Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean (Review)

Horey D, Kealy M, Davey MA, Small R, Crowther CA


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Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean

Dell Horey1, Michelle Kealy2, Mary-Ann Davey2, Rhonda Small2, Caroline A Crowther3

1Faculty of Health Sciences, La Trobe University, Bundoora, Australia. 2Mother and Child Health Research, La Trobe University, Melbourne, Australia. 3ARCH: Australian Research Centre for Health of Women and Babies, The Robinson Institute, Discipline of Obstetrics and Gynaecology, The University of Adelaide, Adelaide, Australia

Contact address: Dell Horey, Faculty of Health Sciences, La Trobe University, Bundoora, VIC, 3086, Australia. d.horey@latrobe.edu.au.

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ABSTRACT

Background

Pregnant women who have previously had a caesarean birth and who have no contraindication for vaginal birth after caesarean (VBAC) may need to decide whether to choose between a repeat caesarean birth or to commence labour with the intention of achieving a VBAC. Women need information about their options and interventions designed to support decision-making may be helpful. Decision support interventions can be implemented independently, or shared with health professionals during clinical encounters or used in mediated social encounters with others, such as telephone decision coaching services. Decision support interventions can include decision aids, one-on-one counselling, group information or support sessions and decision protocols or algorithms. This review considers any decision support intervention for pregnant women making birth choices after a previous caesarean birth.

Objectives

To examine the effectiveness of interventions to support decision-making about vaginal birth after a caesarean birth.

Secondary objectives are to identify issues related to the acceptability of any interventions to parents and the feasibility of their implementation.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (30 June 2013), Current Controlled Trials (22 July 2013), the WHO International Clinical Trials Registry Platform Search Portal (ICTRP) (22 July 2013) and reference lists of retrieved articles.

We also conducted citation searches of included studies to identify possible concurrent qualitative studies.

Selection criteria

All published, unpublished, and ongoing randomised controlled trials (RCTs) and quasi-randomised trials with reported data of any intervention designed to support pregnant women who have previously had a caesarean birth make decisions about their options for birth. Studies using a cluster-randomised design were eligible for inclusion but none were identified. Studies using a cross-over design were not eligible for inclusion. Studies published in abstract form only would have been eligible for inclusion if data were able to be extracted.
Data collection and analysis

Two review authors independently applied the selection criteria and carried out data extraction and quality assessment of studies. Data were checked for accuracy. We contacted authors of included trials for additional information. All included interventions were classified as independent, shared or mediated decision supports. Consensus was obtained for classifications. Verification of the final list of included studies was undertaken by three review authors.

Main results

Three randomised controlled trials involving 2270 women from high-income countries were eligible for inclusion in the review. Outcomes were reported for 1280 infants in one study. The interventions assessed in the trials were designed to be used either independently by women or mediated through the involvement of independent support. No studies looked at shared decision supports, that is, interventions designed to facilitate shared decision-making with health professionals during clinical encounters.

We found no difference in planned mode of birth: VBAC (risk ratio (RR) 1.03, 95% confidence interval (CI) 0.97 to 1.10; I² = 0%) or caesarean birth (RR 0.96, 95% CI 0.84 to 1.10; I² = 0%). The proportion of women unsure about preference did not change (RR 0.87, 95% CI 0.62 to 1.20; I² = 0%).

There was no difference in adverse outcomes reported between intervention and control groups (one trial, 1275 women/1280 babies): permanent (RR 0.66, 95% CI 0.32 to 1.36); severe (RR 1.02, 95% CI 0.77 to 1.36); unclear (0.66, 95% CI 0.27, 1.61). Overall, 64.8% of those indicating preference for VBAC achieved it, while 97.1% of those planning caesarean birth achieved this mode of birth. We found no difference in the proportion of women achieving congruence between preferred and actual mode of birth (RR 1.02, 95% CI 0.96 to 1.07) (three trials, 1921 women).

More women had caesarean births (57.3%), including 535 women where it was unplanned (42.6% all caesarean deliveries and 24.4% all births). We found no difference in actual mode of birth between groups, (average RR 0.97, 95% CI 0.89 to 1.06) (three trials, 2190 women).

Decisional conflict about preferred mode of birth was lower (less uncertainty) for women with decisional support (standardised mean difference (SMD) -0.25, 95% CI -0.47 to -0.02; two trials, 787 women; I² = 48%). There was also a significant increase in knowledge among women with decision support compared with those in the control group (SMD 0.74, 95% CI 0.46 to 1.03; two trials, 787 women; I² = 65%). However, there was considerable heterogeneity between the two studies contributing to this outcome (I² = 65%) and attrition was greater than 15 per cent and the evidence for this outcome is considered to be moderate quality only. There was no difference in satisfaction between women with decision support and those without it (SMD 0.06, 95% CI -0.09 to 0.20; two trials, 797 women; I² = 0%). No study assessed decisional regret or whether women’s information needs were met.

Qualitative data gathered in interviews with women and health professionals provided information about acceptability of the decision support and its feasibility of implementation. While women liked the decision support there was concern among health professionals about their impact on their time and workload.

Authors’ conclusions

Evidence is limited to independent and mediated decision supports. Research is needed on shared decision support interventions for women considering mode of birth in a pregnancy after a caesarean birth to use with their care providers.
We found three studies (involving 2270 women), all from high-income countries, that were suitable for this review. The studies looked at the effectiveness of decision support tools designed to be used either independently by women or mediated through the involvement of someone not associated with their care support. No studies looked at shared decision support tools that were intended to help with shared decision making with the pregnant women and their health professionals during pregnancy care visits.

We found that the use of these decision support tools made no difference to the type of birth women planned, how women actually gave birth, or in the number of women and babies who experienced harm, although only one study reported harms. There was also no difference in the proportion of women who were unsure about what they wanted. Overall, nearly 65% of women who wanted a VBAC achieved it, while almost all women wanting a caesarean birth had one (97%). We found no difference in the proportion of women who achieved their preferred mode of birth. However, women who used decisional support interventions had less uncertainty about their decision than those that did not use them. Research is needed on the effectiveness of decision support interventions designed to be shared between women and the health professionals caring for them in pregnancy after a caesarean birth.
### SUMMARY OF FINDINGS FOR THE MAIN COMPARISON

**Decision support intervention compared with usual care for women making decisions about mode of birth in a pregnancy after caesarean birth**

**Patient or population:** women deciding about mode of birth in a pregnancy after caesarean birth  
**Settings:** all settings  
**Intervention:** decision support intervention  
**Comparison:** usual care

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<tr>
<td><strong>Planned or preferred mode of birth: VBAC</strong></td>
<td>57% to 65%</td>
<td>67% (63 to 71%)</td>
<td><strong>RR 1.03 (0.97 to 1.10)</strong></td>
<td>2071 (3 studies)</td>
<td>★★★★★ high</td>
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<tr>
<td><strong>Planned mode of birth: unsure</strong></td>
<td>69-74 per 1000</td>
<td>65 per 1000 (46 to 89)</td>
<td><strong>RR 0.87 (0.62 to 1.20)</strong></td>
<td>2071 (3 studies)</td>
<td>★★★★★ high</td>
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<td><strong>Adverse outcomes</strong></td>
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<td>Permanent</td>
<td>14 per 1000</td>
<td>9 per 1000</td>
<td><strong>RR 0.66 (0.32 to 1.36)</strong></td>
<td>2555 (1 study)</td>
<td>★★★ moderate</td>
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<td>Severe</td>
<td>68 per 1000</td>
<td>70 per 1000</td>
<td><strong>RR 1.02 (0.77 to 1.36)</strong></td>
<td>2555 (1 study)</td>
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<tr>
<td>Unclear</td>
<td>9 per 1000</td>
<td>6 per 1000</td>
<td><strong>RR 0.66 (0.27 to 1.61)</strong></td>
<td>2555 (1 study)</td>
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Congruence between preferred and actual mode of birth

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<th>Actual mode of birth (%)</th>
<th>RR</th>
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<th>Studies</th>
<th>GRADE</th>
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<tr>
<td>75%</td>
<td>75% (67% to 78%)</td>
<td>1.02</td>
<td>(0.96 to 1.07)</td>
<td>1921 (3 studies)</td>
<td>⊕⊕⊕⊕ high</td>
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Actual mode of birth (VBAC versus caesarean)

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<tr>
<th>Actual mode of birth (%)</th>
<th>RR</th>
<th>(95% CI)</th>
<th>Studies</th>
<th>GRADE</th>
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<td>30% to 42%</td>
<td>0.97</td>
<td>(0.89 to 1.06)</td>
<td>2190 (3 studies)</td>
<td>⊕⊕⊕⊕ high</td>
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*The basis for the assumed risk (e.g. the median control group risk across studies) is provided in footnotes. The corresponding risk (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

1. Adverse outcomes for both infants (1271) and mothers (1275) were categorised as follows:
   - Permanent: where there is an ongoing adverse impact;
   - Severe: where there has been risk of death and significant costs in terms of time, emotional distress and resources
   - Major: where there has been no risk of death but significant costs in terms of time, emotional distress and resources
   - Non-major: no risk of death and minor costs
   - Unclear: where impact is unable to be determined from data available
2. Permanent adverse outcomes included perinatal death and hysterectomy
3. Severe adverse outcomes included uterine rupture or dehiscence and admission to Neonatal Intensive Care Unit (NICU)
4. Unclear adverse outcomes included maternal blood transfusion and 5-minute Apgar score < 7
5. Only one study provided data

GRADE Working Group grades of evidence

High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.
BACKGROUND

Pregnant women who have previously given birth by caesarean delivery and who have no contraindication for vaginal birth after caesarean (VBAC) may need to decide whether to have a repeat caesarean birth or to commence labour with the intention of achieving a VBAC. Information about their options is needed and interventions designed to support decision-making may help these women. This review considers any decision support intervention for pregnant women making birth choices after a previous caesarean birth.

Description of the condition

The option of VBAC was available with some obstetricians in the 1950s and became recommended practice in the USA by 1982 (McClain 1990; Morley 1961). In the United Kingdom, a national clinical practice guideline for VBAC has been available since 2004 (RCOG 2007), yet few strategies have emerged to explicitly support active decision-making by women considering their options for mode of birth.

After a caesarean birth, planning the mode of birth in subsequent pregnancies begins by determining if there are any contraindications for VBAC. If there are none, and appropriate clinical support is available, factual information about the risks and benefits of the options of VBAC or repeat caesarean are needed. The choice between a repeat caesarean birth or commencing labour with the intention of vaginal birth can be complex; the options do not have the same level of certainty and several possible benefits and harms for both mother and infant need to be considered (Kaimal 2010; Lydon-Rochelle 2010; O'Shea 2010; Patel 2010; Silver 2010). If a repeat caesarean birth is chosen, there is a very high probability it will occur. However, for a planned vaginal birth there is a much less certainty as to the actual mode of birth that will occur as no accurate prediction model is available (Grobman 2010). There is also a lack of quality information comparing outcomes for planned vaginal birth with planned elective caesarean birth after a previous caesarean birth (Crowther 2012; Dodd 2004), and reported success rates for vaginal birth rely on observational studies, leading to large variations in national guidelines - between 30% and 80% (Foureur 2010). Successful VBAC is associated with several factors that include: a woman's physical characteristics; her medical and obstetric history including the reasons for the previous caesarean birth; events during the current pregnancy or labour; and the site of pregnancy care (Grobman 2010). These factors overlap with the reasons identified as motivations for women choosing elective caesarean birth, which include: medical or obstetric issues; psychological issues, such as fear of childbirth; perceptions of safety; and cultural or social factors (McCourt 2007).

Description of the intervention

Interventions to support women considering VBAC or a repeat caesarean birth generally aim to enhance decision-making capacity, most commonly by providing information to increase knowledge (Catling-Paull 2011). Strategies may also seek to overcome other types of barriers, for example, by working to overcome fear of vaginal birth (Saisto 2001).

Interventions to support health decision-making can be implemented in three main ways. They can be used independently, or shared with health professionals during clinical encounters, or mediated in social encounters with others, such as with a telephone decision coaching service. (Elwyn 2010). Decision support interventions can include decision aids (Dugas 2012; Shorten 2005b), one-on-one counselling, group information or support sessions and decision protocols or algorithms designed for use in discussions with consumers. This review will consider any decision support interventions for women making a decision about their birth choices after a previous caesarean birth.

An informational component is a necessary part of a decision support intervention although few guidelines are available about what this should cover. It can include the context in which the decision is relevant, why a decision is required, the available options and their potential benefits and harms with the likelihood of such outcomes. The International Patient Decision Aids Standards (IPDAS) Collaboration states that decision aids should provide evidence-based information about a health condition, the options, associated benefits, harms, probabilities, and scientific uncertainties (Elwyn 2006; IPDAS 2005a; Stacey 2011). In general, decision aids lead to more informed values-based choices and appear to improve communication between consumers and health professionals (Stacey 2011).

Interventions to support decisions related to birth may be confined to the mode of birth only, or may extend to related decisions, such as type of anaesthesia (Afolabi 2006; Ng 2004), methods of wound repair (Alderdice 2010), use of prophylactic therapies and care practices after surgery (Smaill 2010), or even the use of music during the surgery (Lopaiboon 2009). In practice, such choices may be limited, unavailable, or thought to be inappropriate for women to make. Descriptions of any intervention to support decisions should include information about the choices offered and the actual services available. This review focuses on the broader decision about mode of birth but will record related decisions identified and included in any study.

How the intervention might work

Despite the ongoing development of decision support interventions designed for use by consumers, few are explicitly based on any theory or model of decision-making (Bekker 1999; Durand 2008). Moreover, current theories that explain or describe the process of decision-making do so without any specific focus on how to support people in their decision-making (Elwyn 2011). Despite these shortcomings, the explicit focus of decision support
Interventions to provide information may better prepare people for decision-making. Individuals vary in terms of the quantity and type of information they want, or need, to feel informed. While health-related information is needed for decision-making, it is not the only criterion people use, as everyone brings previous experiences, beliefs and values, fears and information from other sources (Bekker 2010; Elwyn 2009).

Interventions that are to be used independently may provide pregnant women with information and guidance not otherwise available to them, while interventions used in conjunction with others, clinicians or other facilitators may promote dialogue and greater involvement by women in decision-making (Elwyn 2010). This is important as most people want to be involved in shared decision-making with care providers as partners in decision processes (Chewning 2012; Murray 2007). Even those who prefer to delegate decisions want to discuss the options with their care provider (Chewning 2012).

The use of specific interventions to support women's decision-making about mode of birth after caesarean birth may make women feel more involved in their care. It could lead to greater understanding of the issues involved and help women to feel more certain that they are making the best decision for them. Decision uncertainty (decisional conflict) and decision regret could be reduced and the option of commencing labour may change, affecting caesarean delivery rates.

