In most developed countries worldwide, the rate of cesarean section is increasing, accounting for 21.3% of all births in the UK, 23% in Northern Ireland [1], 23.3% in Australia [2] and 26% in the USA [5]. Reported rates from South America are higher, reaching in excess of 50% in some private hospitals in Chile, Argentina, Brazil and Paraguay [4]. There have been many reasons proposed to account for the increase in cesarean births over the past decades, including medicolegal issues, the increasing use of electronic fetal heart rate monitoring, and reduced training in operative vaginal and vaginal breech births [5]. The most common primary obstetric indication for cesarean section is repeat cesarean, accounting for 28% of births in the UK [1] and over 40% of births in the USA [6]. It has been estimated that previous cesarean is the main reason (56.6%) for an elective cesarean and 13.9% of emergency cesareans are in women who have had a previous cesarean [7]. Figures from the USA indicate a repeat cesarean section rate in 2003 of 89.4%, with a similar rate (88.7%) occurring in women considered to be ‘low-risk’ [8].

Many studies have examined the reasons for the increase in the proportion of cesarean births observed, assessing population characteristics, variations in clinician practice [9], available resources, women’s childbirth preferences [9–12] and the views of healthcare practitioners [1,13,14].

In an attempt to halt the increasing cesarean section rate, the American College of Obstetricians and Gynecologists issued a consensus statement supporting vaginal birth after cesarean section (VBAC) as a “safe and acceptable” care option for women with a previous cesarean [15]. Figures from the UK indicate that for women who have had a previous cesarean birth, the chance of successful vaginal birth is 33%, although again there was considerable variation across institutions, ranging from 6–64% [1]. Reports from sub-Saharan Africa indicate rates of planned VBAC of 54–97%, with successful vaginal birth being achieved in 63–84% of women [18].

Despite attempts to both reduce the cesarean section rate and increase the proportion of women with a previous cesarean who attempt VBAC [19], the number of women attempting VBAC has declined markedly. Data from the USA highlight a fall in the number of women attempting VBAC from 28.3% in 1996 to 12.7% in 2002 [3]. However, recent literature reports of VBAC have highlighted the seemingly increasing maternal and infant risks, including uterine rupture [20–22] and perinatal death [23]. These citations have impacted negatively on VBAC rates and have not helped to reverse this declining trend [3]. There is therefore renewed public debate over the relative safety of VBAC and calls from key international agencies for better quality evidence [24].

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Vaginal birth after cesarean versus elective repeat cesarean section: what are the benefits & harms?

There are benefits and harms associated with both repeat cesarean section and VBAC. Repeat elective cesarean birth is associated with an increased risk of complications such as bleeding, the need for blood transfusion, infection, damage to the bladder and bowel, and deep venous thrombosis. As the number of cesarean births for each individual woman increases, so does the difficulty in performing surgery, due to adhesions, and the risk of damage to the bladder or bowel at...
the time of surgery. There may also be difficulties in conceiving a further pregnancy or the development of placenta previa or placenta accreta/percreta [25]. Infants born by cesarean may develop transient tachypnea of the newborn, the risks of this relating to the use of general anesthesia and gestational age at birth [26,27].

One uncommon, but potentially serious, complication associated with a prior uterine surgery (including a previous cesarean section) is that of uterine rupture, which may occur prior to the onset of labor or during labor. Any vaginal birth may be associated with a nonreassuring fetal heart rate tracing or failure to progress, both of which may require birth by emergency cesarean section. Emergency cesarean in labor has been associated with an increased risk of infection, bleeding and deep venous thrombosis when compared with both vaginal birth and elective cesarean birth. Any vaginal birth may be associated with trauma to the woman’s perineum and may be associated with longer-term problems, including pelvic floor weakness, contributing to symptoms of prolapse and incontinence. Infants born vaginally may have lower Apgar scores and an increased chance of trauma, if the birth has been difficult, than those infants born by elective cesarean section.

