

Embracing excellence in neonatal transport



UK National Neonatal Transport Group Conference, Southampton Grand Harbour, 28-29 November 2019

Established in 2006, the Neonatal Transport Group (NTG) hosts an annual conference that has grown in size each year. The aim is to provide an educational meeting to improve the care of infants who need transportation. It allows the network transport teams to come together and share best practice. The conference is attended by anyone interested in neonatal transport including doctors, nurses, advanced neonatal nurse practitioners (ANNPs), as well as paramedics and drivers for the teams. Throughout the 2019 conference there was a focus on human factors and improving team working.

Day 1

The conference began with an update on current strategies and placement of the NTG by our Chair, Dr Cath Harrison (Embrace Transport Team). Discussions included ensuring safe practice during transport and making sure that we are considering all modalities of transport, including fixed wing and helicopter transfers for longer road distances and those across water.

Dr Allan Jackson (Scottish Specialist Transport and Retrieval, ScotSTAR) presented a summary of the data entered by all the national teams. This is a review of all the transfers that happen over the first six months of the year and looks at many factors, for example:

- have the babies been transferred within a reasonable timeframe
- temperature control
- ventilation markers
- time taken to provide therapeutic hypothermia.

Kelly Rutherford (ANNP, Southampton Oxford Neonatal Transfer service, SOnET) then facilitated a discussion about ANNPs and nurse-led transfers. It is well recognised that staffing neonatal units is challenging and it was interesting to see the variation in practice across the UK, often due to geographical logistical considerations.



Delegates heard speakers discuss a range of subjects including team working and human factors.



The keynote lecture for day 1 was given by the Wessex Ear, Nose and Throat team regarding transfer with a difficult airway (Mrs Eleanor Spronson, Mr Kwamena Amonoo-Kupfi and Mrs Hasnaa Ismail Koch). This included a summary of the Make the Airway Safe Team (MAST) course run out of Southampton as well as case presentations on babies who have been difficult to transfer due to airway problems. Learning points included the communication required and the power of multiple specialists working together. The day closed with an evening of entertainment packed with networking opportunities.

Day 2

The second day opened with discussions about the impact of redesignation of

neonatal units on transfer teams (Jenny Weddell, SOnET Nurse Coordinator). This included consideration of education and outreach, and the various training strategies from Dr Syed Mohinuddin (London Neonatal Transfer Service, NTS) and Dr Sarah Davidson (SONET). Discussions revolved around what should be taught and to whom, including human factors, team working and how to maintain clinical skills.

Dr James Tooley (Newborn Emergency Stabilisation and Transport team – NEST, Bristol) presented on the topic of HALT and Debriefing. HALT stands for hungry, angry, late and tired – four of the main factors that we need to be aware of as they can significantly impede performance. Debriefing after scenarios that went

particularly well or that could have gone better is vital to ensure lessons are learnt but more importantly, it supports team members to continue to do their jobs.

Dr Alex Philpott (Kids Intensive Care Decision Support and Neonatal Transfer Service, KIDSNTS, West Midlands) discussed time and how to handle it. It can be easy to become involved in a transfer and not consider how quickly time moves. Ensuring staff have regular breaks and listening to their personal needs is linked to improved patient care. Team working requires understanding of each other's strengths and needs – including when a sugar boost might be needed!

Dr John Madar (Peninsula Neonatal Transport Service) presented an informative and well-received talk on how transport has changed over the years and the lessons we have learnt together as the NTG. It is important we intermittently look back in order to see how far we have come and ensure we are continuing to improve and not reinventing the wheel.

Squadron Leader Elizabeth Paxman gave the second keynote lecture on the medical emergency response team. As a Specialist Nurse Practitioner in the Royal Air Force she talked us through the real challenges they face in developing countries –

allowing us all to realise how lucky we are in the UK. It is always fascinating to hear about the differences between developing and developed countries. However, the fundamental approach remains the same and the importance of thinking outside the box to manage difficult situations is transferrable across all settings.

Getting it Right First Time (GIRFT) is a national NHS programme designed to improve quality of care. Within the last few months, neonatal units and neonatal transport teams have submitted data so that variations across the country can be explored and recommendations made. Dr Eleri Adams (National GIRFT Lead for Neonatology, SOnET) explained the processes involved with GIRFT and what the programme hopes to achieve. This was followed by Sue Lloyd (SONeT Nurse Lead) who presented on streamlining processes and de-cluttering the kit bags. This talk highlighted that having external agencies reviewing processes can be very helpful. Also, the whole team embracing the challenges of quality improvement reaps benefits.

