Birthplace in England
Collaborative Group Studies

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on behalf of the Birthplace Collaborative Group

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Birthplace Collaborating Group

Birthplace was designed by the multi-disciplinary collaborative group of maternity care researchers, health professionals and service users listed below. This group is responsible for the design and governance of the Birthplace programme.

- Professor Peter Brocklehurst, Professor of Perinatal Epidemiology, NPEU, University of Oxford
- Professor Alison Macfarlane, Professor of Perinatal Health, City University London
- Professor Neil Marlow, Professor of Neonatal Medicine, University College London
- Professor Rona McCandlish, Midwifery Professional Advisor, Chief Nursing Officer's Professional Leadership Team, Department of Health (on secondment from NPEU from February 2009)
- Professor Christine McCourt, Professor of Maternal and Child Health, City University London
- Alison Miller, Programme Director and Midwifery Lead, CMACE
- Mary Newburn, Head of Research and Information, NCT
- Professor Stavros Petrou, Professor of Health Economics, University of Warwick
- Dr Maggie Redshaw, Social Scientist, NPEU, University of Oxford
- Professor Jane Sandall, Professor of Women's Health, King's College, London
- Louise Silverton, Deputy General Secretary, Royal College of Midwives
# Having a baby in England 2012

- About 680,000 births, 99% women give birth in NHS and 1% in private sector
- 40% of deliveries were conducted by hospital doctors and 60% by midwives
- In 2012 21,249 midwives FTE (5,000 in training) and 1,570 consultants and 2,635 registrars, plus Drs in training

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSR</td>
<td>24.8</td>
</tr>
<tr>
<td>Elective</td>
<td>10.1</td>
</tr>
<tr>
<td>Emergency</td>
<td>14.8</td>
</tr>
<tr>
<td>Instrumental</td>
<td>12.5</td>
</tr>
<tr>
<td>Forceps</td>
<td>6.3</td>
</tr>
<tr>
<td>Ventouse</td>
<td>6.2</td>
</tr>
<tr>
<td>Induction</td>
<td>21.3</td>
</tr>
</tbody>
</table>
Where do women give birth in England?

Freestanding Midwife Unit (59) 2%  Geographically separate from Obstetric Unit

Alongside Midwife Unit (53) 3%  co-located on same site as obstetric unit

Obstetric Unit (177) 92%

Home 3%
Current policy and evidence

• A lack of accurate quantification of the risk of adverse outcomes associated with births planned in different settings

• Interpreting available evidence has been difficult because actual place of birth has often been used to make inferences about planned place of birth

‘Every woman should be able to choose the most appropriate place and professional to attend her during childbirth based on her wishes and cultural preferences and any medical and obstetric needs she and her baby may have’

‘…options for midwife-led care will include midwife-led units in the community or on a hospital site’ and that care was to be provided in a ‘…framework which enables easy and early transfer of women and babies who unexpectedly require specialist care’
Birthplace in England Research Programme

Aim
To provide high quality evidence about processes, outcomes and costs associated with different settings for birth in the NHS in England

Component studies
- Mapping survey of NHS Providers in England
- Prospective cohort study
- Cost-effectiveness study
- Case studies
Primary objective

– to compare intrapartum and early neonatal mortality and morbidity
– by planned place of birth at the start of care in labour
– in women judged to be at ‘low risk’ of complications according to current national clinical guidelines
National prospective cohort study of planned place of birth

Sample
• England: all NHS trusts providing intrapartum care at home, all freestanding midwifery units, all alongside midwifery units, and a stratified random sample of obstetric units (n=142)

Participants (64,538 ‘low risk’ women in total)
• Women with a singleton, term (>=37 weeks gestation), and received antenatal care (April 2008-April 2010). Planned caesarean sections, caesarean sections and unplanned home births before the onset of labour were excluded
  – ~20,000 planned OU births
  – ~17,000 planned home births
  – ~11,000 planned FMU births
  – ~17,000 planned AMU births

Comparison groups
• Planned place of birth at the start of care in labour for low risk women at home, freestanding midwifery units, alongside midwifery units, and obstetric units

Analyses adjusted for maternal age, ethnicity, understanding of English, marital/partner status, Body Mass Index (BMI), area deprivation, parity and gestation
Are there differences between planned birth settings in outcomes for the baby?
Complicating conditions at start of care in labour

- Higher prevalence of complicating conditions recorded at the start of care in labour suggested possible differences in the risk profile of the groups

- Conducted additional analyses restricted to women without complicating conditions at start of care in labour
Adverse perinatal outcomes

• 250 primary composite outcome events
  – 13% intrapartum stillbirth or early neonatal death (n=32)
  – 46% neonatal encephalopathy
  – 30% meconium aspiration
  – 12% shoulder injuries