In searching the literature in preparation of a Cochrane Review [28] to evaluate the benefits and harms of VBAC and elective repeat cesarean section for health outcomes for women and infants, in excess of 2000 case series and cohort studies, and five meta-analyses were identified [18,24,29–34]. The magnitude of risks for both repeat elective cesarean section and VBAC are best summarized through the meta-analyses. While the methodology of each of the meta-analyses was well defined, the magnitude of the clinical outcomes reported varied considerably (Table 1).

The most comprehensive of the meta-analyses identified 180 studies published since 1980 that compared the benefits and harms of a trial of labor and an elective repeat cesarean section [24,33,34]. Their assessment of study quality concluded that the literature was ‘significantly flawed’, with comparisons between studies hampered by lack of standards of reporting, inconsistencies in definitions of outcomes, variation in reporting of important clinical outcomes and lack of comparability of groups, specifically it often being unclear whether women included in the elective repeat cesarean group were truly eligible to attempt VBAC.

Guise and colleagues recommended that “future research should focus on conducting methodologically rigorous studies to provide direct evidence regarding the relative benefits and harms of VBAC and elective repeat cesarean. If randomized trials are not done, good-quality studies of VBAC versus elective repeat cesarean must pay attention to comparability of the groups, specificity of the intervention, and standard outcome measures” [24,33,34].

In an attempt to address the current deficiencies in the literature, the National Institute of Child Health and Human Development (NICHD) Maternal–Fetal Medicine Units Network conducted a large, prospective, observational study across 19 centers in the USA [35]. A total of 33,699 women with a prior cesarean birth were involved in the study, of whom 17,898 (53.1%) attempted VBAC and 15,801 (46.9%) underwent elective repeat cesarean section. The observed rate of symptomatic uterine scar rupture among women undergoing VBAC was 0.7%. The absolute risk of infant hypoxic ischaemic encephalopathy was 0.46 per 1000 women undergoing trial of labor at term. The authors concluded that trial of labor was associated with an increase risk of perinatal morbidity and mortality when compared with elective repeat cesarean section, although the absolute risks remained small [35].

The Birth After Caesarean Study (ISCTRN 5397431), a partially randomized patient preference study, is currently recruiting women to assess the benefits and harms associated with both a planned VBAC and a planned repeat elective cesarean for women with a previous cesarean birth eligible for a VBAC. This study is adopting rigorous methodology, using a ‘restricted’ prospective cohort study design, in which women are assessed at 37 weeks gestation against standard inclusion criteria to determine their suitability to attempt VBAC. All women included in this study will therefore have been eligible to attempt VBAC. At 37 weeks gestation, with consent, women can either be randomized to a planned VBAC or a planned elective repeat cesarean, or choose their preferred planned mode of birth. An intention-to-treat analysis similar to that used in randomized trial methodology will be adopted.

**Induction of labor for women with a prior cesarean section**

For women with a prior cesarean birth, uncertainty exists regarding whether labor should be induced in a subsequent pregnancy, or whether a
repeat elective cesarean section should be performed. In a recent survey of practice, Australian and New Zealand obstetricians were asked about their willingness to offer induction of labor in a subsequent pregnancy to women with a previous cesarean birth [36]. Induction of labor was considered an acceptable option, with 68% of respondents preferring this to cesarean section. However, in the setting of the ‘post-term’ pregnancy, willingness to proceed with induction of labor fell to 54%.

Concerns specifically related to induction of labor in the presence of a scarred uterus are the possible increased risk of uterine scar rupture. Retrospective data show a 2.5% risk of uterine scar rupture associated with the use of vaginal prostaglandins (including misoprostol and vaginal prostaglandin E$_2$) to induce labor in the presence of a uterine scar [21]. Misoprostol is a synthetic prostaglandin E$_1$ analogue, and is being used increasingly as an agent to induce labor. Concerns have been raised regarding its safety in the setting of women with a previous cesarean section, with several case reports in the literature detailing uterine rupture following the use of misoprostol in these women [37–41].

