How can the UK inform the growth of primary birthing units in New Zealand?

Professor Jane Sandall
King’s College, London
‘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’

Where did women give birth in England?

Freestanding Midwife Unit (59)
Geographically separate from Obstetric Unit

2%

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

3%

Obstetric Unit (177)

92%

In 2012, 670,627 births,
21,249 midwives
FTE and 1,570
consultants and
2,635 registrars,
plus Drs in
training

Home

3%

NICE criteria

- Medical conditions
- Previous obstetric complications
- Current obstetric complications
- Fetal indications
- Previous gynae history
- Individual assessment
What was known before

- 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*

- Birthplace in England
- 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
Objective
Compared the safety of births planned in four settings at the start of face to face care in labour for 'low risk' women

Design
• Prospective cohort study

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

Participants (64,538 ‘low risk’ women in total)
• Women with a singleton, term (≥37 weeks gestation), and received antenatal care. Planned caesarean sections, caesarean sections and unplanned home births before the onset of labour were excluded

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?
Adverse perinatal outcomes

- 250 primary 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
# Adverse perinatal outcome by planned place of birth – All women

<table>
<thead>
<tr>
<th></th>
<th>Adverse outcomes per 1000 births</th>
<th>Adjusted odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/1000</td>
<td>(95% CI)</td>
</tr>
<tr>
<td><strong>All ‘low risk’ women</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstetric unit</td>
<td>4.4</td>
<td>(3.2-5.9)</td>
</tr>
<tr>
<td>Home</td>
<td>4.2</td>
<td>(3.2-5.4)</td>
</tr>
<tr>
<td>Freestanding</td>
<td>3.5</td>
<td>(2.5-4.9)</td>
</tr>
<tr>
<td>Midwife unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alongside midwife unit</td>
<td>3.6</td>
<td>(2.6-4.9)</td>
</tr>
</tbody>
</table>
## Perinatal outcome by parity

<table>
<thead>
<tr>
<th></th>
<th>Adverse outcomes per 1000 births</th>
<th>Adjusted odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/1000</td>
<td>(95 CI)</td>
</tr>
<tr>
<td><strong>Nulliparous women</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstetric unit</td>
<td>5.3</td>
<td>(4.0-7.0)</td>
</tr>
<tr>
<td>Home</td>
<td>9.3</td>
<td>(6.5-13.1)</td>
</tr>
<tr>
<td>Freestanding midwife unit</td>
<td>4.5</td>
<td>(2.8-7.1)</td>
</tr>
<tr>
<td>Alongside</td>
<td>4.7</td>
<td>(3.1-7.2)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>(27,669)</td>
<td></td>
</tr>
<tr>
<td><strong>Multiparous women</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstetric unit</td>
<td>3.3</td>
<td>(2.2-5.0)</td>
</tr>
<tr>
<td>Home</td>
<td>2.3</td>
<td>(1.6-3.2)</td>
</tr>
<tr>
<td>Freestanding midwife unit</td>
<td>2.7</td>
<td>(1.6-4.6)</td>
</tr>
<tr>
<td>Alongside</td>
<td>2.4</td>
<td>(1.4-4.3)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>(34,367)</td>
<td></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
<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>Percentage transferred</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Home</td>
<td>Freestanding midwife unit</td>
<td>Alongside midwife unit</td>
<td></td>
</tr>
<tr>
<td>All women</td>
<td>21.0</td>
<td>22.0</td>
<td>26.0</td>
<td></td>
</tr>
<tr>
<td>Nulliparous women</td>
<td>45.0</td>
<td>36.3</td>
<td>40.2</td>
<td></td>
</tr>
<tr>
<td>Multiparous women</td>
<td>12.0</td>
<td>9.4</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>Reason</td>
<td>Home</td>
<td>Freestanding midwife unit</td>
<td>Alongside midwife unit</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>------</td>
<td>---------------------------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td>Failure to progress in 1st stage</td>
<td>4.5</td>
<td>4.8</td>
<td>5.1</td>
<td></td>
</tr>
<tr>
<td>Failure to progress in 2nd stage</td>
<td>2.3</td>
<td>3.3</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>Fetal distress</td>
<td>1.5</td>
<td>2.3</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>Epidural request</td>
<td>1.1</td>
<td>1.4</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>Meconium staining</td>
<td>2.6</td>
<td>2.7</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Retained placenta</td>
<td>1.5</td>
<td>1.6</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Repair of perineal trauma</td>
<td>2.3</td>
<td>1.6</td>
<td>2.2</td>
<td></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. Travel distance to OUs was a concern for women living in more rural areas.