**Why it is important to do this review**

Caesarean birth is a major health issue affecting the lives of many childbearing women. Caesarean section rates have risen steadily in the developed world since the 1970s and in some areas, and among some populations, caesarean deliveries represent almost one-third of all births (Laws 2010; Menacker 2010). Variability in VBAC rates and the relatively small proportion of women that attempt VBAC in some areas (MacDorman 2011; Mizunoya 2002) suggest that there is capacity to increase the proportion of VBAC attempts and subsequent vaginal births. The success rate for VBAC does not appear to be associated with the attempt rate although improved screening for suitable candidates may result in lower attempt rates and higher success rates.

This review expands on a Cochrane review first published in 2004, which looked at the provision of information about caesarean birth to pregnant women more generally (Horey 2004). This version of the review focuses on interventions to support decision-making for women who have had a previous caesarean birth. This is an increasingly relevant issue as the number of women who have experienced a previous caesarean birth has risen with the increasing rates of this mode of birth. This means that more women are now faced with a decision about whether or not to plan a VBAC in subsequent pregnancies and to consider the consequences of such a decision.

**OBJECTIVES**

To examine the effectiveness of interventions to support decision-making about vaginal birth after a caesarean birth.

Secondary objectives are to identify issues related to the acceptability of any interventions to parents and the feasibility of their implementation.

**METHODS**

**Criteria for considering studies for this review**

**Types of studies**

All published, unpublished, and ongoing randomised controlled trials (RCTs) and quasi-randomised trials with reported data. Studies using a cluster-randomised design were eligible for inclusion but none were identified. Studies using a cross-over design were not eligible for inclusion. Studies published in abstract form only would have been eligible for inclusion if data had been able to be extracted.

**Types of participants**

The primary participants are pregnant women who have previously had a caesarean birth. Secondary participants include health professionals or the partners of pregnant women who have previously had a caesarean birth. We excluded women with known multiple pregnancy.

**Types of interventions**

Interventions designed specifically to support pregnant women who have previously had a caesarean birth make decisions about their options for birth. We planned to categorise interventions into three types.

1. Independent (such as web-based decision aids).
2. Shared (such as decision-coaching with care provider).
3. Mediated (such as telephone decision-coaching).

The comparison is usual care or no formal decision support process.

**Types of outcome measures**

**Primary outcomes**

The primary outcomes we considered related to pregnant women and infants as appropriate and include the following.

- Planned mode of birth.
Proportion of women with congruence for planned and actual mode of birth.

Adverse outcomes, categorised as:

1. permanent: where there is an ongoing adverse impact;
2. severe: where there has been risk of death and significant costs in terms of time, emotional distress and resources (e.g. uterine rupture or dehiscence);
3. major: where there has been no risk of death but significant costs in terms of time, emotional distress and resources (e.g. blood transfusions, admission to neonatal intensive care);
4. non-major: no risk of death and minor costs (e.g. blood transfusions);
5. unclear: where impact is unable to be determined from data available (e.g. Apgar score less than seven at five minutes).

Secondary outcomes

Secondary outcomes related to pregnant women and their babies, their partners and health professionals as appropriate.

- Actual mode of birth.
- Decisional conflict (Decisional Conflict Scale).
- Decisional regret (Decisional Regret Scale).
- Knowledge or understanding of options for mode of birth and possible outcomes.
- Information needs met.
- Satisfaction with decision-making process.
- All adverse outcomes reported by study authors (maternal and perinatal mortality, maternal morbidities such as uterine rupture; postpartum haemorrhage; psychological distress, blood transfusion, neonatal morbidities such as admission to intensive care unit; respiratory distress syndrome).

Search methods for identification of studies

Electronic searches

We contacted the Trials Search Co-ordinator to search the Cochrane Pregnancy and Childbirth Group's Trials Register (30 June 2013). The Cochrane Pregnancy and Childbirth Group's Trials Register is maintained by the Trials Search Co-ordinator and contains trials identified from:

1. monthly searches of the Cochrane Central Register of Controlled Trials (CENTRAL);
2. weekly searches of MEDLINE;
3. weekly searches of Embase;
4. handsearches of 30 journals and the proceedings of major conferences;
5. weekly current awareness alerts for a further 44 journals plus monthly BioMed Central email alerts.

Details of the search strategies for CENTRAL, MEDLINE and Embase, the list of handsearched journals and conference proceedings, and the list of journals reviewed via the current awareness service can be found in the 'Specialized Register' section within the editorial information about the Cochrane Pregnancy and Childbirth Group.

Trials identified through the searching activities described above are each assigned to a review topic (or topics). The Trials Search Co-ordinator searches the register for each review using the topic list rather than keywords.

In addition, we conducted author and citation searches in Science Citation Index database and searched for unpublished and ongoing studies in the following registry search platforms: Current Controlled Trials metaRegister of Controlled Trials (22 July 2013), and the WHO International Clinical Trials Registry Platform Search Portal (ICTRP) (22 July 2013). See Appendix 1 for search terms used.

Searching other resources

We screened the reference lists of all included studies to identify other possible trials. We also conducted citation searches and screened the references lists of all included trials to identify any possible concurrent qualitative studies.

Correspondence

We wrote to the corresponding authors of all included studies (DiAMOND 2007; Fraser 1997; Shorten 2005) and searched relevant reviews (Dugas 2012; Khunpradit 2011; Say 2011, Stacey 2011; Viemmix 2012), to assist with identification of unpublished and ongoing studies. The contact authors for DiAMOND 2007 and Shorten 2005 replied and provided additional data, including outcome data, but no further studies were identified. We did not apply any language restrictions.

Data collection and analysis

Selection of studies

Two review authors independently screened the potential relevance of all titles and abstracts to assess which studies meet the inclusion criteria. Full text copies of articles deemed potentially relevant were retrieved.

Two review authors then independently assessed the retrieved articles for inclusion (DH, MK). All review authors verified the final list of included studies. If disagreements arose, we planned to resolve them through discussion between all authors. If eligible studies were reported as abstracts we would have included them if there was sufficient information (in the abstract or provided by authors) to allow us to assess risk of bias and if results were reported by randomisation group; where this was not the case, we would
have considered such studies as awaiting assessment pending further publications or information from authors.

Data extraction and management

Both quantitative and qualitative data were extracted independently by two review authors (DH and MK).

Quantitative data

Details of study (quantitative studies)

Study design; description of comparison group; aim of study; methods of recruitment of participants; inclusion/exclusion criteria for participation in study; informed consent obtained (yes/no/unclear); ethical approval (yes/no/unclear); funding source and amount (if stated); statistical methods and their appropriateness (if relevant) and consumer involvement (in the design of study and/or intervention, in evaluation of intervention, in interpretation of study findings).

Intervention quality: any information on the quality of the intervention as assessed by the study authors; including information related to the fidelity/integrity of the intervention, such as if it was delivered as intended or not, and rate of attrition.

For methodological quality of the study, we used the seven domains of The Cochrane Collaboration’s ‘Risk of bias’ assessment tool (see Assessment of risk of bias in included studies).

Participant characteristics (quantitative studies)

Primary participants (pregnant women): number of participants; details of inclusion and exclusion criteria, such as number of previous caesareans and/or reasons for previous caesarean; social demographic details including information health literacy; language, ethnicity, age range, mode of birth decisions made; proportion where actual birth mode consistent with choice made.

Secondary participants (health professionals, support facilitators, or partners): number of participants; type (doctor, midwife or nurse, physiotherapist, spouse or partner, other); whether trained in use of intervention (yes/no/unclear); age range; details of inclusion criteria, gender.

Intervention

Type of intervention (independent, shared, mediated, or unclear); stated aim of intervention; description of the decisions identified to be made; description of informational component including topics and evidence base for information; description of deliberative component; description of other components.

A consensus process involving all authors was used to categorise the interventions.

Outcomes

Intervention effect estimate, P value and confidence interval and method of statistical analysis used for all outcomes reported in included studies. We analysed those outcomes selected a priori: planned mode of birth (vaginal birth, elective caesarean); proportion of women with congruence between planned and actual mode of birth; adverse outcomes (maternal and perinatal mortality, morbidities); mode of birth (vaginal birth, assisted vaginal birth, elective caesarean [planned], or emergency caesarean [unplanned]); decisional conflict; decisional regret; knowledge or understanding of options and possible outcomes; information needs met; satisfaction with decision-making. We also recorded how each outcome was measured and when they were measured.

If information about any outcome was unclear or if data related to our primary outcomes were not reported, we contacted the authors of the original studies (DiAMOND 2007; Shorten 2005). Data from both trials were provided to us. Where necessary we computed outcomes, such as the proportion of women with congruence between preferred and actual mode of birth. The categorisation of adverse outcomes according to their potential impact was performed by one author (DH) and confirmed by two other authors (MK and CC).

We made three decisions prior to performing the analyses to address issues that we had not considered when developing the protocol for the review and one post hoc decision related to reporting an outcome. First, we decided to exclude women who were unsure about their preference for mode of birth from the congruence outcome. Second, we chose to report actual mode of birth as a dichotomous, rather than a multi-categorical outcome (vaginal birth and caesarean birth) because of potential differences in defining issues across the included studies, third, we decided to include an additional variation on the planned mode of birth outcome (unsure) and calculated the proportion of women who remained unsure about either preference for type of birth compared with those that nominated a preference (VBAC or caesarean). Finally, we decided post hoc to report two aspects of decisional conflict: mean scores at term 36 to 37 weeks which was after the intervention had been introduced and when the preferred mode of birth was recorded; and change during pregnancy (that is, before and after the intervention was introduced, at 28 weeks and again at 36 weeks).

Qualitative data

Due to the lack of a strong theoretical base for the development of decision support interventions we examined qualitative studies conducted concurrently with included trials for information related to the acceptability of the intervention and issues related to its feasibility. A narrative synthesis of these issues was conducted to inform the discussion section of the review. We anticipated that any qualitative study alongside a trial would include a subset of trial participants and the same inclusion and exclusion criteria ap-
We assessed the methods as:

**Details of study (qualitative studies)**
Study design; description of participants; aim of study; methods of recruitment of participants; differences in inclusion/exclusion criteria for participation in qualitative study and trial; informed consent obtained (yes/no/unclear); ethical approval (yes/no/unclear); funding source and amount (if stated); consumer involvement (in the design of study and interpretation of study findings).

**Participant characteristics (qualitative studies)**
Number of participants; gender; parent involved (mother, father, both, unclear); details of inclusion and exclusion criteria, such as number of previous caesarean births, gestational age and/or reasons for previous caesarean birth; socio-demographic details including information health literacy; language, ethnicity, age.

Secondary participants (health professionals, support facilitators): Number of participants; type (doctor, midwife or nurse, pathologist, spouse or partner, other); whether trained in use of intervention (yes/no/unclear); age range; details of inclusion criteria, gender.

**Assessment of risk of bias in included studies**
Two review authors (DH, MK) independently assessed risk of bias for each study using the criteria outlined in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2011). We resolved any disagreement by discussion and if necessary would have involved a third author.

**(1) Sequence generation (checking for possible selection bias)**
We have described for each included study the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups. We assessed the method as:

- low risk of bias (any truly random process, e.g. random number table; computer random number generator);
- high risk of bias (any non-random process, e.g. odd or even date of birth; hospital or clinic record number); or
- unclear.

**(2) Allocation concealment (checking for possible selection bias)**
We have described for each included study the method used to conceal the allocation sequence and determined whether intervention allocation could have been foreseen in advance of, or during recruitment, or changed after assignment.

We assessed the methods as:

- low risk of bias (e.g. telephone or central randomisation; consecutively numbered sealed opaque envelopes);
- high risk of bias (open random allocation; unsealed or non-opaque envelopes, alternation; date of birth); or
- unclear.

**(3) Blinding (checking for possible performance bias)**
We have described for each included study the methods used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. We considered that studies were at low risk of bias if they were blinded, or if we judged that the lack of blinding could not have affected the results. We assessed blinding separately for different outcomes or classes of outcomes.

We assessed the methods as:

- low, high or unclear risk of bias for participants;
- low, high or unclear risk of bias for personnel; and
- low, high or unclear risk of bias for outcome assessors.

**(4) Incomplete outcome data (checking for possible attrition bias through withdrawals, dropouts, protocol deviations)**
We have described for each included study and, for each outcome or class of outcomes, the completeness of data including attrition and exclusions from the analysis. We state whether attrition and exclusions were reported, the numbers included in the analysis at each stage (compared with the total randomised participants), reasons for attrition or exclusion where reported, and whether missing data were balanced across groups or were related to outcomes. Where sufficient information was reported, or supplied by the trial authors, we planned to re-include missing data in the analyses. We assessed methods as:

- low risk of bias (where 20% or less data for an outcome are missing);
- high risk of bias (where more than 20% of data for an outcome are missing); or
- unclear.

**(5) Selective reporting bias**
We have described for each included study how we investigated the possibility of selective outcome reporting bias and what we found.

We assessed the methods as:

- low risk of bias (where it is clear that all of the study’s pre-specified outcomes and all expected outcomes of interest to the review have been reported);
- high risk of bias (where not all the study’s pre-specified outcomes have been reported; one or more reported primary outcomes were not pre-specified; outcomes of interest are reported incompletely and so cannot be used; study fails to include results of a key outcome that would have been expected to have been reported); or
(6) Other sources of bias
We have described for each included study any important concerns we had about other possible sources of bias.
We assessed whether each study was free of other problems that could put it at risk of bias:
- low risk of other bias;
- high risk of other bias; or
- unclear risk of other bias.

In this version of the review we did not include any cluster-randomised trials, but if such trials are identified and eligible for inclusion in future updates, the specific sources of bias we will consider for cluster-randomised trials include the following.

Recruitment bias
- Low risk of bias (where it is clear that all study participants are recruited to the trial prior to randomisation);
- high risk of bias (where not all the study participants are recruited to the trial prior to randomisation); or
- unclear.

Baseline imbalance
- Low risk of bias (where it is clear baseline comparability of clusters, or statistical adjustment for baseline characteristics is reported);
- high risk of bias (where not all the study participants are recruited to the trial prior to randomisation); or
- unclear.

Missing cluster data
- Low risk of bias (where all clusters retained for duration of study);
- high risk of bias (where one or more clusters lost to the study); or
- unclear.

Statistical analysis
- Low risk of bias (where clustering taken into account);
- high risk of bias (where clustering is not taken into account); or
- unclear.

(7) Overall risk of bias
We have made explicit judgements about whether studies are at high risk of bias, according to the criteria given in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2011). We assessed the likely magnitude and direction of the bias and whether we considered it was likely to impact on the findings.
We explored the impact of the level of bias through undertaking sensitivity analysis.

Measures of treatment effect

Dichotomous data
For dichotomous data, we have presented results as summary risk ratios (RRs) with 95% confidence intervals (CIs).

Continuous data
For continuous data, we used the mean difference (MD) if outcomes were measured in the same way between trials. We used the standardised mean difference (SMD) to combine trials that measure the same outcome, but used different methods.

