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Northern Neonatal Transport Service
Newcastle upon Tyne Hospitals NHS Charity (reg. 1057213)

UK National Neonatal Transport Group Conference 2026



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2

Neonatal Education On Site (NEOS) – Recognition & Management of the Sick Neonate

DR Alex Philpott[1], Nisha Rani[1]
[1]KIDSNTS

Background

In 2021 KIDSNTS, the regional paediatric and neonatal transfer service, was approached by a Special care unit (SCU) to assist with upskilling their team in managing neonatal emergencies. The 1st NEOS was delivered in April 2022.

Since 2022, 24 ½ day sessions, in 2 SCUs and 2 Local neonatal units (LNU) have been delivered. Feedback from 16 courses is available.

Faculty for the course includes 1 consultant, 1 senior sister, 1 ANNP/transport nurse & a videographer.

What is NEOS

NEOS is a 3-hour session for a maximum of 7 multidisciplinary participants. Each team consists of a consultant, Tier 1 & 2 participants and at least 2 nurses. All present must participate in the simulation.

The session begins with an interactive session concentrating on human factors and team building – Team to Scheme. 2 bespoke high fidelity simulation sessions are run, with each followed by a video-assisted debrief. Depending on the team responses, these may be the same case – or a different clinical condition. Simulations are written to flex to the responses given by the team. All scenarios are filmed, with permission, by a videographer. These are shared with the participants on a private channel after the event.

NEOS aims to delivers:

- Onsite upskilling
- High-fidelity simulation
- Video-assisted debriefing
- Team-based learning
- A focus on rare but critical events

A suite of simulations has been generated, based on unit request, including extreme preterm, difficult airway, therapeutic hypothermia, PPHN and cardiac conditions. A range of mannequins is used to give fidelity for the simulation and is brought by to the bedside KIDSNTS but all other equipment is supplied by the hosting team. Wherever possible, the simulation is undertaken on the neonatal unit with debrief away from the cot-side.

Areas for learning are identified and allocated to team members to share with the wider team. Evaluation is undertaken post attendance via a QR code. Attendance certificates are emailed post attendance.

Results

Feedback was received from 90 participants. Results are as shown below:

Free text comments in addition to the above results included:

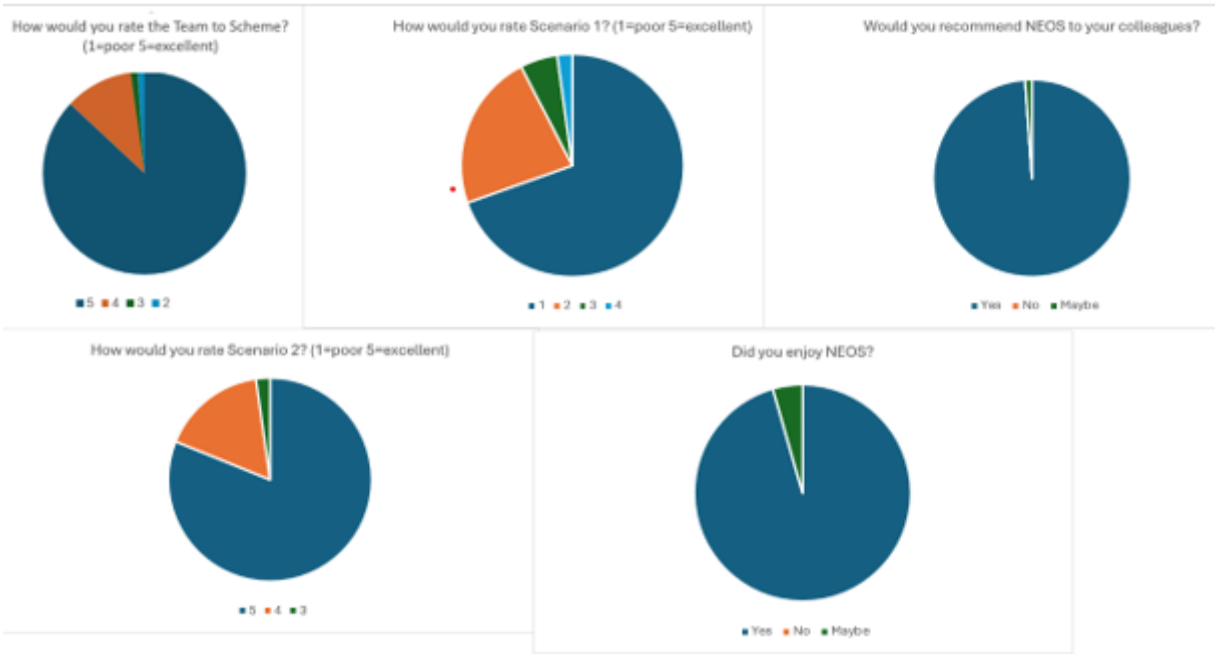
- Will suggest it becomes mandatory for my fellow consultant team, perhaps biannual?
- Team was fabulous in giving us feedback and the video review and analysing was excellent way to reflect
- Yes its stressful at first but very helpful in the end

Participants were asked about 3 things they learned. Themes included team working, communication, verbalisation, the respectful challenge as well as managing different clinical situations.

Summary

NEOS trains the whole multidisciplinary team together, in the surroundings they work in every day. Video-assisted debriefing allows adult learners to observe their technical and non-technical skills and to make adjustments. The feedback received regarding the experience is overwhelmingly positive.

Graphs



Images



Northern Neonatal Transport Service

Newcastle upon Tyne Hospitals NHS Charity (reg. 1057213)

UK National Neonatal Transport Group Conference 2026





3

The Use of Inhaled Nitric Oxide in a Regional Transfer Service over a 8 year Period

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Background

Inhaled nitric oxide (iNO) is used in the management of persistent pulmonary hypertension (PPHN) in the late preterm and term neonate.

Prior to 2025, iNO was being delivered in 2 local neonatal units (LNU) in the region, although neonates would still be referred for uplift into a neonatal intensive care unit (NIC).

Regionally, it has been reported there are increasing numbers of extremely preterm infants receiving iNO in our NICs.

With these 2 changes, we were interested to see whether there would be a change in pattern of requests for iNO from our referrers.

Data Review

A retrospective review of the KIDSNTS database was performed from May 2018 until June 2026, examining all neonatal transfers where iNO was delivered.

Results

A. Total transfers on iNO

· 214 iNO transfers were undertaken by the KIDSNTS team

· 167 neonates were moved out of a LNU/SC on iNO

· 43 neonates were referred for uplift out of a NIC on iNO

· 2 neonates improved (while on iNO) and were not uplifted to a PIC

· 3 neonates were repatriated out of PIC to a NIC on iNO

· 2 neonates died (while on iNO) before transfer (1 NIC; 1SC)



Regarding gestational age:

· 20 neonates <28 weeks received iNO

· 24 neonates <34 weeks received iNO

· 170 neonates 34 weeks and above received iNO

There was no obvious change regarding iNO use and gestational age during the time period examined

B. LNU/SC transfers into NIC:

· 140 neonates were referred from a LNU/SC into a NIC

· 64 of these referrals were from one LNU (LNU 1), which previously had iNO

C. LNU/SC into PIC transfers:

· 27 neonates were uplifted into PIC for consideration of ECLS. 1 neonate was transferred into PIC on iNO for surgical intervention.

· 1 LNU (LNU 1) referred 14 of the cohort

D. NIC into PIC transfers:

· 43 neonates were uplifted from a NIC into a PIC

Of the total 43 referrals, the primary reason was:

· ECLS – 22

· Surgery – 16

· Cardiac - 5

There was no obvious change in categories of referral over the study period.

E. PIC into NIC transfers:

· 3 neonates were repatriated, while still on iNO, from PIC to NIC



Results

KIDSNTS undertakes a considerable number of transfers of neonates requiring iNO

Roughly 3/4 of transfers are for uplift into regional NICs, with 1/4 of transfers from SC/LNU/NICs into PIC for consideration of ECLS, surgery or cardiac management.

There is no obvious change in the numbers of transfers in any gestational age group over the study period

Reassuringly, since the removal of iNO from regional LNUs, we have not seen an increase in referrals for uplift with iNO or consideration of ECLS.

4

Family centred care in neonatal transport: Current practices and perceptions

Mrs Libuse Mason[1], Ms Amanda Robinson[1]
[1]Centre Neonatal Transport Service

Background

Neonatal transport is documented as a time of heightened stress for parents of babies on neonatal units (NNUs). Neonatal care generally embraces Infant and Family-Centred Developmental Care (IFCDC) and Family-Integrated Care (FICare), however, little is known about how these approaches relate to neonatal transport.

In order to provide more family-friendly transfers, we are undertaking a Quality Improvement Project (QIP) to design and put into operation a new multifunctional trolley that will enable transferring either twins together in one journey, or one stable baby held by one of their parents in kangaroo care (KCT). In addition to the practical innovation, information was collected to understand how this QIP fits into the current neonatal transport scene in the United Kingdom (UK).

Methods

As part of the QIP process we collected information via (1) a national survey, (2) a local service twin audit, and (3) parents' views on KCT.

The national survey was emailed to all UK neonatal transport leads in April 2026. It consisted of five closed questions about KCT, twin transfers and related guidelines.

The local twin audit, commenced in April 2026, collects data about transfers of twins and multiplets. Transport staff scan a QR code and complete 12 closed questions including if transfers were completed within the same shift, the reasons for transfer and other operational details.

Parents of babies who would have qualified for a KCT were asked if they would have chosen KCT over incubator transfer (current standard practice). The interviews were brief, conducted by one person for consistency (the first author) around the time of transfer.

Results

The national survey showed that approximately half of UK teams already transfer twins together in one journey, while only one team provide KCT; most teams that do not provide these types of transfers indicated that they would be interested in being able to do so in future. Answers were received from all the teams. There was a mixed picture regarding guidelines related to IFCDC and FICare, such as pain assessment and management; some were reported as mandatory for all staff in some services, while not provided at all in other services.

The local twin audit demonstrated a need for the new multifunctional trolley to prevent separation of twins (almost half were transferred by different teams and a third were transferred on different shifts), with the team commenting that the new trolley would improve environmental impact as well as time efficiency. Please see table below for numbers of multiplets transferred who would qualify for transfers together in one journey (stable babies eligible for nurse-led transfers, breathing in air or nasal cannula oxygen).