During the conference we had several oral abstract and poster presentations from the various national teams (see below). Other topics included reducing vibration

and noise (University of Nottingham), oxygenation parameters for hypoxic respiratory failure and predicting outcome (London NTS) and the use of carbon dioxide measurement in transport (Embrace, CHANTS – Cymru inter Hospital Acute Neonatal Transfer Service – and SOnET Oxford). The lunch and coffee breaks provided opportunities for delegates to visit the poster area as well as the exhibition stands of medical companies displaying innovative products for care of neonates during transfers. Thanks are extended to the companies who supported this educational meeting through purchase of exhibition space.

The 2020 Neonatal Transport Group Conference will be held in Nottingham on 26-27 November 2020 (www.cfsevents.co.uk/healthcare-events). We look forward to welcoming our regulars and anyone interested in learning more about neonatal transport.

Sarah Davidson

Meeting Organiser and Neonatal Consultant, SOnET Wessex Lead, Princess Anne Hospital, University Hospital Southampton NHS Foundation Trust

Abstracts from the UK National Neonatal Transport Group Conference

Delegates attending the conference were invited to submit abstracts for poster and oral presentations (**TABLE 1**). Well done to all of the authors and presenters – some excellent entries were received. Congratulations to this year's winners, their abstracts can be seen on pages 42-43.



Title	Authors
Oral presentations	
Human factors approach to quality improvement	Barnes K, Drencheva P, Yates E, Lawn C
Five minutes to safer transport – rapid <i>in situ</i> debrief to improve patient safety on transfer	Barnes K, Young L, James D, Drencheva P, Yates E, Lawn C
Towards reducing vibration and noise encountered by neonates during ambulance transfers by using intelligent routing	Partridge T, Morris D, Light R, Leslie A, Sharkey D, Crowe J, McNally D
Oxygenation parameters and characteristics of ventilated term infants with hypoxic respiratory failure during neonatal transport	Sampath S, Reddy Patlolla N, Desai A, Garg A, Ratnavel N, Sakhuja P
A review of the use of supraglottic airways in neonates for use during inter-hospital transfer	Wightman S, Godden C, O'Shea J
Quality improvement project: transcutaneous carbon dioxide monitoring of ventilated neonates during neonatal transport	Hayward A, Cleaton L
How accurate is transcutaneous CO ₂ measurement in neonatal transport?	Wood K, Lloyd S

Joint prize winning oral presentations

Title	Authors
Poster presentations	
Pre-hospital newborn stabilisation and transport to hospital: a proof of concept course	Armson A, Bates S, Kelly T, Langford-Wood H, Mosuro A, Sawyer A, Shaw H, Youde R
Development of an electronic 'immediate advice dashboard' application for standardised pre-dispatch neonatal critical care instruction to referring units	Cawley P, Turton P, Tooley J
Transferring neonates for therapeutic hypothermia: improving time to target temperature	Margetts R, Weddell J, Davidson S
The implementation of a lead nurse for education into the neonatal transport service	Garnell S
What happened next: a retrospective audit of all antenatal transfers within the Peninsula Network of Devon and Cornwall in 2018	Harris H, Madar J
Drive-through services provided by the neonatal transport group – a survey of current practices	Hayward R, Richards C
Audit of debriefing practices within the UK Neonatal Transport Group	Hayward R, Richards C, Hurley J
Review of pCO ₂ levels following neonatal transport in South Wales	Hayward A
Effectiveness of incubator humidity during transport of the extreme preterm neonate	Holland M
Parents in neonatal transfer – when is too early?	Nice D
Cardiac point of care ultrasound scan (POCUS) in neonatal transport	Job S
Finding my travel time in neonatal transport	Werner A
Does size matter? The perspective of the UK's smallest neonatal transport service	Kaiser L, Bakker S, Jones D
Can I travel with my baby?	McDermott P
Parent and healthcare professional neonatal transport research priorities	Mistry A, Sharkey D
Temperature control on neonates of 27 weeks' gestation and less during transport	Moderno R, Farrow A
Therapeutic hypothermia in transport: implementation of a national cooling protocol	Moore C, Bowden A, Purna J, Fucikova H, Franta J
Transfer of neonates with gastroschisis: a review	O'Connor C, Philpott A, Mughal-Hussain S, Hodgson A
Evaluating parent experience of the NEST team 2015-2019	Parsons R
The impact of a changing workforce on service provision in KSS NTS – a regional audit	Pryce R, Manea C, Fletcher J, Watts L, Leach C, Nichols A, Ord S, Garland C, Lawn C, Heggarty S, Otunla T, Pattanayak S
Phototherapy in transport	Renson E
Servo-controlled thermoregulation in extreme preterm and ELBW infants during neonatal transport	Sharma N, Ratnavel N, Mohinuddin S, Kempley S, Sakhuja P
Neonatal transfers for term respiratory failure: a four-year review of referrals to a national transport service	Stevenson J, Connolly P, Jackson A
Improving and tracking performance using the GAMUT data base	Jordan L, Harrison C, Talbot H
What a performance! Referring and receiving unit feedback on the transport team	Duggan C, Talbot H, Sharpe J
Use of ambulance lights and sirens in emergency time critical transfers – is the time saving worth the risk?	Thomas P, Davidson S, Weddell J
Developmental care in transport	Young R



TABLE 1 The abstracts accepted for poster and oral presentations.