In the large NICHD study, the use of prostaglandin-based medication to induce labor was associated with a nonsignificant increase in the risk of uterine rupture when compared with mechanical methods of induction of labor (such as the use of a Foley catheter) [35]. In this study, the risk of uterine rupture was 1.4% (140/10,000 inductions) using prostaglandins compared with 0.89% (89/10,000 inductions) using a Foley catheter to dilate the cervix [35]. However, a large retrospective study from Scotland assessing over 36,000 women with a prior cesarean birth, of whom 4600 underwent induction of labor with prostaglandins, indicated an increased risk of uterine rupture leading to perinatal death associated with the use of prostaglandin agents (0.045% [4.5 per 10,000 noninduced labors] versus 0.11% [11 per 10,000 labors induced with prostaglandins in women with a prior cesarean]) [42]. It is unclear whether the reported risk of uterine rupture related to the use of prostaglandins reflects medication-induced changes in the connective tissue of the uterine scar, or whether it is a marker of an unfavorable cervix [43], which in itself is a predictor of adverse outcomes associated with a trial of labor in women attempting VBAC [44].

Controversy exists around the use of oxytocin to induce and augment labor in women with a scarred uterus. The NICHD study suggests an increase in the risk of uterine rupture associated with the use of oxytocin, being 0.36% (36/10,000 women) without the use of oxytocin, increasing to 0.87% (87/10,000 women) where oxytocin is used [35]. However, it is unclear whether this increased risk is confined to women undergoing induction of labor, or whether the risk also extends to those women undergoing augmentation of labor.

Despite the manufacturers of both vaginal prostaglandin E$_2$ gel and oxytocin (Syntocinon®) listing the presence of a uterine scar as a contraindication to use in their product guidelines, they are widely used to induce labor in women with an unfavorable cervix who have had a previous cesarean section. In Australia and New Zealand, almost two-thirds of obstetricians indicated a reluctance to use vaginal prostaglandins to induce labor in

| Table 1. Clinical outcomes from the five identified meta-analyses. |
|---------------------------------------------------------------|
| **Febrile morbidity** | **Uterine rupture/dehiscence** | **Low Apgar score** | **Perinatal death** | **Maternal death** |
| | **Trial of labor** | **Elective repeat cesarean** | **Trial of labor** | **Elective repeat cesarean** | **Trial of labor** | **Elective repeat cesarean** | **Trial of labor** | **Elective repeat cesarean** | **Ref.** |
| Rosen | 9.6/100 | 17.3/100 | 1.8/100 | 1.9/100 | 2.4/100 | 1.6/100 | 1.8/100 | 1/100 | 2.8/1000 | 2.4/10,000 | [31,32] |
| Boulvain | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | [18] |
| Mozurkewich | 4.3/100 | 5.5/100 | 3.9/1000 | 1.6/1000 | 2.2/100 | 9/1000 | 5.8/1000 | 3.4/1000 | 0 | 0 | [30] |
| Guise | 8.6–9.7/100 | 6.6–6.8/100 | 2.7/1000 | NR | NR | NR | 1.3–9/1000 | 1/10,000 | 0 | NR | [24] |
| Dodd | NR | NR | 1.2/100 | 0 | 4.2/100 | 8/1000 | 7.7/1000 | 0 | 0 | 0 | [29] |

NR: Not recorded; NS: Nonsignificant.
women with a prior cesarean birth, whereas 80% indicate a willingness to use oxytocin [46]. Recent clinical practice guidelines issued from the Society of Obstetricians and Gynaecologists of Canada for care of women with a previous cesarean section advise against the use of prostaglandin medications for induction, although the use of oxytocin is not contraindicated [45].

Information derived from randomized, controlled trials related to specific methods of induction of labor in the presence of a scarred uterus is limited. Three systematic reviews have identified four randomized, controlled trials assessing various methods of induction of labor in this clinical setting, involving a combined sample size of 137 women [46–48]. Unfortunately, the methods of induction employed in each of the trials were too disparate for meta-analysis to be appropriate, and the available sample size was significantly underpowered to be able to detect differences in clinically meaningful outcomes. In order to confirm the suspected increased risk of uterine rupture associated with the use of prostaglandin agents, a sample size of the order of 10,000 women would be required, using uterine rupture as a primary outcome measure.

In the absence of sufficient quality data on which to base clinical decisions, uncertainty persists regarding the safety of induction of labor in women with a previous cesarean birth, and the safety of specific agents and methods of induction. Caution should therefore be exercised during induction of labor in women with a prior cesarean birth as indicated by obstetric bodies worldwide [15,47,49–51].