Parent interviews indicated positive views towards KCT: 85% would have chosen KCT while the remaining 15% had understandable clinical and non-clinical reasons for preferring incubator transfers.

Conclusions

There is a positive appetite for more family-friendly transfers, including preventing separation of multiplets and provision of KCT, which promote closeness between parents and their babies and will align neonatal transport services more closely with the principles of IFCDC and FiCare.

Images

Audit of multiplets transferred April – July 2026

Month (2026)	Number of sets of twins transferred	Number of sets of triplets transferred	Number of sets of multiplets transferred within the same shift	Number of transfers undertaken by an acute team	Miles which would be saved with the new trolley (with baby on board plus return to the receiving unit)
April	5	0	3	4	113.9
May	3	0	1	1	36.1
June	9*	1	7	9	393.4
July	3	0	2	4	73.7
Total	20	1	13	18	1,234.2

* 2 sets of twins were transferred twice



5

From Days to Hours: The Impact of a Neonatal Drive-Through Bilious Vomiting Pathway

DR Alex Philpott[1], Mrs Gemma Colvin
[1]Kidsnts

Background

With lack of local paediatric radiology provision and local surgical review, KIDSNTS frequently transfers babies from neonatal units to 2 regional surgical centres with a referring symptom of bilious vomiting.

The majority of regional units (10) refer to a single centre (Birmingham Childrens Hospital - BCH) with only 1 referring to both -BCH and Alder Hey.

Prior to September 2018, babies with bilious vomiting (BV) were referred to BCH for upper GI contrast study (UGI) and surgical review. These neonates admitted to a neonatal surgical ward for review. While some neonates were accompanied by a parent, not all were.

It was perceived that many of this group spent a considerable amount of time away from their referring neonatal unit.

In September 2018, the 'Drive through BV pathway' was launched. This was agreed between KIDSNTS, radiology, surgery and clinical coordinator team. Strict criteria as to suitability for the pathway was agreed. Transfer is undertaken by a single person, directly to radiology for a surgical review and upper gastrointestinal contrast (UGI). If investigation and review is negative, the neonate is transferred directly back to the referring unit by the same team.

Data Collection

Data was extracted from the KIDSNTS database for 2 periods: Sept 2017-Aug 2018 and July 2025-June 2026. Only transfers into BCH were included as the BV pathway is not in place for KIDSNTS transfers into Alder Hey.

Neonates with a positive finding on UGI or clinical review were excluded from this study.

Results

Study Period 1

- 44 neonates were transferred from 6 neonatal units.
- Median time spent away from the neonatal unit for 5 units (time baby leaves neonatal unit until return) ranged from 900-1560 mins (15-26 hours)
- Average time spent away from the neonatal unit for 5 units ranged from 960- 1740 mins (16 – 29 hours)
- A single neonate from one unit was away from their referring neonatal unit for 7200mins (117 hours)

Study Period 2

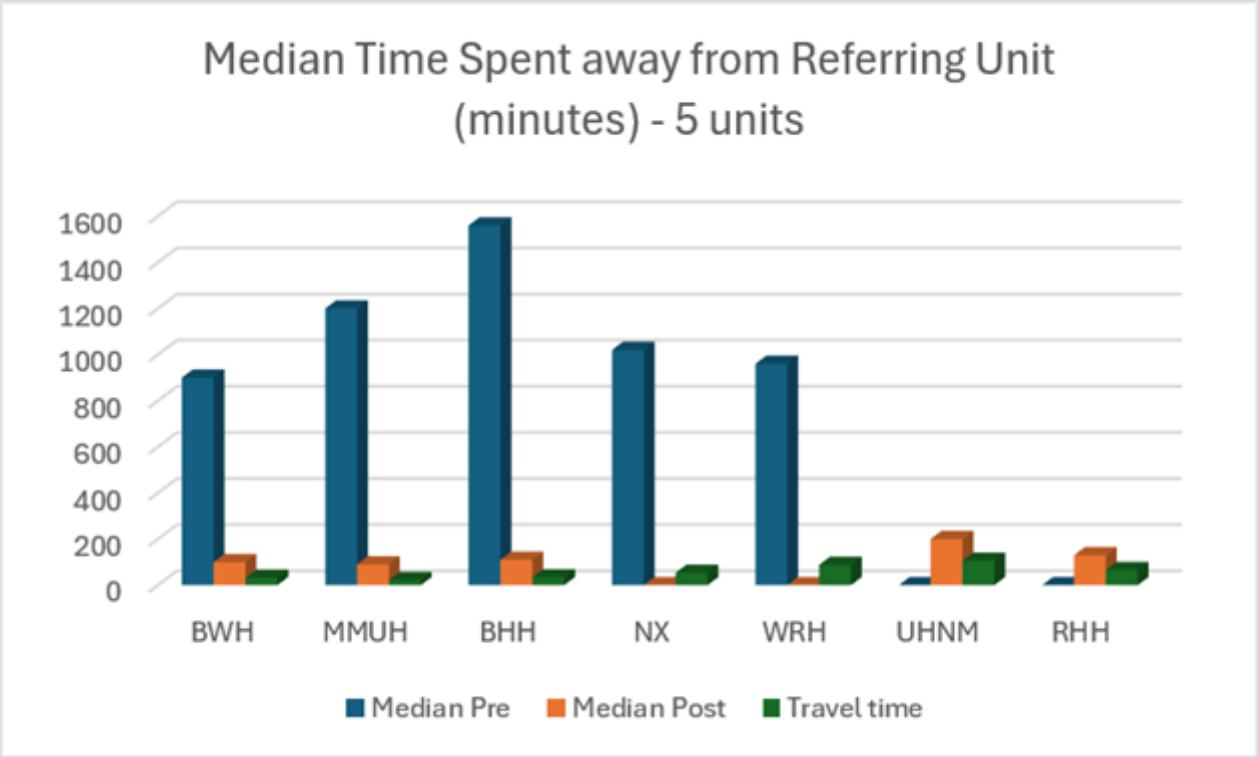
- 39 neonates were transferred from 6 neonatal units.
- Median time spent away from the neonatal unit (time baby leaves neonatal unit until return) ranged from 90- 200 mins (1-3 hours).
- Average time spent away from the neonatal unit ranged from 90 -190 mins (1-3 hours).

Discussion

The BV pathway was introduced to streamline the process from referral to surgical assessment. Prior to the BV pathway, neonates were spending considerable periods of time away from a dedicated neonatal unit, being cared for in a neonatal surgical bed. Many of these would be away from parents, with implications for establishment of feeding and access to other members of the multi-disciplinary team.

The establishment of this pathway minimises this time, and releases neonatal surgical cots for admission of neonates with surgical requirements

Graphs





6

BRIDGING THE GAP: A QUALITY IMPROVEMENT INITIATIVE TO IMPROVE EARLY MILK EXPRESSION IN MOTHERS OF PRETERM INFANTS DURING NEONATAL TRANSPORT

Dr Sarah Kasha[1], Dr Anna Curley[2], Dr Carmel M Moore[3]
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Background:
Maternal milk is the gold standard for preterm infant nutrition. The first two weeks after preterm birth represent a critical period for initiating and establishing lactation. Infants requiring transfer from regional hospitals to tertiary neonatal intensive care units within the first 24 hours of life are particularly vulnerable. Early neonatal transport results in early maternal–infant separation, delays in initiating breast milk expression, and accessing lactation support. The clinical urgency and uncertainty surrounding early transfer further heighten maternal anxiety and stress, negatively impacting milk production. Delayed or inadequate milk expression in this critical early period contributes to suboptimal nutrition and is associated with increased morbidity and prolonged hospital stay.
Method:
As part of the MILQ Study, an RCT of early pump use compared to hand expression in mothers of preterm infants. We conducted a quality improvement initiative to improve the timing of breast milk expression for mothers of preterm infants by early collaboration between referring and receiving hospitals, targeting initiation within the first hours after delivery and during the neonatal transport pathway.
Outcomes included the proportion of mothers who initiated expression within the first 24 hours, milk volume at 14 days, time of first feed, and time to achieve full enteral feeds.
Results:
8/110 preterm infants included in the MILQprem study were transferred to NMH within 24 hours after birth. 1/8 mothers consented and randomised by National Neonatal Transport Team (NNTP) on arrival at referring hospital at 2 hours after birth ,1/8 consented by NMH team < 3 hours after birth .6/8 consented by NMH team member < 24 hours after birth, all mothers started milk expression < 24 hours after delivery.7/8 reached milk volume > 500ml on day 14 post-delivery. All preterm infants had first feed <24 hours after birth.8/8 reached full feed between day 7- 10 of life ,7/8 were transferred back by the NNTP team to their local hospital closer to home.
Conclusion:
Early lactation support within neonatal transport pathways reliably achieves timely milk expression and improves early feeding outcomes in preterm infants. These findings highlight the importance of timely multidisciplinary collaboration between neonatal transport and tertiary neonatal units to optimise nutrition and may help overcome barriers associated with maternal–infant separation following preterm birth.

7

Grading oxygenation without a gas: OSI thresholds for escalation decisions in neonatal transport

Dr Anurag Girdhar[1], Ashley Thacker[1], Gemma Colvin[1], Louise Jones[1], Dr Asad Abbas[1]
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Background
The Oxygenation Index (OI = FiO_2 × mean airway pressure × 100 / PaO_2) grades hypoxic respiratory failure in ventilated neonates and informs escalation, including referral for extracorporeal life support. It requires arterial sampling, which is often unavailable during inter-hospital transport. The Oxygen Saturation Index (OSI = FiO_2 × mean airway pressure × 100 / SpO_2) substitutes pulse oximetry and is available non-invasively and continuously. If OSI could be translated into OI across the severity range, transport teams could estimate severity and apply familiar OI-based escalation thresholds without an arterial gas. We derived the OSI–OI relationship and OSI cut-offs corresponding to a range of clinically used OI thresholds.

