

# Birth after Caesarean Section

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## Note:

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion.

This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

*Note: The words woman/women/mother/she/her have been used throughout this guideline as most pregnant and birthing people identify with their birth sex. However, for the purpose of this guideline, these terms include people who do not identify as women or mothers, including those with a non-binary identity. All clinicians should ask the pregnant person what their preferred term is and ensure this is communicated to the healthcare team.*

## Explanation of the aboriginal artwork:

The Aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the Aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant woman. The smaller horse shoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in unison.



**Australian Aboriginal Culture is the oldest living culture in the world yet Aboriginal people continue to experience the poorest health outcomes when compared to non-Aboriginal Australians. In South Australia, Aboriginal women are 2-5 times more likely to die in childbirth and their babies are 2-3 times more likely to be of low birth weight. The accumulative effects of stress, low socio economic status, exposure to violence, historical trauma, culturally unsafe and discriminatory health services and health systems are all major contributors to the disparities in Aboriginal maternal and birthing outcomes. Despite these unacceptable statistics, the birth of an Aboriginal baby is a celebration of life and an important cultural event bringing family together in celebration, obligation and responsibility. The diversity between Aboriginal cultures, language and practices differ greatly and so it is imperative that perinatal services prepare to respectfully manage Aboriginal protocol and provide a culturally positive health care experience for Aboriginal people to ensure the best maternal, neonatal and child health outcomes.**

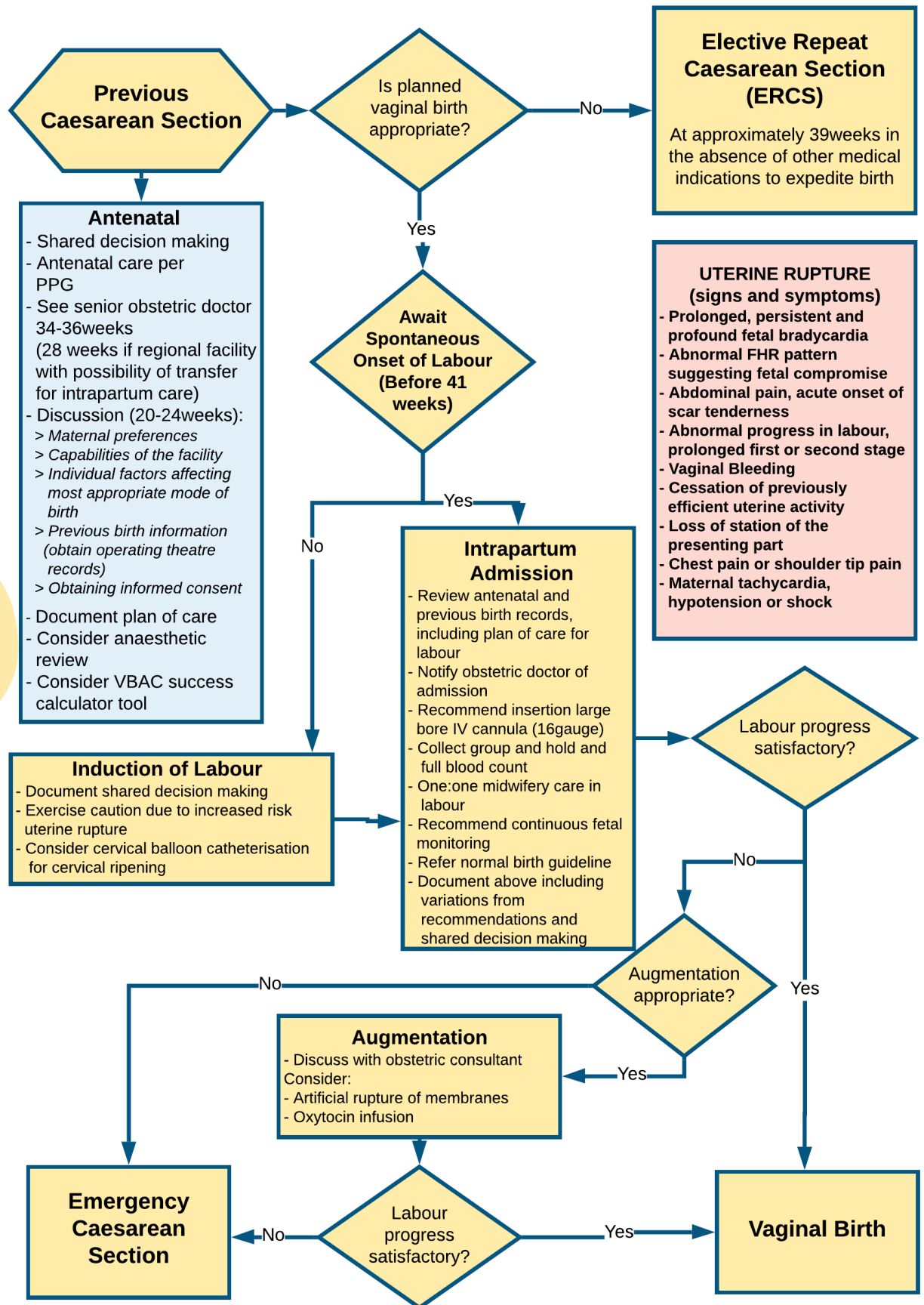
## Purpose and Scope of Perinatal Practice Guideline (PPG)

This guideline will assist clinicians in the care and counselling of women who have previously had a caesarean section, incorporating the risks and benefits of their options for subsequent births.