Predictors of successful VBAC

There has been considerable interest in the literature related to prediction of a woman’s chance of successfully achieving VBAC. In a meta-analysis of studies reported between 1982 and 1989, involving 11,417 women, successful VBAC was more likely among women with a vaginal birth prior to cesarean section, and where the primary indication for cesarean section was breech presentation, rather than ‘failure to progress’ or ‘cephalopelvic disproportion’ [31].

In the large NICHD study, factors associated with successful VBAC were examined for the 14,529 women who underwent a trial of labor [44]. Factors found to be associated with an increased chance of successful VBAC were vaginal birth prior to the cesarean section, spontaneous onset of labor and infant birth weight less than 4000 g [44]. Conversely, cesarean section performed for dystocia or failure to progress was associated with an increased chance of emergency cesarean section during labor [44].

The available literature relating to women who have more than one prior cesarean section who attempt vaginal birth in a subsequent pregnancy is largely confined to case series and retrospective cohort studies. In a secondary analysis of the NICHD data, success of attempted VBAC and risks of maternal morbidity were examined [52]. The rate of successful VBAC was similar for women with more than one prior cesarean section, as compared with women with a single cesarean section, with no statistically significant increase in the risk of uterine rupture (0.9% multiple cesarean sections vs 0.7% single prior cesarean section) [52]. However, for women with more than one prior cesarean section attempting VBAC, there was a significant increase in the risk of hysterectomy and transfusion, and an increase in the risk of maternal morbidity when using a composite index (odds ratio: 1.41; 95% confidence interval: 1.02–1.93) [52].

Women’s preferences

A woman’s expectations for birth and mode of birth preferences are influenced by knowledge of the potential benefits and risks as well as personal and social factors, including issues related to family size. In the UK cesarean section audit 45% of women with a previous cesarean indicated a preference for vaginal birth in a subsequent pregnancy, while 20% preferred an elective repeat cesarean. In a further 27% of women, their preference was determined by medical factors. Only 6.2% of women expressed no preference for mode of birth. In a randomized trial of prenatal education and support program for vaginal birth for women with a previous cesarean, of women eligible for a planned VBAC, just over 10% expressed no preference for mode of birth. A survey of recent mothers who had given birth by cesarean section were asked about their planned mode of birth in a subsequent pregnancy [53]. For 63% of the women surveyed, a preference for subsequent mode of birth (either VBAC or repeat elective cesarean section) had been formed within 6 months of their primary cesarean birth [53], suggesting that the optimal time to influence decision-making processes may be prior to discharge home from the index cesarean.

In a systematic review of the literature, Eden and colleagues identified that women with a previous vaginal birth were more likely to select a
trial of labor in a subsequent pregnancy when compared with women who had not had a previous vaginal birth \[54\]. The cited reasons included ease of recovery and need to return quickly to ongoing family responsibilities, rather than concerns primarily for the woman's own safety or that of her infant \[54\]. Any future research designed to influence the rate of planned VBAC must include an assessment of women's views, and an evaluation of women's processes of decision making \[24\].

**Conclusion**

Despite the appearance of a vast body of literature related to the benefits and harms of VBAC compared with repeat elective cesarean birth, the quality of the available data is flawed, limited by inconsistent reporting of outcomes, variations in the definitions used and uncertainty regarding the comparability of groups, particularly whether all women included in repeat cesarean section groups are truly eligible to attempt VBAC \[24,33,34\].

**Future perspective**

Guise and colleagues recommended that “future research should focus on conducting methodologically rigorous studies to provide direct evidence regarding the relative benefits and harms of VBAC and elective repeat cesarean. If randomized trials are not done, good-quality studies of VBAC versus elective repeat cesarean must pay attention to comparability of the groups, specificity of the intervention, and standard outcome measures” \[24,33,34\].

Given the number of women and infants who birth by cesarean section each year worldwide, obtaining reliable information regarding the benefits and harms of both planned elective repeat cesarean and planned VBAC should be a research priority. Until methodologically rigorous studies are performed, the literature available to care providers will continue to be confused and contradictory, and the information required by women to make informed healthcare choices unavailable.