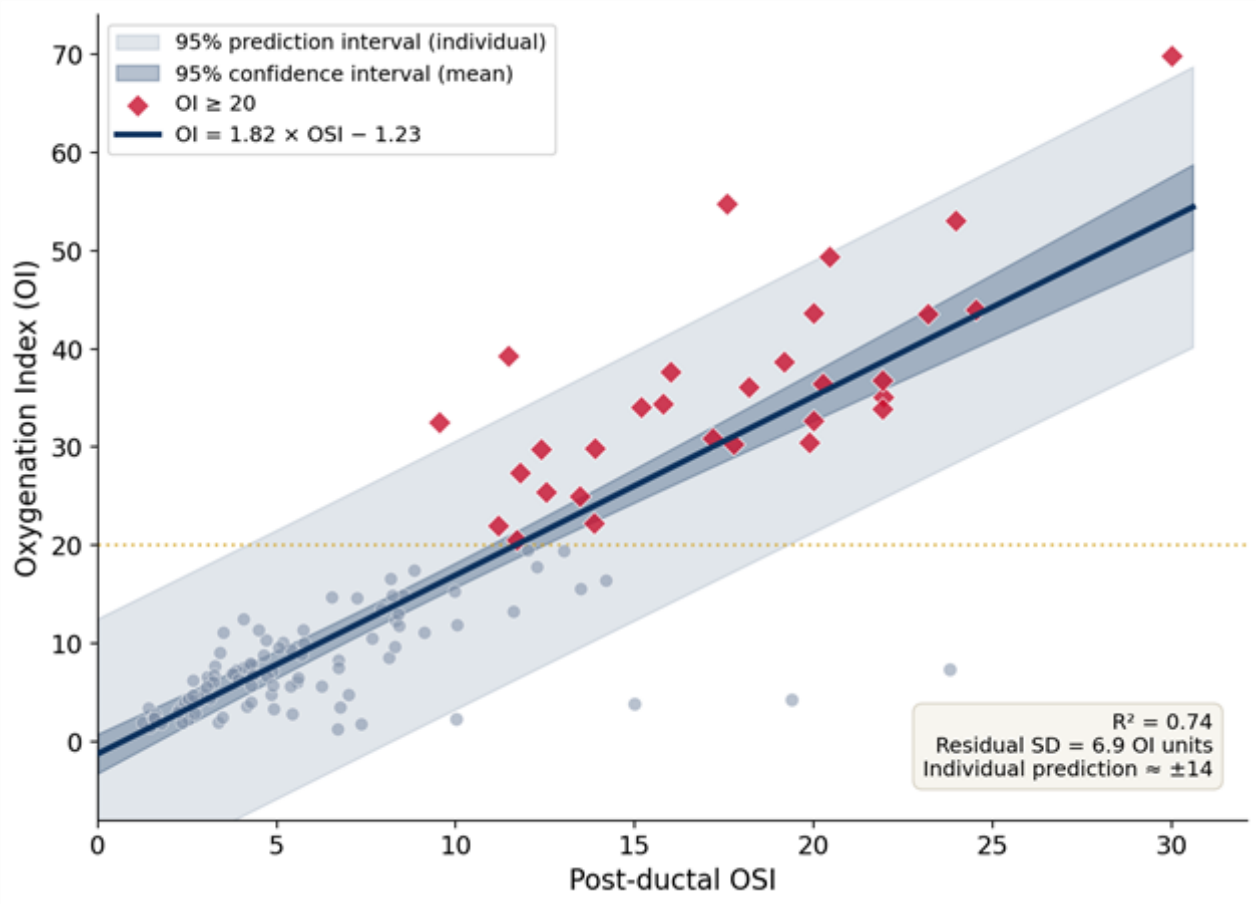
Methods
Retrospective observational study of ventilated neonates undergoing inter-hospital transport by the KIDSNTS transport service in the West Midlands, with arterial gases paired to concurrent SpO_2, FiO_2 and mean airway pressure within 10 minutes. Post-ductal OSI was the primary index. The OSI–OI relationship was estimated using a linear mixed-effects model with patient as a random intercept, accounting for repeated measures, and its individual prediction interval quantified. For OI thresholds of 10, 20, 25, 30 and 40, Youden-optimal OSI cut-offs were derived with bootstrap optimism correction; all confidence intervals used cluster bootstrap resampling patients rather than measurements.

Results
Eighty-six neonates contributed 152 paired measurements; post-ductal OSI was available for 128 measurements in 70 patients. OSI was linearly related to OI (OI = 1.82 × OSI − 1.23; R^2 = 0.74), consistent with previously reported coefficients (Muniraman 1.78, Maneenil 2.30). At the population level the regression line was precisely estimated, but individual prediction was imprecise: the residual standard deviation was 6.9 OI units, giving a 95% prediction interval of approximately ±14 OI units (for example, an OSI of 9.5 predicts an OI of 16 but an individual value could plausibly range from 2 to 30). (Figure 1) Discrimination was excellent at every threshold (area under the curve 0.92–0.98). Youden-optimal OSI cut-offs were 7.25 for OI 10 (sensitivity 86%, negative predictive value 89%), 9.54 for OI 20 (sensitivity and negative predictive value both 100%, no false negatives), 11.46 for OI 25 (96%, 99%), 15.19 for OI 30 (91%, 98%) and 17.57 for OI 40. Cut-offs for OI 10 to 30 were well supported (26–57 events; optimism 0.03–0.05); the OI 40 cut-off rested on only 7 events (optimism 0.08) and was statistically unstable.

Conclusions
OSI is linearly related to OI and provides robust threshold-based discrimination of severity in transported neonates, with an optimism-corrected OSI cut-off of 9.54 excluding severe disease (OI ≥ 20) with 100% negative predictive value. The OSI–OI equation is suitable for population-level conversion and comparison with the literature, but its wide individual prediction interval means it

should not be used to estimate a single infant's OI for clinical decisions. Transport teams should apply OSI as a graded threshold tool rather than a continuous OI predictor. External multicentre validation is required, particularly at the highest severity thresholds.

Images



8

When does the Oxygenation Index mislead? A hypothesis-generating study of oxygenation markers and airway pressure in transport

Dr Anurag Girdhar[1], Ashley Thacker[1], Gemma Colvin[1], Louise Jones[1], Dr Asad Abbas[1]
[1]Birmingham Women's and Children NHS Trust and KIDSNTS

Background
Oxygenation in ventilated neonates is quantified with several indices. Some incorporate mean airway pressure (MAP), such as the Oxygenation Index (OI) and Oxygen Saturation Index (OSI); others are MAP-free, such as the arterial-to-inspired oxygen (PaO_2/FiO_2, PF) ratio. Because MAP-containing indices rise with the pressure applied, they may misrepresent oxygenation when ventilation strategy is dictated by lung compliance rather than by oxygenation. In stiff (non-compliant) lungs, high MAP is appropriate and inflates OI in step with disease severity. In compliant lungs with a vascular or shunt physiology, gentle ventilation keeps MAP low, so OI may remain modest despite severe hypoxaemia. We examined whether the agreement between MAP-containing and MAP-free markers depends on the airway pressure used, using MAP as an objective, measurable surrogate for underlying lung mechanics in a cohort without reliable diagnostic labels.

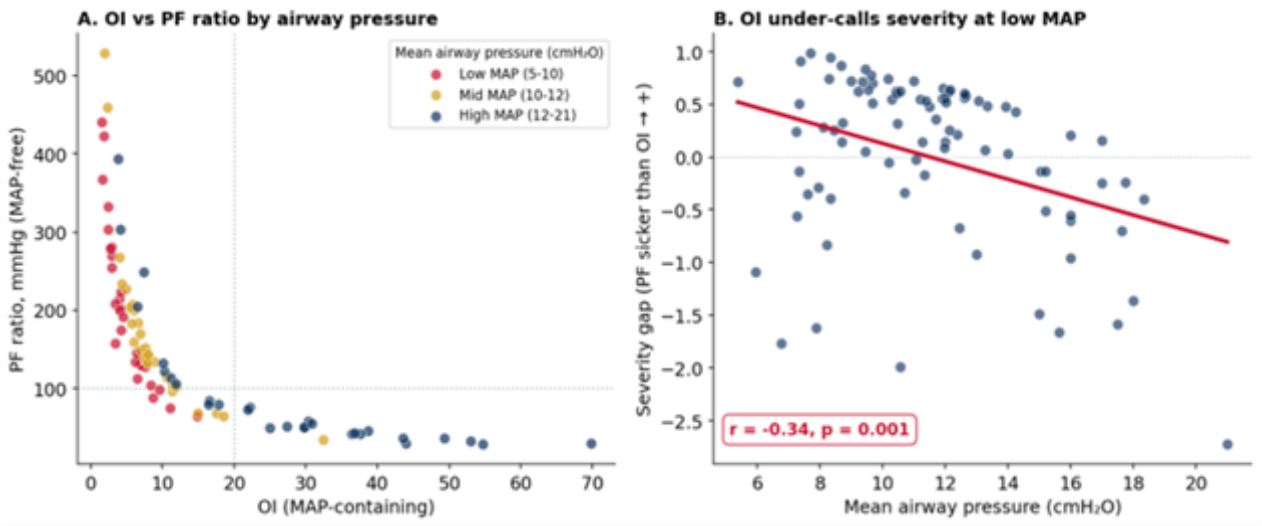
Methods
Retrospective analysis of ventilated neonates undergoing inter-hospital transport by the KIDSNTS transport service. For each patient's most severe measurement (highest OI), we calculated OI and post-ductal OSI (MAP-containing) and the PF ratio, alveolar-arterial oxygen gradient and PaO_2 (MAP-free), from concurrently recorded FiO_2, PaO_2, SpO_2 and MAP. Marker concordance was assessed by Spearman correlation and severity-classification agreement (Cohen's kappa) using percentile-matched thresholds, so that each marker flagged an equal proportion of the cohort. The standardised difference in severity between PF and OI (the severity gap) was correlated with MAP to test whether marker divergence depends on airway pressure. Discrimination for extracorporeal life support (ECLS) consideration was described as an exploratory outcome anchor.

Results
Eighty-six neonates were analysed. At each patient's worst measurement, OI and PF ratio were near mirror images (Spearman −0.97) and severity classification agreed closely once thresholds were percentile-matched (kappa 0.88–0.94); discordance was uncommon and symmetric. However, when the markers diverged it was governed by airway pressure. The PF-minus-OI severity gap correlated negatively with MAP ($r = -0.34$, $p = 0.001$): at low MAP, OI read as less severe than the MAP-free markers (OI under-called severity), whereas at high MAP the two agreed. The median severity gap fell from +0.60 in the lower MAP quartiles to −0.33 in the highest. Raw PaO_2 alone was the weakest marker (Spearman −0.65 with OI). (Figure 1) In the exploratory ECLS analysis (13 events), OSI and the alveolar-arterial gradient discriminated well (area under the curve 0.96 and 0.88); confidence intervals were wide and overlapping, so no ranking among OI, PF and the gradient was statistically supported.

