Tackling Babies born in the wrong place – An approach to getting it right at Frimley Park Hospital

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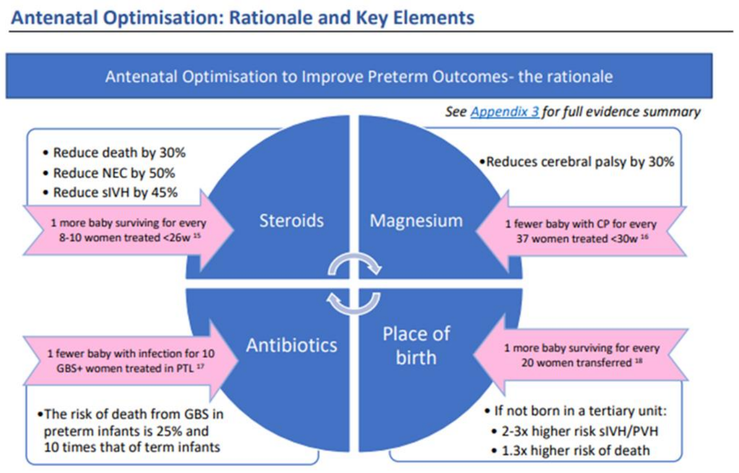
Background

Maternity services have committed to achieving the national target of reducing rates of neonatal stillbirths and brain injuries by 50%. In order to achieve this target, we have recognised the need to reduce preterm birth rates and optimise outcomes for those born prematurely. At Frimley Park Hospital (FPH), we have implemented the PREM7 package of care for these babies, with optimisation of place of birth featuring high on the agenda. Ensuring extremely premature babies are born in a tertiary unit is imperative for optimising outcomes with one more baby surviving for every 20 women transferred and an up to three fold increase in intraventricular and periventricular haemorrhage as well as a 1.3 fold increased risk of death.



Place of Birth		
Objective: Singleton infants less than 27 weeks of gestation, multiples less than 28 weeks of gestation and infants with an estimated fetal weight of less than 800g should be born in a maternity service on the same site as a neonatal intensive care unit (NICU).		
Evidence	**Professional Recommendations**	**Standards and Quality Improvement Initiatives**
Reduced risk of death of extreme preterm infants if birth occurs in a high volume, neonatal intensive care setting [18 83-85] Reduction in mortality is ~50%[84] Reduction in major morbidities of extreme preterm infants if born in a tertiary centre (NEC[86] and PVL[87]) Being born in a non-NICU setting +/- transfer is associated with increased risks of mortality, IVH and severe brain injury in extreme preterm infants [18 88-90]	BAPM[10]: • In utero transfer to facilitate birth of extremely preterm infants in a tertiary centre NHS England[91]: • Infants <27w to be treated in high volume centres with sufficiently expert and experienced staff The Scottish Maternity and Neonatal Services Review[92]: • Develop formal pathways to ensure that clear agreements are in place to treat the highest risk preterm babies in fewer centres, while returning babies to their local area as soon as clinically appropriate	NNAP[1]: 85% of babies less than 27w should be born in a maternity service on the same site as a NICU The European Standards of Care for Newborn Health[93]: Perinatal centralisation of extremely preterm infants with well-organised perinatal networks • MatNeoSIP[2] • Neonatal Critical Care Quality Dashboard[77] • MCQIC-SPSP in Scotland. Preterm Perinatal Wellbeing package[8] • PERIPrem care bundle of the West of England AHSN[7]

Objectives

In 2021, FPH was identified as an outlier for the key performance indicator (KPI): 'babies born in the right place', with only 50% of extremely premature babies being delivered in a tertiary unit, well below the 85% target set out by the National Neonatal Audit Programme (NNAP). The purpose of this project was to review our current in utero transfer pathways and implement changes to achieve a target of at least 85%.