- Some women were prepared for the unpredictability of childbirth, others 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.
- Some women described difficulty in being listened to by staff when they raised concerns about complications they had noticed themselves.
- Not being listened to resulted in frustration, self-blame or anger.
- Good relationships with health professionals facilitated women to express concerns, and staff to respond.

• 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 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 OU). No differences for those planning birth in FMU or AMU.

• All women planning birth in a freestanding or alongside midwifery unit, and multiparous women planning birth at home experience fewer interventions than those planning birth in an obstetric unit, with no impact on perinatal outcomes.
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 practice

• Guidance to women on planned place of birth should be updated with more accurate information about maternal and perinatal outcomes and transfer rates. NICE guidance updated 2014.

• Expansion of midwife-unit provision.
  • Most births (87 per cent in 2012) take place in obstetric units, with 11 per cent in midwife-led units and 2.4 per cent at home (National Audit Office 2013).
  • The number of obstetric units in England has fallen slightly from 180 in 2007 to 177 in 2010.
  • 152 midwifery-led units in June 2013, an increase from 87 in April 2007. 79 per cent of women are within a 30-minute drive of both an obstetric unit and a midwifery-led unit, compared with 59 per cent in 2007.
  • In 2007, the annual number of deliveries in a midwife-led birthing unit ranged from 8 to 548; for an alongside midwifery-led unit, it ranged from 93 to 2,860; and for deliveries in obstetric units, it ranged from 914 to 6,781.
BirthPlace & Place

Birth place decisions

Information for women and partners on planning where to give birth

Where can I give birth?

What birth settings might be suitable for me?

Who can I ask for help?

Where can I find out more?

What if I change my mind about where to give birth?

What's available near me?

Planned place of birth: outcomes for babies of healthy women at low risk of complications

Birth is generally very safe for women at low risk of complications and their babies. These diagrams show outcomes for babies when birth is planned in different settings. In each case, the green circles represent a baby born healthy, and the blue circles represent a baby with a poor outcome, meaning that the baby was injured, seriously ill or died during or just after birth. These outcomes are very rare amongst healthy women who are at low risk of complications, but they can happen in any birth setting. For women expecting their first baby, a poor outcome, whilst still uncommon, is more likely for planned home births.

First Baby
- Birth planned in Obstetric Unit
  - 995 babies born healthy
  - 2 babies born with complications
  - 3 babies born unhealthy

Second, third or fourth baby
- Birth planned in Obstetric Unit
  - 995 babies born healthy
  - 2 babies born with complications
  - 3 babies born unhealthy

- Birth planned in alongside midwifery unit (AMU)
  - 996 babies born healthy
  - 1 baby born with complications
  - 3 babies born unhealthy

- Birth planned in freestanding midwifery unit (FMU)
  - 996 babies born healthy
  - 1 baby born with complications
  - 3 babies born unhealthy

- Birth planned at home
  - 991 babies born healthy
  - 4 babies born with complications
  - 3 babies born unhealthy

Assisted birth and emergency caesarean section

- Ventouse or vacuum, or episiotomy, are sometimes used in the second stage of labour to help deliver the baby more easily if there is concern about the wellbeing of the baby or the woman. These interventions may be called instrumental or assisted. There are no comparisons between these two interventions, as they are similar in that they may be beneficial, and that a caesarean birth may be avoided. Assisted births are associated with complications for the baby compared to birth planned at home. Birth outcomes are more likely to be better following birth. However, survival rates of assisted births are indistinguishable from the assisted births outcomes.