Conclusions
Markers of oxygenation are not interchangeable: their agreement depends on the mean airway pressure used, itself a reflection of underlying lung compliance. In gently ventilated (low-MAP)

infants, in whom the lungs are compliant and the problem is vascular, OI and OSI can under-represent the severity of hypoxaemia that a MAP-free marker such as the PF ratio detects. A reassuring OI should not be taken at face value at low airway pressure; cross-checking with a MAP-free index is prudent. Confirmation in a cohort with reliable diagnoses and hard outcomes is required.

Images





9

Difficult Airway Management in Neonatal Transport: A Case Series and Service-Level Analysis

Miss Samantha Bird[1]
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Background:
Airway emergencies during neonatal transport present high risks due to neonatal physiological vulnerability and environmental constraints. British Association of Perinatal Medicine (BAPM) and Newborn Life Support (NLS) guidelines prioritize oxygenation over intubation, recommending alternative techniques like supraglottic airway devices (SADs). However, real-world operational data on these principles remain sparse.
Methods:
This study combines a retrospective descriptive case series of two complex neonatal transport airway scenarios with a four-year retrospective review of internal transport registry data (2022–2026) for suspected difficult airways or otolaryngology (ENT) involvement. Additionally, a prospective service-evaluation survey was distributed to 25 UK Neonatal Transport Group (NTG) teams to benchmark current national infrastructure, guidelines, and equipment.
Results:
Both cases involved rapid physiological deterioration where emergency SAD insertion successfully achieved rescue ventilation and stability (Case 1: complete tracheal agenesis; Case 2: Pierre Robin Sequence acting as a conduit for fibreoptic intubation). Internal transport data showed a low but rising trend in difficult airway/ENT transport referrals over four years (1, 4, 2, and 6 cases, respectively). The national survey (24% response rate, n=6/25) showed that these high-acuity transfers are consultant-led (66.7%), rely entirely on road transport (100%), and universally feature SAD availability (100%), while 88.0% carry video laryngoscopes. Half of the teams (50.0%) hold dedicated transport-specific difficult airway guidelines.
Conclusions:
Prioritizing oxygenation and deploying SADs early align with national guidance and effectively secure failing neonatal airways during transit. Even small increases in case volume require standardized equipment, transport-specific guidelines, and targeted training to maintain service preparedness.



10

Simultaneous Activation of Red and Blue Teams in the National Neonatal Transport Programme: A Logistical Case Report.

Dr Hadeel Mohamed[1], Dr Nurul Aminudin[2]
[1]The Rotunda Hospital, [2]National Neonatal Transport Programme (NNTP)

The National Neonatal Transport Programme (NNTP) provides specialised stabilisation and retrieval of premature and critically ill neonates requiring inter-hospital transfer. The programme includes a 24/7 acute retrieval service (Red Team) and, since May 2025, a nurse-led non-acute bidirectional transfer service (Blue Team). We present a unique logistical scenario involving near-simultaneous referrals of two high-risk neonates to a single regional Level 1 neonatal unit; concurrent activation of both teams. This also included the escalation of the Blue Team to acute-level care. The following report highlights the operational flexibility, team coordination, and resource allocation necessary for managing simultaneous neonatal emergencies.



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Simultaneous Activation of Red and Blue Teams in the National Neonatal Transport Programme: A Logistical Case Report

Dr Hadeel Mohamed[1], Dr Nurul Aminudin[2]
[1]The Rotunda Hospital, [2]National Neonatal Transport Programme (NNTP) / The Rotunda Hospital, National Maternity Hospital, Holles Street, and Coombe Women & Infants University Hospital
Abstract The National Neonatal Transport Programme (NNTP) provides specialised stabilisation and retrieval of premature and critically ill neonates requiring inter-hospital transfer1. The programme includes a 24/7 acute retrieval service (Red Team) and, since May 2025, a nurse-led non-acute bidirectional transfer service (Blue Team)2. We present a unique logistical scenario involving near-simultaneous referrals of two high-risk neonates to a single regional Level 1 neonatal unit; concurrent activation of both teams. This also included the escalation of the Blue Team to acute-level care. The following report highlights the operational flexibility, team coordination, and resource allocation necessary for managing simultaneous neonatal emergencies.

References:
1. National Neonatal Transport Programme. Information for health professionals [Internet]. Ireland: NNTP; [cited 2026 Jun 3]. Available from: https://www.nntp.ie/professionals.asp
2. National Neonatal Transport Programme, (NNTP). 25 years of dedicated Service 2001-2025. Dublin: NNTP 2025. www.NNTP.ie
Acknowledgements:
1. National Neonatal Transport Programme (NNTP) / The Rotunda Hospital, National Maternity Hospital, Holles Street, and Coombe Women & Infants University Hospital, Dublin, Ireland
2. National Ambulance Service Critical Care Retrieval Sevrice (NASCCRS)
3. National Emergency Operations Centre (NEOC) under National Ambulance Service

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Implementation of a Supraventricular Tachycardia Guideline for Neonatal Transport

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Background

Supraventricular tachycardia (SVT) is a cardiac arrhythmia that can occur in neonates due to a primary cardiac problem or secondary to another cause, such as sepsis. Management of SVT incorporates vagal manoeuvres, adenosine and synchronised DC cardioversion. These are challenging during transfers due to equipment and environment challenges, including storage of medications. NNeTS identified unique challenges for their service. As a solely neonatal transport service, team members were less familiar with cardioversion as this is not currently included in neonatal resuscitation courses. NNeTS utilise ambulances from the North East Ambulance Service (NEAS) rather than their own vehicle.

Methods

NNeTS developed a guideline specifically focused on: preparing to transfer a baby with known SVT and management of unanticipated SVT during a transfer. This involved liaising with NEAS regarding their defibrillation equipment and the manufacturers of our transport incubators and ventilators to ensure they are compatible with cardioversion.

NNeTS have ice for vagal manoeuvres readily available as ice packs are used for storage of expressed breast milk and medications. Adenosine is an unstable medication so cannot be taken routinely by the NNeTS team in their emergency drug box. The NEAS defibrillators are different to those used by the NHS trusts in the network. Safe use of supplemental oxygen during defibrillation needed to be considered.

Results

A multi-disciplinary team (MDT) simulation was facilitated to test the utility of the guideline and feasibility of cardioversion in the NEAS ambulances. Based on the simulation, the guideline was modified and ratified. A laminated version of the guideline is taken on every NNeTS transfer with the emergency guidelines. SVT simulation was incorporated into the joint simulation days with NEAS to increase team familiarity with the guideline.

Conclusions

Management of SVT, including cardioversion, can be performed safely on neonatal transfers with appropriate equipment and training. NNeTS will continue to review this guideline through annual joint simulation days with NEAS.

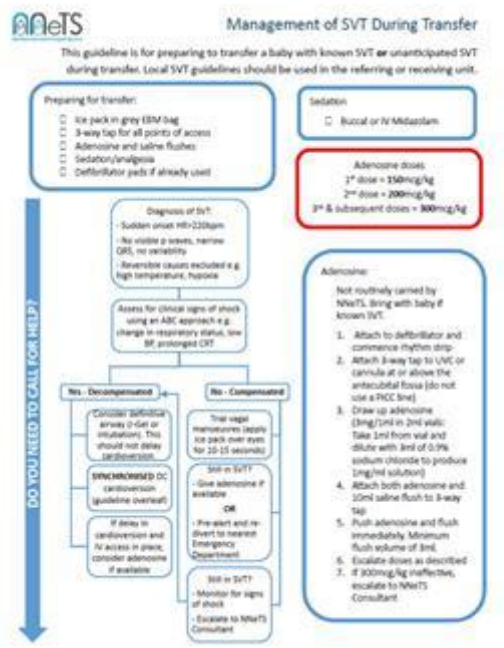
Images

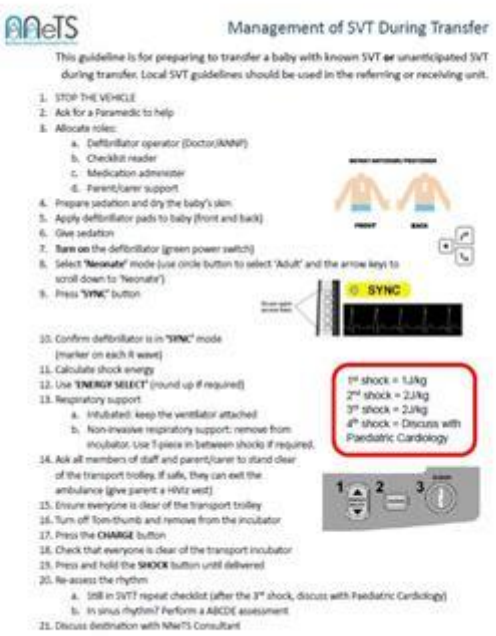
Northern Neonatal Transport Service

Newcastle upon Tyne Hospitals NHS Charity (reg. 1057213)

UK National Neonatal Transport Group Conference 2026







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Improving Family Experiences of Moving around the Northern Neonatal Network

Dr Anna Jackson[1,2,3,4], Ms Gina Muers[3], Ms Sarah Brooks[4], Dr Rachel Collum[4], Ms Ailie Hodgson[4], Ms Kirsty Reehal[3], Dr Jenna Gillone[1,4]
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Background

The Northern Neonatal Transport Service (NNeTS) carry out approximately 400 “moving closer to home” transfers annually. Feedback from 52 parents and families suggested that they felt unprepared for repatriation and described feeling “out of control” and “less like a parent” during this process. They preferred the terminology of “Moving closer to home” to “repatriation” and “important people” to parents/families.

Methods

"Moving around the Network" was identified as a key workstream at a Network Family Integrated Care (FiCare) Conference. A network-wide “Moving around the Network” FiCare working group was created to address this feedback and improve the experience for the important people. Multi-disciplinary team (MDT) members and parent representatives from across the network have been meeting monthly for a since November 2024.