Unit of analysis issues
In this version of the review we did not identify any cluster-randomised trials for inclusion. In future updates if such trials are included we will take cluster design into effect in our analyses.
Studies where clusters of individuals are randomised to intervention groups (cluster-RCTs), but where inference is intended at the level of the individual, will be re-analysed taking account of intra-cluster correlation (ICC) where possible. The design effect will be calculated using the formula 1+(M-1) ICC, where M is the average cluster size. A common design effect will be assumed across intervention groups. Estimates of ICC will be obtained from contacting authors, or imputed using external estimates from similar studies. If this is not possible, we will report effect estimates and annotate ‘unit of analysis error’. If we use ICCs from other sources, we will report this and conduct sensitivity analyses to investigate the effect of variation in the ICC.
For dichotomous data both the number of participants and the number experiencing the event will be divided by the design effect and rounded to whole numbers.
For continuous data the sample size will be reduced only and means and standard deviations will remain unchanged.
If we identify both cluster-randomised trials and individually-randomised trials in future updates, we plan to synthesise the relevant information. We will consider it reasonable to combine the results from both if there is little heterogeneity between the study designs and the interaction between the effect of intervention and the choice of randomisation unit is considered to be unlikely. We will also acknowledge heterogeneity in the randomisation unit and perform a subgroup analysis to investigate the effects of the randomisation unit.
Dealing with missing data
For included studies, we noted levels of attrition. We planned to explore the impact of including studies with high levels of missing data in the overall assessment of treatment effect by using sensitivity analysis if it had been necessary.
For all outcomes, we carried out analyses on an intention-to-treat (ITT) basis, i.e. we attempted to include all participants randomised to each group in the analyses, and all participants were analysed in the group to which they were allocated, regardless of whether or not they received the allocated intervention. The denominator for each outcome in each trial is the number randomised minus any participants whose outcomes were known to be missing.
We did not undertake any imputation for missing outcome data other than summary data (standard deviations where possible). We have reported all assumptions. If in future updates we include cluster-randomised trials, we will investigate the effect of our choice of ICCs on the pooled effect estimate in any meta-analysis through sensitivity analyses.

Assessment of heterogeneity
We assessed statistical heterogeneity in each meta-analysis using the $T^2$, $I^2$ and Chi$^2$ statistics. We regarded heterogeneity as substantial if an $I^2$ was greater than 30% and either a $T^2$ was greater than zero, or there was a low P value (less than 0.10) in the Chi$^2$ test for heterogeneity.

Assessment of reporting biases
In this version of the review, too few studies contributed data to allow us to carry out planned assessment of reporting bias. In future updates if more data become available and there are 10 or more studies in the meta-analysis, we will investigate reporting biases (such as publication bias) using funnel plots. We will assess funnel plot asymmetry visually. If asymmetry is suggested by a visual assessment, we will perform exploratory analyses to investigate it.

Data synthesis
We carried out data analysis using The Cochrane Collaboration’s statistical software, Review Manager 2012. We used fixed-effect meta-analysis for combining data as it was reasonable to assume that studies were estimating the same underlying treatment effect: i.e. trials examined similar interventions, and the trials’ populations and methods were judged to be sufficiently similar. If we had suspected clinical heterogeneity sufficient to expect that underlying treatment effects would differ between trials, or if substantial statistical heterogeneity was detected, we used random-effects meta-analysis to produce an overall summary of an average treatment effect across trials where it was considered clinically meaningful. The random-effects summary was treated as the average range of possible treatment effects. We discussed the clinical or practical implications of such treatment effects differing between trials. If we had considered that the average treatment effect was not clinically meaningful, we intended not to combine trials. Where we used random-effects analyses, the results are presented as the average treatment effect with its 95% CI, and the estimates of $T^2$ and $I^2$.
We have included one multi-armed trial where we combined groups to create a single pair-wise comparison, i.e. we combined all relevant experimental intervention groups of the study into a single group and compared to a single control group as recommended in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2011), as we considered combining the groups was acceptable. If this were not the case, we would have considered selecting one pair of groups for comparison and clearly described our rationale for this selection in the methods of the review.

Narrative synthesis
We examined the content of qualitative studies for women’s views of the acceptability of the intervention and issues related to its feasibility.

Subgroup analysis and investigation of heterogeneity
If we identified substantial heterogeneity, we investigated it using subgroup analyses and sensitivity analyses, and considered whether an overall summary was meaningful, and if it was, used random-effects analysis to produce it. We intended to carry out the following subgroup analyses.

Obstetric history
- Women who had experienced at least one prior vaginal birth versus women who had not experienced a prior vaginal birth
- Women who had experienced one prior caesarean birth versus women who had experienced more than one prior caesarean birth

Type of decision support
- Independent versus shared versus mediated.

These analyses were limited by the available data. The following outcomes were chosen a priori for these analyses.
- Actual mode of birth.
- Decisional conflict (Decisional Conflict Scale).
- Decisional regret (Decisional Regret Scale).

We assessed differences between those subgroups with available data by interaction tests available in Review Manager 2012.
Sensitivity analysis

If we had found trials at high risk of bias we would have performed sensitivity analysis based on the trial quality by temporarily excluding studies at high risk of bias from the analyses to see whether there was any impact on findings. Studies would have been considered at high risk of bias and included in any sensitivity analysis if they had inadequate or unclear allocation concealment and/or sample attrition was greater than 20%. We also intended to undertake sensitivity analysis to explore the effects of fixed- or random-effects analyses if outcomes displayed statistical heterogeneity or the effects of any assumptions made, such as the value of the ICC used if there had been cluster-randomised trials included. The following outcomes were chosen a priori for these analyses.

- Planned mode of birth.
- Proportion of women with congruence for planned and actual mode of birth.
- Adverse outcomes.

RESULTS

Description of studies

Results of the search

The searches retrieved 17 reports. This included two ongoing studies (Begley 2013; Wise 2011). The remaining 15 reports were from six randomised trials (DiAMOND 2007; Eden 2009; Flamm 1997; Fraser 1997; Greene 1989; Shorten 2005). See Figure 1.
Figure 1. Study flow diagram.

12 records identified through database searching

Five additional records identified through other sources

17 records after duplicates removed

17 records screened

Two ongoing studies cited but not included

15 full-text articles assessed for eligibility

Three studies excluded, with reasons

12 articles relate to three studies

Three studies included in quantitative synthesis (meta-analysis)

Four of these articles relating to 1 study (DIAMOND 2007) identified for inclusion in qualitative analysis

One study included in qualitative analysis
Included studies

Three randomised controlled trials involving 2270 women were eligible for inclusion in the review. The trials were conducted in the UK (DiAMOND 2007), Canada (Fraser 1997) and Australia (Shorten 2005). See Figure 2 and Characteristics of included studies.

Figure 2. 'Risk of bias' summary: review authors' judgements about each risk of bias item for each included study.
**Participant characteristics**

All three randomised controlled trials included pregnant women who had experienced a single previous caesarean birth and no current obstetric problems in high-income countries. DiAMOND 2007 explicitly excluded non-English speakers and Fraser 1997 included those with sufficient English or French to complete the questionnaire. Fraser 1997 assessed motivation for vaginal birth: 372/1275 (29%) were assessed to have low motivation for vaginal birth after caesarean (VBAC) and 903/1275 (71%) to have high motivation. Fraser 1997 also reported outcomes for 1280 infants.

**Interventions**

There were four decision support interventions identified in the three included studies. Three interventions were decision aids. DiAMOND 2007 assessed two computer decision aids delivered via a laptop computer. One was an information program which provided descriptions and probabilities of clinical outcomes for mother and baby associated with planned vaginal birth, elective caesarean section, and emergency caesarean section. The other included a decision analysis, which recommended a mode of delivery based on utility assessments performed by participants combined with probabilities of clinical outcomes within a concealed decision tree. These interventions were considered to be sufficiently similar to be combined for the purposes of this review. Shorten 2005 assessed a paper-based decision aid in a booklet format based on the Ottawa Decision Framework. It incorporated evidence-based information, explicit probability illustrations, and values clarification exercises. All decision aids were compared with usual care.

The fourth intervention was a prenatal education and support program, which was compared with a pamphlet detailing the benefits of planned vaginal birth after caesarean birth (Fraser 1997). This intervention was compared with a pamphlet detailing the benefits of planned vaginal birth after caesarean birth, which was considered usual care for the purposes of this review.

The three decision aids were classified as independent decision support and the prenatal education and support program was classified as a mediated decision support. None of the interventions were classified as shared decision support. These assessments were based on judgements about the role of health professionals in the use of the decision supports. Apart from brief instruction from research staff no health professional was involved with the implementation of any of the decision aids. Participants using the decision analysis program were encouraged to take the computer printout of the decision analysis produced to subsequent antenatal visits to aid discussions with their care provider, but there was no direct involvement by the care provider with use of the decision aid. The prenatal education and support program was provided by a research nurse with experience in prenatal instruction (as well as someone with personal experience of VBAC), but who was not directly involved with antenatal care.

Informational components were identified in each of the four interventions evaluated in the included studies. The interventions either described the outcomes associated with different delivery types (DiAMOND 2007), reported the risks and benefits of VBAC (Fraser 1997; Shorten 2005), or compared the advantages and disadvantages of elective caesarean section (Shorten 2005). Fraser 1997 also provided information on consensus panel recommendations favouring planned vaginal birth and the probability of success of an attempt for vaginal delivery at each participating hospital, reassured about pain relief options for labour, and counselled on alternative methods of permanent contraception for women considering tubal sterilisation. Three of the four interventions included a deliberative component. Participants using the decision analysis decision aid were asked to rate the value they attached to possible outcomes on a visual analogue scale from zero to 100. These values were combined with the probabilities of each outcome in a decision tree to produce the recommended “preferred option” based on maximised expected utility (DiAMOND 2007). Fraser 1997 assessed each woman’s motivation to attempt VBAC and their perceptions of attitudes of key persons including her spouse and treating obstetrician. Shorten 2005 used a values clarification exercise to guide women through a summary of major advantages and disadvantages based on the content provided in the booklet. This involved questions about the importance of particular issues using a response scale (“not important”, “some/moderately important” and “very important”). No deliberative component was identified in the other decision aid in DiAMOND 2007, the information program. No other components were identified in either of the decision aids in DiAMOND 2007, but Fraser 1997 used a resource person to provide peer influence and support and Shorten 2005 included explicit probability illustrations. All the interventions to provide decision support were concerned only with the decision about mode of birth.

**Comparisons**

Women in the control groups were given usual care. In Fraser 1997 women in the control group received only written information (in the form of a brief pamphlet) about the benefits of VBAC over elective repeat caesarean section; Shorten 2005 reported that with “usual care” everyone was expected to receive information about birth options during the pregnancy. DiAMOND 2007 did not report what information women in the control group received, just that it “comprised the usual level of care given by the obstetric and midwifery team”.

**Outcomes**

Fraser 1997 reported data related to the three primary outcomes of this review: planned mode of birth, proportion of women with congruence for planned and actual mode of birth and adverse
outcomes. Additional information on these outcomes was sought and provided by the other trial authors. Additional data provided by DiAMOND 2007 and Shorten 2005, allowed us to calculate the actual proportions of women achieving vaginal and caesarean births.

The primary outcomes for the DiAMOND 2007 trial were total score on decisional conflict scale (measured prior to birth only) and mode of birth. Secondary outcomes were anxiety (measured with six-item Spielberger state-trait anxiety inventory (STAI)), knowledge, subscales of the decisional conflict scale, and satisfaction with the decision (satisfaction with decision scale).

The primary outcome for Fraser 1997 was the proportion of women achieving vaginal delivery. Other outcomes were: the proportion of women attempting vaginal delivery (with pre-determined criteria to judge this), and maternal and neonatal postpartum morbidities. All primary outcome data were extracted from hospital medical records. In addition, women's sense of control over the birth experience was assessed with the 18-item Birth Experience Rating Scale (a modified version of the Labor Agentry Scale) and women's views were sought on the effects on their decision to participate in the study.

For Shorten 2005 the primary outcomes were: level of knowledge, decisional conflict score (measured at 28 weeks and at 36 weeks' gestation), preference for mode of birth at 36 weeks, and satisfaction at six to eight weeks postnatally. These data were collected across four surveys (at 12 to 18 weeks' gestation, 28 weeks, 36 weeks, and six to eight weeks postnatal), which were distributed either by mail with a return postage envelope or stored with clinic notes and given to participants by the midwife during visits. Birth outcome data were also collected; these came from hospital medical records.

Excluded studies
Three studies were excluded (see Characteristics of excluded studies). Study participants in Eden 2009 and Greene 1989 were either not pregnant or had not necessarily experienced a previous caesarean birth. The aim of the intervention in Flamm 1997 was not to support a decision about mode of birth.

Risk of bias in included studies
We judged the three included studies to be at low risk of bias (Figure 2).

Allocation
Two of the three trials reported using a computer-generated random sequence (DiAMOND 2007; Shorten 2005) but it is unclear how the random sequence was generated for the third trial (Fraser 1997). All three trials reported a method of allocation concealment likely to have low risk of bias: sequentially numbered sealed opaque envelopes (Shorten 2005); the use of “another member of staff with no other involvement in the trial” to allocate the randomisation sequence which had been computer-generated by a member of the study team (DiAMOND 2007); and use of a centralised telephone answering service (Fraser 1997).

Blinding
It was not possible for participants or clinicians to be blinded to the treatment group or primary outcomes (planned mode of birth; proportion of women with congruence for planned and actual mode of birth; adverse outcomes). The review authors judge that these outcomes are not likely to be influenced by lack of blinding.

Incomplete outcome data
All three trials were judged to be at low risk of attrition bias with reasons for missing outcome data unlikely to be related to true outcome.

Selective reporting
The study protocols are available for two trials (DiAMOND 2007; Shorten 2005) and all pre-specified (primary and secondary) outcomes were reported; additional information was provided by both study authors to meet the needs of this review. There is insufficient information to assess whether the third study reported all outcomes, but authors judged that selective reporting appears unlikely (Fraser 1997).

Other potential sources of bias
All three included studies appear to be free of other sources of bias.

Effects of interventions
See: Summary of findings for the main comparison

Decision support intervention versus usual care
A total of eight meta-analyses were performed. Four of these were for two primary outcomes, including three related to planned mode of birth (VBAC, elective caesarean, and unsure) and one for congruence between planned and actual mode of birth. The remaining four were for the following secondary outcomes: actual mode of birth (VBAC); decisional conflict at 37–38 weeks; knowledge; and satisfaction.

Primary outcomes
Planned mode of birth
Data for planned or preferred mode of birth were available for 2071 women from the three included studies and were judged
to be high quality. VBAC was the preferred option for 64.8% of trial participants, elective caesarean was planned for 28.6% and 6.6% remained unsure. We found no difference in the type of birth planned or preferred, whether it was for planned VBAC; (risk ratio (RR) 1.03, 95% confidence interval (CI) 0.97 to 1.10; \( P = 0\%\); Analysis 1.1) or caesarean birth (RR 0.96, 95% CI 0.84 to 1.10; \( P = 0\%\); Analysis 1.2). There was no difference in the proportion of women unsure about their preference for mode of birth among women with and without decision support (RR 0.87, 95% CI 0.62 to 1.20; \( P = 0\%\); Analysis 1.3).

