Large study will help guide women’s choices in where to give birth

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Women with straightforward pregnancies can choose whether they’d like to give birth in a hospital obstetric unit, a midwifery unit or at home, knowing that giving birth is generally very safe.

But there are some important differences between these birth settings in benefits and risks for the mother and baby, the Birthplace in England study has shown.

The findings come from a landmark study of almost 65,000 ‘low risk’ births– the first of its type and scale.

It included nearly 17,000 planned home births and 28,000 planned midwifery unit births.

The Birthplace study addressed the safety, costs and provision of maternity care in England according to where women with ‘low risk’ pregnancies plan to give birth.

It compared women at ‘low risk’ of complications who planned to give birth in hospital obstetric units with those who planned to give birth at home or in midwifery units.

Overall, outcomes for the baby did not appear to differ between the planned places of birth.

However, first-time mothers planning a birth at home had an increase in poor outcomes for the babies compared with first-time mothers planning a birth in an obstetric unit – although poor outcomes were still uncommon in both settings.

There was no increased risk for second and subsequent babies in planned home births.

There was no increase in risk of poor outcomes for babies for mothers planning to give birth in a midwifery unit, whether they were first or subsequent births.

All mothers planning to give birth at home or in a midwifery unit had substantially fewer interventions compared to those planning births in obstetric units.

These include epidurals, assisted deliveries (forceps and vacuum), caesarean sections, and others.

The researchers say the guidance given to women in planning where they want to give birth can now be updated to take account of the study findings.

The Birthplace study was carried out at Oxford University and led by co-investigators from Oxford, UCL (University College London), King’s College London, City University London, NCT, the UK’s largest charity for parents, and the Royal College of Midwives.

**Key findings**

* Giving birth is generally very safe. In straightforward, ‘low-risk’ pregnancies, poor outcomes for babies are uncommon regardless of where mothers plan to give birth.
* Among almost 65,000 ‘low risk’ births, there were 250 births where the baby had a poor outcome.
* That is 4.3 events per 1000 births, so these poor outcomes are rare.
* The adverse outcomes measured in the study included both very serious adverse outcomes, such as death of the baby during or shortly after the birth, but also conditions and injuries that can vary widely in severity.
* First-time mothers planning to have a home birth have an increased risk of poor outcomes for the baby: 9.3 per 1000 births compared with 5.3 per 1000 births in obstetric units.
* The likelihood of a ‘normal’ birth (one without interventions) is reduced for mothers planning births in an obstetric unit.
* Transfers to hospital from other birthplaces are relatively frequent, particularly among first-time mothers where more than a third (36%–45%) of mothers are transferred during labour or immediately after the birth.
* Costs are lower for births planned at home and in midwifery units than in obstetric units.
* The safety, lower costs and fewer interventions seen in midwifery units could see an increase in their number in future, although this might require an increase in midwife numbers.
* There are big differences across the country in the availability of midwifery units, and in the way maternity services are organised and staffed
* 50% of trusts had no midwifery units in 2010, which is likely to have limited the choices available to women about where they would like to give birth.

**The study**

The Birthplace study compared women at low risk of complications at the start of care in labour who planned to give birth in hospital obstetric units, with those who planned to give birth at home or in midwifery units.

Midwifery units were further divided into those that are freestanding (are geographically separate from a hospital obstetric unit) and those that are situated alongside obstetric units (on the same site as an obstetric unit).

Previous studies often looked at where women actually gave birth, meaning that complications that resulted in mothers transferring to hospital during labour were counted as hospital births.

This could potentially skew results, with outcomes for midwifery units and home births reflecting more straightforward births.

Other studies looked at women’s planned place of birth early in pregnancy, meaning that where the woman switched to a hospital birth because of complications identified during pregnancy – such as pre-eclampsia, breech presentation or twins – the outcomes would have been counted with low-risk home or midwifery unit births.

The main part of the study, which is published in the BMJ, looked primarily at outcomes for the babies, and assessed interventions in labour for mothers.