At the first meeting, the group set out their key areas of focus:

- Empowerment tool for Important People when moving closer to home

- Orientation resources for neonatal units around the network

- Resources to prepare Important People for moving closer to home

Results

The working group output:

- “Our voice” empowerment tool was developed with feedback from Parent Advisory Group (PAG) representatives. This tool will be used network wide and allows the important people to handover the “non-medical” aspects of their baby’s care to put their voice at the centre of the transfer process.

- A facilities document has been created which allows referring units to provide key information to families about resources at the receiving unit; this includes information about prayer facilities and language services to cater for different cultures and ethnicities. This document unintentionally led to more consistent resources across the region, such as parking passes and nappy provisions, by providing evidence for units to use in business cases and charity applications.



- “Moving closer to home” animation has been designed as an accessible resource to provide information about the transfer process.

Conclusions

An MDT working group with parent representation is an effective way to produce resources to support moving closer to home. The working group will continue to work on the key areas of focus with the following next steps:

- Parent-led handovers when moving closer to home

- Virtual tours of Units around the network

- Supporting important people during acute transfers

- Welcome phone calls to Important People from receiving units

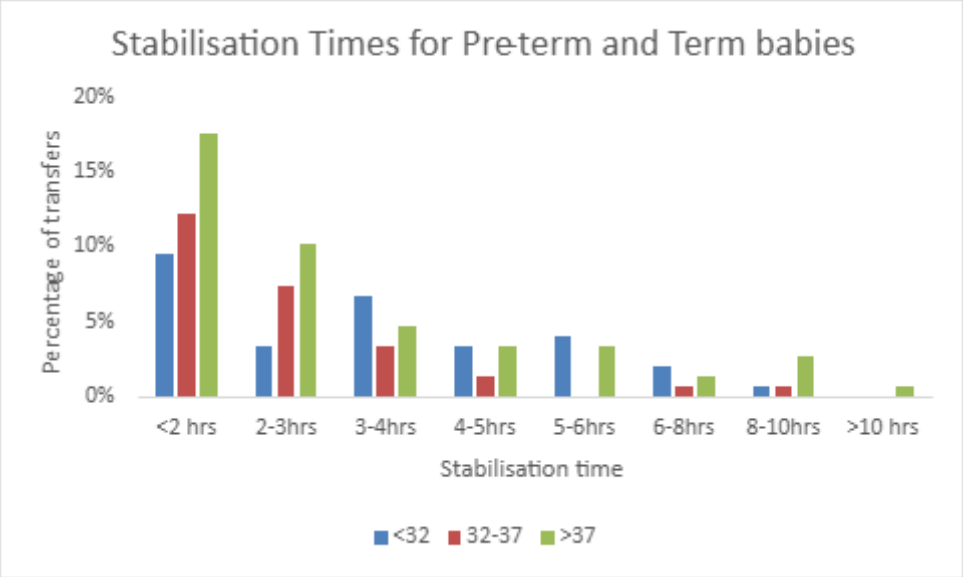
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Neonatal ITU transfer Stabilisation Audit... How long should it take?

Mrs Emma Blackbourn[1], Dr Puneet Nath[1], Dr Davina Sham[1]
[1]Centre Neonatal Transport
Title: Neonatal ITU transfer Stabilisation Audit... How long should it take?
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Supervising Consultant: Puneet Nath

Backgroud: Review of NTG data for neonatal ITU transfers showed CenTre team's stabilisation times were longer than others nationally. There is no current benchmark for stabilisation times in neonatal transport, NTG data showed median stabilisation times for ITU uplift by UK neonatal transport teams to be 115 mins (2024/25) (CenTre median stabilisation time was 133 minutes). CenTre team reviews all transfers with stabilisation time of above 2 hours to identify themes and learning. There is very minimal published literature on this topic and no UK studies. Studies from Canada and Australia, found that in transfers where invasive procedures were required, stabilisation time was prolonged and proposed that non-essential procedures, such as UAC insertion, should be done in the tertiary unit where possible. Stabilisation times were reduced when interventions were carried by unit staff prior to transport team arrival. When compared to Paediatric transfers neonatal transfers had significantly longer stabilisation times.
Methods : We used a prospective audit proforma for all ITU uplift transfers, over a 6-month period (1st July 2025 to 31st December 2025). Anonymised data was collated and compared to identify themes. Data collected included whether the baby was ready for transfer on team arrival, whether advice was given prior to transfer and was this completed, did unplanned events contributed to additional stabilisation time and an estimation of that additional time.
Results: Over the 6-month period we completed a total of 147 ITU uplifts (figure 1) of these 93 were felt by the attending team to have additional factors extending stabilisation time (63% of transfers). Our median stabilisation time was 150mins (range of 50-637 mins). 67% of transfers had advice given on the referral and of those in 68%, the referring team had completed the advice prior to arrival of the transport team. 63% of all the transfers in this period were felt to not be ready for transfer at the time of arrival of the transferring team. An estimation of additional time spent in referring centres were there were perceived additional factors was given in 60 transfers. An average additional time spent was 80 minutes. Themes that were identified most frequently as the cause of extended stabilisation were drugs/fluids, lines/ drains and x-rays and relieving previous teams.
Suggested measures to improve this include a transfer checklist for local units to encourage preparation of infusions and insertion of lines prior to the arrival of the transport team. We also aim to incorporate learning into our local outreach teaching including simulation.
Conclusions: Additional factors resulting in extended stabilistion times were common, occurring in 63% of neonatal ITU transfers. Despite pre-transfer advice, many babies were not ready for transfer on the team’s arrival, resulting in additional time spent at referring centres. The main contributors were drug/fluids, lines/drains, imaging and handover/relieving teams.
A standardised transfer checklist, enhanced outreach education and simulation-based training may improve preparation and reduce stabilisation times.

Images


Stabilisation Times for Pre-term and Term babies
Percentage of transfers
20%
15%
10%
5%
0%
<2 hrs
2-3hrs
3-4hrs
4-5hrs
5-6hrs
6-8hrs
8-10hrs
>10 hrs
Stabilisation time
<32
32-37
>37

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Air Versus Ground: Evaluating Interhospital Transfer of Infants <30 Weeks' Gestational Age

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Background: Interhospital transfer is a potentially high-risk period for extremely preterm infants. Helicopter retrieval can reduce travel time over long distances, but experience in this population is limited and infants selected for air transfer may differ clinically from those transferred by road. We compared the clinical characteristics, physiological stability and transfer times of infants at <30 weeks' corrected gestation (cGA) transferred by helicopter versus road.

Methods: A retrospective review of all transfers for infants <30 week's cGA carried out by SoNAR between January 2023 and May 2026. Demographic and clinical characteristics were captured as well as transfer distances and times. Statistical comparisons between air and road transfers were by T-test or Chi-squared test as appropriate. A p-value <0.05 was considered statistically significant.

Results: During the 41-month analysis period a total of 350 infants <30 week's cGA were transferred. 15 (4.3%) were air transfers by helicopter. Infants transferred by air were the same mean cGA as those transferred by road (27.6 vs 27.2 weeks; p=0.42) but were of significantly greater weight (1101g vs 940g; p=0.041) and age (15.9 vs 9.2 days; p=0.038).
Infants transferred by air were significantly less likely to be uplifts (13% vs 57%; p=0.001), meet British Association of Perinatal Medicine criteria for receiving intensive care (40% vs 67%; p=0.03) or be invasively mechanically ventilated (27% vs 58%; p=0.019). No infants requiring prostin, inhaled nitric oxide or with an indwelling chest drain were transferred by air during this period.
There were no significant differences seen in changes in physiological parameters during transport between air and road (ΔpH 0.01 vs -0.01; p=0.93; ΔpCO2 -0.17kPa vs -0.39kPa; p=0.83; Δtemperature 0.16°C vs 0.30°C; p=0.79). No clinically relevant increase in oxygen requirement was seen during air transfer (ΔFiO2 +5.1%).
Although infant journey time was longer during air transfers compared to road (leaving referral unit to arriving receiving unit: 2 hours 7 minutes vs 1 hour 35 minutes; p=0.037), air transfers were over significantly longer distances compared to road (mean 142.8 miles vs 55.6 miles; p=<0.001). Equivalent transfer times by road (assuming average speed of 40 miles/hr) would have been significantly longer (3 hours 34 minutes; p=0.001). There was no significant difference in total team time between air and road transfers (6 hours 54 minutes vs 6 hours 36 minutes; p=0.67).

Conclusion: In selected infants born at <30 weeks' gestation, helicopter transfer was associated with maintenance of physiological stability and enabled timely transfer over substantially greater distances, reducing infant transfer time, and maintaining overall team time. Infants transferred by air were generally less acutely unwell, suggesting careful selection of infants for whom air transfer is appropriate. These findings support the role of helicopter transfer for selected long-distance neonatal transfers for infant's <30 week's cGA, however further data is required to evaluate its suitability for those requiring a greater number of intensive care interventions.



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Developing a National Toolkit to Support Implementation of Kangaroo Care Transfers Across UK Neonatal Transport Services

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Background

Kangaroo Care Transfer (KCT) allows eligible infants to be transported in close chest-to-chest contact with a parent, rather than in a transport incubator or pod. Emerging UK experience, alongside international practice, has demonstrated that KCT can be delivered safely when supported by appropriate governance, equipment, staff training and patient selection. Despite growing interest, many transport services report barriers to implementation including funding, equipment acquisition, development of local guidelines, governance processes and staff education.

Aim

To develop a practical implementation toolkit that supports UK neonatal transport services wishing to establish Kangaroo Care Transfer within their local service.

Methods

Drawing upon the experience of UK neonatal transport teams currently delivering, and working towards KCT, a comprehensive toolkit was developed to support services through each stage of implementation. The toolkit was designed using quality improvement principles and focuses on practical delivery rather than theoretical concepts alone.

Toolkit Content

The toolkit provides a structured implementation pathway covering:

Building a project team and stakeholder engagement

Equipment and funding considerations

Governance and standard operating procedures

Staff education and simulation training



Parent and infant eligibility criteria

Communication and engagement strategies

Evaluation and sustainability planning

Supporting resources include sample SOPs, parent information leaflets, eligibility posters, staff and parent feedback tools, implementation checklists and examples of funding applications. The toolkit also incorporates suggested Plan-Do-Study-Act (PDSA) cycles to support local quality improvement activity.