**Adverse outcomes**

Only one included study (Fraser 1997) provided data on adverse outcomes (see Table 1 for categorisation). There was no difference in the adverse outcomes reported between the intervention and control groups (See Analysis 1.4) for those categorised as permanent adverse outcomes (RR 0.66, 95% CI 0.32 to 1.36; one trial, 1275 women/1280 babies; see Analysis 1.4) or severe adverse outcomes (RR 1.02, 95% CI 0.77 to 1.36; one trial, 1275 women/1280 babies, see Analysis 1.5) or unclear adverse outcomes (RR 0.66, 95% CI 0.27 to 1.61; one trial, 1275 women/1280 babies, see Analysis 1.6). No adverse outcomes were categorised as major or non-major adverse outcomes (see Table 1).

**Proportion of women with congruence for planned and actual mode of birth**

Data for the proportion of women with congruence for their planned and actual mode of birth were available from all three trials for 1921 women (93.3% of those with preferences recorded) after two trial authors provided additional unpublished data. Data from the three included trials were judged to provide high-quality evidence. Overall, 64.8% of 869 women who indicated a preference for VBAC achieved it, while 97.1% of the 576 women indicating a preference for caesarean birth achieved this mode of birth. We found no difference in the proportion of women who achieved congruence between their preferred and actual mode of birth between the intervention and comparison groups (RR 1.02 95% CI 0.96 to 1.07; three trials, 1921 women; \( P = 0\%\); see Analysis 1.7).

**Secondary outcomes**

**Actual mode of birth**

Data for actual mode of birth were available for 2190 women after two trial authors provided additional data (DiAMOND 2007; Shorten 2005). Data from the three included trials were judged to provide high-quality evidence. Overall, 933 women achieved VBAC (42.6%) and 1257 women had a caesarean birth (57.3%), including 535 women where this delivery was classified as an emergency caesarean (42.6% of all caesarean deliveries and 24.4% of all births). We found no difference in the actual mode of birth between the intervention and control groups, (average RR 0.97, 95% CI 0.89 to 1.06 three trials; Heterogeneity: \( \tau^2 = 0.00; \chi^2 \)).

**Decisional conflict**

Data for two aspects of decisional conflict were available: mean decisional conflict scores at term (36 to 37 weeks) and change in decisional conflict scores during pregnancy. These data were both from trials assessing decision aids that were classified as independent forms of decision support. The mean score for decisional conflict about preferred mode of birth was lower (less uncertainty) among women with decisional support (standardised mean difference (SMD) -0.25, 95% CI -0.47 to -0.02; two trials/787 women; Heterogeneity: \( \tau^2 = 0.09; \chi^2 = 0.91, df = 1 (P = 0.34); P = 48\%\) (see Analysis 1.9). Data for change in decisional conflict scores during pregnancy came from a single, small, study with relatively high attrition (17.6% of study sample) (Shorten 2005), and these reasons the evidence was judged to be low quality. Compared with the control group, women in the intervention group experienced reduced decisional conflict between 28 and 36 weeks' gestation (Shorten 2005), (mean difference (MD) -0.32, 95% CI -1.02 to 0.38; one trial, 187 women; see Analysis 1.10).

**Decisional regret**

None of the included studies measured decisional regret.

**Knowledge or understanding**

Knowledge was assessed in two studies (DiAMOND 2007; Shorten 2005). Attrition for this outcome was about 16% (15.9% in Shorten 2005 and 16.6% in DiAMOND 2007). The evidence for this outcome was judged to be moderate. There was a significant increase in knowledge among women with decision support compared with those in the control group included in this review (SMD 0.74, 95% CI 0.46 to 1.03; two trials, 787 women) (see Analysis 1.11). However, there was substantial heterogeneity present (Heterogeneity: \( \tau^2 = 0.03; \chi^2 = 2.87, df = 1 (P = 0.09); P = 65\%\)). This was judged to be due to possible differences in the method of assessment rather than any practical differences in the knowledge measured.

**Information needs met**

None of the included studies assessed whether information needs had been met.

**Satisfaction with decision-making**

Two studies assessed satisfaction at six weeks (DiAMOND 2007) and six to eight 6 weeks (Shorten 2005) after birth. Attrition for this outcome ranged from 11.6% in DiAMOND 2007 to 27%
in Shorten 2005. The evidence for this outcome was judged to be moderate. We found no difference in satisfaction with decision-making (SMD 0.06, 95% CI -0.09 to 0.20; two trials, 797 women) (see Analysis 1.12).

Adverse outcomes

Only one study reported adverse outcomes (Fraser 1997). There were no differences in the adverse outcomes reported between the intervention and control groups.

- All maternal morbidity (RR 0.90, 95% CI 0.38 to 2.10; one trial, 1275 women; Analysis 1.13)
- Uterine rupture or dehiscence (RR 1.32, 95% CI 0.46 to 3.78; one trial, 1275 women; Analysis 1.14)
- Hysterectomy (RR 0.20, 95% CI 0.01 to 4.11; one trial, 1275 women; Analysis 1.15)
- Blood transfusion (RR 0.66, 95% CI 0.11 to 3.93; one trial, 1275 women; Analysis 1.16)
- All adverse neonatal indicators (RR 0.93, 95% CI 0.71 to 1.21; one trial, 1280 babies; Analysis 1.17)
- Perinatal deaths (RR 0.50, 95% CI 0.09 to 2.69; one trial, 1280 babies; Analysis 1.18)
- Apgar score less than seven at five minutes (RR 0.66, 95% CI 0.24 to 1.84; one trial, 1280 babies; Analysis 1.19)
- Admission to NICU (RR 1.00, 95% CI 0.75 to 1.34; one trial, 1280 babies; Analysis 1.20)

Qualitative analysis

Qualitative data from four publications relating to one included study (DiAMOND 2007) provided information about the acceptability of the decision support interventions and the feasibility of implementation. The intervention in this study was classified as an independent decision support. The related qualitative studies included 30 antenatal and 22 postnatal interviews with women (Frost 2009), 26 interviews with pregnant women (Emmett 2007) and six discipline-specific focus groups with 28 health professionals (Rees 2009).

Acceptability of decision support interventions

There was evidence of the acceptability of the decision support interventions. Women perceived a sense of the choice and information available to them, which was typically discussed in relation to their previous birth experience (Frost 2009). Most women found the form and content of the information to be relevant, timely and helpful (Emmett 2007; Frost 2009). Decision support appeared to help with understanding the decision to be made, and several women commented that it helped them to reconcile their preferred and actual mode of birth, including re-evaluation of their past birth experiences (Frost 2009). Language and format were considered appropriate, although one woman found the language patronising and over-simplified (Emmett 2007). The more complex decisional analysis format was viewed less favourably, with some feeling it raised anxiety, particularly when descriptions of risks were described without indication of their likelihood and some women found the quantity of information too much to absorb in one session (Emmett 2007). A few women indicated that they would have liked broader information and personal stories (Frost 2009).

Health professionals reported that women spoke positively about the decision supports available to them, particularly the simpler, web-based information. Some felt that the decision support interventions would encourage more questions in consultations (Rees 2009).

Feasibility of implementation

There were issues with the usability of the decision aids employed in the trial, particularly in regard to the clarity of the instructions. Most women sought help from the researcher at some stage, some unintentionally overlooked sections of the program, and others found the scales difficult to use (Emmett 2007). Health professionals believed that the decision aids should be incorporated into existing antenatal care, preferably early in pregnancy. Some participants suggested that introducing them at 12 weeks would be ideal. The consensus across the multidisciplinary groups was that community midwives were the most appropriate group to introduce the aids to women but many felt that obstetricians needed to be involved to answer questions that arise. While the majority believed that decision support interventions should be offered to all women who have had a previous caesarean birth, others felt that there should be targeted provision of the aids. Views about appropriate target groups varied. Some thought that ethnic minority and disadvantaged groups would be most likely to benefit, others believed that higher socio-economic groups would get the most out of using decision support aids (Rees 2009). The majority of health professionals agreed that aids used independently were likely to be easiest to implement and provide the greatest access. Midwives felt that the decision aids would provide unbiased and trustworthy information to women, which would help overcome the often conflicting information currently available. Four of the six health professional focus groups saw the decision aids as a good educational resource for health professionals (Rees 2009).

There was broad-based concern among the health professionals that introduction of the decision aids would adversely affect their time and workload, with consultations becoming more complex and time-consuming. There was also concern that costs associated with set-up and ongoing maintenance, particularly updating information, would be prohibitive. A minority of participants in the three focus groups raised clinician preference for mode of birth delivery as a potential barrier (Rees 2009).
Summary of main results

The evidence for the effectiveness of interventions to support women's decisions about mode of birth in a pregnancy after caesarean birth is limited to independent and mediated decision supports. These types of decision support have no effect on women's preferred mode of birth, actual mode of birth and congruence between preferred and actual modes of birth. However, there is some evidence that independent decision support interventions are effective in reducing uncertainty in women about the choices they make. It appears that this is something women want. This review provides no justification to stop providing such types of support to women making these decisions.

This review identified three randomised controlled trials involving 2270 women that assessed the impact of interventions designed to support pregnant women who have experienced a previous caesarean birth to make decisions about their options for birth. We found these interventions, which were designed to be used either independently by women (DiAMOND 2007; Shorten 2005) or mediated through the involvement of independent support (Fraser 1997), had no significant effect on women's planned mode of birth, congruence between planned and actual mode of birth, or rate of adverse events. We also did not find any significant differences in the actual mode of birth. There was some lower quality evidence of decreased decisional conflict (reduced uncertainty about the decision made) when decision support was provided by independent decision support interventions. This was consistent with the evidence of acceptability of these types of decision aids found in the qualitative data. There was no difference in knowledge or satisfaction, although the quality of evidence for these outcomes was lower.

Quality of the evidence

This review included three trials with over 2000 women providing outcome data (DiAMOND 2007; Fraser 1997; Shorten 2005) with the overall risk of bias for the included trials judged to be low for the primary outcomes. Lower quality evidence was provided for some secondary outcomes (decisional conflict; knowledge; and satisfaction with decision-making), where there was moderate to high attrition in one small study for all these outcomes (Shorten 2005), and moderate attrition for one outcome in another study (DiAMOND 2007).

Potential biases in the review process

Due to the small number of trials included in this review, we were unable to assess the presence of publication bias, but two of the included studies had previously published protocols and the studies report inconclusive findings, suggesting that bias is likely to be low.

Two review authors independently categorised the decision aid interventions in the included trials as either independent, shared or mediated based on the criteria articulated by Elwyn 2010. Categorisation of one intervention (Fraser 1997) required further discussion between authors before agreement. The intervention involved a health professional but it was classified as a mediated form of decision support because the actual clinical decision (for trial of labour or elective caesarean delivery) was made elsewhere. We concluded that for interventions to be categorised as shared decision supports, it would necessarily include the health professional involved in the clinical decision-making. It is possible that others may categorise the interventions differently.

Agreements and disagreements with other studies or reviews

Support for decision-making has been the focus of at least five systematic reviews (see Table 2). Three reviews are specifically focused on the use of decision aids in pregnancy and childbirth (Dugas 2012; Say 2011; Viemix 2012). There are also two Cochrane reviews: Stacey 2011 looks at decision aids for people facing health treatment or screening decisions including childbirth procedures, and Khunpradit 2011 is concerned with non-clinical interventions.
to reduce unnecessary caesarean sections, reporting by intervention type. All five reviews take different approaches to analysis but all include decision aids in pregnancy and childbirth and include both trials from this review that include decision aids (DiAMOND 2007 and Shorten 2005). Khunpradit 2011 also includes the third trial from this review (Fraser 1997).

Like this review, all five reviews found the use of decision aids had no effect on final preference (Dugas 2012; Khunpradit 2011; Say 2011; Stacey 2011; Viemmix 2012), however Dugas 2012 found decision aids based on decisional analysis tools (such as used in DiAMOND 2007) significantly influenced final outcome. Four reviews assessed decisional conflict and found it was significantly reduced among women using decision aids (Dugas 2012; Say 2011; Stacey 2011; Viemmix 2012). Knowledge was reported to have increased with the use of decision aids in three reviews (Say 2011; Stacey 2011; Viemmix 2012) and satisfaction in another (Khunpradit 2011), although the effect size reported was small.

Unlike this review, none of the other five reviews looked at congruence between preference and actual mode of birth, or categorised decision support interventions as independent, mediated or shared. Rather decision aids were considered as a particular type of decision support intervention.

Three other reviews and a meta-synthesis are also relevant to this review. While not specifically focused on decisions related to birth, a systematic review of patient preferences for shared decisions, which included 115 studies, (Chewning 2012) found the majority of patients preferred sharing decisions with their physicians (63% of included studies) and that this is increasingly likely. Seventy-one per cent of studies published in 2000 or later demonstrated a preference for shared decision-making compared with only half of those published before that time. This finding lends support for the need to address an important gap found in this review, namely the absence of studies testing shared decision support interventions. The need for more systematic approaches to information giving and decision support is also found in a recent meta-synthesis of eight qualitative articles looking at women’s experiences of VBAC conducted in similar countries to the trials included in this review (Australia, UK, and USA). The study concluded that women can find decision-making about mode of birth unclear and information from health professionals sometimes conflicting (Lundgren 2012).

The vaginal birth rate across the three trials in this review was 42.6%, yet a recent review of 67 cohort studies undertaken in developed countries found that although rates of trial of labour (ToL) have dropped since 1996, rates of vaginal birth with ToL remained constant at about 74% (Eden 2012). This large discrepancy suggests possible publication bias among these cohort studies.

Finally, a systematic review (Rossi 2008) of seven studies published between the years 2000 and 2007 compared maternal morbidity among women who had ToL with those who had elective repeat caesarean birth. Four of these studies were also included in Eden 2012, and the overall successful VBAC rate (73%) was similar to that found in the review comparing mode of birth rates. Like our review, Rossi 2008 found that maternal morbidity, blood transfusion and hysterectomy were similar among women who attempted VBAC and those who opted for elective caesarean delivery. However Rossi 2008 also found a higher incidence of uterine rupture/dehiscence in the ToL group (1.3% compared with 0.4%) although overall morbidity was lower when ToL led to successful VBAC. The review concluded that the higher risk of uterine rupture/dehiscence for women planning VBAC needs to be balanced by the reduced risk of maternal morbidity, uterine rupture/dehiscence and hysterectomy when VBAC is achieved (Rossi 2008).