# Birth after Caesarean Section

## Flowchart – Birth after Caesarean Section



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# Birth after Caesarean Section

## Summary of Practice Recommendations

- > Vaginal birth after caesarean is a safe option for most women
- > Women should be supported to make decisions that best align with their individual values
- > Continuous monitoring and intravenous access in labour continues to be recommended for women who have had a previous caesarean section
- > If a woman decides to have an elective repeat caesarean section, in the absence of other medical indications to expedite birth, this should be scheduled for 39weeks gestation. There is a growing body of evidence for short and long term morbidity as well as developmental implications for babies born prior to 39weeks

## Abbreviations

APGAR	Appearance, Pulse, Grimace, Activity, Respiration
ARM	Artificial Rupture of the Membranes, Amniotomy
BMI	Body Mass Index
CEFM	Continuous Electronic Fetal Monitoring
cm	centimetres
CS	Caesarean Section
EICS	Elective Caesarean Section
EmCS	Emergency Caesarean Section
ERCS	Elective repeat Caesarean Section
IOL	Induction of Labour
kg/m <sup>2</sup>	Kilograms per metre squared (BMI calculation)
PPG	Perinatal Practice Guideline
SA	South Australia
TOLAC	Trial of Labour after Caesarean Section
TOL	Trial of Labour
VBAC	Vaginal Birth after Caesarean Section
VBA2C	Vaginal Birth after two Caesarean Sections

## Definitions

Bishop Score	A score used to determine how favourable the cervix is for induction of labour. A vaginal examination is performed with a score given to a number of features of the cervix. These are added together to provide a bishop score
Elective Repeat Caesarean Section (ERCS)	Planned Caesarean birth by a woman who has had a previous caesarean section (CS)
Inter-pregnancy interval	The duration between a CS birth to conception of the subsequent pregnancy
Primary Caesarean Section	A woman's first caesarean section birth
Trial of labour after Caesarean (TOLAC)	A woman aiming for a labour and vaginal birth when any previous birth has been by caesarean. Previously known as attempted VBAC
Uterine Rupture	Disruption of the uterine muscle extending to and involving the uterine serosa or disruption of the uterine muscle with extension to the bladder or broad ligament
Uterine Dehiscence	Disruption of the uterine muscle, with intact uterine serosa



## Background

Pregnant women who have had a caesarean section in a previous pregnancy (30.7% in Australia, 28.2% in South Australia), will need to make a decision in their next pregnancy on how to give birth<sup>1</sup>.  
<sup>2</sup>. Maternity caregivers should facilitate women who have had one or more previous caesarean section to make as informed a choice as possible. Her two options are to:

- > Plan a vaginal birth after caesarean (VBAC) which will result in either a vaginal birth or an emergency CS; or
- > Plan an elective repeat CS (ERCS)<sup>3</sup>

Both options carry infrequent, but significant clinical risks. Findings from large systematic reviews indicate that VBAC is a safe and reasonable choice for most women<sup>4-6</sup> and is associated with lower overall maternal morbidity and mortality than repeat CS<sup>6</sup>. There are, however, some circumstances that increase the risks for women and these are discussed in the literature review, below.

Facilitating open communication, providing accurate information, encouraging shared decision-making and continuity of care giving consistent information will enable the woman to make a supported and informed decision about her birth options<sup>2, 7</sup>.

## Literature review

- > Women considering their birth options after a single previous caesarean should be counselled that the average success rate when VBAC is attempted in Australia is 59%. A large study concluded that the VBAC rate was 43%, although excluding those who required, or requested an elective caesarean after initially opting for VBAC, actual VBAC success rate was 59%<sup>8</sup>.
- > The Green-top guidelines report a pooled VBAC success rate of 74%<sup>7</sup>
- > A large systematic review of the literature concluded that the risk of hysterectomy, haemorrhage and blood transfusion was not significantly different for ERCS and TOLAC<sup>3, 6</sup>. However, maternal death was increased following ERCS (13.4 per 100,000 versus 3.8 per 100,000 for TOLAC).
- > The risk of uterine rupture in women who have had a previous CS is 3 per 1000, and significantly higher among women who laboured (4.7 per 1000 for TOLAC versus 0.3 per 1000 for ERCS)<sup>3, 6</sup>.
- > There is conflicting data regarding the risk of uterine rupture for women who have had one previous CS compared to 2 previous CSs. Good evidence suggests that women with a history of two prior CS appear to have similar VBAC success rates as those with one prior CS<sup>9</sup>.
- > With appropriate care, uterine rupture can potentially be recognised and acted upon such that the risk of long term harm to both mother and/or baby can be minimised<sup>10</sup>.

Australian research has shown that induction of labour and augmentation of labour in women with a previous caesarean section increases the risk of uterine rupture compared with spontaneous labour<sup>11, 12</sup>. In a 2010 population-based retrospective cohort study of four Australian states of over 29,000 women, the risk of uterine rupture in spontaneous labour without augmentation was 0.15%, but was considerably higher when there was augmentation with oxytocin (1.91%). The risk with induction of labour was 0.54% for oxytocin alone, 0.68% for prostaglandin alone, 0.63% without either and 0.88% when they were combined. Thus, compared with spontaneous labour, risks were increased three- to five-fold for any induction, six-fold for prostaglandin combined with oxytocin and 14-fold for augmentation with oxytocin<sup>12</sup>.

## South Australian Statistics

- > In 2017, previous caesarean section was cited as the most common reason for a caesarean section (39.1%)<sup>13</sup>, this reflects the national trend<sup>14</sup>
- > In 2017, 13.6% of South Australian women who had a previous caesarean section, birthed their second baby vaginally<sup>13</sup>
- > Comparatively, in 2017; 12.1% of Australian women whose first birth was by caesarean section had their second birth vaginally<sup>13</sup>
- > Between 1999 and 2017 the rate of uterine rupture in South Australia for all births ranged 0.3 – 1.2 per 1000 births. The uterine rupture rate for women birthing in South Australia who had a previous caesarean ranged 0.4 – 5 per 1000 births<sup>15</sup>





- > Between 1999 and 2017 the rate of postpartum hysterectomy in South Australia for all births ranged 0.3 – 3 per 1000 births. Conversely, the postpartum hysterectomy rate for women birthing in South Australia who had a previous caesarean ranged 0.2 – 1.2 per 1000 births <sup>15</sup>

### Shared decision-making

- > Shared decision-making integrates the woman's values, goals and concerns with the best available information regarding the benefits, risks and uncertainties of treatment.
- > A shared understanding of the evidence for all options of care will more appropriately guide the decision-making between the woman and her care providers.
- > **Aboriginal women can ensure better health and wellbeing outcomes for their babies if they have choice and control over their experiences during pregnancy, labour and birth**
- > This ensures that the woman can provide informed consent and is able to communicate her preferences. She must feel supported to select the course of action that best aligns with her values <sup>16</sup>.

### Service Capability

Offering VBAC within a service must correlate with facility Clinical Services Capability Frameworks. Site-specific guidelines should reflect the resources and ability of the birthing facility to respond to emerging scenarios.

