

Neonatal Technology Enabled Care

SUMMARY REPORT



CURRENT STATE, FUTURE OPPORTUNITIES

INTRODUCTION

This work is part of a collaborative working project in conjunction with Health Innovation North West Coast (HINWC), Northwest Neonatal Operational Delivery Network (NWNODN) and Chiesi Limited. For further information please see the project executive summary which can be found on all partners websites.

Collaborative partners within the project



The purpose of this 12-month project is to enable more equitable, efficient, and family-integrated neonatal care in the North West, specifically through the use of Technology Enabled Care (TEC), by providing decision makers with validated information to improve the current state of TEC in neonatal care. TEC encompasses a variety of digital and technology tools that support the delivery of neonatal care.

TEC in neonatal care can have many benefits. The largest one being improving care and reducing risks to babies.

The original aim of this project was to make recommendations on deploying specific TEC solutions, however it became apparent soon after embarking on this project that the foundation for TEC in neonatal care still needed to be built – which in itself was a vital finding. Therefore, this summary document does not name any particular TEC being used, or TEC under future consideration.

This report uncovered a number of recurring challenges during the landscape review of 22 NWNODN neonatal units (seven neonatal intensive care units (NICUs); 12 local neonatal units (LNUs) and two special care units (SCUs)), as well as the neonatal transport service (Connect North West). This summary report highlights these and makes recommendations. The full report, which is available on [HINWC website](#), provides additional information on the units involved, research and data collection methodology, and more.

The project team worked hard to ensure the voices of as many stakeholders as possible were represented in the findings, with face-to-face qualitative data prioritised. Stakeholders included clinicians, digital/IT professionals, administration, management and families.

Current state of TEC in neonatal care in the north west

TEC usage, integration and functionality varies across the 22 units. There are a handful of examples of TEC being used well with staff and family satisfaction, however there is a general feeling that basic barriers have to be addressed in order for TEC systems to be efficiently used.

Main challenges and recommendations

Information technology (IT) infrastructure and support

- **Poor IT infrastructure and Wi-Fi connectivity**
 - Beneficial TEC is simply impossible to use
- **Electronic patient record (EPR) issues**
 - Continued use of paper-based records, especially in handover to Connect North West
 - Multiple EPR-like systems being fragmented, resulting in duplications and inefficiencies
 - Imaging tools that are not 'integrated' into patient records either because they are paper-based or fragmented
- **Broken or inadequate hardware**
- **Difficult or non-existent interfaces between different TEC, leading to wasted time, repetition, and higher risk of errors**
 - Systems are unable to 'talk' to each other across units and throughout the NW - imaging systems are a particular issue, where systems do not always integrate with other departments in the same trust or across trusts, making the transfer or sharing of data difficult or impossible.
 - Systems within trusts themselves are fragmented, complicating the most simple tasks

- **Digital team capacity**
 - Small teams spread across trusts who are unable to fully enable system functionality
 - Backlog of work to test and replace broken hardware
 - Staff are used to IT issues – especially around connectivity – and have found workarounds leading to them stopping raising issues
 - Complexity of issues limits innovation, as basic operational issues take precedence
- **IT suppliers being barriers rather than enablers**
 - There are examples of suppliers being non-responsive or sluggish to make changes

Recommendations

- Invest in foundational IT infrastructure with fast and reliable Wi-Fi across all neonatal units to enable full function of TEC
- Undertake routine maintenance, upgrades and timely replacement of hardware to ensure uninterrupted access to essential systems
- Develop interoperable systems to facilitate seamless data sharing across units and regions
- Early engagement by procurement teams with all IT suppliers, and, where possible, procurement teams should seek out responsive and innovative suppliers
- Neonatal clinicians should be included in early discussions around IT system changes to ensure accessibility
- Nominate an IT team member as a neonatology champion to ensure the department has a named contact

Procurement of solutions

- TEC procurement decisions are made without adequate input from users – both clinical and families – and the IT teams who will need to support implementation and ongoing support and maintenance

Recommendations

- Ensure there is true co-production of TEC solutions (including design and implementation) with clinicians, families and IT specialists to ensure everyone's needs are met. This should happen at the earliest stage possible. If all needs can't be met, there should be acceptable compromises
- Recognise the unique needs of neonatal services and ensure their integration into broader IT and digital strategies
- Ensure regular and meaningful communication between trust neonatal and digital teams
- Engage early with innovative vendors to develop user-friendly and responsive solutions
- Family experience should be at the heart of decision making
- Prioritise TEC that is simple and intuitive to use and that does not require extensive training

Staff training and time

- Inconsistent training leading to low digital confidence or staff that do not know how to use TEC tools to full function
- Shortage of trainers who are themselves confident with TEC
- Current training of neonatal staff in general, appears to be in formats that are incompatible with effective learning
- Overall change fatigue among staff
- Staff do not have the time to consider TEC innovation
- Lack of time to attend training and embed learning

Recommendations

- A network-wide approach to neonatal learning, including a schedule of regular training and ongoing refresher courses to keep staff updated on best practices and innovations
- Dedicated TEC champions/"superusers" for neonatal care who can provide timely, quality support, ideally with an on-call element
- Standardise hybrid training models that include on-the-job, online and face-to-face formats
- Ensure training is competency-based, relevant, flexible, easy to access, and innovative itself in approach
- Development of easy access educational resources to support immediate refreshers on TEC while working clinically
- Emphasise peer-to-peer training and on-the-job learning for a more collaborative and supportive environment
- Provide neonatal teams with dedicated time to meet with digital teams to identify and promote TEC innovation