Authors’ Conclusions

Implications for practice

The evidence for the effectiveness of interventions to support women’s decisions about mode of birth in a pregnancy after caesarean birth is limited to independent and mediated decision support. These types of decision support have no effect on women’s preferred mode of birth, actual mode of birth and congruence between preferred and actual modes of birth. However there is some evidence that independent decision support interventions are effective in reducing uncertainty in women about the choices they make. It appears that this is something women want. This review provides no justification to stop providing such types of support to women making these decisions.

Implications for research

Research is needed on the effectiveness, acceptability and feasibility of shared decision support interventions for women considering mode of birth in a pregnancy after a caesarean birth. This is likely to require cluster-randomised trials with nested qualitative studies to gain better understanding of the potential impact of such interventions.

Acknowledgements

As part of the pre-publication editorial process, this review has been commented on by two peers (an editor and referees who is external to the editorial team), a member of the Pregnancy and Childbirth Group’s international panel of consumers and the Group’s Statistical Adviser.

The National Institute for Health Research (NIHR) is the largest single funder of the Cochrane Pregnancy and Childbirth Group. The views and opinions expressed therein are those of the review

Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean (Review)

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authors and do not necessarily reflect those of the NIHR, NHS or the Department of Health.

REFERENCES

References to studies included in this review

DiAMOND 2007  {published and unpublished data}
Fraser 1997  {published data only}
* Fraser W, Maunsell E, Hodnett E, Moutquin JM.


Shorten 2005  {published and unpublished data}

References to ongoing studies

Eden 2009  {published data only}

Flamm 1997  {published data only}

Greene 1989  {published data only}

References to studies excluded from this review

Eden 2009

References to ongoing studies

Begley 2013  {published data only}

Wise 2011  {published data only}

Additional references

Afolabi 2006
Afolabi BB, Lesi AFE, Merah NA. Regional versus general anaesthesia for caesarean section. *Cochrane Database*
Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean (Review)

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Ng KW, Parsons J, Cyna AM, Middleton P. Spinal versus epidural anaesthesia for caesarean section. *Cochrane Database of Systematic Reviews* 2004, Issue 2. [DOI: 10.1002/14651858.CD0003765.pub2


RCOG 2007


Review Manager 2012 [Computer program]


Smaill 2010

Stacey 2011

Viemmix 2012

References to other published versions of this review

Horey 2012

* Indicates the major publication for the study
**CHARACTERISTICS OF STUDIES**

**Characteristics of included studies  [ordered by study ID]**

**DIAMOND 2007**

| Methods | Randomised controlled trial (May 2004-Aug 2006).  
Setting: 4 maternity units in south west England and Scotland.  
Aim: to determine the effects of 2 computer-based decision aids on decisional conflict and mode of delivery among pregnant women who had a previous caesarean section |
|---|---|
| Participants | 742 pregnant women with 1 previous lower segment caesarean section and delivery expected at $\geq 37$ weeks were randomised. Women of all parities with no current obstetric problems were included but the most recent delivery must have been a caesarean section. Non-English speakers were excluded  
713 women were included in the primary analysis (96% of those randomised, 247 usual care; 250 information program and website; 245 decision analysis program). (Data missing for 2 participants)  
13 participants were ineligible after randomisation and 14 withdrew  
Overall mean (SD) age at randomisation was 32.6 (4.7) years. Women who consented to participate were slightly older (32.5 v 31.9 years, $P = 0.05$) and less deprived ($P = 0.02$) than those who did not take part  
Mean gestational age was 19.0 (4.4) weeks. |
| Interventions | 2 computer-based decision aids were delivered via a laptop computer after brief instructions from a researcher  
1) Information programme: women navigated through descriptions and probabilities of clinical outcomes for mother and baby associated with planned vaginal birth, elective caesarean section, and emergency caesarean section  
Aim: informational component: outcomes associated with planned vaginal delivery, elective caesarean section, and emergency caesarean section, including descriptions of possible health outcomes for both mother and baby  
Deliberative component: none described.  
Other components: probabilities of having and not having the event, in both numerical and pictorial format  
Type: independent.  
2) Decision analysis: mode of birth was recommended based on utility assessments performed by the woman combined with probabilities of clinical outcomes within a concealed decision tree  
Aim: to produce a computer printout of the outcome of a decision analysis with encouragement for discussion with midwife or obstetrician at subsequent antenatal visits  
Informational component: the outcomes associated with planned vaginal delivery, elective caesarean section, and emergency caesarean section. This comprised descriptions, but not explicit probabilities, of outcomes for both mother and baby  
Deliberative component: participants were asked to consider the value they attached to possible outcomes by rating each on a visual analogue scale from 0 to 100. Ratings were not strictly equivalent to utility values, but considered to be a pragmatic method of assessment. These values were combined with the probabilities of each outcome in a decision tree to produce a recommended “preferred option” based on maximised expected utility |
**DiAMOND 2007**  (Continued)

Other components: none described.
Type: independent.
Control group: usual care - standard care given by obstetric and midwifery staff.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>2 primary outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Decisional conflict score</strong> (37 weeks) using Decisional Conflict Scale. Data not collected postpartum.</td>
</tr>
<tr>
<td></td>
<td><strong>Actual mode of birth</strong> (vaginal birth v caesarean delivery) from hospital records.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8 secondary outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anxiety</strong> 6-item short-form of the state scale of the Spielberger state-trait anxiety inventory (STAI).</td>
</tr>
<tr>
<td><strong>Knowledge</strong> instrument not described.</td>
</tr>
<tr>
<td><strong>5 subscales of the decisional conflict scale</strong></td>
</tr>
<tr>
<td><strong>Satisfaction with the decision</strong> (6 weeks post delivery) using satisfaction with decision scale</td>
</tr>
<tr>
<td>Other outcomes (collected as longitudinal observational data during randomised controlled trial reported in Emmett 2010).</td>
</tr>
<tr>
<td><strong>Mode of birth preference</strong> (baseline [approx. 19 weeks' gestation] and 37 weeks).</td>
</tr>
</tbody>
</table>

Notes

Informed consent: YES.
Ethical approval: YES.

**Funding source (amounts):** BUPA Foundation. First author partly supported by a post-doctoral fellowship from the UK Department of Health National Coordinating Centre for Research Capacity Development. (no amounts reported)

**Consumer involvement:** the content of the decision aids was derived from best practice protocols, extensive literature review (including systematic reviews) and from clinical experience of issues salient to women. The content was also discussed with pregnant women from the earliest stage and revised according to their comments.

**Intervention quality:** no independent assessment reported.

**Mode of birth decisions made:** mode of delivery preference was determined by asking women to indicate their planned method of delivery from the following options: attempt trial of labour (vaginal birth); planned caesarean section.

### Risk of bias

<table>
<thead>
<tr>
<th>Bias</th>
<th>Authors’ judgement</th>
<th>Support for judgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random sequence generation (selection bias)</td>
<td>Low risk</td>
<td>Randomisation sequence generated by computer.</td>
</tr>
<tr>
<td>Allocation concealment (selection bias)</td>
<td>Low risk</td>
<td>Study reports “another member of staff with no other involvement in the trial performed the allocation” allocated the randomisation sequence, which had been computer-generated by a member of the study team.</td>
</tr>
</tbody>
</table>
DiAMOND 2007  (Continued)

| Incomplete outcome data (attrition bias) | Low risk | Reasons for missing outcome data unlikely to be related to true outcome. Missing outcome data balanced in numbers across intervention groups, with similar reasons for missing data across groups |
| Selective reporting (reporting bias) | Low risk | The study protocol is available and all of the study's pre-specified (primary and secondary) outcomes that are of interest in the review have been reported in the pre-specified way |
| Other bias | Low risk | The study appears to be free of other sources of bias. |
| Blinding of participants and personnel (performance bias) | Low risk | No blinding or incomplete blinding, but the review authors judge that the outcome is not likely to be influenced by lack of blinding |
| Blinding of outcome assessment (detection bias) | Low risk | No blinding of outcome assessment, but the review authors judge that the outcome measurement is not likely to be influenced by lack of blinding |

Fraser 1997

Methods
Randomised controlled trial (April 1992 to November 1994).
Setting: 12 hospitals in North America (11 in Canada and 1 in USA).
Aim: to assess whether, for women who had a previous caesarean section, a prenatal education and support program promoting VBAC delivery increases the probability of vaginal delivery

Participants
1301 women were randomised; of these 1 ineligible woman was randomised in error, 6 miscarried, 3 therapeutic abortions, 2 delivered prior to 24 weeks' gestation, 13 lost to follow-up, and 1 withdrew because of language difficulties. Outcomes were also reported for 1280 infants
1275 women (98%) were included in the primary analysis including 372 women with low motivation for VBAC (29%) and 903 with high motivation for VBAC (71%)
1135 women completed postpartum questionnaire (87% of those randomised and 89% of those in primary analysis)
Women were eligible if they had a single previous low transverse caesarean were less than 28 weeks' gestation, planned to deliver in participating hospital, received prenatal care from physician associated with participating hospital, and had sufficient English or French to complete questionnaire
Women were ineligible if they had a previous VBAC section, a classic caesarean section or myomectomy scar, or a known multiple gestation
Mean age of both groups was 31 +/-0.5 years.
Interventions

**Verbal group:** offered a prenatal education and support program provided by a research nurse with experience in prenatal instruction and a resource person with personal experience of VBAC and communication skills. There were 2 contacts. The first with the research nurse on day of randomisation and the second with both nurse and resource person 4 to 8 weeks later.

**Aim:** to apply the principles of the model of Green and Kreuter of health promotion-disease prevention interventions in the promotion of VBAC delivery to increase the probability of vaginal delivery.

**Informational component:** women were given a pamphlet emphasizing the benefits of VBAC section (given to the control group), informed of consensus panel recommendations favouring planned vaginal birth and the probability of success of an attempt for vaginal birth in her centre, and reassured about pain relief options for labour. Women considering tubal sterilization were counselled on alternative methods of permanent contraception, including vasectomy for their partner.

**Deliberative component:** at first contact motivation to attempt VBAC was assessed and as were the woman's perceptions of the attitudes of key persons in her social network, including her spouse and her treating obstetrician.

**Other components:** the resource person participated in the second contact to provide peer influence and support. Attempts were made to identify and discuss perceived barriers to VBAC including, when applicable, the views of the treating obstetrician. As much as possible, the intervention was individualised to the woman's needs.

**Type:** shared/mediated.

**Control or document group:** provided with a pamphlet detailing the benefits of planned VBAC delivery.

Outcomes

**Motivation to attempt vaginal birth** after a previous caesarean delivery was self assessed and measured on a 10 cm visual analogue scale: stratum I, low motivation; stratum II, high motivation.

**Proportion of women achieving vaginal delivery.**

**Proportion of women attempting vaginal delivery** (defined with at least 1 of the following criteria: (1) a vaginal delivery, (2) a caesarean section that was preceded by at least 4 hours of labour in the hospital, (3) a caesarean section preceded by in-hospital labour of less than 4 hours but where there was an urgent indication for abdominal delivery)

**Sense of control over the birth experience** measured with the Birth Experience Rating Scale (shortened version of Labor Agency Scale adapted for study) 12 and 72 hours postpartum (all women after 24 weeks of pregnancy). 18-item Lickert-type each with seven steps and maximum score of 126.

Participants were also asked about the effects of study participation on the ease of their decision on mode of birth.

Adverse outcomes were reported for mothers and neonates.

Notes

**Informed consent:** YES.

**Ethical approval:** YES.

**Funding source (amounts):** supported by operating grant No. MT 11430 from the Medical Research Council of Canada and by nominal awards (first author from the Medical Research Council of Canada, grant No DG-401; E.M. from the National Health Research and Development Program, National Health Research Scholar, No. 6605-2487-47) (no amounts reported)
Consumer involvement: the resource person had personal experience of VBAC but no other consumer involvement in the study design or conducted was reported. **Intervention quality:** no independent assessment reported.

**Mode of birth decisions made:** mode of delivery preference using a 10 cm visual analogue scale to indicate agreement or disagreement with the statement "I plan to attempt a vaginal delivery in this pregnancy". Participants were also asked whether participation in the study influenced the ease of decision-making (a higher proportion of women in the document group indicated that the study had no effect [67% v 38%]).

### Risk of bias

<table>
<thead>
<tr>
<th>Bias</th>
<th>Authors’ judgement</th>
<th>Support for judgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random sequence generation (selection bias)</td>
<td>Unclear risk</td>
<td>Unclear how the random sequence was generated.</td>
</tr>
<tr>
<td>Allocation concealment (selection bias)</td>
<td>Low risk</td>
<td>&quot;Randomization, which was performed through a centralized telephone answering service, was blocked and stratified by hospital and by the woman's motivation to attempt vaginal delivery&quot;</td>
</tr>
<tr>
<td>Incomplete outcome data (attrition bias)</td>
<td>Low risk</td>
<td>All data satisfactorily reported.</td>
</tr>
<tr>
<td>Selective reporting (reporting bias)</td>
<td>Low risk</td>
<td>Insufficient information to assess whether an important risk of bias exists.</td>
</tr>
<tr>
<td>Other bias</td>
<td>Low risk</td>
<td>The study appears to be free of other sources of bias.</td>
</tr>
<tr>
<td>Blinding of participants and personnel (performance bias)</td>
<td>Low risk</td>
<td>No blinding of mode of birth, but the review authors judge that this outcome measurement is not likely to be influenced by lack of blinding</td>
</tr>
<tr>
<td>Blinding of outcome assessment (detection bias)</td>
<td>Low risk</td>
<td>No blinding of mode of birth, but the review authors judge that this outcome measurement is not likely to be influenced by lack of blinding</td>
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</tbody>
</table>
### Methods

**Setting:** 3 hospital prenatal clinics and 3 obstetric practices in New South Wales, Australia  
**Aim:** to determine whether a decision aid for women who have experienced previous caesarean birth facilitates informed decision-making about birth options during a subsequent pregnancy

### Participants

227 women who had 1 previous caesarean section were randomised (intervention group = 115 and control group = 112). Women were recruited when less than 20 weeks' gestation. Women who had experienced more than 1 previous caesarean section, classical or unknown uterine scar, a history of uterine rupture or upper segment perforation, multiple pregnancy, or obstetric or medical contraindications to vaginal birth and/or trial of vaginal birth (e.g. placenta previa) in the current pregnancy were excluded  
193 women completed the survey at 36 weeks (intervention group = 99 and control group = 94)  
There was no significant difference in the mean age of the groups (control = 31.5 years and intervention = 32.05 years)  
Women in the intervention group were significantly more likely to report problems after their previous caesarean (33.0% cf 46.1%, P = 0.05)

### Interventions

Decision-aid booklet constructed using the Ottawa Decision Framework as a format and incorporating evidence-based information, explicit probability illustrations, and values clarification exercises  
**Type:** independent.  
**Aim:** to facilitate ‘quality’ decision-making based on research evidence about the risks and benefits of a trial of vaginal birth versus elective caesarean section weighted against individual values and needs (Shorten 2004)  
**Informational component:** risks and benefits of trial of labour versus elective repeat caesarean were presented. Major advantages of trial of vaginal birth over elective caesarean included: good success rates for attempted VBAC (60% to 80%), shorter hospital stay and recovery time, greater opportunities to establish breastfeeding and avoidance of risks related to surgery. Disadvantages included potential for complications such as rupture of uterine scar, possible instrumental vaginal birth (forceps/vacuum), vaginal trauma and emergency caesarean. Major advantages of elective caesarean included the ability to plan or book in advance therefore reducing uncertainty or labour fears, and reduction in risks associated with emergency caesarean. Disadvantages included surgical risks such as infection, anaesthetic problems, bleeding, blood clots (lung and legs) and longer postnatal recovery time, as well as increased likelihood of transient tachypnoea of the newborn  
**Deliberative component:** a values clarification exercise to guide women through a summary of major pros and cons, based on the discussion within the body of the booklet. This involved questions about the importance to them of particular issues a response scale (“not important”, “some/moderately important” and “very important”). The women were also to record any additional issues. A 15-point “Birth Preference Scale” was placed at the end of the exercise to elicit final birth preferences between trial of vaginal birth and elective caesarean birth  
**Other components:** explicit probability illustrations.  
**Control group:** received routine pregnancy care.