Study design

Retrospective audit followed by prospective quality improvement project

Methods

We performed a retrospective audit of all our babies born in the wrong place in 2021 to identify barriers to transferring babies out. We then performed a further retrospective audit of our in-utero transfers (IUT). This initial audit identified two issues: failure of arranging transfers due to presumed imminent delivery, when in reality, many did not delivery for several hours and failure of our tertiary NNU to accept the transfer. We then implemented the following actions:

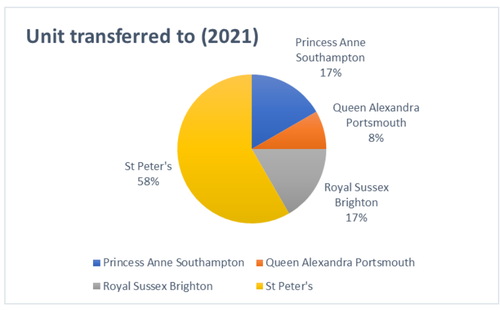
1. **Presentation of findings to consultants and wider department – to improve awareness of time available to transfer babies in utero**
2. **Engaged with local Level 3 NNU obstetric and neonatal leads with support and attendance from FPH Chief of services for Obstetrics and Paediatrics. Identified two issues – poor maternity staffing at unit leading to inability to accept patients. Proposed actions – arrange 'swap of patients' to support transfer and possibility of midwives working 'cross-site' – rejected by midwifery teams due to concerns of unacceptable governance risk.**
3. **Education and introduction of new IUT proforma to all Labour ward co-ordinators to allow earlier IUT and allow prospective collection of data and act as 'prompt' to suggest inter hospital transfer of patients to enable IUT.**
4. **Update of local Preterm Labour guideline to embed culture of IUT for preterm babies**
5. **Education delivered again at joint Educational Half Day with paediatrics to improve awareness of updated guidance**
6. **Prospective audit of in utero transfers**

Results

Our initial audit of 2021 data showed that only 50 % (9/18) of our extremely premature babies were born in the right place. Of those that were successfully transferred, only 58% (7/12) were accepted by our local Level 3 NNU centre, with the remainder being accepted further afield **(figure 1).** Median time to arrange transfer was 2.5 hours. Furthermore, of the babies that were born at FPH, we found that 55% (n=5) of our women were waiting more than 30 minutes after admission for obstetric review (target = 30 minutes) **(figure 2).** We also found that 67% (6/9) were already dilating on initial assessment with 44% (4/9) already fully dilated. Interestingly, we found that only 22% of patients (n=2) actually delivered within one hour, with the majority (67%, n=6) taking 2 hours or more to deliver (including those who were fully dilated). Despite this, an in utero transfer was attempted in only 22% (2/9) of cases. Following these results, we implemented several actions including engaging with clinical leads at our local Level 3 NNU, sharing our learning with the wider department and adapting our Preterm Labour guidance to reflect our change in practice. We also implemented an updated IUT proforma to prospectively capture data regarding all our attempted and successful transfers and act as a 'prompt' to instigate actions such as 'swap of patients' in order to accommodate the transfer.

Following these interventions, we increased the percentage of babies born in the right place to 82% in 2022 (9/11).

Of the two babies that delivered at FPH, both received obstetric review within 30 minutes of arrival (100%) and in both cases (100%), contact with a level 3 NNU was made to attempt transfer **(figure 3).**
Of our successful IUTs in 2022, only 56% (5/9) were accepted by our local NNU centre. Median time taken to arrange transfer remained the same at 2.5 hours (target = to arrange IUT within 30 minutes of obstetric assessment) **(figure 4).**



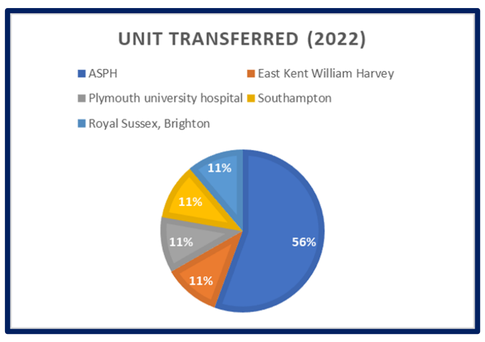
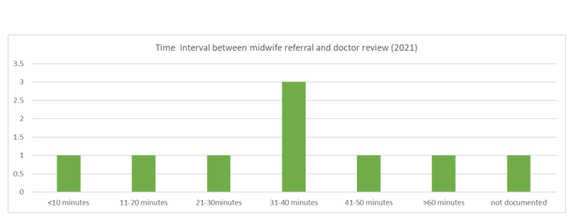