The service must be capable of providing:

- > Access to emergency CS, ensuring local policy reflecting process for category 1 CS
- > Continuous electronic fetal monitoring
- > One-to-one midwifery care in labour
- > Advanced neonatal resuscitation equipment and trained personnel
- > Blood transfusion services, including access to emergency O negative units and policy to reflect process for massive transfusion
- > 24 hour obstetric and anaesthetic services

The above capabilities, which determine the level of the service (outlined in *Standards for Maternal and Neonatal Services in South Australia 2020 Clinical Directive* available at [www.sahealth.sa.gov.au/perinatal](http://www.sahealth.sa.gov.au/perinatal)) must be considered by both the care provider and the woman when consideration is given to the most appropriate facility to safely care for the woman and her baby <sup>17</sup>.

### Care Following Primary or Prior CS

#### Antenatal Care

Antenatal care is guided by the *Antenatal Care: Routine care in normal pregnancy* PPG available at [www.sahealth.sa.gov.au/perinatal](http://www.sahealth.sa.gov.au/perinatal).

For women who have had a previous caesarean section, services must ensure that women have received individualised care, planning and advice throughout their pregnancy, including:

- > At least one visit with a senior obstetric doctor for discussion and planning before or at:
  - o 20 weeks gestation (referral from booking appointment)
- > These initial discussions should be consolidated by:
  - o 34-36 weeks gestation in a tertiary setting; or,
  - o Before 28 weeks gestation for rural services if antenatal transfer to a larger service is anticipated.

The decision making process may be fraught with uncertainty and a cause of great anxiety and distress for women <sup>18</sup>. The qualitative literature shows that women experience a number of challenges when making decisions for mode of birth following a CS <sup>11</sup>. According to a meta-synthesis, these challenges stem from <sup>2</sup>:

- > Difficulty accessing information
- > A sense of reluctance and perceived lack of support for VBAC from health care providers
- > Emphasis on risks including uterine rupture and death of woman and/or baby, and risk of having an emCS
- > A sense of feeling irresponsible for planning a VBAC

- > Unclear and widely variable information from health providers

Multi-Disciplinary team and continuity of carer (e.g. midwifery group practice, Aboriginal family birth programs, shared care, team models, private obstetric or midwifery care) should be utilised where available <sup>19</sup>.

Perinatal care providers need cultural sensitivity within a non-judgemental environment when planning care for all Aboriginal women. Aboriginal women should be consulted about any decisions in a culturally appropriate and safe manner. An Aboriginal Health Professional (AMIC, Aboriginal Midwife or ALO) should be offered and or sought if requested during consultations on women's business.

Additionally, discussion with the woman regarding all aspects of her care is vital with an understanding of the care provider's scope of practice, and requirement for consideration of the National Midwifery Guidelines for consultation and referral available at [www.midwives.org.au](http://www.midwives.org.au)

## Discussion and Planning

Shared decision-making ensures that the woman is empowered to make informed choices about her care. Aboriginal women should be referred to an Aboriginal Health Professional to support their care. A woman's decision-making should be guided by:

- > Maternal preferences and plans, including:
  - o The number of intended future pregnancies - noting that the risk of morbidly adherent placentation increases with each subsequent caesarean section (see *Morbidly Adherent Placenta Management* PPG available at [www.sahealth.sa.gov.au/perinatal](http://www.sahealth.sa.gov.au/perinatal))
- > Capability of the birthing service (see *Standards for Maternal and Neonatal Services in South Australia 2020* Clinical Directive available at [www.sahealth.sa.gov.au/perinatal](http://www.sahealth.sa.gov.au/perinatal))
  - o If the local service is unable to support planned VBAC, the woman should be offered the opportunity to transfer to a hospital that provides the appropriate resources to safely support her choice.
  - o If a woman makes a choice outside of those recommended by her senior clinician, or beyond the service capabilities of the chosen place of birth, consider:
    - Ethical frameworks; respecting the woman's right to her own bodily autonomy and beneficence
    - That the woman is adequately informed of the potential harms due to the under-equipped service (limited access to: obstetric, paediatric, anaesthetic, pathology, and operating theatre support)
    - Developing management plans for possible harms (e.g. uterine rupture)
- > Previous birth information including indication for previous CS and sourcing the operation report to establish suitability for labour and vaginal birth. Documentation should be requested from other facilities early in pregnancy to ensure information is available when a plan for mode of birth is being discussed
- > Potential maternal benefits and harms of VBAC compared with ERCS in the context of her individual circumstances
- > Comprehensive explanation of the individual factors contributing to a woman's preferred pathway of care not being advised
- > In circumstances where there is insufficient evidence or uncertainty, a second opinion from an obstetric consultant should be offered
- > Access to culturally competent care, including access to interpreters and Aboriginal Health Workers/Professionals (AMIC, AHP, ALO and/or Aboriginal Nurse/Midwife)

Documentation should include:

- > Discussions between the woman and her caregiver/s
- > The woman's acknowledgement of the points raised in the discussion
- > The decision regarding mode of birth and agreed plan of care, including a plan for spontaneous onset of labour prior to ERCS date (if an ERCS has been chosen by the woman)

Included in this guideline is a VBAC counselling checklist (Appendix A), and an example management plan (Appendix B). Checklists and standardised decision aids are helpful in outlining the necessary information in a clear and concise manner <sup>7, 20</sup>. It is important that the woman and her care provider document the agreed management plan. Additionally, clear documentation is helpful in providing protections for care providers from a risk management perspective.



