

## **Health Innovation West of England - Written evidence (PRT0011)**

### **Introduction to organisation and reason for submitting evidence**

**PERIPrem** (Perinatal Excellence to Reduce Injury in Premature Birth) was co-produced by Health Innovation West of England, Health Innovation South West, and the South West Operational Delivery Network, together with parents with lived experience of preterm birth.

**Health innovation networks** bring together the NHS, industry, academic, third sector and local organisations. Our collaboration ensures innovations, improvements and best practice benefit more patients faster. We are commissioned by NHS England and the Government's Office for Life Sciences. We're also a partner in the NHS Accelerated Access Collaborative, which brings together key organisations to streamline the adoption of new innovations in healthcare.

### **What is PERIPrem?**

Launched in April 2020, PERIPrem (Perinatal Excellence to Reduce Injury in Premature Birth) is a unique evidence-based perinatal care bundle that aims to improve the outcomes for premature babies across the West and South West of England regions. PERIPrem reflects the NHS Long Term Plan ambition to reduce stillbirths, maternal and neonatal mortality and serious brain injury by 50% by 2025, with an increased focus on pre-term mortality.

The bundle, which now forms part of the national Maternity and Neonatal Safety Improvement Programme, consists of 11 interventions that demonstrate a significant impact on brain injury and mortality rates amongst babies born earlier than 34 weeks. The evidence base is summarised in this diagram.

The PERIPrem bundle was co-created by maternity and neonatal teams, quality improvement experts and parents. The interventions range from ensuring that the most premature babies are born in the right place, to

offering mothers magnesium sulphate (which has been shown to reduce the risk of the baby developing cerebral palsy), and optimal cord management, which reduces the risk of death. The key innovation was to take these evidence-based elements to reduce mortality and brain injury and bring them together into a care bundle that spans the perinatal preterm journey for both mother and baby, with implementation supported by robust quality improvement (QI), coaching and data support.

### **How was PERIPrem implemented?**

PERIPrem is built on the QI theory and community of PReventing Cerebral palsy in Pre-Term labour (PReCePT), a project developed by Health Innovation West of England (previously known as West of England AHSN) in collaboration with University Hospitals Bristol and Weston NHS Foundation Trust. The programme was funded by NHS England and was subsequently selected for adoption and spread across England during 2018-20 via the national Health Innovation Network.

QI methodology was at the heart of implementation alongside coaching and forging new ways of working, where clinicians from obstetrics, midwifery and neonatology, joined together to drive forward and revolutionise care for preterm babies.

To enable units to focus on increasing rates of PERIPrem interventions, the health innovation networks provided funding to each trust to backfill two PERIPrem Leads - one neonatal nurse and one midwifery lead who, alongside identified obstetric and neonatology leads, formed each unit's 'PERIPrem quad preterm optimisation team.' In addition, units were encouraged to identify PERIPrem Champions to act as advocates for selected bundle interventions, encouraging shared team engagement and ownership with the improvement process.

The PERIPrem Steering Group developed a toolkit of resources and materials for each element of the bundle. Units were encouraged to use

and adapt these to meet their needs. PERIPrem clinical and parent passports were also created to offer advice and reassurance to families and many resources were made available in multiple languages. The PERIPrem team met with each unit team on a regular basis for coaching, support, and encouraging maintained improvement. They also ran virtual share and learn sessions and sent weekly newsletters to distribute resource connect disparate teams kept apart by the COVID pandemic and celebrate success.

### **What evidence is there that PERIPrem has positively impacted on care and outcomes for preterm babies?**

Over 2,500 premature babies have been cared for using the PERIPrem bundle (to December 2023). Implementation of PERIPrem, delivered by a large regional perinatal QI collaborative, was associated with an improvement in preterm mortality and brain injury in very preterm infants. There was a 30% reduction in mortality, and a 17% reduction in severe brain injury and brain bleeds following the introduction of PERIPrem in South West England. Preterm mortality and brain injury remained unchanged in the UK over the same period. (3)

Between 2020 and 2023 South West England has progressed to achieve the lowest neonatal mortality rate in England, the only region to attain the NHS Long Term Plan goal of a mortality rate of 1:1000 live births (See National Child Mortality Database evidence submission).

The National Neonatal Audit Programme's (NNAP) 2022 report (published November 2023) shows:

- The South West Neonatal Operational Delivery Network (ODN) has the lowest rates of severe preterm white matter brain injury or death
- The South West is the top ODN for early breastmilk feeding and delayed cord clamping

- Optimal place of birth is above average across the South West (80.4%) and is the only ODN in England demonstrating consistent improvement in this area during 2020-2022.

In August 2022, an independent evaluation was [published in the British Medical Journal Open Quality](#). It indicated 26% more mothers and babies born prematurely across the South West received the care interventions they were eligible for between July 2020 and June 2021, compared to before PERIPrem started. [Explore a summary graphic of the PERIPrem evaluation](#).

Perinatal team culture has also improved, with an enhanced common language and situational monitoring, according to an [independent evaluation of PERIPrem conducted by Health Innovation South West in 2022](#). Staff are empowered to increase their knowledge, skills and confidence in preterm birth and infant care, benefitting from strategically placed cues like posters and magnets to remind staff to deliver elements, protected time, and access to tailored resources and QI support.

