# Birthplace: New Evidence, Key Findings and Implications for Maternity Care

## Report of the Presentation of Findings

**Dr Irene Walton**

A meeting was held on 25th November 2011 at the Royal Society of Medicine in London to present the finding of the latest research, part of which is published as 'Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies: the Birthplace in England national prospective cohort study'. BMJ 2011; 343:d7400 (published 24 November 2011).

The meeting was opened by Professor Peter Brocklehurst of the National Perinatal Epidemiology Unit in Oxford. He was followed by colleagues Maggie Redshaw, social scientist, Jennifer Hollowell, epidemiologist, Liz Schroeder, health economist and Rachel Rowe, a health services researcher. Other speakers included Jane Sandall of King's College London, Dr David Richmond, vice president, RCOG, Jacque Gerrard, Director of the Royal College of Midwives Board for England and Mary Newburn of the National Childbirth Trust.

### Background

'Birthplace in England' is a programme of research, funded by the National Institute for Health Research (NIHR) Service Delivery and Organisation (SDO) and the Department of Health Policy Research. It is designed to plug the gaps in existing knowledge regarding the processes, outcomes and funding of various settings for birth in England. The research has used various methodologies.

Since 1990s, government policy has moved away from consultant-led care for women with straight forward pregnancies. In addition the National Service Framework (NSF) for Children, Young People and Maternity Services requires "that every woman should be able to choose the most appropriate place and professional to attend her during childbirth". It also requires that there be options for midwife led units (MLUs) in the community or on the hospital site. In addition the current development of services is *ad hoc* and poorly evaluated.

### Research Evidence

The Birthplace research programme was commissioned in 2007 and found little useful and reliable evidence about the benefits and risks of birth in various settings, including that from Cochrane systematic reviews. They considered that there was little accurate quantifiable evidence and a particular difficulty was that inferences were often made about planned place of birth using actual place of birth. Meanwhile other large observational studies have been published. However difficulties arise because they are reporting from other types of healthcare e.g. Canada and Sweden and so direct comparisons are difficult to make.

The overall aim of the Birthplace in England programme is: *To provide high quality evidence about processes, outcomes and costs associated with different settings in the NHS in England.*

The overarching questions addressed by the research are:

1. How is intrapartum care organised?
2. Are there differences in maternal and child outcomes between the various settings and, in particular, are there any differences in safety for the babies of women at 'low risk' of complications according to current clinical guidelines?
3. What is the comparative cost-effectiveness of the planned settings for birth?
4. What are the features of maternity care systems that affect the quality and safety of care?

### Component studies

The programme of research consisted of six separate component studies. The first five were published at the end of November and the sixth is ongoing; it will compare intrapartum related mortality by planned place of birth at the start of care in labour for 'low risk' birth.

**1. Consensus**

The consensus process built on the existing literature and developed the terms and definitions. Terms for obstetric unit (OU), alongside midwifery unit (AMU) and freestanding maternity unit (FMU) were agreed and used throughout the reports.

**2. Mapping Maternity Units** (2007).

This study involved distributing two questionnaires to trusts and units providing healthcare in England. One was distributed in 2007 (mandatory) and the other in 2010 regarding the plans for change and subsequent changes. It asked questions such as: how and where is intrapartum care organised? What role do MLUs play in the current provision? How will changes in staffing influence the development of different settings? It determined the service configuration systems of care and mapped key drivers for change. It described women's choices, needs, experiences and wellbeing with each type of clinical location. The management and impact of transfer during labour in relation to outcomes for mother and baby was evaluated, as were the clinical

outcomes associated with location including safety for low risk women and their babies and the cost effectiveness of MLUs and consultant-led units. Valid and reliable women-centred indicators and outcome measures were identified for future benchmarking

*Results*

In 2007 152 Trusts (100%) returned the mandatory questionnaire while only 63% returned the 2010 survey. In 2010 35% Trusts had an AMU, 24% had an FMU and 49% had only an obstetric unit. This meant that the overall number of maternity units had increased by 11% from 2007. The workload was concentrated in the obstetric units with 95% of women giving birth in hospital. (2.5% give birth at home)