## Planned VBAC

### Considerations

#### Precautions | Previous CS

- > Classical incision associated with higher risk of uterine rupture or dehiscence (up to 12%) <sup>21</sup>
- > Where the inter-pregnancy interval (i.e. CS to conception of subsequent pregnancy) is less than 12 months, discuss:
  - Limited high level evidence for ideal minimum inter-pregnancy interval, inconsistent results and variation in recommendations <sup>22</sup>
  - Inter -pregnancy interval less than 12 months is associated with an increased risk of uterine rupture, placenta praevia, placental abruption <sup>22</sup> and, preterm birth <sup>23</sup>
  - Short inter-pregnancy interval is not an absolute contraindication for VBAC. Consider individual risk factors and consult with a senior obstetric doctor
  - Inter-pregnancy interval has not been shown to affect the success rates of VBAC with spontaneous labour <sup>24</sup>
- > VBAC after two or more caesarean sections
  - Women with a history of two prior CS appear to have similar VBAC rates as those with only one prior CS, though studies report mixed findings <sup>3</sup>
  - A systematic review of the literature on VBA2C of 5666 women reports <sup>9</sup>:
    - VBAC rate of 71%
    - Uterine rupture rate 1.36%
    - Comparable maternal morbidity with repeat third CS
    - No significant differences in neonatal morbidity, though data is limited.
- > Multiple pregnancy - review with a consultant obstetrician, see below – special considerations
- > Suspected fetal macrosomia – review with a consultant obstetrician, see below – special considerations

#### Contraindications

Any condition or reason for avoiding vaginal birth in current pregnancy including:

- > Previous uterine incision other than lower transverse segment, including classical, inverted-T or J-incision
- > Previous uterine rupture
- > Previous hysterotomy or myomectomy entering the uterine cavity

#### Likelihood of VBAC

Factors recognised that <u>favour success of VBAC</u> <sup>4, 11</sup>	Factors recognised as <u>reducing success of VBAC</u> <sup>4, 11</sup>
<ul style="list-style-type: none"> <li>&gt; Previous safe vaginal birth <sup>4, 25-27</sup> <ul style="list-style-type: none"> <li>○ Previous successful VBAC <sup>4, 26, 27</sup></li> <li>○ VBAC rates are reported to be 85-91% in this cohort <sup>27-30</sup></li> </ul> </li> <li>&gt; Spontaneous onset of labour <sup>25</sup></li> <li>&gt; Uncomplicated pregnancy <sup>4</sup></li> <li>&gt; High Bishop score (&gt;6) <sup>25, 26, 31</sup></li> <li>&gt; Care provider commitment to VBAC <sup>32</sup></li> <li>&gt; Continuity of midwifery care <sup>33</sup> <ul style="list-style-type: none"> <li>○ One to one midwifery support in labour <sup>34</sup></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>&gt; No previous vaginal birth <sup>4</sup></li> <li>&gt; Previous CS for:           <ul style="list-style-type: none"> <li>○ dystocia <sup>4, 25-27</sup></li> <li>○ failed induction of labour <sup>26, 27</sup></li> <li>○ cephalopelvic disproportion <sup>26</sup></li> </ul> </li> <li>&gt; Induction of Labour (IOL) <sup>4, 25, 26</sup></li> <li>&gt; Hypertensive disorders <sup>26</sup></li> <li>&gt; Fetal, placental or maternal risks <sup>4</sup></li> <li>&gt; Maternal BMI greater than 30kg/m2 <sup>26, 27, 35</sup></li> <li>&gt; Fetal macrosomia (&gt;4000grams) <sup>4, 25, 26, 28</sup></li> <li>&gt; Advanced maternal age (&gt;40years) <sup>4, 25, 26</sup></li> <li>&gt; Short stature (height less than 155cm) <sup>36</sup></li> <li>&gt; More than 1 previous CS</li> </ul>





## Potential Benefits and Risks of planned VBAC <sup>11</sup>

Maternal Benefits	Maternal Risks
<ul style="list-style-type: none"> <li>&gt; 72-75% chance of vaginal birth <sup>28, 37</sup> (Refer section likelihood of vaginal birth)</li> <li>&gt; If vaginal birth achieved: <ul style="list-style-type: none"> <li>o Lower rates of maternal morbidity for index and subsequent pregnancies <sup>7, 38</sup></li> <li>o Avoidance of major surgery and subsequent major surgeries <sup>4, 20</sup></li> <li>o Risk reduction for morbidly adherent placentation in future pregnancies <sup>38</sup></li> <li>o Faster recovery, earlier mobilisation and discharge from hospital <sup>6, 7, 39</sup></li> <li>o Patient gratification in achieving vaginal birth if this is the desired outcome <sup>2, 4</sup></li> <li>o Reduced risk maternal mortality compared with ERCS (0.004% versus 0.013%) <sup>6, 7</sup></li> <li>o Able to drive earlier than 6 weeks post birth</li> </ul> </li> <li>&gt; Increased likelihood of breastfeeding compared with ERCS <sup>40-42</sup> <ul style="list-style-type: none"> <li>o Likelihood remains even if planned VBAC results in emCS <sup>43</sup></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>&gt; 25-28% chance of emCS <sup>7</sup> <ul style="list-style-type: none"> <li>o EmCS associated with higher morbidity than ERCS <sup>29</sup></li> </ul> </li> <li>&gt; Approximately 0.5% risk of uterine rupture <ul style="list-style-type: none"> <li>o If rupture occurs, it may be associated with significant maternal and perinatal morbidity</li> <li>o Estimated incidence varies across studies <sup>25</sup></li> <li>o Risk increases with induction and augmentation of labour</li> </ul> </li> <li>&gt; If vaginal birth: <ul style="list-style-type: none"> <li>o Potential perineal and pelvic floor trauma <sup>4, 7, 44</sup></li> <li>o Increased risk of anal sphincter injury for women having second birth following one previous CS, compared with nulliparous women <sup>45, 46</sup> <ul style="list-style-type: none"> <li>▪ Birthweight is strongest predictor <sup>46</sup></li> <li>▪ Rate of instrumental birth is also increased (20.2% for VBAC compared with 19.3 for nulliparous) – likely due to VBAC women factors of age, short stature, birth in non-upright position, heavier infants with larger head circumferences) <sup>46</sup></li> </ul> </li> </ul> </li> </ul>
Fetal and Neonatal Benefits	Fetal and Neonatal risks
<ul style="list-style-type: none"> <li>&gt; If vaginal birth achieved: <ul style="list-style-type: none"> <li>o there is an increased likelihood of breastfeeding at birth, hospital discharge and six-eight weeks postpartum <sup>40, 42, 43</sup></li> <li>o Improved infant gut microbiota that may reduce the incidence of metabolic and immune diseases <sup>47-49</sup></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>&gt; Increased risk of perinatal mortality compared with ERCS (0.13% vs. 0.05%) <sup>6</sup></li> <li>&gt; 0.1% prospective risk of antepartum stillbirth beyond 39 weeks (recommended timing for ERCS) while awaiting spontaneous onset of labour <sup>7, 50, 51</sup> <ul style="list-style-type: none"> <li>o Similar to nulliparous women</li> </ul> </li> <li>&gt; Increased risk hypoxic ischaemic encephalopathy (HIE) and associated long term sequelae compared with ERCS <sup>52</sup> <ul style="list-style-type: none"> <li>o 0.08% vs less than 0.01% <sup>52</sup></li> <li>o Majority of cases associated with uterine rupture <sup>52</sup></li> </ul> </li> <li>&gt; Some suggest there is no strong evidence to suggest a difference in outcomes for baby between VBAC or ERCS <sup>5</sup></li> </ul>

## Planned ERCS

### Timing of ERCS

The timing of an ERCS must consider both the maternal and neonatal implications. Babies who are born via CS at or after 39 weeks gestation experience less respiratory morbidity.