• 4.3 adverse perinatal outcome events per 1000 births
• Nulliparous women: 5.3 events per 1000 births
• Multiparous women: 3.1 events per 1000 births
<table>
<thead>
<tr>
<th>Place of Birth</th>
<th>Adverse outcomes per 1000 births</th>
<th>Adjusted odds ratio</th>
<th>(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All ‘low risk’ women</td>
<td>4.3</td>
<td></td>
<td>(3.3-5.5)</td>
</tr>
<tr>
<td>Obstetric unit</td>
<td>4.4</td>
<td>1</td>
<td>(3.2-5.9)</td>
</tr>
<tr>
<td>Home</td>
<td>4.2</td>
<td>1.16</td>
<td>(3.2-5.4)</td>
</tr>
<tr>
<td>Freestanding</td>
<td>3.5</td>
<td>0.92</td>
<td>(2.5-4.9)</td>
</tr>
<tr>
<td>Midwife unit</td>
<td>3.5</td>
<td>0.92</td>
<td>(2.5-4.9)</td>
</tr>
<tr>
<td>Alongside midwife unit</td>
<td>3.6</td>
<td>0.92</td>
<td>(2.6-4.9)</td>
</tr>
</tbody>
</table>
### Perinatal outcome by parity

#### Adverse outcomes per 1000 births

<table>
<thead>
<tr>
<th></th>
<th>n/1000</th>
<th>(95 CI)</th>
<th>Odds ratio</th>
<th>(95 CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nulliparous women</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5.3</td>
<td>(4.0-7.0)</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Obstetric unit</td>
<td>5.3</td>
<td>(3.9-7.3)</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Home</td>
<td>9.3</td>
<td>(6.5-13.1)</td>
<td>1.75</td>
<td>(1.07-2.86)</td>
</tr>
<tr>
<td>Freestanding midwife unit</td>
<td>4.5</td>
<td>(2.8-7.1)</td>
<td>0.91</td>
<td>(0.52-1.60)</td>
</tr>
<tr>
<td>Alongside midwife unit</td>
<td>4.7</td>
<td>(3.1-7.2)</td>
<td>0.96</td>
<td>(0.58-1.61)</td>
</tr>
<tr>
<td><strong>Total</strong> (27,669)</td>
<td></td>
<td></td>
<td>2.4</td>
<td>(1.4-4.3)</td>
</tr>
<tr>
<td>Multiparous women</td>
<td>3.1</td>
<td>(2.2-4.5)</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Obstetric unit</td>
<td>3.3</td>
<td>(2.2-5.0)</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Home</td>
<td>2.3</td>
<td>(1.6-3.2)</td>
<td>0.72</td>
<td>(0.41-1.27)</td>
</tr>
<tr>
<td>Freestanding midwife unit</td>
<td>2.7</td>
<td>(1.6-4.6)</td>
<td>0.91</td>
<td>(0.46-1.80)</td>
</tr>
<tr>
<td>Alongside midwife unit</td>
<td>2.4</td>
<td>(1.4-4.3)</td>
<td>0.81</td>
<td>(0.40-1.62)</td>
</tr>
<tr>
<td><strong>Total</strong> (34,367)</td>
<td></td>
<td></td>
<td>2.4</td>
<td>(1.4-4.3)</td>
</tr>
</tbody>
</table>
Perinatal outcome for babies of ‘low risk’ women by planned place of birth

• For ‘low risk women’, the incidence of adverse perinatal outcomes is low in all birth settings
  – 4.3 adverse perinatal outcome events per 1000 births

• For multiparous ‘low’ risk women there are no differences in adverse perinatal outcomes between settings

• The risk of an adverse perinatal outcome appears to be higher for nulliparous women who plan to give birth at home (9.3 primary outcome events per 1000 births vs. 5.3 per 1000 births in an obstetric unit)
How does planned birth in different settings affect intrapartum interventions and other maternal outcomes?
Secondary maternal outcomes

• Mode of birth

• Maternal morbidity and mortality

• Interventions during labour and birth
  – Forceps delivery
  – Intrapartum caesarean section
  – ‘Normal birth’*

* Normal birth is defined as birth without any of the following interventions: induction of labour, epidural or spinal analgesia, general anaesthetic, forceps or ventouse, caesarean section or episiotomy
Maternal outcomes by planned place of birth, percentages of women

<table>
<thead>
<tr>
<th></th>
<th>Home</th>
<th>Obstetric Unit</th>
<th>Alongside midwife unit</th>
<th>Freestanding midwife unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrapartum CS</td>
<td>2.8</td>
<td>11.1</td>
<td>4.4</td>
<td>3.5</td>
</tr>
<tr>
<td>Forceps</td>
<td>2.1</td>
<td>6.8</td>
<td>4.7</td>
<td>2.9</td>
</tr>
<tr>
<td>Syntocinon</td>
<td>5.4</td>
<td>23.5</td>
<td>10.3</td>
<td>7.1</td>
</tr>
<tr>
<td>Normal birth</td>
<td>87.9</td>
<td>57.6</td>
<td>76.0</td>
<td>83.3</td>
</tr>
<tr>
<td>Immersion in water</td>
<td>33.3</td>
<td>9.1</td>
<td>30.2</td>
<td>45.7</td>
</tr>
</tbody>
</table>
How often are women who plan birth in non-obstetric settings transferred during labour or immediately after the birth?
## Transfers during labour or immediately after birth by parity