Expected Impact

The toolkit aims to reduce implementation barriers and provide transport services with practical resources that can be adapted locally. By sharing learning from early adopters, the project seeks to accelerate safe implementation of KCT, improve family-centred transport practice and support wider adoption across UK neonatal transport networks.

Next Steps

The toolkit will be shared with interested transport services for review and refinement. Feedback will inform future versions, with the longer-term aim of creating a nationally recognised resource to support safe and sustainable implementation of Kangaroo Care Transfer across the UK.



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Introducing continuous enteral feeding in place of IV insertion during neonatal repatriation transfers.

Mrs Katrina Taylor-blyth[1], Ms Samantha O'Hare[1]
[1]Cambridge University hospitals

Background

The majority of repatriation transfers are completed between feeds but this is not always possible, especially when journey times exceed 1.5 to 2 hours.
Currently the only alternative is cannula insertion and IV fluids. This is a painful procedure, may need multiple attempts and takes up time of busy medical staff. Some babies have long lines kept in for transfer which increases risk of infection or thrombosis.
The aim of this quality improvement project is to avoid cannula insertion for these babies by running continuous feeds via the nasogastric tube (NGT) instead.

Methods

A retrospective audit of repatriation transfers over 6 months showed that a quarter of all babies already established on full feeds required IV fluids for the transfer. In almost all cases the reason for IV fluids was that the expected preparation and journey time between the two units exceeded the time between feeds.
Contact was made to all other UK neonatal transport teams, none are currently providing continuous feeds during transfer, though several expressed interest in the concept.
A PaNDR team survey found that the idea was perceived as beneficial. Some potential safety concerns were raised around risk of tube displacement but staff generally felt some minor changes could reduce this risk. Aspiration risk should be no higher than in babies receiving a bolus feed shortly before transfer (current practice). A blood glucose level will be checked on arrival whilst the practice is being introduced.
Staff feedback and a retrospective audit were used to determine initial inclusion criteria.

Results

The following inclusion criteria has been agreed for cautious introduction of this practice:

- Dual clinician, doctor and nurse, repatriation transfers only
- Tolerating full 2+ hourly bolus feeds for at least 24 hours
- NGT only, not OGT as the movement of the tongue and the oral secretions can cause the OGT to be at higher risk of dislodging. OGT may be replaced with NGT prior to transfer if otherwise meets criteria.
- Baby's CGA ≥30/40
- Baby's weight ≥1.5kg
- Respiratory status: SViA or nasal cannula O2 for minimum of 24hours
- Journey time between units: <3 hours
- No recent/current complaints of vomiting, reflux, excessive secretions, apnoeas, desaturation, bradycardia or hypoglycaemia



- No other reason besides length of transfer infant would not be suitable to be moved between feeds

The retrospective audit suggests around 3 babies per month would meet this initial criteria and the proposal was presented to the regional clinical leads and operational delivery network (ODN) team.

Conclusions

With support from the regional ODN, equipment has been loaned from the local NICU, a guideline has been approved and the clinical team have undergone training. The practice has been cautiously introduced and any adverse events will be reported via DATIX. The experiences of parents and staff members of both the PaNDR team and neonatal units will be captured with post-transfer surveys.

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NeoSIT: A National Survey of Neonatal Intubation for Transfer

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Background
Neonatal intubation can be life-saving but risks adverse tracheal intubation-associated events (TIAEs). Current intubation data mostly comes from neonatal intensive care units (NICUs), not special care units (SCUs) or local neonatal units (LNUs) where intubation is less frequent. The 2024 BAPM Neonatal Airway Safety Standard aims for intubation success within two attempts to be at least 80%. It also recommends premedication, checklists, video laryngoscopy (VL), high-flow nasal cannula oxygen (HFNC). No prospective national UK data exists to demonstrate if these standards are being achieved.

Methods
Prospective multicentre service evaluation. Questionnaire data on intubated infants referred to UK transport services was collected February to September 2025. Ten transport services contributed, from England, Scotland, and Wales. Data was analysed by referring unit level and intubating team, then by non-emergency (elective or urgent) versus emergency intubation. Measures included indication, success within two attempts, adjunct use, TIAEs and significant desaturation (SpO_2<85% for >2 minutes). Unknown responses were excluded from denominators.

Results
481 intubation episodes from 465 referrals were analysed. Respiratory failure (80.6%) and recurrent or significant apnoea (15.5%) were present in 96.1% of indications. LNUs referred the most infants (49) under 1000g.
Transport teams met the BAPM advanced standard, with success within two attempts of 87.5% (non-emergency) and 91.7% (emergency), advanced practitioner presence of 98.0–100.0%, and the lowest TIAE rate (6.1%). LNUs achieved 65.8% and 66.1%, SCUs 72.1% and 77.4%, and NICUs 89.5% and 71.4%. Success fell further in infants under 1000g: 50.0% in SCUs and 60.7% in LNUs for non-emergency intubation. Consultant or advanced practitioner presence was high (80.0–98.0% non-emergency; 58.3–100.0% emergency). TIAE frequency rose with increasing attempts and urgency. Reported number of attempts ranged from 1-11, 26.4% had 3 or more intubation attempts. Eventual success was ≥94.3% across all services.
VL (28.9–38.8%) and HFNC (6.3–22.1%) were used infrequently. LNUs utilised premedication and checklists less frequently than other units. Supraglottic airways (SGA) were used before or during 27 intubation attempts, 16 were emergency intubations. Three cases (one SCU, one LNU, one non-neonatal setting) documented SGA use to stabilise after unsuccessful attempts; two were subsequently intubated by the transport team and one locally.
Transport teams intubated 13.3% of SCU and 12.0% of LNU referrals, most often for clinical deterioration, unsuccessful local attempts, or tube displacement or leak. Intubation was advised but not attempted before arrival in five cases (3 SCBU, 2 LNU); eight episodes were believed necessary only to facilitate transfer.

Conclusions

Only transport teams met the BAPM recommendations of intubation success of ≥80% within two attempts in emergency and non-emergencies. NICU intubations were compliant for non-emergency intubations. We would recommend that units and clinicians know their intubation success rates and have clear escalation policies including the use of SGA to stabilise after unsuccessful attempts or convert an emergency intubation into a controlled one. Who is best placed to intubate (the local or transport team) should feature in referral conversations. Encouraging checklists, premedication, VL, HFNC and airway skill training could improve success and reduce complications across all services.

Images

Table 1. Neonatal intubation practice and outcomes by unit level / transport team, non-emergency versus emergency, n (%).

Measure	SCU		LNU		NICU		Transport	
	Non-emergency	Emergency	Non-emergency	Emergency	Non-emergency	Emergency	Non-emergency	Emergency
Referral demographics								
Total referrals	192 (41.8%)		209 (45.5%)		58 (12.6%)		n/a	
Birth gestation < 27 weeks	10 (5.3%)		33 (15.8%)		13 (22.4%)		n/a	
Weight at transfer < 1000g	16 (8.3%)		49 (23.4%)		12 (20.7%)		n/a	
Transport involvement								
Intubation attempted by transport team	27 (13.3%)		26 (12.0%)		4 (6.8%)		n/a	
Practice and outcomes by team								
Intubation episodes	142 (81.1%)	33 (18.9%)	124 (65.3%)	66 (34.7%)	41 (74.5%)	14 (25.5%)	49 (80.3%)	12 (19.7%)
Premedication	116 (86.6%)	16 (55.2%)	80 (70.8%)	14 (24.6%)	34 (89.5%)	5 (38.5%)	45 (91.8%)	8 (66.7%)
Intubation checklist	91 (86.7%)	10 (50.0%)	58 (67.4%)	11 (28.9%)	29 (85.3%)	3 (37.5%)	41 (85.4%)	7 (63.6%)
HFNC	8 (6.3%)	2 (6.9%)	23 (22.1%)	2 (3.5%)	8 (21.6%)	1 (9.1%)	9 (18.4%)	0 (0.0%)
Video laryngoscopy	37 (28.9%)	6 (22.2%)	38 (37.3%)	14 (26.9%)	13 (36.1%)	2 (16.7%)	19 (38.8%)	4 (33.3%)
Supraglottic airway	5 (3.9%)	11 (36.7%)	3 (2.7%)	4 (6.9%)	1 (2.6%)	1 (8.3%)	1 (2.0%)	0 (0.0%)
Success on first attempt	62 (45.6%)	18 (58.1%)	46 (40.7%)	26 (41.9%)	21 (55.3%)	8 (57.1%)	34 (70.8%)	8 (66.7%)
Success in ≤2 attempts	98 (72.1%)	24 (77.4%)	75 (65.8%)	41 (66.1%)	34 (89.5%)	10 (71.4%)	42 (87.5%)	11 (91.7%)
Success in ≤2 attempts, weight <1000g	6 (50.0%)	0 (0.0%)	17 (60.7%)	7 (50.0%)	9 (100.0%)	1 (50.0%)	6 (66.7%)	4 (80.0%)
First attempt by resident doctor	85 (59.9%)	17 (51.5%)	78 (62.9%)	39 (59.1%)	21 (51.2%)	10 (71.4%)	27 (55.1%)	8 (66.7%)
Consultant / advanced practitioner present	117 (88.6%)	26 (81.3%)	99 (85.3%)	44 (71.0%)	32 (80.0%)	7 (58.3%)	48 (98.0%)	12 (100.0%)
Any TIAE	26 (20.5%)	9 (29.0%)	16 (14.8%)	19 (31.7%)	3 (7.7%)	3 (21.4%)	3 (6.1%)	2 (16.7%)
Significant desaturation	19 (15.0%)	9 (29.0%)	13 (11.7%)	13 (21.7%)	6 (15.4%)	2 (14.3%)	6 (12.2%)	4 (33.3%)

SCU, special care unit; LNU, local neonatal unit; NICU, neonatal intensive care unit; HFNC, high-flow nasal cannula oxygen; TIAE, adverse tracheal intubation-associated event. Non-emergency = elective and urgent intubations combined. Significant desaturation = SpO_2<85% for >2 minutes. Percentages exclude unknown or not-known responses from denominators.