### Outcomes

**Birth preference** (12-18 weeks; 28 weeks; 36 weeks).  
**Knowledge score** (28 weeks, 36 weeks) assessed with 15-item questionnaire developed and piloted for the study based on key risk and benefit information contained in the
decision aid

**Decisional conflict score** (28 weeks, 36 weeks) using Decisional Conflict Scale.

**Mode of birth** from hospital medical records.

**Satisfaction** (6-8 weeks postnatal) using a visual analogue scale (0 to 10) where women were asked to indicate “how they feel about their birth experience”.

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**Notes**

*Informed consent:* YES.

*Ethical approval:* YES.

*Funding source (amounts):* MBF Research Grant, Sydney; The University of Wollongong New Researcher Grant Scheme, Wollongong; NSW Midwives Association Research Scholarship, Sydney, New South Wales, Australia (no amounts reported)

*Consumer involvement:* a critical review of the draft decision aid included two women who had already experienced caesarean birth (Reported in Shorten 2004)

*Intervention quality:* the International Patient Decision Aid Standards (IPDAS) Collaboration assessment of this decision aid indicates that it meets:

14/14 of the content criteria; 8/9 of the development process criteria and 2/2 of the effectiveness criteria

**Mode of birth decisions made:** mode of delivery preference using a 15-point Birth Preference Scale (at baseline, 28 weeks and 36 weeks)

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**Risk of bias**

<table>
<thead>
<tr>
<th>Bias</th>
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<th>Support for judgement</th>
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<tbody>
<tr>
<td>Random sequence generation (selection bias)</td>
<td>Low risk</td>
<td>Participant code numbers were prepared by computer-based randomised generation</td>
</tr>
<tr>
<td>Allocation concealment (selection bias)</td>
<td>Low risk</td>
<td>After recruitment and consent were obtained, a code number was assigned to each participant and an opaque envelope with corresponding number opened and allocation recorded</td>
</tr>
<tr>
<td>Incomplete outcome data (attrition bias)</td>
<td>Low risk</td>
<td>Missing outcome data balanced in numbers across intervention groups for main study outcome (preferred mode of birth) with similar reasons for missing data across groups; 16 women were lost to follow-up from the intervention group (14%) and 18 from the control group (16%) by survey 3 at 36 weeks</td>
</tr>
<tr>
<td>All outcomes</td>
<td>Low risk</td>
<td>The study protocol is available. All the study’s pre-specified (primary and secondary) outcomes have been reported and additional information has been provided by the author</td>
</tr>
<tr>
<td>Selective reporting (reporting bias)</td>
<td>Low risk</td>
<td></td>
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</tbody>
</table>
Shorten 2005  (Continued)

<table>
<thead>
<tr>
<th>Other bias</th>
<th>Low risk</th>
<th>The study appears to be free of other sources of bias.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blinding of participants and personnel (performance bias)</td>
<td>Low risk</td>
<td>Participants blinded to their allocation, although they all expected to receive information about birth options during the pregnancy. Midwives and doctors were blinded to both women’s enrolment and study allocation. However, women who used the decision aid as specified and in a process of consultation with their midwife or doctor would have negated the blinding of their clinicians, and perhaps of the women themselves. However authors judge that the outcome is not likely to be influenced by lack of blinding.</td>
</tr>
<tr>
<td>Blinding of outcome assessment (detection bias)</td>
<td>Low risk</td>
<td>No blinding or incomplete blinding, but the review authors judge that the outcome is not likely to be influenced by lack of blinding.</td>
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</table>

**Characteristics of excluded studies  [ordered by study ID]**

<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eden 2009</td>
<td>Hypothetical decision. Participants were not pregnant.</td>
</tr>
<tr>
<td>Flamm 1997</td>
<td>Intervention does not aim to support decision about mode of birth</td>
</tr>
<tr>
<td>Greene 1989</td>
<td>Participants did not necessarily have previous caesarean and information about previous deliveries not reported</td>
</tr>
</tbody>
</table>

cf: compare  
SD: standard deviation  
v: versus  
VBAC: vaginal birth after caesarean
### Characteristics of ongoing studies  
**[ordered by study ID]**

**Begley 2013**

<table>
<thead>
<tr>
<th>Trial name or title</th>
<th>Improving the organisation of maternal health service delivery, and optimising childbirth, by increasing vaginal birth after caesarean section (VBAC) through enhanced women-centred care (OptiBIRTH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods</td>
<td>A randomised trial</td>
</tr>
</tbody>
</table>
| Participants        | 1. Pregnant women aged over 18 years  
2. Who have had one previous caesarean section  
3. Who speak a language for which translation is available  
4. Who give their consent |
| Interventions       | 1. Evidence-based education of women and clinicians, introduction of communities of practice (women and clinicians sharing knowledge), opinion leaders, audit and peer review of caesarean sections in each hospital, and joint decision-making by women and clinicians. The content and details of the intervention will be determined through systematic reviews and qualitative research.  
2. Usual care. |
| Outcomes            | Primary outcome measures  
Change from baseline in each hospital in the proportion of women who have had one previous caesarean section who have a vaginal birth during the study  
Secondary outcome measures  
1. Gestational age at birth  
2. Length of labour  
3. Emotional well-being, feelings of anxiety, control, satisfaction with care and perception of involvement in care, during pregnancy and the postnatal period.  
4. Intrapartum interventions (induction or augmentation of labour, use of epidural and fetal monitoring, mode of birth).  
5. Maternal morbidities during pregnancy and the postnatal period (for example, pain, postpartum haemorrhage, wound infection, abdominal pain, depression).  
6. Neonatal morbidities (resuscitation, Apgar scores, admission to intensive care).  
8. Length of hospital stay (mother and infant).  
9. Readmission. |
| Starting date       | 01/12/2013                                                                                                                                                                                         |
| Contact information | Prof Cecily Begley  
School of Nursing and Midwifery  
Trinity College Dublin  
City/town Dublin  
Zip/Postcode D2  
Country Ireland  
Tel +353 (0)1 8962693  
Fax +353 (0)1 8963001  
Email cbegley@tcd.ie |
| Notes               | --------- |
**Wise 2011**

<table>
<thead>
<tr>
<th>Trial name or title</th>
<th>The effect of an antenatal decision aid booklet on rate of vaginal birth after caesarean (VBAC) in women with previous caesarean section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods</td>
<td>Randomised controlled trial.</td>
</tr>
<tr>
<td>Participants</td>
<td>Pregnant women with 1 previous caesarean section who are less than 25 weeks' gestation in current pregnancy at recruitment</td>
</tr>
<tr>
<td>Interventions</td>
<td>The decision aid is a comprehensive 25-page booklet that first explains the risks and benefits of elective repeat caesarean and of VBAC, and then asks the woman to write down her own values and preferences about the 2 birth options. It will be administered at the time of the consultation in the Positive Birth After Caesarean (PBAC) Clinic. The patient pamphlet is 6 pages and briefly lists risks and benefits of elective repeat caesarean and of VBAC. It is administered at the time of the consultation in PBAC clinic</td>
</tr>
<tr>
<td>Outcomes</td>
<td>The rate of vaginal birth after caesarean is determined using the perinatal database at the hospital. Mean decisional conflict score about birth choice, out of 5 measured just prior to intervention, and again at 33-35 weeks' gestation. Mean knowledge score about birth choices, out of 15 measured just prior to intervention, and again at 33-35 weeks' gestation.</td>
</tr>
<tr>
<td>Starting date</td>
<td>1/11/2011.</td>
</tr>
</tbody>
</table>
| Contact information | Dr Michelle Wise  
Department of Obstetrics and Gynaecology  
Faculty of Medical and Health Sciences  
University of Auckland  
Private Bag 92019  
Auckland 1142 |
| Notes               | Target sample 314.                                                                                                               |
### Comparison 1. Decision support intervention versus usual care

<table>
<thead>
<tr>
<th>Outcome or subgroup title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Planned mode of birth: VBAC</td>
<td>3</td>
<td>2071</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>1.03 [0.97, 1.10]</td>
</tr>
<tr>
<td>2 Planned mode of birth: caesarean birth</td>
<td>3</td>
<td>2071</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>0.96 [0.84, 1.10]</td>
</tr>
<tr>
<td>3 Planned mode of birth: unsure versus sure</td>
<td>3</td>
<td>2071</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>0.87 [0.62, 1.20]</td>
</tr>
<tr>
<td>4 Permanent adverse outcome</td>
<td>1</td>
<td>2555</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>0.66 [0.32, 1.36]</td>
</tr>
<tr>
<td>5 Severe adverse outcome</td>
<td>1</td>
<td>2555</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>1.02 [0.77, 1.36]</td>
</tr>
<tr>
<td>6 Unclear impact adverse outcome</td>
<td>1</td>
<td>2555</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>0.66 [0.27, 1.61]</td>
</tr>
<tr>
<td>7 Congruence - preferred and actual</td>
<td>3</td>
<td>1921</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>1.02 [0.96, 1.07]</td>
</tr>
<tr>
<td>8 Actual mode of birth (VBAC)</td>
<td>3</td>
<td>2190</td>
<td>Risk Ratio (M-H, Random, 95% CI)</td>
<td>0.97 [0.89, 1.06]</td>
</tr>
<tr>
<td>8.1 Independent decision support</td>
<td>2</td>
<td>915</td>
<td>Risk Ratio (M-H, Random, 95% CI)</td>
<td>1.01 [0.88, 1.15]</td>
</tr>
<tr>
<td>8.2 Mediated decision support</td>
<td>1</td>
<td>1275</td>
<td>Risk Ratio (M-H, Random, 95% CI)</td>
<td>0.92 [0.82, 1.03]</td>
</tr>
<tr>
<td>9 Decisional conflict at 36-37 weeks</td>
<td>2</td>
<td>787</td>
<td>Std. Mean Difference (IV, Random, 95% CI)</td>
<td>-0.25 [-0.47, -0.02]</td>
</tr>
<tr>
<td>10 Decisional conflict - change between 28 and 36 weeks</td>
<td>1</td>
<td>187</td>
<td>Mean Difference (IV, Fixed, 95% CI)</td>
<td>-0.32 [-1.02, 0.38]</td>
</tr>
<tr>
<td>11 Knowledge</td>
<td>2</td>
<td>787</td>
<td>Std. Mean Difference (IV, Random, 95% CI)</td>
<td>0.74 [0.46, 1.03]</td>
</tr>
<tr>
<td>12 Satisfaction with decision-making process</td>
<td>2</td>
<td>797</td>
<td>Std. Mean Difference (IV, Fixed, 95% CI)</td>
<td>0.06 [-0.09, 0.20]</td>
</tr>
<tr>
<td>13 Maternal morbidity</td>
<td>1</td>
<td>1275</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>0.90 [0.38, 2.10]</td>
</tr>
<tr>
<td>14 Uterine rupture</td>
<td>1</td>
<td>1275</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>1.32 [0.46, 3.78]</td>
</tr>
<tr>
<td>15 Hysterectomy</td>
<td>1</td>
<td>1275</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>0.20 [0.01, 4.11]</td>
</tr>
<tr>
<td>16 Blood transfusion</td>
<td>1</td>
<td>1275</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>0.66 [0.11, 3.93]</td>
</tr>
<tr>
<td>17 All adverse neonatal indicators</td>
<td>1</td>
<td>1280</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>0.93 [0.71, 1.21]</td>
</tr>
<tr>
<td>18 Perinatal deaths</td>
<td>1</td>
<td>1280</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>0.50 [0.09, 2.69]</td>
</tr>
<tr>
<td>19 Apgar score &lt; 7 at 5 minutes</td>
<td>1</td>
<td>1280</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>0.66 [0.24, 1.84]</td>
</tr>
<tr>
<td>20 Admission to NICU</td>
<td>1</td>
<td>1280</td>
<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>1.00 [0.75, 1.34]</td>
</tr>
</tbody>
</table>
Analysis 1.1. Comparison 1 Decision support intervention versus usual care, Outcome 1 Planned mode of birth: VBAC.

Review: Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean

Comparison: 1 Decision support intervention versus usual care

Outcome: 1 Planned mode of birth: VBAC

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention n/N</th>
<th>Control n/N</th>
<th>Risk Ratio M-H,Fixed 95% CI</th>
<th>Weight Risk Ratio M-H,Fixed 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>DiAMOND 2007</td>
<td>229/401</td>
<td>115/202</td>
<td>23.8 % 1.00 [ 0.87, 1.16 ]</td>
<td>1.00 [ 0.87, 1.16 ]</td>
</tr>
<tr>
<td>Fraser 1997</td>
<td>465/641</td>
<td>440/634</td>
<td>69.0 % 1.05 [ 0.97, 1.12 ]</td>
<td>1.05 [ 0.97, 1.12 ]</td>
</tr>
<tr>
<td>Shorten 2005</td>
<td>48/99</td>
<td>45/94</td>
<td>7.2 % 1.01 [ 0.76, 1.36 ]</td>
<td>1.01 [ 0.76, 1.36 ]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>1141</strong></td>
<td><strong>930</strong></td>
<td><strong>100.0 %</strong> 1.03 [ 0.97, 1.10 ]</td>
<td>1.03 [ 0.97, 1.10 ]</td>
</tr>
</tbody>
</table>

Total events: 742 (Intervention), 600 (Control)
Heterogeneity: Chi² = 0.28, df = 2 (P = 0.87); I² =0.0%
Test for overall effect: Z = 1.00 (P = 0.32)
Test for subgroup differences: Not applicable
Analysis 1.2. Comparison 1 Decision support intervention versus usual care, Outcome 2 Planned mode of birth: caesarean birth.