Pre-hospital newborn stabilisation and transport to hospital: a proof of concept course

H Shaw,¹ A Armson,¹ H Langford-Wood,²
T Kelly,³ A Sawyer,⁴ S Bates²

¹Undergraduate Academy ²Department of Neonatology

³Resuscitation Training Department Great Western Hospital, Swindon

⁴South Western Ambulance Service NHS Foundation Trust

Prize
winning
poster

Background

The Resuscitation Council (UK) Newborn Life Support (NLS) course has been enormously successful in standardising skills and knowledge in newborn resuscitation across the country. However, it is largely focused on hospital births and planned home births. Unplanned out-of-hospital births are attended by healthcare professionals with limited resources and support, and are associated with increased rates of newborn morbidity and mortality.¹ There is a need for specific training aimed at pre-hospital practitioners including those involved in the transfer of unstable neonates from a pre-hospital birth environment to the hospital. We evaluate a novel course: *Pre-Hospital Newborn Resuscitation and Stabilisation*.

Methods

The course was designed and delivered as a joint venture between Great Western Hospital, South Western Ambulance Service and Wiltshire Air Ambulance. Candidates represented a diverse range of professionals involved in care of the newborn. Faculty members were from a comparable breadth of professions and most had NLS instructor status. Mixed modality training involved term and preterm neonates, transfer logistics and a strong focus on human factors and multidisciplinary team work. Training included transfer of both term and preterm newborns requiring airway support and candidates were encouraged to collaborate in developing solutions for the logistical considerations in these circumstances.

Anonymised qualitative and quantitative feedback was collected before and after the course, with self-ranked confidence in the delivery of care, implementation of skills, transfer of newborns and communication with the receiving centre regarding both term and preterm newborns.

Results

Feedback from candidates showed the course increased confidence in all areas, notably in preterm care and transfer logistics (**FIGURE 1**). Qualitative feedback highlights the perceived value of this course and benefit of the multidisciplinary team approach.

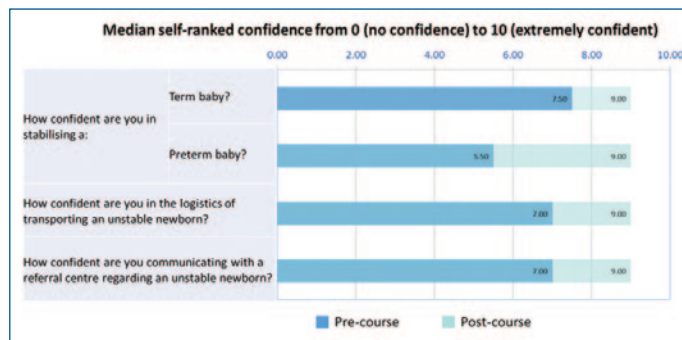


FIGURE 1 Feedback from candidates.

Discussion

The authors believe that this proof-of-concept course was a useful resource for those who attended, and could be developed on a wider scale in line with regional and national priorities around newborn care.²

References

1. Loughney A, Collis R, Saleem D. Birth before arrival at delivery suite: associations and consequences. *Brit J Midwif* 2006;14:204-08.
2. NHS Improvement. Driver diagram and change package: improve the optimisation and stabilisation of the very preterm infant. National maternal and neonatal safety collaborative. 2017. Online available at: https://improvement.nhs.uk/documents/3595/20190308_Optimisation_v2.1.pdf

Human factors approach to quality improvement

K Barnes,¹ D James,¹ E Yates,² P Drencheva,¹
M Suciu,¹ B Jahnke,¹ T Joyce,¹ C Morfoot,¹
C Hunt,¹ C Lawn¹

Joint prize
winning oral
presentation

¹Trevor Mann Baby Unit, Royal Sussex County Hospital Brighton

²Western Sussex Hospitals NHS Foundation Trust

Aim

To implement a bundle of human factor interventions developed in a tertiary NICU setting to neonatal transport.

A human factors approach

Human factors (HF) are involved in the majority of adverse incidents in health care. Neonatal transport is extremely high risk involving multiple working environments, many of which will be new to the team.

Over the past two years we have developed a HF approach on the NICU and have seen major improvements in patient safety and culture change within the department. The HF project is centred on the HF team (consultant, registrar, ANNP, senior nurses). Current projects include:

- safety pauses
- safety STEPPs
- prompt cards
- troubleshooting guides.