**Numbers of women delivered in different types of maternity unit in year to March 31, 2007**

| *type of unit* | *FMU* n=56 | *AMU* n=26 | *OU* n=180 |
|---|---|---|---|
| mean | 201 | 738 | 3282 |
| median | 192 | 613 | 3217 |
| range | 8-548 | 93-2860 | 914-6781 |
| **total** | **11261** | **19192** | **590859** |

The bed capacity in England in 2007 was 2,193 delivery beds situated in 293 units, 6.2% in FMUs, 6% in AMUs and 88% in OUs. The staffing for these units was 19,415 midwives, 5,263 midwife support workers and 3,864 doctors. This gave a median ratio of midwives to mothers of 35:1000 in FMUs and 31:1000 women in OUs and AMUs; women could have more support from midwives in free standing units. General practitioner support was patchy and generally low overall.

Intrapartum related services results showed that almost all units had a telephone triage system for early labour. Assessment of women in early labour at home was available in slightly fewer than half of units, with midwife led units more likely to offer this type of care. The majority of units of all types (79%) had a fixed birthing pool though use of these was proportionately far higher in midwife led units. Specialised medical services were more likely to be on site in obstetric units, although it is interesting to note that fewer than half obstetric units had one or more obstetric high dependency beds and 13 OUs had no adult intensive care on site. Where there was no adult and intensive care and neonatal unit on site, the distance to one varied, with the median distance to a neonatal unit being 17 miles.

There were deemed to be gaps in provision in 2007 where there were 4% or more midwife posts vacant or more than 11% midwifery support worker vacancies. This survey reported an ageing workforce, with 21% of midwives aged over 50 years of age (FMUs 26%, 22% OUs, 19% AMUs).

*Recent and Future Changes*

By 2010 there had been a number of changes. 77% of trusts had increased their midwifery establishments but three had reduced midwifery cover. 80% had increased the number of obstetricians and none had reduced the obstetric establishment. 36% of trusts had increased their overall number of obstetric units, 44% their delivery bed capacity, 32% their paediatric cover for delivery suite and theatre. Looking ahead, 57% were planning to increase the number of delivery beds and 66% were planning an increase in the midwifery establishment. However, while 64% had plans to increase the number of consultant obstetricians only 58% were planning to increase obstetric cover.

*Key Messages*

Options for place of birth have improved but a substantial number of women are unlikely to have the full range of choices. Regional differences mean that most women will give birth in hospital. Future planned changes in the NHS include the provision of more AMUs, more beds, more midwives and more consultants. However, it was noted that although there is a marked variation in provision, women's needs are unlikely to fundamentally vary. Staffing levels vary and there is a need for a method of matching staff numbers to care requirements.

### 3. National Prospective Study of Planned Place of Birth: 1st April 2008 – 30th April 2010

This is the major study that examined the risks of planned home births, comparing them against planned deliveries in hospitals and midwife units. It compared planned home births, those planned to be in freestanding midwifery units situated outside a hospital setting (FMU), planned obstetric unit (OU) births and births planned in 'alongside midwifery units' (AMU). It had an 85% completion rate from 74% of participating trusts and there were 79,774 eligible women. After closer scrutiny it was found that only 64,538 women could be classified and included as low risk, the remaining 15236 women had a risk factor at the start of labour.

The aim was to determine:

- The proportion of women in England planning home birth
- The number of women who transfer from to another setting in labour.
- The clinical outcomes associated with planned birth at home in relation to maternal and neonatal morbidity compared to planned birth in FMUs, AMUs and OUs

Also to compare birth outcome for women who plan home birth and deliver at home compared with those who plan home birth and deliver in another setting

*Primary Outcomes*

The research did not have one primary outcome measure – numbers of stillbirths and neonatal deaths were too small for robust statistical comparisons to be made – but the primary outcome was a composite of:

1. Intrapartum stillbirth
2. Early neonatal death
3. Neonatal encephalopathy
4. Meconium aspiration syndrome
5. Specified birth related injuries e.g. brachial plexus injury

(The problem with the composite primary outcomes is that it is not composed of equally serious events. Intrapartum stillbirth and early neonatal death are obviously not comparable to some of the others such as meconium

aspiration. There was widespread disquiet at the RSM day at the inclusion of broken bones in the primary outcome measure. A paediatrician present said that there was just no comparison between a stillbirth and a broken clavicle. The response from the platform was that despite a sample of 10% of the population, numbers of serious adverse events were just too few for statistical analysis unless these 'lesser' outcomes were also included. This showed just how safe birth was for low risk women, whatever the setting).