Data suggests that approximately ten per cent of women booked for an elective caesarean at 39 weeks will labour spontaneously prior to the date of booking. This implies that a proportion of women will require an emergency caesarean section, which has additional maternal hazards alongside resourcing implications. Balancing these factors, ERCS should be scheduled at approximately 39 weeks gestation in the absence of other indications to expedite birth. Where the delivery of an infant by caesarean section without prior labour must occur before this time, the administration of corticosteroids should be considered to reduce neonatal respiratory morbidity <sup>53</sup>.

The Australian Commission for Safety and Quality in Healthcare continues to investigate elective delivery of an infant prior to 39 weeks. 42-60% of planned caesarean sections occurring in Australia between 37 and 39 weeks gestation had no medical or obstetric indication. Additionally 10-22% of eICS before 37 weeks had no medical or obstetric indication <sup>54</sup>.

The Australian Commission for Safety and Quality in Health Care are increasingly concerned about the number of early term and preterm CS given the growing body of evidence that there are not only short term implications for birth prior to 39 weeks, but also long term developmental implications <sup>54-59</sup>.

### Potential Benefits and Risks of ERCS at 39 weeks<sup>11</sup>

Maternal Benefits	Maternal Risks
<ul style="list-style-type: none"> <li>&gt; Ability to plan a known ERCS date<sup>7</sup> <ul style="list-style-type: none"> <li>○ May change based on clinical circumstances</li> <li>○ Higher likelihood of avoiding an emCS</li> </ul> </li> <li>&gt; Lower prevalence of urinary incontinence and pelvic organ prolapse in women who have only given birth via CS vs those who have given birth vaginally <sup>60</sup> <ul style="list-style-type: none"> <li>○ Difference in rates of urinary incontinence appear to level out with increasing age <sup>60</sup></li> </ul> </li> <li>&gt; Option for sterilisation if fertility is no longer desired <sup>7</sup></li> <li>&gt; Extremely low risk of uterine rupture (&lt;0.03%) <sup>6</sup></li> </ul>	<ul style="list-style-type: none"> <li>&gt; Potential difficulty with future conception <sup>37</sup></li> <li>&gt; More likely to require a CS for future births <ul style="list-style-type: none"> <li>○ Increasing maternal morbidity risk with increasing number of CS.</li> </ul> </li> <li>&gt; Increased risk maternal mortality compared with planned VBAC <sup>6</sup> <ul style="list-style-type: none"> <li>○ 0.013% vs 0.004% <sup>6, 7</sup></li> </ul> </li> <li>&gt; Decreased rates of breastfeeding <sup>40, 42, 43, 61</sup></li> </ul>
Fetal and Neonatal Benefits	Fetal and Neonatal Risks
	<ul style="list-style-type: none"> <li>&gt; Decreased likelihood of breastfeeding at birth, hospital discharge and 6-8 weeks postpartum <sup>40-43,61</sup></li> <li>&gt; Impairment of infant gut microbiota that may increase the incidence of metabolic and immune diseases<sup>47-49</sup></li> </ul>

### Vaginal birth after caesarean success prediction tool

The National institute of Child Health and Human Development Maternal Fetal Medicine Unit (NICHD MFMU) developed a tool to predict the likelihood of successful VBAC. This tool represents an algorithm based on predictors of success for women within their network demographic <sup>62</sup>. The literature supports use of this tool specifically identifying its benefit in providing consistency in antenatal counselling for planned mode of birth, however additional studies have demonstrated higher than predicted success rates <sup>63</sup>. RANZCOG recognises the tool as a useful adjunct to clinical judgement in counselling women to determine their individualised plan of care <sup>4</sup>.

Additional validation studies of the MFMU tool found that the predicted success rates were comparable to actual success rates when the predicted success was greater than 50%. The accuracy for women with lower than 50% predicted success was low, therefore caution should be taken when counselling these women <sup>64</sup>. The NICHD MFMU tool can be accessed [here](#).

# Birth after Caesarean Section

## Intrapartum Care

### On Admission

The environment in which care is provided and the approach to communication by caregivers can have a significant impact on the woman and her partner's experience of childbirth <sup>65</sup>.

### Maternal and Fetal Assessment

A comprehensive medical and obstetric history alongside full clinical assessment should be undertaken on admission to maternity unit in alignment with *Labour and Birth: Routine care in normal labour and birth* PPG available at [www.sahealth.sa.gov.au/perinatal](http://www.sahealth.sa.gov.au/perinatal).

### Pain Management

The woman's preferences for pain relief in labour must be discussed. Non-pharmacological and pharmacological pain relief options may be provided to the woman at her request. Refer to *Analgesia for Labour and Birth* PPG for pharmacological options and *Labour and Birth: Routine care in normal labour and birth* PPG for non-pharmacological options.

Maintaining continuous fetal monitoring is of paramount importance as fetal compromise is most often the first sign of uterine dehiscence or rupture. However, continuous CTG can still be achieved if the woman requests non-pharmacological pain relief options such as water immersion. The woman should be aware that if the monitoring is compromised through loss of contact, her caregiver will request that she exit the water. All options for pain relief in labour should be presented to the woman <sup>5</sup>. Refer to institutional policies such as First stage Labour and Birth in Water and manufacturers guidelines for guidance on equipment suitability.

Epidural anaesthesia is considered safe for women undertaking TOLAC <sup>4, 66</sup>. Acute onset of scar pain or tenderness is not masked by an epidural <sup>66</sup>.