- Cesarean sections, whether planned or emergency, are far more common among women having their first baby, compared to women having their second or subsequent baby. In some cases, the use of instruments is not successful, and a caesarean is performed.

The diagrams below show how many women who were at low risk of complications had an assisted birth (ventouse or vacuum) or an emergency caesarean in different birth settings. In these diagrams, women who had an assisted birth or an emergency caesarean are represented by green figures. Women who had a healthy birth are represented by white figures. Women who had a unhealthy birth are represented by black figures. Women who had a stillbirth are represented by red figures. Women who had an assisted birth and an emergency caesarean are represented by blue figures. Women who had an assisted birth and a healthy birth are represented by yellow figures. Women who had an assisted birth and a unhealthy birth are represented by orange figures. Women who had an assisted birth and a stillbirth are represented by pink figures.
London Maternity Strategic Clinical Network

Maternity services in London: Key facts

- 7.8 million people live in London
- 600,000 of London’s children live in poverty
- 132,564 live births in London in 2012

Across London there are 25 trusts providing maternity care on 33 sites; 2 stand-alone birth centres and 16 co-located birth centres.

- 1.84 children born per woman in London on average
- Among local authorities, Barking and Dagenham had the highest 2.58
- Camden had the lowest 1.35

Newham has the highest proportion of births to non-UK women (77%) among regions in England, London had the lowest birth rate for women aged under 18 and highest birth rate for women aged over 45 years.
Increasing the number of women who receive continuity of midwife care: A best practice toolkit

**Aim**
To increase the number of women accessing continuity of midwife care in London. This toolkit has been produced as part of the London Maternity Strategic Clinical Network’s strategy to identify areas of good practice for implementation across all maternity units in the capital, ensuring equally good outcomes for all pregnant women and their babies.

This toolkit presents the evidence that continuity of midwife care improves maternal and infant outcomes, improves maternal experience of care and reduces resource more effectively. It also reinforces Department of Health policy and the NHS Mandate that every woman has a named midwife who is responsible for ensuring she has personalised, one-to-one care throughout pregnancy, childbirth and during the postnatal period, including antenatal care in the hospital or practice for those who have a maternal health concern.

Current National Institute for Health and Care Excellence (NICE) guidance7 and midwifery communication standards both state women should have a named midwife. In the postnatal period, this person is referred to as a named health care professional. This should be available to all women including those of social complexity.

The toolkit is intended to cover all maternity units in all maternity units across London.

**Background and rationale**
A woman who receives care from a known midwife is more likely to:
- Have a vaginal birth.
- Have fewer interventions during birth.
- Have a more positive experience of labour and birth.
- Successfully breastfeed her baby.
- Cost health system less.

There appears to be a cost-saving effect for midwife-led continuity of care as compared to other care models, in which the estimated mean cost saving for each maternity episode is £12.38.

However, the levels of implementation of continuity of midwife care and the number of women who have a named midwife who cares for them throughout their pregnancy and birth is unknown. In the latest national survey of 23,000 women’s experiences of maternity care in England in 2013, 34 per cent of women saw the same midwife every time during pregnancy, and 27 per cent during the postnatal period.

Increasing the number of births at home and in midwifery led units: A best practice toolkit

**Aim**
To increase the number of eligible women accessing midwife led settings in London (midwifery led units and home births).

This toolkit has been produced as part of the London Maternity Strategic Clinical Network’s strategy to identify areas of good practice for implementation across all maternity units in the capital, ensuring equally good outcomes for all pregnant women and their babies.

This toolkit presents the evidence that midwife led settings improve maternal outcomes, increases maternal satisfaction and uses resources more effectively. The Department of Health policy and the NHS Mandate require that pregnant women should be offered a wide range of choices of maternity services including choice of where to give birth and information to support the choices available. This should be available to all women including those of social complexity.

The toolkit is intended to cover all maternity units in all maternity units across London.

**London wide definitions**
There is variation in how birth place settings are defined. To be able to compare outcome data and measures, standardised definitions should be adopted by all units.