*Problems*

Analysis showed that 5% of women in the non-OU groups were classified as high risk and should (according to NICE guidelines) have been in obstetric units. Consequently two sets of calculations were done, one including the higher risk women planning to give birth at home and one without.

The four groups of women were not strictly comparable; maternal characteristics varied with planned place of birth, for example in home birth setting only 27% of women were nulliparous whilst in other settings around half the women were having their first baby.

*Incidence of adverse perinatal outcomes*

The incidence of adverse perinatal outcomes was low in all settings with an overall total of 250 events, which equates to 4.3 events per 1000 births. There was no statistical difference in primary outcomes between settings in outcomes for multiparous women.

There was also no significant difference in primary outcomes between settings for nulliparous women However adverse perinatal outcomes were more common in the planned home birth group (9.3 per 1000 against 5.3 per 1000 in OUs) for nulliparous women.

*Positive outcomes for women giving birth at home, in an FMU or AMU*

Such women suffered fewer instrumental and operative deliveries, fewer epidurals and episiotomies, fewer third and fourth degree tears, and required fewer blood transfusions. In addition they were more likely to have normal birth and their babies were more likely to breastfeed. Adverse maternal events were low and not all were significant at 1% level (a more rigorous statistical measure was used to compare secondary outcomes).

*Transfer to hospital*

Transfer rates were over 20% in all three non-OU groups and far higher for nulliparous women (FMU 36%; AMU 40%; 45% home). The most common reasons for transfer from home were failure to progress (33%) followed by meconium staining (12%) and fetal distress (7%). However, transfer for fetal distress was least likely in the home setting (1.9% of all planned home births) and most likely in AMU (2.9% of all planned AMU births). The worst outcomes were associated with medical reasons for transfer. Transfer for maternal reasons were for epidural anaesthesia and midwives' concerns.

*Conclusions*

For low risk women:

- AMUs and FMUs are safe for babies and offer benefits to mothers
- Nulliparous women should be informed of their higher rate of transfer from out of hospital settings
- For multiparous women home birth appears to be safe and offers benefits to both mother and baby
- A lower incidence of interventions has benefits to all women out of hospital
- There should be more research looking at intervention rates in low risk women in hospital which were high
- The service should continue to offer home birth to multiparous and some nulliparous women who are aware of the higher risk
- Expansion of FMU and AMUs would provide choice for low risk nulliparous women.

**4. Cost Effectiveness Analysis Study**

The analysis factored in all associated costs for each setting for intrapartum and immediate post partum care including such resources as the ambulance service. The unadjusted cost of planned births in an obstetric unit was £1631, £1461 in an AMU, £1435 in an FMU and £1067 for a home birth. Non OU settings were more cost effective and even given uncertainty e.g. CNST costs the above results were considered to be valid and showed that planned birth in non-OU settings showed significant cost savings.

Increased home and maternity unit care is potentially cost saving but, there is a higher midwife: woman ratio which may make expansion more costly. Due to differences in sizes, staffing levels and skill mix more information on cost effective models is needed. Strong leadership (midwifery and obstetric) is needed to make services function well alongside each other. Attention is needed to skills training and rotation for midwives and to staffing models in AMU and FMU.

(A further account of cost of care in different birth settings will appear in a future issue of *Midwifery Matters*.)

**5. Qualitative Case Studies**

This part of the Birthplace study concentrated on a qualitative inquiry into women's choices, information and access and found that there were variations in realistic choices and service provision and delivery of safe and high quality care. The studies found that AMUs blurred professional and spatial boundaries and that deployment of community staff was challenging. They recommended that more training needs should be addressed in AMUs. They also found that guidelines were supportive in positive environments, management of complications were a key issue regarding information, knowledge and resources. With regard to women's experiences there is a need for clear and careful communication. There is a need for women to be listened to when they raise concerns and speaking up and not being heard raised negative feelings in the women.

*Intrapartum Transfers*

There is a need to look at women's experiences and discussion is needed between maternity services and ambulance Trusts in order to develop effective transfer protocols. (An account of the presentation of a qualitative study into transfer from MLUs is to be found overleaf.)

