

Reducing Hypoxic Ischaemic Encephalopathy at BHRUT: A thematic review & QI project

Ms Ruth-Anna Macqueen, Barking, Havering and Redbridge NHS Trust, London, United Kingdom; *Ms Giulia Petrucci* LEWISHAM AND GREENWICH NHS TRUST, London, United Kingdom, *Ms Tosin Biobaku* Barking, Havering and Redbridge NHS Trust, London, United Kingdom



Introduction

Barking, Havering and Redbridge Trust provides care for the residents of three diverse London boroughs; as well as providing healthcare services to people in south-west Essex. We operate from two main sites - King George Hospital in Goodmayes and Queen’s Hospital in Romford. Inpatient care, including a Consultant Led Unit and Midwifery Led Birth Centre, are provided on the Romford site. We provide maternity care to around 7,250 women each year, making us one of the largest maternity services in the country and the largest single site maternity provider in London. We have a Local Neonatal Unit (LNU) with 32 cots.

Hypoxic ischemic encephalopathy (HIE) is an umbrella term for a brain injury that happens before, during, or shortly after birth when oxygen or blood flow to the brain is reduced or stopped

Objective

A cluster of 7 cases of neonatal HIE were identified between September 2023 and January 2024 at BHRUT. A decision was made to perform a thematic review, which was extended to cover all of 2023. The aim was to identify any common themes, especially those which may have not been identified as part of individual reviews, to enable meaningful and effective actions to reduce the rate of HIE.

Method

The review was designed with both qualitative and quantitative aspects. **Quantitative** data was collected on maternal demographics, gestation at delivery, mode of delivery, maternal and fetal risk factors, onset of labour (where labour had occurred), fetal birth weight and centile, cord blood gas results. Placental histology was reviewed.

Qualitative data in the form of both external and internal investigation reports were analysed thematically. Mixed inductive and deductive coding of qualitative data was performed in MS Word using the SEIPS (Systems Engineering Initiative for Patient Safety) categories as a starting point (external environment, tools and technologies, organisation, internal environment, tasks, and person(s)).

Following the 2023 review, an MDT group met to plan a series of robust actions which were then enacted in the department.

In January 2025 the thematic review was repeated and again a series of actions were generated and embedded. The cycle is planned to continue to repeat annually.

Thus an ongoing iterative process of continuous improvement has been created, based on solid quantitative and qualitative data.

Limitations include thankfully small numbers, and the fact that not all cases were investigated to the same depth (investigation type is based on clinical outcome plus gestation – for example for eligibility for MNSI, plus findings at initial MDT review) so some themes may be missed. Furthermore intrapartum IUDs due to possible HIE were not included in this review as the Trust performs a separate rolling thematic review on perinatal losses.

Results

2023:

- 12 babies of all gestations with HIE (delivery rate 6874): 1.7 per 1000
- 11 term babies with HIE (term deliveries 6434): 1.7 per 1000

2024:

- 11 babies with HIE (delivery rate 7187): 1.5 per 1000
- 8 term babies with HIE: 1.2 per 1000

National data (2021)

- 4.09 per 1000 for all gestations
- 2.39 per 1000 for term babies

Discussion

In 2023, there was a HIE rate of 1.7 per 1000. In 2024 this fell to 1.5 per 1000. The vast majority of the most severe HIE cases were babies exposed to hypoxia during the antenatal as opposed to intrapartum period. The majority of cases had no known fetal or maternal risk factors antenatally.

No clear trends existed between severity of HIE and placental abnormalities on histopathology.

Qualitative themes potentially impacting care included service pressures impacting decision making, access to and quality of interpreting services, obstetric theatre capacity, fetal surveillance in second stage, antenatal CTG interpretation, adapting management plans in the face of evolving clinical contexts, staffing and multiprofessional information sharing.

Conclusion

Early indications show encouraging trends in both quantitative and qualitative data for HIE cases at BHRUT as a result of these analyses and resulting actions.