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention n/N</th>
<th>Control n/N</th>
<th>Risk Ratio M-H,Fixed 95% CI</th>
<th>Weight %</th>
<th>Risk Ratio M-H,Fixed 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIAMOND 2007</td>
<td>158/401</td>
<td>82/202</td>
<td>0.97 [0.79, 1.19]</td>
<td>37.7 %</td>
<td></td>
</tr>
<tr>
<td>Fraser 1997</td>
<td>137/641</td>
<td>150/634</td>
<td>0.90 [0.74, 1.11]</td>
<td>52.1 %</td>
<td></td>
</tr>
<tr>
<td>Shorten 2005</td>
<td>37/99</td>
<td>29/94</td>
<td>1.21 [0.82, 1.80]</td>
<td>10.3 %</td>
<td></td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>1141</strong></td>
<td><strong>930</strong></td>
<td><strong>0.96 [0.84, 1.10]</strong></td>
<td><strong>100.0 %</strong></td>
<td></td>
</tr>
</tbody>
</table>

Total events: 332 (Intervention), 261 (Control)
Heterogeneity: Chi² = 1.68, df = 2 (P = 0.43); I² = 0.0%
Test for overall effect: Z = 0.58 (P = 0.56)
Test for subgroup differences: Not applicable
### Analysis 1.3. Comparison 1 Decision support intervention versus usual care, Outcome 3 Planned mode of birth: unsure versus sure.

Review: Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean

Comparison: 1 Decision support intervention versus usual care

Outcome: 3 Planned mode of birth: unsure versus sure

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Risk Ratio</th>
<th>Weight</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/N</td>
<td>n/N</td>
<td>M-H,Fixed,95% CI</td>
<td>M-H,Fixed,95% CI</td>
<td></td>
</tr>
<tr>
<td>DIAMOND 2007</td>
<td>14/401</td>
<td>5/202</td>
<td>9.3 % 1.41 [ 0.52, 3.86 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraser 1997</td>
<td>39/641</td>
<td>44/634</td>
<td>62.0 % 0.88 [ 0.58, 1.33 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorten 2005</td>
<td>14/99</td>
<td>20/94</td>
<td>28.7 % 0.66 [ 0.36, 1.24 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>1141</td>
<td>930</td>
<td>100.0 % 0.87 [ 0.62, 1.20 ]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total events: 67 (Intervention), 69 (Control)
Heterogeneity: Chi² = 1.60, df = 2 (P = 0.45); I² =0.0%
Test for overall effect: Z = 0.87 (P = 0.39)
Test for subgroup differences: Not applicable

### Analysis 1.4. Comparison 1 Decision support intervention versus usual care, Outcome 4 Permanent adverse outcome.

Review: Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean

Comparison: 1 Decision support intervention versus usual care

Outcome: 4 Permanent adverse outcome

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Risk Ratio</th>
<th>Weight</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/N</td>
<td>n/N</td>
<td>M-H,Fixed,95% CI</td>
<td>M-H,Fixed,95% CI</td>
<td></td>
</tr>
<tr>
<td>Fraser 1997</td>
<td>12/1284</td>
<td>18/1271</td>
<td>100.0 % 0.66 [ 0.32, 1.36 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>1284</td>
<td>1271</td>
<td>100.0 % 0.66 [ 0.32, 1.36 ]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total events: 12 (Intervention), 18 (Control)
Heterogeneity: not applicable
Test for overall effect: Z = 1.12 (P = 0.26)
Test for subgroup differences: Not applicable
**Analysis 1.5. Comparison 1 Decision support intervention versus usual care, Outcome 5 Severe adverse outcome.**

Review: Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean

Comparison: 1 Decision support intervention versus usual care

Outcome: 5 Severe adverse outcome

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention n/N</th>
<th>Control n/N</th>
<th>Risk Ratio M-H,Fixed 95% CI</th>
<th>Weight %</th>
<th>Risk Ratio M-H,Fixed 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraser 1997</td>
<td>90/1284</td>
<td>87/1271</td>
<td>1.02 [0.77, 1.36]</td>
<td>100.0</td>
<td>1.02 [0.77, 1.36]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>1284</strong></td>
<td><strong>1271</strong></td>
<td></td>
<td>100.0</td>
<td>1.02 [0.77, 1.36]</td>
</tr>
</tbody>
</table>

Total events: 90 (Intervention), 87 (Control)

Heterogeneity: not applicable

Test for overall effect: Z = 0.16 (P = 0.87)

Test for subgroup differences: Not applicable
### Analysis 1.6. Comparison 1 Decision support intervention versus usual care, Outcome 6 Unclear impact adverse outcome.

**Review:** Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean

**Comparison:** 1 Decision support intervention versus usual care

**Outcome:** 6 Unclear impact adverse outcome

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention n/N</th>
<th>Control n/N</th>
<th>Risk Ratio</th>
<th>Weight</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraser 1997</td>
<td>8/1284</td>
<td>12/1271</td>
<td>0.66 [0.27, 1.61]</td>
<td>100.0 %</td>
<td>0.66 [0.27, 1.61]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>1284</strong></td>
<td><strong>1271</strong></td>
<td><strong>100.0 %</strong></td>
<td><strong>0.66 [0.27, 1.61]</strong></td>
<td></td>
</tr>
</tbody>
</table>

Total events: 8 (Intervention), 12 (Control)
Heterogeneity: not applicable
Test for overall effect: Z = 0.91 (P = 0.36)
Test for subgroup differences: Not applicable

---

### Analysis 1.7. Comparison 1 Decision support intervention versus usual care, Outcome 7 Congruence - preferred and actual.

**Review:** Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean

**Comparison:** 1 Decision support intervention versus usual care

**Outcome:** 7 Congruence - preferred and actual

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention n/N</th>
<th>Control n/N</th>
<th>Risk Ratio</th>
<th>Weight</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIAMOND 2007</td>
<td>270/386</td>
<td>132/196</td>
<td>1.04 [0.92, 1.17]</td>
<td>25.2 %</td>
<td>1.04 [0.92, 1.17]</td>
</tr>
<tr>
<td>Fraser 1997</td>
<td>476/602</td>
<td>460/590</td>
<td>1.01 [0.96, 1.08]</td>
<td>66.9 %</td>
<td>1.01 [0.96, 1.08]</td>
</tr>
<tr>
<td>Shorten 2005</td>
<td>55/77</td>
<td>52/70</td>
<td>0.96 [0.79, 1.17]</td>
<td>7.8 %</td>
<td>0.96 [0.79, 1.17]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>1065</strong></td>
<td><strong>856</strong></td>
<td><strong>100.0 %</strong></td>
<td><strong>1.02 [0.96, 1.07]</strong></td>
<td></td>
</tr>
</tbody>
</table>

Total events: 801 (Intervention), 644 (Control)
Heterogeneity: Chi² = 0.44, df = 2 (P = 0.80); I² = 0.0%
Test for overall effect: Z = 0.61 (P = 0.54)
Test for subgroup differences: Not applicable
**Analysis 1.8. Comparison 1 Decision support intervention versus usual care, Outcome 8 Actual mode of birth (VBAC).**

Review: Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean

Comparison: Decision support intervention versus usual care

Outcome: Actual mode of birth (VBAC)

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Risk Ratio (Non-event)</th>
<th>Weight</th>
<th>Risk Ratio (Non-event)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/N</td>
<td>n/N</td>
<td>M-H, Random, 95% CI</td>
<td></td>
<td>M-H, Random, 95% CI</td>
<td></td>
</tr>
<tr>
<td>I Independent decision support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIAMOND 2007</td>
<td>158/474</td>
<td>72/239</td>
<td>40.6 %</td>
<td>0.95</td>
<td>0.86, 1.06</td>
<td></td>
</tr>
<tr>
<td>Shorten 2005</td>
<td>23/99</td>
<td>31/103</td>
<td>21.8 %</td>
<td>1.10</td>
<td>0.93, 1.30</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td><strong>573</strong></td>
<td><strong>342</strong></td>
<td><strong>62.4 %</strong></td>
<td><strong>1.01</strong></td>
<td><strong>0.88, 1.15</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Mediated decision support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraser 1997</td>
<td>339/640</td>
<td>310/634</td>
<td>37.6 %</td>
<td>0.92</td>
<td>0.82, 1.03</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td><strong>641</strong></td>
<td><strong>634</strong></td>
<td><strong>37.6 %</strong></td>
<td><strong>0.92</strong></td>
<td><strong>0.82, 1.03</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>1214</strong></td>
<td><strong>976</strong></td>
<td><strong>100.0 %</strong></td>
<td><strong>0.97</strong></td>
<td><strong>0.89, 1.06</strong></td>
<td></td>
</tr>
</tbody>
</table>

Total events: 181 (Intervention), 103 (Control)
Heterogeneity: \( \tau^2 = 0.00; \) \( \chi^2 = 1.97, df = 1 (P = 0.16); I^2 = 49\%
Test for overall effect: \( Z = 0.11 (P = 0.91) \)

Test for subgroup differences: \( \chi^2 = 0.99, df = 1 (P = 0.32), I^2 = 0.0\% \)
### Analysis 1.9. Comparison 1 Decision support intervention versus usual care, Outcome 9 Decisional conflict at 36-37 weeks.

Review: Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean

Comparison: 1 Decision support intervention versus usual care

Outcome: 9 Decisional conflict at 36-37 weeks

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Std. Mean Difference</th>
<th>Weight</th>
<th>Std. Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>IV,Random,95% CI</td>
<td>IV,Random,95% CI</td>
</tr>
<tr>
<td>DIAMOND 2007</td>
<td>399 23 (14.18)</td>
<td>201 27.8 (14.6)</td>
<td>-0.33</td>
<td>62.5%</td>
<td>[ -0.51, -0.16 ]</td>
</tr>
<tr>
<td>Shorten 2005</td>
<td>99 1.94 (2.34)</td>
<td>88 2.18 (2.48)</td>
<td>-0.10</td>
<td>37.5%</td>
<td>[ -0.39, 0.19 ]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>498</td>
<td>289</td>
<td>-0.25</td>
<td>100.0%</td>
<td>[-0.47, -0.02]</td>
</tr>
</tbody>
</table>

Heterogeneity: Tau² = 0.01; Ch² = 1.91, df = 1 (P = 0.17); I² = 48%

Test for overall effect: Z = 2.16 (P = 0.031)

Test for subgroup differences: Not applicable

### Analysis 1.10. Comparison 1 Decision support intervention versus usual care, Outcome 10 Decisional conflict - change between 28 and 36 weeks.

Review: Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean

Comparison: 1 Decision support intervention versus usual care

Outcome: 10 Decisional conflict - change between 28 and 36 weeks

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Mean Difference</th>
<th>Weight</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>IV,Fixed,95% CI</td>
<td>IV,Fixed,95% CI</td>
</tr>
<tr>
<td>Shorten 2005</td>
<td>99 -0.4 (2.41)</td>
<td>88 -0.08 (2.49)</td>
<td>-0.32</td>
<td>100.0%</td>
<td>[-1.02, 0.38]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>99</td>
<td>88</td>
<td>-0.32</td>
<td>100.0%</td>
<td>[-1.02, 0.38]</td>
</tr>
</tbody>
</table>

Heterogeneity: not applicable

Test for overall effect: Z = 0.89 (P = 0.37)

Test for subgroup differences: Not applicable
### Analysis 1.11. Comparison 1 Decision support intervention versus usual care, Outcome 11 Knowledge.

**Review:** Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean

**Comparison:** 1 Decision support intervention versus usual care

**Outcome:** 11 Knowledge

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Std. Mean Difference</th>
<th>Weight</th>
<th>Std. Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>IV(Random,95% CI)</td>
<td></td>
<td>IV(Random,95% CI)</td>
</tr>
<tr>
<td>DiAMOND 2007</td>
<td>394 68.9 (18.25)</td>
<td>202 57.5 (18.5)</td>
<td>58.6 % 0.62 [ 0.45, 0.79 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorten 2005</td>
<td>99 11.3 (2.25)</td>
<td>92 9.08 (2.56)</td>
<td>41.4 % 0.92 [ 0.62, 1.22 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>493</strong></td>
<td><strong>294</strong></td>
<td></td>
<td><strong>100.0 % 0.74 [ 0.46, 1.03 ]</strong></td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: Tau² = 0.03; Chi² = 2.87, df = 1 (P = 0.09); I² = 65%
Test for overall effect: Z = 5.06 (P < 0.00001)
Test for subgroup differences: Not applicable

### Analysis 1.12. Comparison 1 Decision support intervention versus usual care, Outcome 12 Satisfaction with decision-making process.

**Review:** Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean

**Comparison:** 1 Decision support intervention versus usual care

**Outcome:** 12 Satisfaction with decision-making process

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Std. Mean Difference</th>
<th>Weight</th>
<th>Std. Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>IV(Fixed,95% CI)</td>
<td></td>
<td>IV(Fixed,95% CI)</td>
</tr>
<tr>
<td>DiAMOND 2007</td>
<td>423 4.35 (2.05)</td>
<td>209 4.2 (0.6)</td>
<td>77.2 % 0.09 [-0.08, 0.25 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorten 2005</td>
<td>85 7.73 (2.76)</td>
<td>80 7.86 (2.42)</td>
<td>22.8 % -0.05 [-0.36, 0.26 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>508</strong></td>
<td><strong>289</strong></td>
<td></td>
<td><strong>100.0 % 0.06 [-0.09, 0.20 ]</strong></td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: Chi² = 0.60, df = 1 (P = 0.44); I² = 0.0%
Test for overall effect: Z = 0.76 (P = 0.45)
Test for subgroup differences: Not applicable
### Analysis 1.13. Comparison 1 Decision support intervention versus usual care, Outcome 13 Maternal morbidity.

**Review:** Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean

**Comparison:** 1 Decision support intervention versus usual care

**Outcome:** 13 Maternal morbidity

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention n/N</th>
<th>Control n/N</th>
<th>Risk Ratio M-H,Fixed 95% CI</th>
<th>Weight</th>
<th>Risk Ratio M-H,Fixed 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraser 1997</td>
<td>10/641</td>
<td>11/634</td>
<td>1.00 [0.38, 2.10]</td>
<td>100.0%</td>
<td>0.90 [0.38, 2.10]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>641</strong></td>
<td><strong>634</strong></td>
<td></td>
<td><strong>100.0%</strong></td>
<td><strong>0.90 [0.38, 2.10]</strong></td>
</tr>
</tbody>
</table>

Total events: 10 (Intervention), 11 (Control)

Heterogeneity: not applicable

Test for overall effect: Z = 0.25 (P = 0.81)

Test for subgroup differences: Not applicable
### Analysis 1.14. Comparison 1 Decision support intervention versus usual care, Outcome 14 Uterine rupture.