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**Executive summary**

**Introduction**

- In most developed countries worldwide, the rate of cesarean section is increasing and the proportion of women attempting vaginal birth after cesarean section (VBAC) in a subsequent pregnancy is decreasing.
- The most common primary obstetric indication for cesarean section is repeat cesarean.

**Vaginal birth after cesarean versus elective repeat cesarean section: what are the benefits and harms?**

- The quality of the available data relating to health outcomes following planned VBAC and planned elective repeat cesarean section is hampered by lack of standards of reporting, inconsistencies in definitions of outcomes, variation in reporting of important clinical outcomes and lack of comparability of groups.
- In the large National Institute of Child Health and Human Development study, the observed rate of symptomatic uterine scar rupture among women undergoing VBAC was 0.7%. The authors concluded that trial of labor was associated with an increase risk of perinatal morbidity and mortality when compared with elective repeat cesarean section, although the absolute risks remained small.

**Induction of labor for women with a prior cesarean section**

- Information regarding the risk of uterine rupture in the setting of induction of labor is contradictory, but risk is thought to be increased after the use of either prostaglandin medication or oxytocin.

**Predictors of successful vaginal birth after cesarean**

- Factors associated with successful VBAC include a previous vaginal birth prior to the cesarean section; the indication for the prior cesarean section (breech presentation as opposed to ‘failure to progress’ or ‘dystocia’); and the spontaneous onset of labor.

**Women’s preferences**

- Women often have strong preferences related to mode of birth in a subsequent pregnancy. Any future research designed to influence the rate of planned VBAC must include an assessment of women's views and an evaluation of women's processes of decision-making.

**Conclusion**

- Given the number of women and infants who birth by cesarean section each year worldwide, obtaining reliable information regarding the benefits and harms of both elective repeat cesarean and VBAC should be a research priority.
Bibliography

Papers of special note have been highlighted as either of interest (*) or of considerable interest (**) to readers.