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Understanding Capacity Pressure Through Resource-Driven Transfers in a Regional Neonatal Transport Service (CENTRE)

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Background
Resource transfers occur when neonatal movement is required primarily because of cot or service capacity rather than escalation of care or repatriation. Although necessary for network flow, recurrent resource transfers may increase transport workload and displace babies and families from their local network. We aimed to describe the scale, distribution and clinical profile of resource-driven transfers within a regional neonatal transport service and identify recurrent capacity pathways.
Methods
We undertook a retrospective descriptive service evaluation of the March 2025-March26 neonatal transport register. Resource transfers were identified and analysed by referring and receiving unit, network status, level of care and respiratory support during transfer. High-volume referral pathways from the two major tertiary centres were compared descriptively. Results are reported as counts and proportions; no patient identifiers were included.
Results
Resource transfers accounted for 306 of 1,419 neonatal transport cases (21.6%). The two tertiary neonatal centres generated 249 capacity-related referrals, accounting for 81.4% of all resource transfers. Most infants remained within their local neonatal network. Median patient transit time was 40 minutes, median total mission time was 240 minutes (4 hours), and median stabilisation time was 42 minutes. Among 305 transfers with valid referring and receiving unit data, the mean estimated inter-hospital road distance was 18.5 miles. Of 302 transfers with day of life recorded, 88 (29.1%) occurred at day 0–2. Infants at 32–34 weeks corrected gestation constituted the largest gestational group (159/307; 51.8%). Within the 306-case resource cohort, 218 infants (71.2%) had no respiratory support recorded during transfer.
Conclusions
Despite capacity-related transfers, most infants were moved within their local neonatal network and did not require long-distance transfers. Increasing capacity in the two surgical NICUs and reconfiguring neonatal cot capacity across the region may reduce capacity-related transfers, with potential financial benefits for both the neonatal transport service and affected families. Reducing transfers away from local services may also minimise family disruption, allow parents to remain closer to their support networks and reduce travel burden.

Images



Table 1. Major resource-transfer pathways and network movement, 2025-26

Measure	Result	Interpretation
Resource transfers	306/1,419 (21.6%)	More than one fifth of annual transport activity
Referrals from two tertiary centers	249/306 (81.4%; ~80%)	Capacity-related referrals were concentrated in the two tertiary centers
Median patient transit time	40 min	Most transfers were relatively local
Median total mission time	240 min (4 h)	Capacity transfers still generated substantial transport-team time
Median stabilisation time	42 min	Time required at the referring unit before transfer
Mean estimated inter-hospital road distance	18.5 miles (n=305)	Estimated road distance between referring and receiving units
No respiratory support flagged	218/306 (71.2%)	Most resource transfers did not require respiratory support



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NeoTRANSPORT-UK: Neonatal Training, Review, Audit and National Standards for Practice, Operations, woRkforce and Transfers in the UK

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Background

Specialist neonatal transport services are integral to regional neonatal care, providing stabilisation, transfer and repatriation of critically unwell newborn infants. Across the UK, services differ in organisational model, workforce configuration and access to transport-specific training. Although neonatal transport competencies feature within wider professional training, there is no universally implemented UK neonatal transport curriculum or standardised multidisciplinary competency framework. A central counterfactual question asks whether respondents believe each competency would have developed to the same standard without any neonatal transport exposure. NeoTRANSPORT-UK was developed to describe current workforce and training provision, explore the educational impact of transport exposure and generate evidence to inform future national competency development.

Methods

NeoTRANSPORT-UK is a national three work-package (WP) evaluation involving UK neonatal transport services and professionals involved in neonatal transport.
WP1 is a national neonatal transport workforce and service census survey aiming at one factual structured return from each UK neonatal transport service. The survey aims to include data on service models, operational structures, resident medical rotas, deanery posts, clinical fellow recruitment and retention processes, workforce requirements, ANNP establishment and pipeline, pattern working, operational management, training provision and assessment.
WP2 is a multi-stakeholder competency acquisition and training-impact survey aimed at neonatal and paediatric resident doctors, clinical fellows, ANNPs, nurses, and consultants. It examines access to transport exposure, training structure and competency acquisition.
WP3 integrates WP1 and WP2 findings with a parallel review of the published literature to identify candidate competency domains and inform subsequent collaborative development of a UK neonatal transport competency curriculum and framework.

Results

WP1 aims to receive 14 responses, one from each UK neonatal transport service. So far 4 services have responded. Data analysis will map the current national neonatal transport workforce, operating models, training provision, and workforce needs.

WP2 aims to receive 200 responses from current and past neonatal transport staff. So far 50 responders have completed the survey. These anonymised individual-level survey responses will reflect overall how neonatal transport rotations are perceived. Data analysis will map current transport competencies and experience, further suggested education and training opportunities as well as whether such competencies and skills would have been developed to the same standards without transport exposure.



WP3 aims to combine existing evidence from the literature together with the results of WP1 and WP2 to propose the development of a sustainable national neonatal transport competency framework.

Conclusions
NeoTRANSPORT-UK hopes to provide a national overview of workforce, training provision and transport-associated competency development. These findings could inform workforce planning and provide an evidence base for collaborative Neonatal Transport Group (NTG) led development of future neonatal transport training standards and competencies. The project is currently ongoing and full survey results will be presented in the upcoming conference.

Graphs

UK National Neonatal Transport Group Conference 2026



NeoTRANSPORT-UK

NeoTRANSPORT-UK: Neonatal **T**raining, **R**eview, **A**udit and **N**ational **S**tandards for **P**ractice, **O**perations, wo**R**kforce and **T**ransfers in the UK

in collaboration with the Neonatal Transport Group

A national evaluation of neonatal transport workforce, training and competency development in the UK

Why this project?

- UK neonatal transport services are essential to regional neonatal care
- Services vary in structure, workforce and access to training
- No universally implemented UK neonatal transport curriculum or multidisciplinary competency framework

Overall aim

- Define the current national workforce and training landscape
- Understand the educational impact of transport exposure
- Inform future national competency development

WP1: National neonatal transport workforce and service census

- One structured factual return from each UK neonatal transport service
- Maps service model, operational structure, resident rota and management
- Captures deanery posts, fellows, ANNP pipeline and workforce requirements
- Identifies funded vs filled vs required staffing for safe sustainable delivery
- Records whether domains are formally taught or assessed

WP2: Multi-stakeholder training and competency survey

- Survey of neonatal and paediatric trainees, fellows, ANNPs, nurses and consultants with neonatal transport exposure
- Examines access to transport exposure and training structure
- Identifies competencies developed through transport experience
- Key counterfactual: would this competency have developed to the same standard without transport exposure?

WP3: Candidate competency framework and curriculum proposal

- Integrates findings from WP1 and WP2
- Includes parallel review of published literature
- Identifies candidate competency domains
- Supports collaborative NTG-led development of a UK neonatal transport competency curriculum and framework

Synthesis and outputs

- National map of workforce, service models and training provision
- Evidence for workforce, educational and service needs
- Candidate domains for future NTG-led competency framework development

Intended impact

- Inform workforce planning
- Support training opportunities
- Share findings with the wider community
- Contribute to service improvement

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Controlling the in-utero referral explosion requires a multi-faceted approach

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Background:
The last 5 years has seen a 121% increase in numbers of in-utero referrals across the East of England (EoE) from 364 in 2020-21 to 806 in 2025-26. The reason for this is multi-factorial but regional capacity and staffing in both Level 2 and 3 neonatal units is an ongoing challenge. Notably, 30% of in-utero referrals in 2025-26 were withdrawn and did not result in a transfer, suggesting considerable scope for improvement in the productivity and efficiency of the process. In-utero referrals are managed by Emergency Bed Service (EBS) coordinators who are co-located with the clinical team in the PaNDR transport office. Thresholds for referral are informed by national guidance and the recently implemented Operational Pressure Escalation Level (OPEL) framework.

Methods:
The recent addition of the management of call handling for the EoE Adult Critical Care Transfer Service has funded recruitment of EBS shift leaders which has helped to manage the increasing in-utero workload.
Co-location of EBS coordinators with the clinical team enables neonatal consultants to support decision-making around the most appropriate centres for in-utero referrals.
Ongoing refinement of the in-utero referral form aims to ensure that senior clinicians are aware of in-utero referrals and that families understand the distances involved and have agreed to transfer before time is spent locating beds/cots.
In January 2026, the EoE launched the OPEL framework which is recorded twice daily by the EBS and shared daily with the Operational Delivery Network (ODN) team and the Lead consultants of the regional Level 3 NICUs. Whilst focussed on internal escalation processes, the framework should help to improve clarity around decision-making thresholds for both in-utero and ex-utero referrals.

Results:
The rapid increase in in-utero referrals has placed significant pressure on the EBS team which has only been partly relieved by additional recruitment. The workload can feel frustrating as, in recent years, 24-30% of referrals did not result in a transfer.
Regional capacity remains very challenging; 27% of completed in-utero transfers went ‘out of region’ in 2025-26, compared to 18% in 2024-2025. Work is ongoing by the ODN team to review cot capacity across the network, though preliminary data suggests that staff shortages are the leading cause of capacity referrals.
In-utero referral forms have been regularly refined over the last 2 years and will shortly be incorporated into the PaNDR electronic patient record (EPR), enabling the activity and workload to be more accurately and efficiently captured.

Conclusions:
In-utero referrals remain a very significant workload for the PaNDR EBS team. Staff shortages need to be addressed at a regional level and the OPEL framework requires further refinement to help



maximise the productivity and efficiency of this process to ensure the right place of birth, as close to home as possible, for the majority of our vulnerable patients.

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NNeTS Simulation days in collaboration with NEAS: Developing Neonatal Transport Skills through Multidisciplinary Simulation

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Introduction and Background

Simulation provides a safe, controlled environment to develop clinical skills, decision-making, communication and teamworking. Neonatal transport presents unique challenges, including time-critical decision-making, restricted physical space, unfamiliar environments and working across organisational boundaries. To address these challenges, a dedicated multidisciplinary simulation programme was developed for NNeTS Specialist Nurses, Advanced Neonatal Nurse Practitioners (ANNPs) and medical team members, in collaboration with the North East Ambulance Service (NEAS). The initial simulation day was delivered in January 2025 and a second in June 2026.