The research team carried out a prospective cohort study, collecting data for 64,538 births between April 2008 and April 2010.

The mothers were all healthy and judged to be at low risk of complications having had straightforward pregnancies.

The study included births from the vast majority of midwifery units and NHS home birth services in England, as well as from a random sample of obstetric units of different sizes and in different parts of the country.

The Birthplace study also looked at the costs of birth in each of the birth settings and mapped variation in maternity service provision across England.

A full report including all sections of the study has gone to the Department of Health, which funded the work.

**Outcomes by planned place of birth**

The researchers found that giving birth is generally very safe.

In straightforward, low-risk pregnancies, poor outcomes for babies are uncommon regardless of where mothers plan to give birth.

There were 250 adverse outcomes for the baby, as counted by the study, among the 64,538 births.

That is 4.3 adverse outcomes per 1000 births (after appropriate statistical weighting).

The researchers used an outcome measure that was designed to bring together a set of individually rare poor outcomes for the baby that might be related to the quality of care received in labour.

The measure included stillbirths during labour and early neonatal deaths, as well as a range of conditions that can vary widely in severity for the baby.

These were conditions associated with trauma at birth, or the baby becoming distressed or being deprived of oxygen during labour.

Overall, there appeared to be no differences in outcomes for the baby between the different planned places of birth.

However, among first-time mothers planning to have a home birth, there was an increase in risk of a poor outcome for the baby.

There were 9.3 poor outcomes in every 1000 planned home births compared with 5.3 per 1000 births planned in obstetric units. So these are still uncommon events.

There was no increased risk for second and subsequent babies in planned home births.

There were differences between the groups of women planning to give birth in the different settings.

For example, those planning births at home were more likely to be older, white, be fluent in English and come from a more advantaged area.

But even after accounting for those differences, the increase in risk for first-time mothers remained statistically significant.

This finding needs to be balanced against benefits for the mother.

In total, 90% of mothers who planned home births had ‘normal births’, having substantially fewer assisted deliveries, Caesarean sections and other common interventions – all of which have some associated risk.

That is compared to under 60% of mothers who planned obstetric unit births.

Again, these benefits remained after accounting for differences between the groups of women and for any extra complications at the start of labour among the mothers who planned obstetric unit births.

Midwifery units appeared to be safe for the baby and also to offer benefits for the mother.

Mothers planning births in midwifery units saw no differences in adverse outcomes for babies compared with mothers planning births in obstetric units.

Again, there were many more ‘normal births’ compared with obstetric units, at 76% for planned births at midwifery units attached to hospitals and 83% for free-standing midwifery units.

The researchers say that first-time mothers coming up to their due date who have plans to give birth at home should feel able to discuss these findings with their midwife.

They say that there is no need for first-time mothers to change their plans as a result of these findings, unless they wish to do so or their clinical condition changes.

The team also found that transfers to hospital from midwifery units or home births during or immediately after labour were relatively frequent, particularly among first-time mothers.

Overall, between 21% and 26% of mothers planning birth outside obstetric units were transferred to hospital.

For first-time mothers it was between 36% and 45%. For subsequent babies the rates were between 9% and 13%.

The fact that women can be transferred if they need more care is one of the reasons why planned home and midwifery unit births are as safe as they are, but women need to be aware of the likelihood of transfer so that they can make informed decisions.

Obstetric units will remain an important part of maternity care even if the number of births increase at midwifery units and at home.

The researchers say their findings generally would support a policy of offering choice of place of birth to healthy women with straightforward pregnancies.

The study did not look at the avoidability of adverse outcomes in different settings, any effect of staffing levels or the configuration of maternity services, or provide detailed analysis of transfers.

**Costs of different planned places of birth**

The Birthplace investigators assessed the costs associated with care during labour, birth and the immediate period after birth.

These cost estimates suggest a saving for all births planned outside hospital obstetric units.

A birth planned at home is £310 cheaper than an obstetric unit on average, while one planned for a midwifery unit is around £130 cheaper.