1. Royal College of Obstetricians and Gynaecologists. Evidence-based clinical guideline number 8: the use of electronic fetal monitoring. RCOG Press, London, UK (2001).
2. National Perinatal Statistics Unit. Australia's mothers and babies 2000. Australian Institute of Health and Welfare, Sydney, Australia (2003).
3. Hamilton BE, Martin JA, Sutton PD: Birth: preliminary data for 2002. Natl Vital Stat. Rep. 51, 4–5 (2003).
4. Belizan J, Althabe F, Barros F, Alexander S: Rates and implications of cesarean sections in Latin America: ecological study. BMJ 319, 1397–1402 (1999).
5. Mastrobattista JM: Vaginal birth after cesarean section. Br. J. Obstet. Gynaecol. 41, 369–381 (1998).
6. Curtin SC, Kozak LJ, Gregory KD: U.S. cesarean and VBAC rates stalled in the mid-1990's. Birth 27, 54–57 (2000).
7. Chan A, Scott J, Nguyen A, Krae N: Pregnancy outcome in South Australia, 2000. Pregnancy Outcome Unit, Epidemiology Branch, Department of Human Services, Adelaide, Australia (2001).
8. Menacker F: Trends in cesarean rates for first births and repeat cesarean rates for low-risk women: United States, 1990–2003. Natl Vital Stat. Rep. 54, 1–8 (2005).
9. Appleton B, Targett C, Rasmussen M, Readman E, Sale F, Permezel M: Vaginal birth after cesarean section: an Australian multicentre study. Aust. NZ J. Obstet. Gynaecol. 40, 87–91 (2000).
10. Gamble JA, Creedy DK: Women’s preferences for a caesarean section. Birth 28, 101–110 (2001).
11. Quinlivan JA, Petersen RW, Nichols CN: Patient preference the leading indication for elective cesarean section in a teaching hospital. Aust. NZ J. Obstet. Gynaecol. 39, 207–214 (1999).
12. Turnbull DA, Wilkinson C, Yaser A, Carry V, Svigos JM, Robinson JS: Women’s role and satisfaction in the decision to have a caesarean section. Med. J. Aust. 170, 580–583 (1999).
13. Stone C, Hallida, J, Lumen J, Brennecke S: Vaginal birth after cesarean (VBAC): a population study. Paediatr. Perinat. Epidemiol. 14, 340–348 (2000).
14. Appleton B, Targett C, Rasmussen M, Readman E, Sale F, Permezel M: Knowledge and attitudes about vaginal birth after caesarean section in Australian hospitals. Aust. NZ J. Obstet. Gynaecol. 40, 195–199 (2000).
15. American College of Obstetrics and Gynecology (ACOG): Practice bulletin: vaginal birth after previous cesarean delivery. Clinical management guidelines. Int. J. Gynaecol. Obstet. 66, 197–204 (1999).
16. McMahon MJ: Vaginal birth after cesarean. Clin. Obstet. Gynecol. 41, 369–381 (1998).
17. Langford BL: Once a cesarean, always a controversy. Obstet. Gynecol. 90, 312–315 (1997).
18. Boulvain M, Fraser WD, Brisson-Carroll G, Eron G, Wollast E: Trial of labour after caesarean section in sub-Saharan Africa: a meta-analysis. BJOG 104, 1385–1390 (1997).
19. Melliswa G, Boulton-Jones C, Cole S, Wilkinson C: Cesarean section in Scotland 1994: a national audit. Scottish programme for Clinical Effectiveness in Reproductive Health, Aberdeen, Scotland (1995).
20. Hibbard JU, Ismail MA, Wang Y, Te C, Karrison T, Ismail MA: Failed vaginal birth after a cesarean section: how risky is it? Am. J. Obstet. Gynecol. 184, 1365–1373 (2001).
21. Lydon-Rochelle M, Holt VL, Easterling TR, Martin DP: Risk of uterine rupture during labor among women with a prior cesarean delivery. N. Engl. J. Med. 345, 3–8 (2001).
22. Sachs BP, Kobolin C, Castro MA: The risks of lowering the cesarean delivery rate. N. Engl. J. Med. 340, 54–57 (1999).
23. Smith GCS, Pell JP, Cameron AD, Dobbs R: Risk of perinatal death associated with labor after previous cesarean delivery in uncomplicated term pregnancies. JAMA 287, 2684-2690 (2002).
24. Guise JM, McDonagh M, Hashima J et al.: Vaginal birth after cesarean (VBAC), Evid. Rep. Technol. Assess. 71, 1–8 (2003).
25. Hemminki E, Merilainen J: Long-term effects of cesarean sections: ectopic pregnancies and placental problems. Am. J. Obstet. Gynecol. 174, 1560–1574 (1996).
26. Morrison JJ, Rennie JM, Milton PJ: Neonatal respiratory morbidity and mode of delivery at term: influence of timing of elective cesarean section. Br. J. Obstet. Gynaecol. 102, 101–106 (1995).
27. Hook B, Kiwi R, Amini SB, Fanaroff A, Hack M: Neonatal morbidity after elective repeat cesarean section and trial of labor. Pediatrics 100, 348–353 (1997).
28. Dodd JM, Crowther CA, Huertas E, Guise JM, Hunts: Planned elective repeat cesarean versus planned vaginal birth for women with a previous cesarean birth. Cochrane Database Syst. Rev. 4, CD004224 (2004).
29. Meta-analysis of studies relating to VBAC, which highlights the need for better-quality information to allow informed decision-making.
30. Mozurkewich EL, Hutton EC: Elective repeat cesarean delivery versus trial of labor: a meta-analysis of the literature from 1989 to 1999. Am. J. Obstet. Gynecol. 183, 1187–1197 (2000).
31. Rosen MG, Dickinson JC: Vaginal birth after cesarean: a meta-analysis of indicators for success. Obstet. Gynecol. 76, 865–869 (1990).
32. Rosen MG, Dickinson JC, Westhoff CL: Vaginal birth after cesarean: a meta-analysis of morbidity and mortality. Obstet. Gynecol. 77, 465–470 (1991).
33. Guise JM, Berlin M, McDonagh M, Osterweil P, Chan B, Helfand M: Safety of vaginal birth after cesarean: a systematic review. Obstet. Gynecol. 103, 420–429 (2004).
34. Extract from the health technology report addressing the safety of VBAC.
35. Guise JM, McDonagh MS, Osterweil P, Nygren P, Chan BK, Helfand M: Systematic review of the incidence and consequences of uterine rupture in women with previous cesarean section. BMJ 329, 19–25 (2004).
36. Extract from the health technology report addressing the risks of uterine rupture.
37. Landon MB, Hauth JC, Leveno KJ et al.: Maternal and perinatal outcomes associated with trial of labor after prior cesarean delivery. N. Engl. J. Med. 351, 2581–2589 (2004).
38. Paper describing a large prospective cohort study addressing the risks and benefits of VBAC and cesarean section.
38. Bennett BB: Uterine rupture during induction of labor at term with intravaginal misoprostol. Obstet. Gynaecol. 89, 832–833 (1997).