Trust/ICS/NHS-wide approaches to neonatal care

- Smaller size of neonatal units compared to other departments in a trust means that other department needs are prioritised, specifically in regard to digital development
- Neonatal teams "making do" with systems procured for other departments' needs
- Differing budgets and priorities across regions and networks leading to variations of systems that do similar jobs
- Neonatal clinical strategies don't always include TEC
- Smaller neonatal care teams are unable to access relevant specialists at the right time, resulting in unnecessary transfers

Recommendations

- Neonatal staff are included in trust digital systems and technology commissioning, and that a regional system approach is taken
- Information and data are shared seamlessly within a unit and across the network
- Enable more remote consultations between smaller care teams and specialists
- TEC that enables remote consultations would enable smaller teams to connect with specialists

Family and patient experience

- Families are 'digitally excluded' (could be caused by a number of factors), resulting in either no, or limited use, of TEC
- Families unaware of the TEC available to them and/or lack of staff time to show families TEC tools and how to use them
- Families not provided with alternatives when TEC doesn't suit them
- Families not feeling close to their babies during neonatal stays, especially when baby is moved internally or externally
- Inconsistent communication between care teams and families
- Access to their baby – families need to wait to be let in to see their baby
- Families concerned about the reliability of paper records, and potential loss or damage to them

Recommendations

- Use of evidence-based TEC that enhances the care of babies through monitoring, should be prioritised
- Remote consultation should be available to every unit to prevent the unnecessary transfer of babies
- Families to be better connected to care teams. Some suggestions were virtual appointments, having a virtual presence during ward rounds and having access to recordings or voice notes from the care team
- Families to be notified when a baby is moved internally or externally
- Future family communication strategies to focus on TEC
- Bio-metric entry to the neonatal unit should be prioritised to support 24/7 immediate access for parents to their baby
- Any proposed TEC must address a family's access to the internet and ability to use TEC. This includes accessibility for non-English speakers, and individuals with additional communication needs
- Enable the wider use of photo and video-centred technologies, however families have concerns about TEC data protection and privacy – these will require adequate consultation before implementing any solutions
- Families want to see all information for the baby in one place, instead of being to multiple places – this would be supported by a harmonised EPR

Next steps

1. Investment in basic IT infrastructure

The technical barriers identified above are major impediments to TEC innovation and a risk to delivering optimal neonatal care. Creating a high-quality digital infrastructure that will support TEC in step 3, and that is future-proofed, is the essential first step.

2. Consideration of the challenges and recommendations raised at the appropriate decision-making level

The project team will disseminate the full and summary report to leadership teams to inform future neonatal care. Once the foundational elements are addressed, neonatal units working together throughout the NW, should be in a better position to discuss specific solutions.

3. Investigate specific TEC solutions that would improve family experience and address safety risks

Neonatal teams and families constantly named specific types of TEC that they would prioritise for implementation. More research and consultation is required to ensure the right solutions across the NW are considered.

3a. Better communication

This includes TEC that enables better communication internally between care teams and specialists, and externally between care teams and families. From the family perspective, any tools that enable them to feel more 'connected' to their baby when they are unable to be physically present would reduce a significant amount of stress.

- Remote video consultations with care teams and specialists
- Virtual ward rounds so that families have updates from the care team
- Virtual tours of units so that families who are unable to be physically present can visualise where their baby is
- Regular video updates
- Remote consultations could allow families to continue to receive expert guidance when their baby returns home.

Remote and contactless monitoring

- Real-time data sharing and monitoring across the NW network.
- Systems that analyse health data trends could alert staff to emerging issues before babies become critically unwell, enabling timely and effective interventions.
- Telemedicine or video monitoring so families can check in on their babies at all times.
- Tools that support consistent communication with specialists, ensuring families remain integral to their baby's care when transfers are necessary.

TEC that reduces the need for babies to be physically touched should be investigated, as not enough is known about the implications of touch/lack of touch on the stress of babies.

4. Connecting the North West

Technology must enable the same standard of care across the North West. Standardised protocols, supported by interoperable systems can help ensure that transferred babies receive consistent, high-quality care, regardless of their location.

Tools that support seamless information transfer during patient handovers can have a significant impact on care, use staff time more efficiently and reduce stress for families.

Ideally, systems would be able to communicate beyond the North West, and across borders, as specialist services are provided for babies born in other parts of the UK, such as the Isle of Man and North Wales. More research is needed on the most suitable forms of technology that would facilitate this transfer.

A seamless, technology-enabled neonatal care network is achievable, but it requires coordinated action across national, regional and organisational levels.

Conclusion

It is the project team's vision that neonatal units can use this information to improve the current system to ultimately ensure the best possible outcomes for every baby in their care.

This report provides recommendations for transformation, emphasising the need for investment, sustained collaboration, and a commitment to aligning digital innovation with clinical excellence. The recommendations outlined offer practical steps to guide future efforts, ensuring that neonatal care remains at the forefront of healthcare innovation.

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Thank you to the families that kindly agreed to provide
images of their babies via NWNODN, for use in this report.