These savings might come as a surprise, as it may have been assumed that the extra midwives needed for births outside of obstetric units would make them more expensive.

However this does not outweigh the costs of the additional interventions (such as caesarean section) and overheads in obstetric units.

The evidence provided by the study about the safety of midwifery units, the fewer interventions for mothers and the cost savings, may provide the impetus to develop more of these units, the researchers say.

But obstetric units will remain at the centre of services for complicated births and for transfers from other settings.

They note that the higher midwife-to-birth ratio in these settings would require an increase in midwife numbers when there are currently shortages.

**Mapping England’s maternity services**

An aim for maternity services is that all women and their partners should be able to choose where they plan to give birth while receiving high-quality care.

Increasing birth rates, coupled with people having babies later in life and a rise in more complicated pregnancies, are having an impact on maternity services and those providing care.

The researchers looked at the way maternity care is organised across England using a 2007 Healthcare Commission survey of all NHS trusts providing maternity care, along with further data collected in 2010 for the Birthplace study.

The picture the study paints is of maternity services that vary significantly in their configuration, whether for reasons of history, population density or geography.

Two-thirds of trusts in 2007 had no midwifery units, which is likely to have limited the choices available to women about where they would like to give birth.

Data from 2010 suggests the situation has changed, with more midwifery units opening up alongside obstetric units.

The proportion of trusts without midwifery units has dropped from 66% in 2007 to 50% in 2010.

There were marked differences in the availability of midwifery units in different geographical areas.

A greater proportion of trusts in the South-West and East Midlands were able to offer midwifery units than in the North-West, Yorkshire and Humberside, and London Strategic Health Authorities.

Most women – more than 90% in 2007 – continued to give birth in obstetric units.

The number of home births is relatively small at around 2.8%, though there were marked differences between trusts.

Although midwifery units were small in the number of births they saw in comparison to obstetric units, both varied widely in size.

For example the median number of births for obstetric units in 2007 was 3217, but over a quarter saw fewer than 2500 births while another quarter saw more than 4000 women.

There was also wide variation between units in the number of delivery beds and their ‘occupancy’ – the number of women giving birth per bed.

The results of this mapping study have been recently published in the journal Evidence Based Midwifery.

**Examples of maternity service provision**

The study does not provide any quantitative data to address the different ways of organising service provision and any association with quality of care.

But it did look at four different trusts as case studies to gather additional evidence.

The team found that many women were not aware that a choice of birthplace was possible, with a lack of good information on which to base those choices.

While there were good examples of services and information provided to women, choice of place of birth was more readily offered to more privileged women who had greater access to information and more confidence in asking for what they wanted.

There was considerable variation in service provision, not just between sites but within them as well.

Good practice was continually challenged by staffing levels, and effective deployment of midwifery staff was a key challenge for managers.

The study team believes that an easily applied method is needed to plan appropriate staffing and match staff numbers to care requirements for all the maternity workforce.

The researchers note that a ‘hub and spoke’ model, where an obstetric unit serves a number of freestanding midwifery units, worked well in one trust where it had been long established.

This enabled a full range of birth settings while maintaining good care.

Midwives rotated between the different units and the community, keeping up their full range of skills.

The report found that women valued being given a choice, but equally wanted sensitive care and support.

Continuity of care was important to many, and women often cited worries about the distance to the hospital in case of a transfer as a reason for planning birth in a hospital setting.

**Comments from the co-investigators**

Peter Brocklehurst, who led the study at the National Perinatal Epidemiology Unit at the University of Oxford, though he has since moved to UCL, says: ‘These results should reassure pregnant women planning their birth that they can make informed decisions about where they’d most like the birth to happen, knowing that giving birth in England is generally very safe.

There is an increase in risk for first-time mums planning home births, but poor outcomes for the baby are still uncommon.’

Jane Sandall, Professor of Social Science and Women's Health at King’s College London, says: ‘These findings show that women who planned birth in midwifery-led units experienced fewer interventions with no increased risk to the baby.