Review: Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean

Comparison: 1 Decision support intervention versus usual care

Outcome: 14 Uterine rupture

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention n/N</th>
<th>Control n/N</th>
<th>Risk Ratio M-H,Fixed(95% CI)</th>
<th>Weight %</th>
<th>Risk Ratio M-H,Fixed(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraser 1997</td>
<td>8/641</td>
<td>6/634</td>
<td>1.32 [0.46, 3.78]</td>
<td>100.0 %</td>
<td>1.32 [0.46, 3.78]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>641</strong></td>
<td><strong>634</strong></td>
<td>100.0 %</td>
<td></td>
<td>1.32 [0.46, 3.78]</td>
</tr>
</tbody>
</table>

Total events: 8 (Intervention), 6 (Control)
Heterogeneity: not applicable
Test for overall effect: Z = 0.52 (P = 0.61)
Test for subgroup differences: Not applicable

---

### Analysis 1.15. Comparison 1 Decision support intervention versus usual care, Outcome 15 Hysterectomy.

Review: Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean

Comparison: 1 Decision support intervention versus usual care

Outcome: 15 Hysterectomy

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention n/N</th>
<th>Control n/N</th>
<th>Risk Ratio M-H,Fixed(95% CI)</th>
<th>Weight %</th>
<th>Risk Ratio M-H,Fixed(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraser 1997</td>
<td>0/641</td>
<td>2/634</td>
<td>0.20 [0.01, 4.11]</td>
<td>100.0 %</td>
<td>0.20 [0.01, 4.11]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>641</strong></td>
<td><strong>634</strong></td>
<td>100.0 %</td>
<td></td>
<td>0.20 [0.01, 4.11]</td>
</tr>
</tbody>
</table>

Total events: 0 (Intervention), 2 (Control)
Heterogeneity: not applicable
Test for overall effect: Z = 1.05 (P = 0.30)
Test for subgroup differences: Not applicable
Analysis 1.16. Comparison 1 Decision support intervention versus usual care, Outcome 16 Blood transfusion.

Review: Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean

Comparison: 1 Decision support intervention versus usual care

Outcome: 16 Blood transfusion

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Risk Ratio</th>
<th>Weight</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/N</td>
<td>n/N</td>
<td>M-H,Fixed,95% CI</td>
<td>M-H,Fixed,95% CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraser 1997</td>
<td>2/641</td>
<td>3/634</td>
<td>100.0 %</td>
<td>0.66</td>
<td>[ 0.11, 3.93 ]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>641</td>
<td>634</td>
<td>100.0 %</td>
<td>0.66</td>
<td>[ 0.11, 3.93 ]</td>
</tr>
</tbody>
</table>

Total events: 2 (Intervention), 3 (Control)
Heterogeneity: not applicable
Test for overall effect: Z = 0.46 (P = 0.65)
Test for subgroup differences: Not applicable

Analysis 1.17. Comparison 1 Decision support intervention versus usual care, Outcome 17 All adverse neonatal indicators.

Review: Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean

Comparison: 1 Decision support intervention versus usual care

Outcome: 17 All adverse neonatal indicators

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Risk Ratio</th>
<th>Weight</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/N</td>
<td>n/N</td>
<td>M-H,Fixed,95% CI</td>
<td>M-H,Fixed,95% CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraser 1997</td>
<td>90/643</td>
<td>96/637</td>
<td>100.0 %</td>
<td>0.93</td>
<td>[ 0.71, 1.21 ]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>643</td>
<td>637</td>
<td>100.0 %</td>
<td>0.93</td>
<td>[ 0.71, 1.21 ]</td>
</tr>
</tbody>
</table>

Total events: 90 (Intervention), 96 (Control)
Heterogeneity: not applicable
Test for overall effect: Z = 0.54 (P = 0.59)
Test for subgroup differences: Not applicable
### Analysis 1.18. Comparison 1 Decision support intervention versus usual care, Outcome 18 Perinatal deaths.

Review: Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean

Comparison: Decision support intervention versus usual care

Outcome: Perinatal deaths

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Risk Ratio</th>
<th>Weight</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/N</td>
<td>n/N</td>
<td>M-H,Fixed,95% CI</td>
<td></td>
<td>M-H,Fixed,95% CI</td>
</tr>
<tr>
<td>Fraser 1997</td>
<td>2/643</td>
<td>4/637</td>
<td>100.0 %</td>
<td>0.50 [0.09, 2.69]</td>
<td></td>
</tr>
</tbody>
</table>

Total (95% CI) 643 637 100.0 % 0.50 [0.09, 2.69]

Total events: 2 (Intervention), 4 (Control)

Heterogeneity: not applicable

Test for overall effect: Z = 0.81 (P = 0.42)

Test for subgroup differences: Not applicable

### Analysis 1.19. Comparison 1 Decision support intervention versus usual care, Outcome 19 Apgar score < 7 at 5 minutes.

Review: Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean

Comparison: Decision support intervention versus usual care

Outcome: Apgar score < 7 at 5 minutes

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention</th>
<th>Control</th>
<th>Risk Ratio</th>
<th>Weight</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/N</td>
<td>n/N</td>
<td>M-H,Fixed,95% CI</td>
<td></td>
<td>M-H,Fixed,95% CI</td>
</tr>
<tr>
<td>Fraser 1997</td>
<td>6/643</td>
<td>9/637</td>
<td>100.0 %</td>
<td>0.66 [0.24, 1.84]</td>
<td></td>
</tr>
</tbody>
</table>

Total (95% CI) 643 637 100.0 % 0.66 [0.24, 1.84]

Total events: 6 (Intervention), 9 (Control)

Heterogeneity: not applicable

Test for overall effect: Z = 0.79 (P = 0.43)

Test for subgroup differences: Not applicable
Analysis 1.20. Comparison 1 Decision support intervention versus usual care, Outcome 20 Admission to NICU.

Review: Interventions for supporting pregnant women’s decision-making about mode of birth after a caesarean

Comparison: 1 Decision support intervention versus usual care

Outcome: 20 Admission to NICU

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Intervention n/N</th>
<th>Control n/N</th>
<th>Risk Ratio</th>
<th>Weight</th>
<th>Risk Ratio M-H,Fixed,95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraser 1997</td>
<td>82/643</td>
<td>81/637</td>
<td>1.00 [0.75, 1.34]</td>
<td>100.0%</td>
<td>1.00 [0.75, 1.34]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>643</strong></td>
<td><strong>637</strong></td>
<td></td>
<td><strong>100.0%</strong></td>
<td><strong>1.00 [0.75, 1.34]</strong></td>
</tr>
</tbody>
</table>

Total events: 82 (intervention), 81 (control)
Heterogeneity: not applicable
Test for overall effect: Z = 0.02 (P = 0.98)
Test for subgroup differences: Not applicable

ADDITIONAL TABLES

Table 1. Categorisation of adverse effects

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
<th>Outcomes included</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td>Ongoing adverse impact</td>
<td>Mothers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hysterectomy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perinatal death</td>
</tr>
<tr>
<td>Severe</td>
<td>Risk of death and significant costs in terms of time, emotional distress</td>
<td>Mothers</td>
</tr>
<tr>
<td></td>
<td>and resources</td>
<td>Uterine rupture or dehiscence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Admission to NICU</td>
</tr>
<tr>
<td>Major</td>
<td>No risk of death but significant costs in terms of time, emotional</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>distress and resources</td>
<td></td>
</tr>
<tr>
<td>Non-major</td>
<td>No risk of death and minor costs</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unclear</td>
<td>Impact unable to be determined from available data</td>
<td>Mothers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blood transfusion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Apgar score &lt; 7 at 5 minutes</td>
</tr>
</tbody>
</table>

NICU: neonatal intensive care unit
<table>
<thead>
<tr>
<th>Review name</th>
<th>Objective</th>
<th>Approach</th>
<th>Number of trials</th>
<th>Outcomes (*Common to this review)</th>
<th>Results</th>
</tr>
</thead>
</table>
| Dugas 2012  | To evaluate the effectiveness of different DA tools on knowledge, anxiety, decisional conflict, final choice and final outcome, in the specific context of pregnancy and birth | Systematic review with meta-analysis where possible comparing different decision aid formats, e.g. computer-based information program, individual counselling, group counselling, decision analysis tool or decision tree. Does not report by decision (e.g. VBAC) | 10 RCTs | • Knowledge*  
• Anxiety  
• Decisional conflict*  
• Final choice*  
• Final outcome* | No meta-analysis performed for knowledge due to heterogeneity. Decisional conflict decreased for DAs based on computer-based information programs or decisional analysis tools. No significant influence on final choice. Final outcomes only influenced by DAs based on decisional analysis tools. |
| Khunpradit 2011 | To evaluate the effectiveness and safety of non-clinical interventions for reducing unnecessary caesarean sections | Cochrane Systematic Review. Reports by intervention type including decision aids and prenatal education and support | 16 studies including 5 cluster-RCTs, 6 RCTs and 5 interrupted time series. | Primary outcomes  
• Rate of caesarean section*  
• Rate of unnecessary caesarean section  
Secondary outcomes  
• Maternal and fetal or neonatal complications such as maternal and neonatal mortality*, postpartum anaemia*, postpartum infection*, birth asphyxia* and admission to neonatal intensive care unit*  
• Costs and financial benefits noted from the change in procedure rates  
• Patient* and provider satisfaction | Reports DAs and prenatal education and support separately. No difference in caesarean birth rates. No significant difference in VBAC/ caesarean birth rates or adverse events. Greater satisfaction with DAs but effect small. |
| **Say 2011** | To evaluate the effects of patient DAs designed for pregnant women on clinical and psychosocial outcomes | Systematic review with no meta-analysis due to heterogeneity of outcomes in primary studies and small number of studies. Studies reported by decision to be made, including VBAC. | 11 RCTs [DIAMOND 2007; Shorten 2005] | Reports selected outcomes from included studies | Both DAs improved knowledge and decreased decisional conflict but neither influenced mode of delivery. |
| **Stacey 2011** | To evaluate the effectiveness of DAs for people facing treatment or screening decisions | Cochrane Systemic Review Reports by attributes of the decision and the decision-making process. Also reports results for DAs associated with childbirth procedures (VBAC, external cephalic version for women with breech presentation). | 86 RCTs [DIAMOND 2007; Shorten 2005] | **Primary outcomes**  
- Decision attributes - knowledge*, accurate risk perceptions, and value congruence with chosen option  
- Decision-making process attributes - recognise decision needs to be made; know options; understand values affect decisions; be clear about option features that matter most; discuss values with practitioner; and become involved in preferred ways.  
**Secondary outcomes**  
- Behavioral, health, and health system effects. (Decisional conflict*; Patient-practitioner communication Participation in decision-making; Proportion undecided*; Satisfaction*) | Overall increase in knowledge and decrease in decisional conflict. No difference in preference for [Shorten 2005] or actual vaginal mode of delivery (Montgomery 2007) following previous caesarean section. |
<table>
<thead>
<tr>
<th>Study</th>
<th>Objectives</th>
<th>Method</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Viemmix 2012 | To determine the effectiveness of DAs to improve informed decision-making in pregnancy care | Systematic review with meta-analysis for global assessment (not by actual decision) | Primary outcomes:  
- Knowledge* (WMD 11.06, 95% CI 4.85, 17.27)  
- Decreased decisional conflict scores* (WMD 3.66, 95% CI 6.65, 0.68)  
Secondary outcomes:  
- Effectiveness of DA (proportion of individuals undecided*, accuracy of risk perception of treatment options, enough information to make decision, involvement in decision-making, regret of choice* and satisfaction with choice*)  
- Acceptability of DA (readability and usefulness of information to make choice)  
- Decision behaviour outcomes (outcome of decision*, uptake of intervention, and adherence to chosen option)  
- Health outcomes (neonatal and maternal morbidity and mortality*, Apgar score*, gestational age at delivery, and depression and self-esteem); and  
- Healthcare system outcomes  
Knowledge increased (WMD 11.06, 95% CI 4.85, 17.27), Decreased decisional conflict scores (WMD 3.66, 95% CI 6.65, 0.68) |
Table 2. Other systematic reviews (Continued)

<table>
<thead>
<tr>
<th>Research design</th>
<th>Terms</th>
<th>Summary of findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>(cost-effectiveness of DA, length of staying hospital and length of consultation)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CI: confidence interval  
DA: decision aid  
RCT: randomised controlled trial  
VBAC: vaginal birth after caesarean  
WMD: weighted mean difference

APPENDICES

Appendix 1. Search terms used for Current Controlled Trials and ICTRP

- Current Controlled Trials metaRegister of Controlled Trial
  Decision AND birth  
  Decision AND cesarean
- WHO International Clinical Trials Registry Platform Search Portal (ICTRP)
  Decision AND birth  
  Decision AND cesarean

WHAT’S NEW

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 July 2013</td>
<td>Amended</td>
<td>Order of authors on the byline changed.</td>
</tr>
</tbody>
</table>
CONTRIBUTIONS OF AUTHORS

Dell Horey wrote the initial version and subsequent drafts of the protocol and review. All review authors contributed to subsequent drafts of the protocol and review. Dell Horey and Michelle Kealy independently screened all titles and abstracts and assessed retrieved articles for inclusion. All authors verified the final list of included studies.

Dell Horey and Michelle Kealy independently assessed risk of bias and assessed both quantitative and qualitative data. Michelle Kealy and Dell Horey undertook the qualitative analysis. Dell Horey categorised the adverse outcomes according to their potential impact and these were confirmed by Michelle Kealy and Caroline Crowther.

Dell Horey is the guarantor of the review.

DECLARATIONS OF INTEREST

None known.

SOURCES OF SUPPORT

Internal sources

- La Trobe University, Australia.
  Salary support for D Horey, R Small and M-A Davy

External sources

- National Institute for Health Research, UK.
  UKNIHR Programme of centrally-managed pregnancy and childbirth systematic reviews of priority to the NHS and users of the NHS: 10/4001/02.

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

Four changes were made, three prior to performing any of the analyses to address issues not considered when developing the protocol and one post hoc decision related to reporting the outcome, decisional conflict.

1. We excluded women who were unsure about their preference for mode of birth from the congruence outcome.

2. We reported actual mode of birth as a dichotomous, rather than multi-category outcome (vaginal birth and caesarean birth) because of potential differences in defining issues across included studies.

3. We added an additional variation (unsure) for the outcome planned mode of birth outcome and calculated the proportion of women who remained unsure about preference for type of birth compared with those that nominated a preference (VBAC or caesarean).

4. We reported decisional conflict both as mean scores at 36 to 37 weeks and as change during pregnancy (before and after intervention introduced, at 28 weeks and again at 36 weeks).

In addition, we used the descriptive terms planned and unplanned instead of emergency and elective in relation to caesarean birth as we consider them to be more accurate.
INDEX TERMS

Medical Subject Headings (MeSH)
*Cesarean Section, Repeat [adverse effects; utilization]; *Decision Making; *Decision Support Techniques; *Vaginal Birth after Cesarean [adverse effects; utilization]; Feasibility Studies; Randomized Controlled Trials as Topic

MeSH check words
Female; Humans; Pregnancy