We are now implementing these in the transport setting and believe they will be instrumental in improving our service.

Safety pauses

Frontline staff have a unique knowledge of how well (or how poorly) equipment, systems and processes work on the NICU. Analysing Datix forms can highlight major issues and incidents



but there was no mechanism for collecting information about snags that are not 'Datix-worthy' but nevertheless impact patient safety. We use safety pauses to do this – these are rapid debriefs occurring at the cotside after interventions (eg resuscitation, intubation). The safety pause is led by any team member and lasts under five minutes. It asks the team to reflect if the same situation arose again:

1. What would you do differently?
2. What would you do the same?
3. Were any latent threats identified (not causing a problem on this occasion)?
4. How did the team function?

Data are collected by the HF team and problems are identified and acted on quickly (taking into account suggestions made by the team in the safety pause) and changes are fed back to the wider multidisciplinary team (MDT).

Safety STEPPs

STEPPs: *Situation, Think problems, Equipment, Prepare, Proceed* These are checks performed before procedures to streamline the team approach and preparation. They take 90 seconds and ensure that all team members are prepared and aware of plan A as well as plan B/C if the procedure is not straightforward. They bring the team together, flatten hierarchy and improve situational awareness during potentially dangerous procedures.

Prompt cards

Prompt cards summarise initial steps in management of neonatal emergencies addressing both the medical treatment and practical steps to be taken. They are used alongside our guideline to ensure emergency treatments/investigations are instituted without delay.

Troubleshooting guides

Guides created by an MDT with detailed knowledge of our equipment provide a framework for approaching and addressing equipment issues.

The future

We have seen clear benefit from these projects on the NICU in terms of our ability to identify and fix problems but also in flattening the hierarchy and moving towards an HF-centred culture. We have also seen a sustained reduction in Datix reports of almost 30%. We are excited to see the impact of the project in the transport setting.

Five minutes to safer transport – rapid *in situ* debrief to improve patient safety on transfer

K Barnes,¹ L Young,¹ D James,¹ E Yates,²
P Drencheva,¹ C Leach,¹ L Watts,¹ C Hunt,¹
C Lawn¹

¹Kent, Surrey and Sussex Neonatal Transport Team

²Western Sussex Hospitals NHS Foundation Trust

Aims

Introduction of a rapid *in situ* debrief to detect and resolve potential patient safety issues during neonatal transport.

Introduction

Human factors are involved in the majority of adverse incidents in health care. Neonatal transport is extremely high risk involving multiple working environments. Frontline staff have unique knowledge of the intricate workings of equipment, systems and processes involved in neonatal transport. Patient safety incident forms (PSI) can be lengthy and are designed to pick up serious incidents that have either caused patient harm or caused a near miss. There is no mechanism at present for 'raking' the environment for the snags and trips that teams encounter on a day-to-day basis or to discover workarounds developed by the team. We previously implemented a rapid debrief (the safety pause) to address these issues on the NICU and are now trialling its use in the transport setting. The aim of the safety pause is to identify and resolve underlying issues. They do not replace PSIs but rather function as an adjunct to proactively address issues before they cause a problem.

Safety pauses

Safety pauses are rapid, *in situ* debriefs, occurring immediately post-transfer. The safety pause is led by any team member and lasts under five minutes. It asks the team to reflect if the same situation arose again:

1. What would you do differently?
2. What would you do the same?
3. Were any latent threats identified (not causing a problem on this occasion)?
4. How did the team function?

Data are collected and problems are identified, acted on quickly (taking into account suggestions made by the multidisciplinary team) and fed back to the wider team.

Results

In the initial three months of data collection 19 safety pauses were completed. From these we identified 39 issues. These are divided into 14 equipment issues, five environmental issues, eight communications issues, 10 process issues and two others. In addition we identified multiple examples of good practice to share with the team. Themes included:

- Communication issues: expectations from pre-arrival phone referral differ from the situation on arrival; readiness of paperwork and availability of full information, particularly in transfers soon after birth.
- Equipment issues: problems with mobile phone, pumps and compatibility of different bits of equipment (particularly nasogastric tubes/syringes of which at least three types are in use in the region).
- Processes: issues around where drugs are prescribed and by whom as well as issues with our difficult airway process.

Conclusion

Our pilot introduction of safety pauses to one arm of our transport team has been successful. We plan to extend this across the region. Involvement of our ambulance crew in leading pauses has been instrumental in uptake. We have already identified a number of issues and examples of excellence. We have seen an improvement in patient safety and culture on the NICU with the introduction of safety pauses. We anticipate that these changes will be replicated with ongoing safety pauses during transport.