This was also the case for women having their subsequent babies at home.

These findings provide good evidence for women to make the best, informed choices for their own circumstances and preferences.’

Mary Newburn, Head of Research and Information at NCT, the UK’s largest charity for parents, said: ‘Expectant parents need support to make plans about where to have their baby, which feel right for them.

Every woman wants her baby to be healthy and have a good start in life, and she needs to feel safe herself.

But different settings appeal to different people. Women will think about this new information in the context of their own lives, their personal circumstances and values.

The Birthplace results should mean more birth centres are opened, creating positive choices for many more women.’

Christine McCourt of City University London says: ‘These findings support the policy of choice for women in terms of birth setting and will enhance the information available to women in making choices.

‘The study also indicated areas of service provision that need to be addressed in order to support safety and quality of care for women across the maternity care system, as well as full and equitable access to the range of maternity care options.

The economic analysis also provides valuable information to support service planning and improvement by managers and commissioners of care. ’

Alison Macfarlane of City University London says: ‘Having worked on this subject for many years, the results of Birthplace come as no surprise to me, as the results of many smaller studies done in recent decades have pointed in the same direction.

Where Birthplace is different and long overdue is that, unlike earlier studies, it has a large enough sample size and sufficient rigour in its design to enable robust conclusions to be drawn.’

Louise Silverton, deputy general secretary of the Royal College of Midwives, said: ‘This clear evidence of the safety and cost effectiveness of midwifery led care is great news.

Commissioners of maternity services must now look at this study and take action to encourage those women likely to have a straightforward birth to consider midwifery led care.

This is a way both to save money and to provide a family friendly environment for birth.

In addition, there need to be sufficient midwives to support women in exercising their choice and in providing continuity of care including one to one care in labour.’

Neil Marlow, professor of neonatal medicine at UCL says: 'For the first time in a study such as this, we have made full ascertainment of problems for the baby that might develop during delivery to determine the sizes of populations we needed to study.

This gives women the information to be confident in their choice of birth setting and to understand the likely risks for their newborn baby.'

**For more information please contact the University of Oxford press office on 01865 280530 or** [**press.office@admin.ox.ac.uk**](mailto:press.office@admin.ox.ac.uk)

**Case studies are available from NCT on request. Please contact Rebecca Barclay, media relations officer at NCT on 020 8752 2412 or** [**r\_barclay@nct.org.uk**](mailto:r_barclay@nct.org.uk%20)

**Notes for editors**

* A ‘frequently asked questions’ document on the study and its findings is available from the University of Oxford press office.
* The paper ‘The Birthplace in England national prospective cohort study: perinatal and maternal outcomes by planned place of birth in “low-risk” women’ by The Birthplace in England Collaborative Group is to be published in the BMJ on Friday 25 November 2011
* The BMJ is also issuing a press release on this paper. Both the paper and the BMJ release are available from the University of Oxford press office.
* The Birthplace in England study is funded by the Department of Health and the National Institute of Health Research. The funders had no role in the design, analysis or interpretation of the data.
* This report combines the Evaluation of Maternity Units in England study funded in 2006 by the National Institute for Health Research Service Delivery and Organisation (NIHR SDO) programme, and the Birth at Home in England study funded in 2007 by the Department of Health Policy Research Programme (DH PRP). The views and opinions expressed by the authors do not necessarily reflect those of the NHS, NIHR, NIHR SDO, DH PRP or the Department of Health.
* **The National Institute for Health Research Service Delivery and Organisation (NIHR SDO)** programme was established in 1999. It aims to improve health outcomes for people by commissioning research evidence that improves practice in relation to the organisation and delivery of healthcare. It also builds research capability and capacity to carry out research amongst those who manage, organise and deliver services, and improves their understanding of the research literature and how to use research evidence. The goal of the programme is to identify, prioritise and refine the research needs of the NHS management community. The programme commissions research that will be of great value in shaping and contributing to decision-making and in promoting the more effective use of research evidence by NHS managers.  
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