Epidural use during TOLAC is associated with <sup>67</sup>:

- > Higher VBAC rates (11.8% vs 8.7%)
- > Higher rates of instrumental birth
- > Similar rates of uterine rupture (0.4% with epidural, 0.29% without)

### Intravenous cannulation in labour

RANZCOG recommend intravenous access once labour is established <sup>4</sup>. The SA PPGs continue to align their recommendations with RANZCOG.

Of note, the NICE guidelines have withdrawn this recommendation, stating that routine insertion of intravenous cannula (IVC) is unnecessary <sup>5</sup>. This may be considered in the case where a woman is strongly opposed to having an IV cannula inserted, as the evidence is not definitive.

### Oral intake during labour

- > There is a paucity of evidence regarding oral intake during TOLAC for women. RANZCOG recommends intake of clear fluids only during labour <sup>4</sup>
- > NICE Guidelines state that there is insufficient evidence to promote or deny oral intake during labour <sup>5</sup>
- > Use of clinical judgement and consideration of co-morbidities, fetal well-being and progress in labour can be considered when advising the woman of the safest option for her.

Women in labour have a prolonged gastric emptying time due to redistribution of blood flow, therefore there is a physiological tendency to reduce oral intake. Additionally, women using opioid analgesics for pain relief in labour experience further delays in gastric emptying due to opiate induced gastroparesis <sup>68</sup>. Whilst clear fluids are encouraged, ingestion of food is generally discouraged and is poorly tolerated. Isotonic, calorific drinks may be of use where diet is poorly tolerated/not recommended.

The restriction of diet and fluids in labour derives from anaesthetic concerns of gastric regurgitation into the lungs (aspiration) during general anaesthesia (GA). The need for a GA for CS in South Australia was 2.2% in 2017, the rate of GA for Emergency CS in TOLAC is unknown.



# Birth after Caesarean Section

Best practice recommendations for gastric aspiration prophylaxis include:

- > Administration of oral pantoprazole 40mg, daily to women who are at greater risk of aspirating during anaesthesia (e.g. obesity, hiatus hernia, severe active reflux in pregnancy), and those for whom surgical intervention in labour becomes a relatively high likelihood (e.g. severe pre-eclampsia, significant signs of fetal compromise, antepartum or intrapartum haemorrhage, multiple pregnancy, breech presentation).
- > If oral medication is not possible (vomiting) or surgical intervention is likely within the next 2 hours, a single dose of pantoprazole 40mg may be administered by slow intravenous injection (diluted in 10mL of sodium chloride 0.9 % (4mg/mL) and given over at least 2 minutes).
- > Avoid the use of particulate antacids such as Mylanta® or Gaviscon®

## Fetal Monitoring

An abnormal fetal heart rate is the first sign of uterine dehiscence and/or abruption in 70-80% of cases <sup>11</sup>. For this reason, RANZCOG recommends continuous electronic fetal monitoring for women during TOLAC <sup>4</sup>.

In view of RANZCOG recommendations and the absence of strong evidence to withdraw this recommendation, the SAPPGs will continue to align with RANZCOG guidance. Of interest, a recent NICE publication excludes recommendations for continuous monitoring in the absence of augmentation (using synthetic oxytocin or amniotomy) <sup>5</sup>.

For women who strongly oppose continuous fetal monitoring, the rationale for recommending this should be discussed and all fetal monitoring options may be presented.

The use of a telemetry external or fetal scalp electrode monitoring may enable the woman to move more freely during labour. These options should be offered to facilitate unimpeded movement if the woman desires an active labour and birth.

In partnership, the woman and her healthcare team consider all monitoring options and the benefits and possible harms associated with each. This ensures that the woman can provide informed consent, and is able to communicate her preferences. She must feel supported to select the course of action that best aligns with her values.

## Labour Management

- > Ensure one-to-one midwifery care and continuous support to improve birth outcomes and enable prompt recognition and management of complications such as uterine dehiscence or rupture <sup>4, 11, 69</sup>
- > Once active labour is established, a vaginal examination should be performed. This examination should be repeated every 4 hours as indicated. Delays in progress should be discussed with senior obstetric and midwifery staff <sup>11</sup>
- > A senior obstetric clinician should oversee the labour management and care of a woman experiencing TOLAC <sup>4</sup>

## Second Stage of labour

- > Encourage one hour of passive descent following diagnosis of cervical full dilatation if epidural in situ or no urge to push <sup>70</sup>
- > Consult senior obstetric doctor if duration of active pushing exceeds one hour.
- > Note the increased incidence of obstetric anal sphincter injury for women having a VBAC. Utilise the *Perineal Care* PPG available at [www.sahealth.sa.gov.au/perinatal](http://www.sahealth.sa.gov.au/perinatal) in consultation with the woman, this includes:
  - Encouraging the woman to adopt the position in which she is most comfortable <sup>71</sup>
  - Warm compresses, perineal massage and support if the woman agrees and understands the associated reduction in anal sphincter injury <sup>72</sup>
  - Slow, steady, progressive descent of the fetal presenting part to assist stretching and minimise trauma <sup>73</sup>
  - Episiotomy if indicated



## Induction of labour (IOL) and augmentation of labour

- > The risk of uterine rupture is increased with IOL and augmentation <sup>6, 12, 52, 74</sup>
- > Reported risk of rupture varies widely across studies <sup>6, 7</sup>
- > One large Australian cohort study explored planned VBAC after one CS and found that the risk of uterine rupture for <sup>12</sup>:

Context	Risk of uterine rupture
Spontaneous labour, no augmentation	0.15%
Spontaneous labour with augmentation <i>Other studies report a lower rate of rupture for augmentation compared with IOL</i> <sup>6, 74</sup>	1.91%
IOL with oxytocin alone	0.54%
IOL with prostaglandin alone	0.68%
IOL with prostaglandin and oxytocin	0.88%