Methods

A multidisciplinary simulation programme was delivered within NEAS ambulances alongside ambulance crew members. The programme aimed to enhance recognition and management of neonatal emergencies, structured clinical assessment, familiarity with transport equipment, multidisciplinary teamwork, human factors and emergency preparedness.

Scenarios included Persistent Pulmonary Hypertension of the Newborn (PPHN) using an escape-room method to promote structured assessment, prioritisation and familiarity with neonatal transport equipment, neonatal Supraventricular Tachycardia (SVT), incorporating the updated SVT pathway and ambulance defibrillator, a neonatal cardiac arrest scenario focused on team roles, equipment and emergency management. An emergency evacuation following fire or road traffic collision including simulated parents with visual or hearing impairment to explore communication, evacuation planning and consideration of family needs. Facilitated debriefs followed each scenario, providing opportunities for reflection and identification of individual, team and service-level learning needs.

Results

In 2025, 18 NNeTs team members participated in the simulation training days. Verbal feedback identified opportunities for improvement in emergency equipment organisation, with staff reporting unfamiliarity with bag layouts due to infrequent use. This informed consideration of revised equipment layouts and dedicated emergency grab bags. The DOPE framework (Displacement, Obstruction, Pneumothorax and Equipment failure) was also identified as a useful, structured approach to assessing the deteriorating neonate.

In 2026, 18 staff participated over two simulation days, comprising 6 medical professionals and 12 specialist nurses. 17 participants (94%) completed a QR-code-based evaluation, with feedback strongly positive regarding the educational value and experience. Participants identified the four-hour programme as restrictive, particularly for simulation, learning and debriefing. The use of the NEAS base and ambulance were positively received as realistic training environments. Recommendations included twice-yearly simulation, inclusion of NICU registrars rotating every six



months, and development of action cards for common emergency situations. Participants also identified potential value in a future palliative and end-of-life care study day and nurse-only simulation sessions focussing on neonatal deterioration.

NEAS crew members provided valuable external perspectives during debriefing, sharing pre-hospital experience, protocols and approaches to emergency management. This enhanced understanding of NEAS processes and promoted appreciation of multidisciplinary and cross-organisational working.

Conclusions

Transport-specific multidisciplinary simulation provides valuable opportunities to develop emergency preparedness, clinical confidence and collaborative working. Delivering simulation within the ambulance environment enables identification of practical, human-factor and teamworking challenges that may not be apparent during ward-based simulation. Collaboration between neonatal transport and ambulance teams facilitates reciprocal learning and strengthens understanding of roles, communication and processes. Regular transport-specific simulation may therefore support staff development, preparedness and ongoing service improvement.



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Remote in-situ ambulance simulation facilitation and observation; a novel industry partnership which will support transport teams to undertake regular moving-ambulance, high-fidelity simulation experiences, whilst building a wider simulation learning network

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Background

Transport medicine is a unique clinical environment, where practitioners work in clinical isolation, with limited resources and difficult physical stressors. In-situ, moving-ambulance simulation can provide the best replication of these challenges, but comes with considerable barriers in its undertaking.

A questionnaire previously published by our team from 2025, showed that only 30% of the 10 UK neonatal transport team responders were regularly engaging in in-situ, moving-ambulance simulations at that time.

From our early experience, barriers to regular simulation events included; lack of understanding of simulation-based education, difficulties in timing of simulation opportunities with the unpredictability of clinical workload, and concerns regarding whole team availability for urgent referrals, especially if the acute consultant was also fulfilling the role of simulation facilitator. Furthermore, due to the spatial and safety confines of the ambulance, simulation participants have to be limited to a few in number, restricting observers and thus reducing a wider learning effect. Additionally, having an on-board facilitator often with a second mannequin-driver technician, can compromise fidelity.

Remote facilitation has grown in acceptance since the Covid-19 pandemic. Recent reviews have shown no significant difference in learning outcomes between remote and face to face groups, with some studies reporting improved knowledge acquisition within remotely facilitated participants.

Methods

To be able to address some of these barriers and further embed our simulation programme, we have collaborated with a leading producer of simulation centres to create first-of-its kind, ambulance simulation viewing equipment.

We are in the process of fitting a growing number of ambulances with the relevant infrastructure needed to support the low latency, high bandwidth communications required to support the connected simulation network equipment. These ambulance packages not only support real-time viewing by additional learners from the transport base, but allow the facilitator to remotely communicate directly with participants in the moving ambulance. The mannequin can also be driven from a distant location. In addition, already established hospital or educationally-based simulation suites, as installed within our trust, can also be linked to view, supporting multiple hospitals to connect in education events.

Discussion

Through this novel partnership and project development, we are looking to widen our transport simulation programme to support transformative simulation opportunities beyond the pedagogy. Providing real-time access to in-situ, moving-ambulance simulation events will allow stress-testing of



new transport standard operating procedures, increase understanding of the transport process by referring and receiving teams and could be used to trial equipment in a high-fidelity environment. With consideration to psychological safety, scenarios which are deemed to be too emotionally triggering for unprepared participants, such as management of mental health presentations in patients or accompanying family, could be observed remotely, with effective debriefing to ensure learning outcomes are still met.

In the longer term, our goal is to support remote viewing of in-situ events from locations which do not currently have specific simulation equipment capabilities. This opens up endless national collaborative opportunities, allowing participating transport teams to view and share learning from each other's simulated scenarios and building the first connected, transport-simulation network.

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NEAT - Neonatal evaluation of analgesia in transport

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Objectives:
Understand and describe the use of analgesia and sedation in ventilated neonates during transport.

Methods:
Neonatal transport services in the UK were approached via the Neonatal Transport Group (affiliated group of BAPM) to participate in a 6-month service evaluation collecting prospective observational data. Anonymised data was submitted via a QR code. Each submission includes basic patient characteristics, reason for transfer and analgesia / sedative use for the given transfer.

Data was then collated and analysed. Monthly summaries were disseminated to clinical leads of participating transport services for quality assurance.

NEAT is registered with the clinical audit and effectiveness committee at Sheffield Children's Hospital.

Results:
We are currently just over halfway through our data collection period (1/12/2025 - 1/6/2026). 6 of the 14 Neonatal transport services in the UK have submitted data for 399 transfers of ventilated neonates, approximately 50% of the quarterly total of ventilated neonatal transfers in the UK (NTG data April 2023- March 2024 n = 3,217)

Patients ranged from 22 - 44 weeks corrected gestational age, weighing 400-4700g. 69% transferred in the first week of life, most often within the first 2 days (231/399). 275/399 (69%) of patients were requiring analgesia/sedative agents prior to transfer, of which 93% (255/275) were receiving morphine. Of the remaining 20 patients, fentanyl was the most used alternative (n=17) followed by midazolam, promethazine and clonidine (n = 1 respectively). 16 patients required multiple sedative agents (2 to 4), only 6 of these patients were not on morphine.
Of the 124 neonates not on sedation prior to transfer, it was commenced in 95 (76.6%), all with morphine; 29 neonates were transferred with no sedation (7.3% of all transfers).
Morphine was used in 350/399 (87.7%) of transfers.

Conclusion:
92% of our ventilated neonatal cohort required opioids during transfer, primarily with morphine.

There are concerns regarding morphine in neonates not providing adequate analgesia, prolonging ventilation, delaying time to full feeds and neurodevelopmental outcomes.
Other studies suggest alternatives like dexmedetomidine could relieve pain with fewer side effects with an ongoing clinical trial in the UK (DEXTA). We hope the NEAT data will support an application for funding a related study to investigate dexmedetomidine for analgesia in ventilated neonates during transport.

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Trends in transport; keeping the CO2 under control to protect preterm brains

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Background:
Neonatal transport poses many challenges, particularly with neonates requiring ventilatory support and the subsequent control of appropriate parameters. In particular, hypocarbia should be avoided as it can contribute to the development of intra-ventricular haemorrhage (IVH) and deafness in preterm neonates.

The neonatal PaNDR transport team covers the East of England region. Historically the Babypac ventilator was used during transfers only allowing for conventional mechanical ventilation and presented challenges with overventilation and resulting hypocarbia.

In June 2023 the Hamilton ventilator was introduced with the aim of reducing episodes of hypocarbia during transfer. The mode of ventilation initially introduced was pressure-controlled synchronised intermittent mandatory ventilation (SIMV + PC), with a plan to provide a staged implementation towards volume guarantee (VG) SIMV.

The use of VG in mechanical ventilation is lung protective and the use of VG in premature neonates has been shown to reduce hypocarbia.

Whilst there was an improvement in hypocarbia rates of 7.1% to 2.2% between 2021/22 and 2023/24 (NTG data), there was a parallel, unexpected rise in neonates with hypercarbia and associated acidosis (pCO_2 >7 kPa and pH <7.2) from 4.7% to 7.6% (2021/22 to 2023/24) (NTG data).

Methods:
To investigate the unexpected rise in hypercarbia an audit was undertaken of ventilated neonates with hypercarbia AND acidosis on the completion of transfer gas following the introduction of the Hamilton ventilator.

Data was retrospectively collected using PaNDR Electronic Patient Records (EPR) (from Epic) between April 2023 to March 2026. These records were reviewed in three groups: April 2023 to March 2024; April 2024 to March 2025; and April 2025 to March 2026 in keeping with the NTG analysis of transport data. The notes of all neonates with completion of transfer gas with a pCO_2 >7 kPa and pH <7.2 were then subsequently reviewed.

Results:
The results from the audit were reassuring. Despite there being an increase in the number of transferred ventilated neonates with a completion of transfer gas with a pCO_2 >7 kPa and a pH <7.2 following the introduction of the Hamilton ventilator, this has not been evidenced in the subsequent two years with an improving trend with 5% (9 out of 178 ventilated neonates) in 2024-25 and 3.7% (6 out of 161 ventilated neonates) in 2025-26. This improvement in KPI data is likely multi-factorial.

Conclusions:
After the implementation of SIMV + VG in February 2024 as the first line neonatal ventilatory strategy, supported with further education and team familiarity, there has been a consistent improvement in KPIs both for hypocarbia and hypercarbia.

Alongside the use of transcutaneous CO_2 monitoring this is a positive step forward in ensuring appropriate control of CO_2 and optimal neuroprotection to transferred ventilated neonates.

Images