<table>
<thead>
<tr>
<th></th>
<th>Home</th>
<th>Freestanding midwife unit</th>
<th>Alongside midwife unit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All women</strong></td>
<td>21.0</td>
<td>22.0</td>
<td>26.0</td>
</tr>
<tr>
<td><strong>Nulliparous women</strong></td>
<td>45.0</td>
<td>36.3</td>
<td>40.2</td>
</tr>
<tr>
<td><strong>Multiparous women</strong></td>
<td>12.0</td>
<td>9.4</td>
<td>12.5</td>
</tr>
</tbody>
</table>
## Most common reasons for transfer (%)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Home</th>
<th>Freestanding midwife unit</th>
<th>Alongside midwife unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to progress in 1&lt;sup&gt;st&lt;/sup&gt; stage</td>
<td>4.5</td>
<td>4.8</td>
<td>5.1</td>
</tr>
<tr>
<td>Failure to progress in 2&lt;sup&gt;nd&lt;/sup&gt; stage</td>
<td>2.3</td>
<td>3.3</td>
<td>4.1</td>
</tr>
<tr>
<td>Fetal distress</td>
<td>1.5</td>
<td>2.3</td>
<td>2.9</td>
</tr>
<tr>
<td>Epidural request</td>
<td>1.1</td>
<td>1.4</td>
<td>3.5</td>
</tr>
<tr>
<td>Meconium staining</td>
<td>2.6</td>
<td>2.7</td>
<td>3.2</td>
</tr>
<tr>
<td>Retained placenta</td>
<td>1.5</td>
<td>1.6</td>
<td>1.2</td>
</tr>
<tr>
<td>Repair of perineal trauma</td>
<td>2.3</td>
<td>1.6</td>
<td>2.2</td>
</tr>
</tbody>
</table>
Women’s experiences of transfer

Concerns around transfer distance meant that many women did not feel they had any realistic choice of place of birth especially for women living in more rural areas.

- Most women were prepared for the unpredictability of childbirth, some were not expecting transfer.
- Some women found transfer worrying, disempowering or disappointing.
- Careful explanation of events by professionals had a positive effect on women & partners’ experiences of escalation and transfer.
- Women and families found it easier to express concerns and were paid attention to, when they had a relationship with the health professional.

Conclusion prospective study

Perinatal outcome

• For ‘low risk women’, the incidence of adverse perinatal outcomes is low in all birth settings at 4.3 adverse perinatal outcome events per 1000 births.
• For multiparous ‘low’ risk women there are no differences in adverse perinatal outcomes between planned place of birth settings.
• The risk of an adverse perinatal outcome appears to be higher for ‘low risk’ nulliparous women who plan to give birth at home.
• There are no differences in risk of adverse perinatal outcome for nulliparous women who plan to give birth in freestanding, alongside and obstetric units.

Maternal outcome

• All ‘Low risk’ women planning birth at home, in a freestanding or alongside midwifery unit experience fewer interventions than those planning birth in an obstetric unit.
• Intrapartum transfer rates are high (36-45%) for nulliparous women.
Economic analysis

Total costs captured

- all resource use and the unit costs of intrapartum care and immediate postnatal period after birth, including any higher level care for the mother or baby
- all costs allocated to planned place of birth

£1631 for a planned birth in an obstetric unit
£1461 for a planned birth in an alongside midwifery unit (AMU)
£1435 for a planned birth in a freestanding midwifery unit (FMU)
£1067 for a planned home birth

Implications for practice

• Guidance to women on planned place of birth should be updated with more accurate information about maternal and perinatal outcomes and transfer rates.

• Reduce variation in out of hours cover, training, experience and professional support for midwives and transport arrangements for home birth provision.

• Need to address higher intervention rates in obstetric units and low rates of normal birth.

• Expansion of midwife-unit provision.

• Audit and review of intra-partum transfers and management.
Issues that Birthplace is not able to address

- Variation between trusts; regions; different models of service provision for home birth services, FMUs and AMUs
- Health economics are limited to intrapartum care and the post-partum period
- We do not know why planned home birth for women having their first baby appears to be more risky
Implications for further research

• What are the aspects of clinical care and service delivery associated with poorer intrapartum outcomes and what are potentially modifiable?

• How can the frequency of interventions be reduced for low risk women planning birth in obstetric units?

• To what extent do socially disadvantaged women have reduced access to choice of birth setting, and what strategies might improve equity?

• How can the experience of intrapartum transfer be better managed and the experience improved for women and partners?

• How to improve ongoing assessment of complications and early detection and referral in late pregnancy and early labour.

• Do models of care (team and caseload midwifery) that provide continuity across settings improve quality and safety of care?
Acknowledgements

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http://www.kcl.ac.uk/schools/medicine/research/wh/
Further Information

NHS Choices

Full reports
Health Services and Delivery Research Programme
http://www.netscc.ac.uk/hsdr/projdetails.php?ref=08-1604-140

The Birthplace in England Research Programme (Birthplace)
www.npeu.ox.ac.uk/birthplace
National Perinatal Epidemiology Unit
University of Oxford