- > The use of prostaglandins for cervical ripening carries a higher risk than mechanical methods (cervical balloon catheterisation or amniotomy) and is not recommended <sup>7</sup>. Practitioners should be aware that prescribing prostaglandins for TOLAC is against manufacturer's instructions and should be used with extreme caution with documented consent from the woman. Risk of uterine rupture in IOL using prostaglandins is 1.4-2.45% <sup>52, 75</sup>
- > Induction with balloon catheter is safer compared to prostaglandins with similar rates of efficacy and vaginal birth <sup>76</sup>
- > One prospective cohort study showed that in women who had a previous CS, IOL with balloon catheter did not result in an increase in maternal or neonatal adverse outcomes, compared with ERCS <sup>77</sup>
- > A case control study showed that there was an increased risk of rupture with higher doses of oxytocin. Uterine rupture rate increased to 2.07% at maximum oxytocin doses (21-30 milliunits/minute) <sup>78</sup>
- > IOL and augmentation are not contraindicated for women who have had a previous CS, however there is increased risk associated. Women should be counselled by an experienced obstetric doctor with consideration of her individual risk.
- > If an IOL or augmentation is agreed:
  - Use mechanical methods where possible <sup>66</sup>
  - Avoid prostaglandins where possible <sup>66</sup>
  - Use oxytocin with caution, particularly at high doses <sup>78</sup>

## Uterine Rupture

- > Uterine Rupture may occur at any stage of pregnancy, labour or postpartum
- > There are no reliable indicators to predict rupture or its timing
  - There is a relationship between thickness of lower uterine segment and risk of rupture however there is no known cut-off between safe and unsafe VBAC. Current ultrasonography measurement does not provide clear prediction therefore its usefulness is limited <sup>7, 66</sup>

## Risk of uterine rupture

- > Overall risk of rupture regardless of mode of delivery ranges 0.005% to 0.3% <sup>6, 79</sup>
- > Risk for planned VBAC following one previous CS ranges 0.22%-0.9% <sup>7, 66, 79</sup>
- > Risk of rupture for planned ERCS is 0.03% <sup>6</sup>
- > A previous vaginal birth reduces the risk of uterine rupture <sup>80, 81</sup>
- > Risk of rupture for women who have experienced uterine rupture in a previous pregnancy is 15.2% <sup>82</sup>





# Birth after Caesarean Section

> Factors shown to affect the risk of uterine rupture in second birth <sup>83</sup>:

Context		Rate/1000
Caesarean section first delivery	No	0.05-0.2
	Yes	2.2-7.4 <sup>79</sup>
Onset of second labour	Spontaneous	0.76
	Induced	2.83
Vaginal instrumental second birth	No	0.83
	Yes	3.46
Birth weight second birth	≤2499	0.60
	2500-3999	0.76
	4000+	1.39
Gestational age in second birth (weeks)	≤36	0.32
	37-41	0.83
	42+	2.39
Mothers age at second birth (years)	≤24	0.49
	25-29	0.79
	30-34	1.09
	35+	1.42
BMI at second birth (kg/m <sup>2</sup> )	≤24.9	0.79
	25.0-29.9	1.09
	30+	1.82
Height	≤159	1.67
	160-164	1.16
	165-169	0.80
	170+	0.59
Inter pregnancy interval (months)	<12	1.18
	12-36	0.93
	>36	0.70
Previous classical CS		20-90 <sup>79</sup>
Previous inverted T or J incision		19 <sup>79</sup>

## Signs of uterine rupture

The most common sign of uterine rupture is persistent and profound fetal bradycardia, occurring in about 80% of cases <sup>84, 85</sup>

The classic triad of complete uterine rupture presents in less than 10% of cases: pain, vaginal bleeding and, fetal heart rate abnormalities <sup>86</sup>

Other non-specific signs and symptoms include <sup>11</sup>:

Sign of rupture	Incidence
Abnormal CTG <sup>7, 66, 84</sup>	76%
Abdominal pain that persists between contractions <sup>7</sup>	49%
Abnormal vaginal bleeding <sup>7, 84</sup>	29%
Alteration or cessation of efficient uterine activity <sup>84, 85</sup>	13%
Maternal tachycardia, hypotension or shock <sup>85</sup>	6%
Haematuria <sup>7</sup>	3%
Acute onset of scar tenderness <sup>7</sup>	
Abnormal progress in labour (prolonged first or second stage) <sup>84</sup>	
Easier abdominal palpation of fetal parts <sup>66</sup>	
Loss of station of the presenting part <sup>7, 84</sup>	
Chest pain or shoulder tip pain	

## Consequences

> The consequences of a uterine rupture are dependent on the time from rupture to delivery, this highlights consideration for chosen place of birth.



# Birth after Caesarean Section

> The complication rates related to scar rupture are represented below <sup>6</sup>:

Complication	Risk / 1000 attempted VBAC
Perinatal death	0.4-0.7
Maternal death	0.02
<b>Major Maternal Morbidity</b>	
Hysterectomy	0.5-2
Genitourinary injury	0.8
Blood transfusion	1.8
<b>Major Perinatal Morbidity</b>	
Fetal acidosis (cord pH <7.0)	1.5
HIE	0.4

> In the event of scar rupture:

- Hysterectomy risk ranges from 14-33%
- Risk of perinatal death (fetal or neonatal death) is around 6.2%
- Reported rates of perinatal death in term babies range 0-2.8%
- No maternal deaths have been reported

## Management

- > Based on the above evidence, it is recommended that an Urgent Category 1 CS is initiated for suspected uterine rupture as there is an urgent threat to the woman and baby <sup>87</sup>
- > Early involvement of senior, experienced staff including consultant obstetrician, anaesthetist, midwife(s), paediatrician and, haematologist and intensivist (if required)
- > Maternal and intrauterine resuscitation whilst initiating urgent caesarean / laparotomy
- > Repair of uterus is preferred, however a hysterectomy may be required

## Postpartum Counselling

> Women who experienced uterine rupture were significantly more likely to experience the following complications in a subsequent pregnancy based on a study of over 34,000 singleton births <sup>82</sup>:

Complication	Previous rupture	No previous rupture
Preterm delivery (<37weeks)	71.7%	18.5%
Low birth weight	39.1%	17.2%
Cervical tears	2.2%	0.2%
Uterine rupture	15.2%	0%
Lower 5 minute APGAR scores	8.7%	3.1%