**Place of birth settings**
- **Alongside midwifery unit (AMU)**: An NHS clinical location offering care to women with straightforward pregnancies during labour and birth in which midwives take primary professional responsibility for care. During labour and birth diagnostic and treatment medical services, including obstetric, neonatal and anaesthetic care are available, should they be needed, in the same building, or in a separate building on the same site. Transfer will normally be by trolley, bed or wheelchair.
- **Free-standing midwifery unit (FMU)**: An NHS clinical location offering care to women with straightforward pregnancies during labour and birth in which midwives take primary professional responsibility for care.
Case study findings

Organisation and delivery of care

Variations existed at provider level in support given to out-of-hospital births, and functioned best when embedded into system, supported by all staff, and not just seen as a midwifery concern.

Strong midwifery and obstetric leadership and a culture of mutually supportive professional teamwork essential.

Deployment and resourcing of community midwifery was variable.

Many women did not feel they had any realistic choice of place of birth due to travel and transfer distance.

Access to good quality information often differed across social groups. Women’s concerns about safety were not always listened to by staff.

Being heard and receiving timely support were aided by continuity of carer and/or presence of a birth partner or relative.

Midwife Led Units

Why do we need to know more about AMU and what do we need to know?
Alongside Units: What do we need to find out?

• What are optimum staffing models and organization of care.
• What is the impact of competing philosophical, political, and administrative pressures on the operation of home-like settings.
• What are the effects of home-like settings on birth outcomes.
• What is the impact of transfer on women, care providers, and decision-making processes regarding the need for intervention.
• What are women’s preferences for traditional labour ward care compared to birth centre care.

Key themes

Improvements needed

• Unequal access to information about midwife-led care
• Admission, problems gaining access early labour
• Transfer out to higher level care felt too slow
• Women needed to be assured of support with coping with pain and easy transfer for epidural

Strengths

• Opt-out approach reduced inequality in information access
• Excellent support once service is known about, and access gained
• Women felt safe, especially when accompanied by partners
• Calm and relaxing environment in which women feel valued and cared for
• Care during labour was person-centred
• Staff able to listen, and acknowledge women’s concerns and needs
Discussion

Aspects of the AMU environment, model and philosophy of care were highly valued by all women and partners.

Some areas of improvement (Access, early labour, transfer)

We still can’t tell from this study whether environment or care are most important. Can changing the décor in an OU be sufficient?

Some indications that the AMU was beginning to shift OU practices in the two services with the newer units.

Most women still give birth in an obstetric unit, and the intervention rates for low risk women planning to give birth in obstetric units was significantly higher in the Birthplace study. There is an important need for research on the impact of obstetric units offering similar features, where possible on women’s experience and childbirth processes and outcomes.

46% women eligible to give birth outside an OU, currently 8% in total, how to scale up?
Ongoing activities

• 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.

• Audit and review of intra-partum transfers and management.

• Maternity services review

• In 2012 45% of women at end of pregnancy eligible to plan birth in a midwife led unit or home (Sandall et al 2013)

• Update of RCOG/RCM standards
Implications for further research

• What are the aspects of clinical care and service delivery associated with poorer intrapartum outcomes and what are the 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?
Local guidelines for the transfer of women from midwifery unit to obstetric unit during labour in England: a systematic appraisal of their quality

Rachel E Rowe

Purpose: To systematically appraise the quality of local MSU guidelines on the transfer of women from midwifery units to obstetric units during labour.

Methods: Three systematic reviews were conducted from 1987 to 2007. The reviews were searched for all relevant publications. The guidelines were assessed using the criteria of the Appraisal of Guidelines Research and Evaluation (AGREE) instrument and to evaluate the quality of the guidelines received.

Results: Twenty guidelines were reviewed from 16 different sources. The guidelines varied in their comprehensiveness, clarity, and conciseness. Some guidelines included patient information, while others did not.

Conclusions: The AGREE instrument is a useful tool for systematically reviewing the quality of local MSU guidelines on the transfer of women from midwifery units to obstetric units during labour.

