstetric/neonatal clinicians as well as with the teams at the hospitals being referred to.
Exceptions will be babies who for reasons of extreme illness or congenital anomaly receive palliative or end-of-life care at their hospital of delivery.
The 4 services with IC will normally expect to accommodate these babies themselves *with the exception of babies up to and including 26+6 weeks gestation at North Tees which will usually need to be cared for at James Cook University Hospital, Middlesbrough*.

Suggested audit metric
Proportion of babies, in hospitals without IC, of < 30 weeks or < 1500g birth weight who receive their early care in one of the 4 IC facilities, by hospital. To be monitored quarterly in the NNN dashboard. Suggested target 95%.

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[3] As from 25/09/2017, babies up to and including 26+6 weeks gestation are no longer delivered/admitted at North Tees and all potential antenatal IUTs of these babies should be discussed with NNeTS on **NNeTS Hotline phone number - 0191 2303020**

[4] As from 25/09/2017, babies up to and including 26+6 weeks gestation are no longer delivered/admitted at North Tees and all post natal EUTs of these babies should be discussed with NNeTS on **NNeTS Hotline phone number - 0191 2303020**

Pathway #3.

Fetus at high risk of preterm delivery at 30 to 31+6 weeks in a hospital without IC[5]

- **Preferred pathway:**

  Use the hot-line to discuss and consider in-utero transfer based on maternal factors and estimated fetal size and condition. Where the estimated fetal weight is less than 1500g the mother should generally be transferred to deliver where there is one of the 4 IC facilities in view of the need for a period of neonatal parenteral nutrition.

- **Secondary pathway:**

  For situations where in-utero transfer is not considered appropriate and when the baby is born at 30 to 31+6 weeks. Use the hot-line to discuss and consider transfer to nearest of the 4 services providing IC based on birth weight and condition[6]. Where the birth weight is less than 1500g the baby should generally be transferred in view of the need for a period of neonatal parenteral nutrition.

- **On completion of intensive care**, transfer the baby to an appropriate level unit closer to home for continuing care prior to discharge home.

- **On completion of Special Care**, discharge home when appropriate.

Note
Many factors impact on the clinical decisions about maternal transfer or post-natal infant transfer at this borderline range of gestation. Well grown babies ≥ 1500g without significant complications can be safely managed in a local special care facility, including those with mild and short-lived respiratory distress requiring nasal continuous positive airways pressure. Similarly those delivered where there is an intensive care facility can mostly be returned fairly quickly to their referring hospital or one as close to home as possible for continuing care. Rarely, babies with extreme illness or congenital anomaly may receive palliative care at their hospital of delivery.

The 4 services with IC will normally expect to accommodate these babies themselves *with the exception of babies up to and including 26+6 weeks gestation at North Tees which will usually need to be cared for at James Cook University Hospital, Middlesbrough*.

Suggested audit metric
Proportion of babies < 1500g birth weight, in hospitals without IC, of 30 to 31+6 weeks who receive their early care in one of the 4 IC facilities, by hospital. To be monitored quarterly in the NNN dashboard. Suggested target 95%.

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[5] South Tyneside 32 weeks and above, other SCUs 30 weeks and above as per agreement.
[6] As from 25/09/2017, babies up to and including 26+6 weeks gestation are no longer delivered/admitted at North Tees and all IUT/EUTs of these babies should be discussed with NNeTS on **NNeTS Hotline phone number - 0191 2303020**

Pathway #4.

Near term deliveries, 32 to 36+6 weeks (in the absence of a perinatal diagnosis requiring specialist care)

- **Preferred pathway:**

  For mothers presenting in labour to the local consultant-led obstetric unit, deliver locally.

  1. Manage the baby on the postnatal ward, or admit to special care, according to local criteria.

  2. If the baby develops an illness manageable locally, treat in the local special care facility.

  3. For conditions potentially or actually needing specialist or IC treatment, discuss with regional specialists using the hot-line (for example, respiratory deterioration despite nasal CPAP, neonatal encephalopathy; surgical problems). Where the birth weight is less than 1500g the baby should generally be transferred in view of the need for a period of neonatal parenteral nutrition.

- **Secondary pathway:**

  For mothers presenting to a midwifery-led unit, transfer to the appropriate consultant-led unit for delivery. NNeTS will NOT undertake ex-utero transfers from MLUs. These need to be arranged as per BAPM guidance and local SOPs.

  1. Manage the baby as in the preferred pathway above.

- **On completion of intensive care**, transfer to an appropriate level unit closer to home for continuing care prior to discharge home.

- **On completion of Special Care**, either return the baby to the mother on the postnatal ward or discharge home as appropriate.

Note
These babies should normally be delivered in their local consultant-led service, and should not normally need transfer to an IC. Exceptions are very growth restricted babies at risk of feed intolerance who may need a period of supplementary parenteral nutrition, and babies who develop complications of delivery or prematurity that cannot safely be managed locally.

Suggested audit metric
Proportion of non-malformed babies 32 to 36+6 weeks, in hospitals without IC, who are admitted to one of the 4 IC facilities, by hospital, by year.

Pathway #5.

Babies, 37 weeks +

- **Preferred pathway:**

  Deliver the baby, keep with mother and discharge home either from the delivery suite or the postnatal ward of facility for which they were booked.

- **Secondary pathway:**

  1. At any time after delivery, identify problems that cannot be safely managed on the postnatal ward according to local guidelines, and admit the baby to special care.

  2. Identify problems requiring specialist treatment and discuss with appropriate specialists.

  3. Identify babies with serious diseases requiring intensive care or specialist assessment, and discuss urgently with the appropriate centre using the hot-line to arrange transfer. For example, this will include babies with serious congenital malformations, serious infections, and encephalopathy.

- **On completion of intensive care**, transfer to an appropriate level unit closer to home for continuing care prior to discharge home.

- **On completion of Special Care**, either return the baby to the mother on the postnatal ward or discharge home as appropriate.

Note
This pathway will be violated in circumstances such as a mother needing transfer from a midwifery-led facility during labour, or a mother delivering but becoming seriously ill, for example requiring a period of intensive care.

Suggested audit metric
Percentage of non-malformed term babies (≥ 37 weeks) admitted for special or intensive care for any reason, by hospital, by year.