- > Perinatal mortality rate did not differ between the two groups
- > Recurrent rupture occurred in 15.2% of patients with a previous rupture
- > If the defect is confined to the lower segment, the risk of rupture in a subsequent pregnancy is similar to that of a VBAC
- > Previous uterine rupture is considered a contraindication for VBAC <sup>7</sup>
- > For women with extensive uterine damage involving the upper segment, future pregnancy may be contraindicated
- > The risk of recurrent rupture should be discussed at an appropriate time with an obstetrician, alongside recommendations for planned elective caesarean section at 37-38weeks gestation in future pregnancy, or possible permanent contraception dependent on type and extent of uterine damage



## Special Circumstances

- > **Multiple pregnancy** is not considered a contraindication to VBAC <sup>66</sup>, there appear to be similar rates of successful VBAC to singleton pregnancy <sup>7</sup>
- > **Macrosomia** carries an increased risk of uterine rupture, CS, shoulder dystocia and obstetric anal sphincter injury <sup>7,88</sup>. Consider 36 week ultrasound for estimated fetal weight if fetal macrosomia is suspected <sup>88</sup> (noting potential inaccuracies of late trimester fetal weight prediction)
- > **Breech presentation** Breech presentation is not a contraindication for VBAC, however there is insufficient evidence to assess the risks of VBAC with breech presentation. A case control study in Germany across 604 singleton breech vaginal births showed that women who attempted a breech vaginal birth after caesarean had similar success rates to primiparous women attempting a breech vaginal birth. There were no differences in neonatal morbidity and mortality, delivery manoeuvres or maternal outcomes<sup>89</sup>. There is currently no guidance from RANZCOG or RCOG regarding this. Discussion with an obstetric consultant is recommended. See 'Breech Presentation' PPG at [www.sahealth.sa.gov.au/perinatal](http://www.sahealth.sa.gov.au/perinatal)
- > **Preterm birth** carries similar rates to term pregnancy, however uterine rupture and dehiscence is less common in preterm labours <sup>7</sup>
- > **Advanced maternal age** over 40 years is an independent risk factor for stillbirth and CS, as such consideration of this is important when planning timing of birth <sup>7</sup>. There is insufficient evidence for optimum timing of birth <sup>7</sup>, and there is no specific age threshold for recommending ERCS over VBAC <sup>25</sup>
- > **Intrauterine fetal death** must be managed with careful consideration to the woman's wishes and unique circumstances. High VBAC rates are reported for this cohort – 87% <sup>7</sup>. If the decision is for a VBAC, avoid uterine hypertonus and tachysystole, observing closely for signs of uterine rupture.

## Postpartum Care

- > The decision for mode of birth and subsequent birth experience may cause significant anxiety or distress for the woman and her support person <sup>90</sup>. Offer women emotional wellbeing assessments, facilitating additional support where indicated.
- > A debrief following the birth with a known care provider may also be beneficial to the woman and should be offered independent of the outcome.
- > **Aboriginal women and families should be offered to debrief in a culturally safe and responsive manner. Ensuring referral to Aboriginal Social Emotional Wellbeing worker or Aboriginal health worker**
- > Contemporaneous documentation of labour and delivery events is essential.
- > Post pregnancy counselling regarding future pregnancies and birthing options is recommended.



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# Birth after Caesarean Section

## Appendix A | Example VBAC Counselling Checklist

Contraindications for VBAC			Tick when Discussed
Contraindications include: previous uterine rupture, history of classical CS, other contraindications to vaginal birth			<input type="checkbox"/>
If complex CS scar (inverted T or J), or history of multiple CS, seek advice from consultant obstetrician			<input type="checkbox"/>
Likelihood of VBAC		VBAC rate	
One previous CS, no previous vaginal birth		59-75%	<input type="checkbox"/>
One previous CS, at least one previous vaginal birth		85-90%	<input type="checkbox"/>
Induced labour, no previous vaginal birth, BMI greater than 30, previous CS for dystocia		If all factors present, 40%	<input type="checkbox"/>
Maternal risks of planned VBAC and ERCS			
Risk	Planned VBAC	ERCS	
Uterine Rupture	0.5%	<0.02%	<input type="checkbox"/>
<i>If uterine rupture occurs – 14-33% risk of hysterectomy, 6.2% chance perinatal death</i>			
Serious complications in future pregnancies	N/A if VBAC	Increased likelihood placenta praevia/ morbidly adherent placenta	<input type="checkbox"/>
Maternal mortality	0.004%	0.013%	<input type="checkbox"/>
Fetal risks of planned VBAC and ERCS			
Risk	Planned VBAC	ERCS	
Antepartum stillbirth beyond 39 weeks awaiting labour	0.1%	N/A if ERCS at 39weeks	<input type="checkbox"/>
Hypoxic Ischaemic Encephalopathy (HIE)	0.08%	<0.01%	<input type="checkbox"/>
Perinatal Mortality	0.13%	0.05%	<input type="checkbox"/>
Intrapartum care recommendations			
Continuous electronic fetal monitoring in labour (CTG)			<input type="checkbox"/>
One-on-one midwifery care			<input type="checkbox"/>
Birth in a suitable facility			<input type="checkbox"/>
Intravenous cannulation			<input type="checkbox"/>
Written information leaflets provided: VBAC <input type="checkbox"/> ERCS <input type="checkbox"/> Other <input type="checkbox"/>			
Woman's Signature:		Care Provider Signature, Name, Designation:	
Date:			

Adapted from Queensland Clinical Guideline: Vaginal birth after caesarean (VBAC)<sup>11</sup> and RCOG Birth after previous caesarean birth green top guideline<sup>7</sup>



## Appendix B | Example Plan for Labour and Birth

This form may be completed by the woman and her clinician to document the discussed and agreed plans for labour and birth based on the information given in the counselling checklist

Management plan in the event of:			
Preterm labour	VBAC		Emergency CS
Spontaneous labour before ERCS date	VBAC	Emergency CS	Depends on the situation (details):
No spontaneous labour by 41 weeks	IOL (details below)	ERCS (details):	Expectant Management (details):
Details of IOL			
Use of oxytocin in labour			
ERCS Booking details and requests			
Additional Comments			
<b>Woman's Signature:</b>		<b>Care Provider Signature, Name, Designation:</b>	
Date:			

*Adapted from Queensland Clinical Guideline: Vaginal birth after caesarean (VBAC)<sup>11</sup> and RCOG Birth after previous caesarean birth green top guideline<sup>7</sup>*



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