Women’s experience of transfer from midwifery unit to hospital obstetric unit during labour: a qualitative interview study

Rachel E Rowe, Jennifer Hancox, Susan Ball, and Hayley Snaith

Introduction: Women who experience a transfer from a midwifery to an obstetric unit may feel unsupported and anxious. This study explores women’s experiences of being transferred.

Methods: Qualitative interviews were conducted with women who had experienced a transfer. Data were analyzed using thematic analysis.

Results: Women described feeling unsupported and anxious during the transfer process. They reported feeling rushed and lacking in information.

Conclusion: Women’s experiences of transfer highlight the need for improved communication and support during this process.
Further Information

Full reports
Health Services and Delivery Research Programme
http://www.nets.nihr.ac.uk/projects/hsdr/081604140

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

NHS Choices

NICE Guideline Intrapartum Care December 2014
CG190
https://www.nice.org.uk/guidance/cg190
Acknowledgements

Birthplace 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). From January 2012, the NIHR SDO programme merged with the NIHR Health Services Research programme to establish the new NIHR health Services and Delivery Research (NIHR HS&DR) programme. The views and opinions expressed by the authors do not necessarily reflect those of the HS&DR Programme, NIHR, NHS, DH PRP or the Department of Health.

Jane Sandall
Division of Women's Health, King's College London
http://www.kcl.ac.uk/schools/medicine/research/wh/
Additional slides
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
Unexpected differences in the proportion of women with complicating conditions recorded by the midwife at the start of care in labour:

<table>
<thead>
<tr>
<th>Condition</th>
<th>OU %</th>
<th>Home %</th>
<th>FMU %</th>
<th>AMU %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prolonged rupture of membranes (&gt;18 hours)</td>
<td>7.4</td>
<td>2.4</td>
<td>2.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Meconium stained liquor</td>
<td>6.4</td>
<td>1.5</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td>Proteinuria (1+ or more)</td>
<td>1.8</td>
<td>0.5</td>
<td>1.0</td>
<td>2.2</td>
</tr>
<tr>
<td>Hypertension</td>
<td>2.6</td>
<td>0.6</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Abnormal vaginal bleeding</td>
<td>1.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Non-cephalic presentation</td>
<td>0.6</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Abnormal fetal heart rate</td>
<td>2.0</td>
<td>0.4</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Other</td>
<td>0.3</td>
<td>0.1</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>% with a complicating condition</strong></td>
<td><strong>19.5</strong></td>
<td><strong>5.4</strong></td>
<td><strong>5.5</strong></td>
<td><strong>6.9</strong></td>
</tr>
</tbody>
</table>
Midwifery staffing

• Birth at home
  – 1:1 midwifery care (continuous) plus another midwife for time of birth of the baby

• FMU / AMU
  – 1:1 midwifery care (continuous)
    • sensitivity analysis: 80-100%

• OU
  – set to 65% intermittent across labour care
    • sensitivity analysis: 50-85%
Economic evaluation

Planned birth at home, in a free standing midwifery unit or an alongside midwifery unit generates incremental cost savings compared to planned birth in an obstetric unit but effectiveness, as measured by adverse perinatal outcome avoided, differs by parity for planned home births.

• For nulliparous ‘low risk’ women, planned birth at home generates incremental cost savings but increases adverse perinatal outcomes
• For multiparous ‘low risk’ women, planned birth at home generates incremental cost savings with no significant effect on adverse perinatal outcomes
• For nulliparous ‘low risk’ women, planned birth at home is likely to be the most cost-effective option (probability of cost effectiveness of 0.63 at a £20,000 cost-effectiveness threshold).
• For multiparous ‘low risk’ women, planned birth at home was found to be the most cost-effective option (100 % probability of being the most cost-effective option across all cost-effectiveness thresholds).

For maternal outcomes, planned birth at home was the most cost-effective option.

Cost effectiveness 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
Cost effectiveness analysis

- Mean differences in costs per woman for planned OU and non-OU births were weighted, adjusted and bootstrapped in an additional analysis.
- Means costs of births in planned non-OU settings were cost-saving when compared with the mean cost of births planned in OUs:
  - £366.8 (home)
  - £182.1 (FMU)
  - £129.3 (AMU)