**6. (ongoing) Recommendations for Future Research**

1. Avoidable or remedial factors in adverse perinatal outcomes which are specific to birth settings
2. Out of hospital births in women at higher risk

3. Obstetric units (how to reduce interventions for low risk women)
4. Choice and equity
5. Intrapartum transfers – how can they be improved?
6. Broader economic evaluation to include women's positive birth experiences
7. Models of care (team and case load midwifery)

**Data Collection**

There is a need for routine data collection on planned place of birth at start of care in labour to monitor outcomes

**Overall Conclusions**

The researchers concluded that:
The research supports a policy of offering healthy women with low risk pregnancies a choice of birth setting. Women planning birth in a midwifery unit and multiparous women planning birth at home experience fewer interventions than those planning birth in an obstetric unit. For nulliparous women planned home births also have fewer interventions but have poorer perinatal outcomes.

REFERENCES

Brocklehurst, P *et al* Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies: the Birthplace in England national prospective cohort study BMJ 2011; 343:d7400

Hollowell J. Birthplace programme overview: background, component studies and summary of findings. Birthplace in England research programme. Final report part 1. NIHR Service Delivery and Organisation programme; 2011.

Hollowell J, Puddicombe D, Rowe R, Linsell L, Hardy P, Stewart, M, et al. The Birthplace national prospective cohort study: perinatal and maternal outcomes by planned place of birth. Birthplace in England research programme. Final report part 4. NIHR Service Delivery and Organisation programme; 2011.

## Women's experience of transfer in labour

The Birthplace study shows that for all but nulliparous women choosing home, the biggest risk facing women planning out of hospital birth is the possibility of transfer to hospital in active labour. How do women cope with this when it happens? At the launch of the Birthplace study Rachel Rowe gave a taste of her doctoral research into women's experience of transfer during labour, focusing on transfers from midwifery led units. She interviewed 34 women who laboured in 21 different units, using grounded theory methodology, finding themes that emerged out of interviews and coding anticipated and emerging themes. Women told their stories (a chronological narrative in the jargon!)

Rachel presented three of the themes that emerged: how prepared women were for transfer, what the journey was like for them and coming to terms with the transfer after the birth.

*Preparation*

Women had considered the possibility of transfer antenatally, one had chosen the alongside MLU to avoid an ambulance should transfer be necessary, another wanted to be transferred sooner rather than later. Others thought it wouldn't happen to them. Care during labour at the MLU ranged from a few minutes to 12 hours before the transfer. The quality of the interaction with the midwife had been important, with women appreciating clear, factual information. Women were inclined to trust their midwife but trust could be eroded by a cold manner, by anxiety and by panic. Some women requested the transfer, others were disappointed by but accepted the need for it or were resigned to the loss of their ideal birth. For others the decision brought a sense of relief during a prolonged labour.

*Journey*

For most women the journey took 10-20 minutes by ambulance, though one woman travelled 60 miles. The journey was described as a limbo period, the women had not been prepared for the change in environment from the warm caring MLU to the cold and discomfort of the ambulance; they no longer felt cared for – they were being transported, not cared for. Communication dried up, they had unspoken questions which were, of course, unanswered.

At the end of the journey some midwives from the MLU stayed with the woman. This was much appreciated and was seen as the gold standard. Policy seemed to vary from trust to trust, in some midwives were welcomed into hospitals as advocates for the women, some were merely 'allowed' to remain while some women were aware of transport arrangements being made to return 'their' midwife to the MLU.

*Coming to terms*

Women felt the need to debrief but many did not get the opportunity. They often felt guilty, blaming themselves, expressing regrets about their behaviour, however few regretting choosing a MLU – one woman expressed this as needing to "find the positive". Most found something good about the experience although one woman said transfer was "like having a tractor drive through your wedding." Months after the event, one woman still did not understand why she had been transferred, another put it down to a deteriorating relationship with her midwife.

*Care Matters*

Rachel finished her presentation by saying that care matters. Care is fractured by transfer. Women need clear and honest information about transfer rates and timing. They would prefer continuity, the same midwife and, if this is not possible, a good handover is very important. Above all they need to understand why they were transferred. Women go over and over the events of their labours and for women who transfer it is important they are able to make sense of what happened to them.

*Margaret Jowitt*