Figure 1. Unit transferred 2021 and 2022



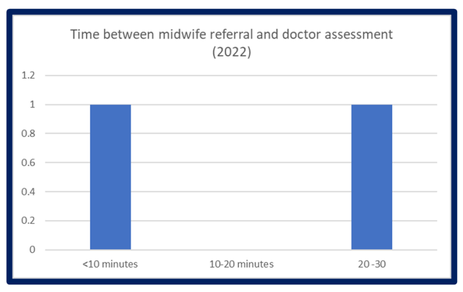
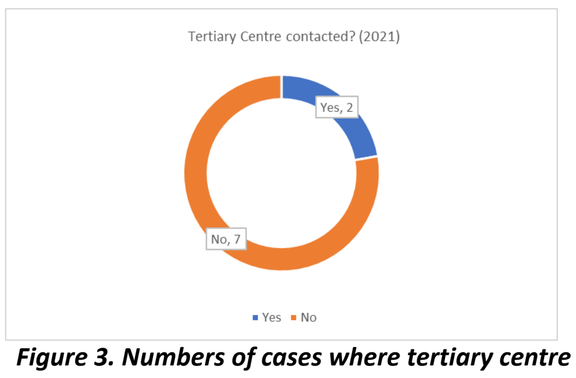


Figure 2. Time interval for Obstetric review 2021 and 2022



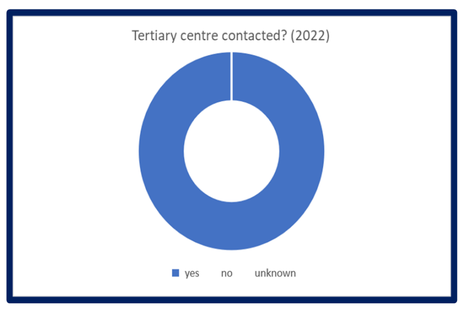
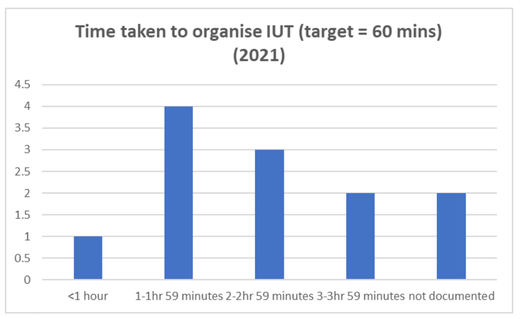


Figure 3. Numbers of cases where tertiary centre contacted 2021 and 2022



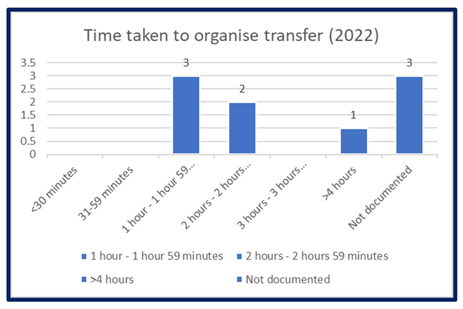


Figure 4. Time taken for IUT transfer 2021 and 2022

Positive findings

- ✓ Rate of babies born in the right place has increased from 50% to 82%
- ✓ Increased rates of assessing/reviewing patient indicating recognition of urgency of situation
- ✓ Evidence of reviewing situation and contacting tertiary NNU in the two cases of babies born at FPH

Key areas for development

- Further work to focus on improving awareness on IUT focus with babies of extreme prematurity and updated guidance of arranging transfer unless membranes at perineum or head crowning
- To liaise further with Service leads on FPH site and ASPH/other tertiary NNU sites to discuss direct pathway referrals to aid IUTs (target = arrange IUT within 30 minutes of assessment)
- To work with Paediatricians to enforce PREM 7 package to those born at FPH to optimise outcomes for extremely premature babies

Conclusions and future developments

Although we have not achieved the national target of 85% transfer rate, we are making progress. We have already implemented a joint Paediatric and Obstetrics Educational Half Day to embed a change of practice of arranging transfer unless the woman presents with membranes at the perineum or a crowning presenting part. Future work will focus on further engagement with Service Leads at our affiliated Level 3 NNUs in order to develop pathways to aid more time-efficient transfer. Wider work will involve a multidisciplinary approach to embedding the PREM 7 package to those born at the extremes of prematurity to optimise outcomes.