### **How has the learning from PERIPrem been shared and spread?**

Resources have been adopted by the British Association of Perinatal Medicine (BAPM) in their [perinatal optimisation pathway](#), Healthcare Improvement Scotland in their [patient safety perinatal change package](#) launched in November 2023, and [PERIPrem Cymru](#) launched in Wales early in 2023. After successful implementation and recognition in several national reports, other health innovation networks are supporting implementation of PERIPrem in the three regions with the highest neonatal mortality rates in England (East Midlands, West Midlands and North East; see National Child Mortality Database evidence submission for context), thereby ensuring equity of access to evidence-based care for the most vulnerable families to help improve survival free from severe preterm brain injury.

We know that complex interventions are context sensitive, and we have learned from PERIPrem Cymru that *adaption* and spread is needed, balancing the needs of the local perinatal communities with the fidelity of the original PERIPrem programme. The PERIPrem programme was built on a collaborative ethos of co-production, involvement and engagement. Lessons from PERIPrem Cymru underscore the importance of local adaptability, while preserving the original programme's integrity.

### **How does PERIPrem align with national best practice and programmes?**

The third update to the Saving Babies' Lives Bundle, published in June 2023, encourages providers of maternity and neonatal care to draw upon the learning of PERIPrem to aid the optimisation of perinatal care (element five). This is shown in this summary diagram. Implementing PERIPrem can assist NHS trusts in accomplishing the Maternity and Neonatal 3 Year Delivery Plan objectives and several essential actions outlined in the Ockenden Final Report.

In April 2022, PERIPrem featured as a case study in the latest NHS GIRFT Neonatology report with teams also being encouraged to access our resources (see pages 10 and 66). PERIPrem case studies were also published by NHS Confederation (April 2022) and the National Child Mortality Database thematic report (pages 21-22 – August 2022).

At the 2021 HSJ Patient Safety Awards, PERIPrem was highly commended as the Patient Safety Pilot of the Year. PERIPrem was also shortlisted for Provider Collaboration of the Year at the 2021 HSJ Awards. In September 2022 PERIPrem was awarded best regional/national project at that year's BAPM Gopi Menon Awards.

PERIPrem and PreCePT were highlighted as areas of good practice in November 2023 paper Quality and reporting of large-scale improvement programmes: a review of maternity initiatives in the English NHS, 2010–2023. Health Improvement Scotland referenced the PERIPrem evaluation

in their patient safety perinatal change package launched in November 2023.

## References

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2. Edwards, Hannah B., Maria Theresa Redaniel, Carlos Sillero-Rejon, Christalla Pithara-McKeown, Ruta Margelyte, Tracey Stone, Tim J. Peters et al. "Quality improvement interventions to increase the uptake of magnesium sulphate in preterm deliveries for the prevention of cerebral palsy (PReCePT study): a cluster randomised controlled trial." *BJOG: An International Journal of Obstetrics & Gynaecology* 131, no. 3 (2024): 256-266.
3. Luyt K on behalf of the PERIPrem steering group. Reducing preterm mortality and brain injury: the PERIPrem (perinatal excellence to reduce injury in premature birth) care pathway [Neonatal-Society-Spring-Meeting-2024-abstract-book.pdf](#) (neonatalsociety.ac.uk)
4. McBain, Hayley, Sam Tuvey, Alessandra Glover Williams, Sally Hedge, Noshin Menzies, Sarah Bates, and Karen Luyt. "Barriers and Enablers to the Implementation of a Perinatal Care Bundle: The Perinatal Excellence to Reduce Injury in Premature Birth (PERIPrem) Project." (2022).
5. McGowan, James, Bothaina Attal, Isla Kuhn, Lisa Hinton, Tim Draycott, Graham P. Martin, and Mary Dixon-Woods. "Quality and reporting of large-scale improvement programmes: a review of maternity initiatives in the English NHS, 2010–2023." *BMJ Quality & Safety* (2023).

6. Redwood, Sabi, Christalla Pithara-McKeown, Tracey Stone, Emma Treloar, Jenny L. Donovan, and Karen Luyt. "Scaling up an intervention to protect preterm infants from neurodevelopmental disabilities—findings from a qualitative process evaluation comparing standard with enhanced quality improvement support packages for maternity units in England." *Implementation Science* 18, no. 1 (2023): 1-11.
7. Williams, Alessandra Glover, Sam Tuvey, Hayley McBain, Noshin Menzies, Sally Hedge, Sarah Bates, and Karen Luyt. "Perinatal excellence to reduce injury in preterm birth (PERIPrem) through quality improvement." *BMJ Open Quality* 11, no. 3 (2022): e001904.

### **More information**

- All PERIPrem resources are freely available at <http://healthinnwest.net/periprem>
- PERIPrem explainer video: <https://vimeo.com/542579599>
- PERIPrem parent stories: <https://vimeo.com/485976065>
- PERIPrem Lauren's story: <https://vimeo.com/610183519>
- PERIPrem [https://twitter.com/peri\\_prem](https://twitter.com/peri_prem)
- PERIPrem Cymru <https://twitter.com/PERIPremCymru>
- BAPM Perinatal Optimisation Pathway <https://www.bapm.org/pages/perinatal-optimisation-pathway>
- Health Innovation West of England <http://healthinnwest.net/>
- Health Innovation South West <https://healthinnovationsouthwest.com>
- South West Neonatal Network (ODN) [www.swneonatalnetwork.co.uk](http://www.swneonatalnetwork.co.uk)
- National Neonatal Audit Programme (NNAP) Summary report on 2022 data <https://www.rcpch.ac.uk/resources/national-neonatal-audit-programme-summary-report-2022-data>

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