39. Plaut MM, Schwartz ML, Lubarsky SL: Uterine rupture associated with the use of misoprostol in the gravid patient with a previous cesarean section. Am. J. Obstet. Gynecol. 180, 1535–1542 (1999).

40. Cunha M, Bugalho A, Bique C, Bergstrom S: Induction of labor by vaginal misoprostol in patients with a previous cesarean delivery. Acta Obstet. Gynecol. Scand. 78, 653–654 (1999).

41. Choy-Hee L, Raynor BD: Misoprostol induction of labor among women with a history of cesarean delivery. Am. J. Obstet. Gynecol. 184, 1115–1117 (2001).

42. Smith GCS, Pell JP, Pasupathy D, Dobbie R: Factors predisposing to perinatal death related to uterine rupture during attempted vaginal birth after cesarean section: retrospective cohort study. BMJ 329, 375 (2004).

43. Bujold E, Blackwell SC, Hendler I, Berman S, Sorokin Y, Gauthier RJ: Modified Bishop’s score and induction of labor in patients with a previous cesarean delivery. Am. J. Obstet. Gynecol. 191, 1644–1648 (2004).

44. Landon MB, Leindecker S, Spong CY et al.: The MFMU Cesarean Registry: factors affecting the success of trial of labor after previous cesarean delivery. Am. J. Obstet. Gynecol. 193, 1016–1023 (2005).

• Paper describing a large prospective cohort study addressing factors associated with successful VBAC.

45. Society of Obstetricians and Gynecologists of Canada: Clinical practice guidelines: guidelines for vaginal birth after previous caesarean birth. Int. J. Gynecol. Obstet. 89, 319–331 (2005).

46. Dodd JM, Crowther CA: Induction of labour for women with a previous caesarean birth: a systematic review of the literature. Aust. NZ J. Obstet. Gynaecol. 44, 392–395 (2004).

47. Royal College of Obstetricians and Gynaecologists. Induction of labour. Evidence Based Clinical Guideline Number 9. RCOG Press, London, UK (2001).

48. McDonagh MS, Osterwell P, Guise JM: The benefits and risks of inducing labour in patients with prior caesarean delivery: a systematic review. Br. J. Obstet. Gynaecol. 112, 1007–1015 (2005).

49. Royal College of Obstetricians and Gynaecologists. Cesarean Section. RCOG Press, London, UK (2004).

50. Royal College of Obstetricians and Gynaecologists. Cesarean section: clinical guideline. RCOG Press, London, UK (2004).

51. American College of Obstetricians and Gynecologists. Guidelines for vaginal delivery after a previous cesarean birth. ACOG, WA, USA (1988).

52. Landon MB, Spong CY, Thom E et al.: Risk of uterine rupture with a trial of labor in women with multiple and single prior cesarean delivery. Obstet. Gynecol. 108(1), 12–20 (2006).

53. Dodd JM, Pearce E, Crowther CA: Women’s experiences and preferences following caesarean birth. Aust. NZ J. Obstet. Gynaecol. 44, 521–524 (2004).

54. Eden KB, Hashima JN, Osterwell P, Nygren P, Guise JM: Childbirth preferences after cesarean birth: a review of the evidence. Birth 31, 49 (2004).

• Extract from the health technology report addressing women’s views of VBAC and repeat cesarean section.