CLINICAL PRACTICE **14**
GUIDELINE

Management of
VAGINAL BIRTH AFTER PREVIOUS LOW-SEGMENT CAESAREAN SECTION
2021

Association *of*
Ontario **Midwives**
Delivering what matters.

The AOM is committed, through our statement on Gender Inclusivity and Human Rights, to reflect and include trans, genderqueer and intersex communities in all aspects of our work.

In this document, there are references to sources that use gendered language to refer to populations of pregnant and birthing parents. To accurately represent these sources, the AOM may have maintained gendered language.

ABOUT THIS CPG

This guideline reflects information consistent with the best evidence available as of the date issued and is subject to change. The information in this guideline is not intended to dictate a course of action, but to inform clinical decision-making. Local standards may cause practices to diverge from the suggestions within this guideline. If practice groups develop protocols that depart from a guideline, it is advisable to document the rationale for the departure.

Midwives recognize that client expectations, preferences and interests are an essential component in clinical decision-making. Clients may choose a course of action that differs from the recommendations in this guideline, within the context of informed choice. When clients choose a course of action that diverges from a clinical practice guideline and/or practice group protocol, this should be well documented in their charts.

A note on language used within this CPG: Planned or Planning VBAC

In updating this CPG, we have carefully considered the language used to describe clients' choices regarding mode of birth following at least one previous caesarean section (CS). When framing health interventions, health-care providers must carefully consider the language used in discussions, as this can impact whether a client views that intervention negatively or positively. In the case of clients who have previously had negative birthing experiences and desire better outcomes in their subsequent pregnancy, using positive, supportive language can lessen birthing parents' fears and increase confidence in giving birth naturally. (1) Furthermore, framing an intervention positively may improve their perception of its effectiveness. (2)

The term "trial of labour after caesarean" (TOLAC) is used widely throughout the literature to denote an attempted vaginal birth after caesarean section (VBAC). While accurate, this term conveys the notion that delivering vaginally after a previous CS can be attempted but may not be achievable or successful. Evidence shows that a client's confidence in the ability to deliver vaginally may improve their likelihood of having a VBAC. (1) As such, we have opted to use the term "planned VBAC" throughout this CPG, as we believe this language better frames VBAC as an achievable, attainable option.

ABBREVIATIONS

AOR	Adjusted odds ratio
BMI	Body mass index (kg/m^2)
CI	Confidence interval
CS	Caesarean section
EDB	Estimated date of birth
EFM	Electronic fetal monitoring
ERCS	Elective repeat caesarean section
IA	Intermittent auscultation
LSCS	Low-segment caesarean section
LTCS	Low-transverse caesarean section
LUS	Lower uterine segment
NICU	Newborn intensive care unit
OR	Odds ratio
PPH	Postpartum hemorrhage
RR	Relative risk
VBAC	Vaginal birth after caesarean section

AIM OF THE GUIDELINE

Statement of purpose

The goal of this document is to provide an evidence-based clinical practice guideline (CPG) that is consistent with the midwifery philosophy and model of care. Midwives are encouraged to use this CPG as a tool in clinical decision-making. This CPG is independent of and not intended to replace the *Professional Standards* of the College of Midwives of Ontario.

Objective

The objective of this CPG is to provide a critical review of the research literature on planned vaginal birth after caesarean section (VBAC), particularly as it relates to those with uncomplicated pregnancies with a previous low-segment (or low-transverse) caesarean section (LSCS). Evidence relating to the following will be discussed:

- Outcomes of planned VBAC vs. elective repeat caesarean section (ERCS)
- Predictive factors of VBAC success and uterine rupture
- Management of labour during planned VBAC
- Choice of birthplace during planned VBAC
- Postpartum care

Outcomes of interest

The following outcomes were rated as critical or important to decision-making and are addressed in this guideline:

Critical:

- Mortality (birthing parent and neonate)
- Uterine rupture
- Rates of vaginal birth
- Rates of caesarean section (CS) (when applicable)

Important:

- Instrumental/operative vaginal birth
- Intrapartum/postpartum infections
- Neonatal infections/sepsis
- Postpartum hemorrhage
- Hysterectomy
- Blood transfusion
- Endometriosis
- Apgar score < 7 at five minutes
- Oxytocin use

Methods

This CPG uses the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) methodology for guideline development. The GRADE process determines the certainty of the evidence (how certain we should be of the results) as well as the strength of the recommendation. Certainty of evidence in this CPG is rated from very low to high, according to five GRADE domains: risk of bias, inconsistency, indirectness, imprecision and publication bias. Methodological concerns about the included studies, variability across results, applicability of the evidence to our context, precision of the results and completeness of the evidence base are considered as part of these domains. The CPG Committee's judgments about the certainty of evidence reflect the work group's confidence that available evidence correctly reflects the true effect of an intervention and is sufficient to support decision-making.

Results from low certainty of evidence are described using language such as "may"; results from moderate certainty of evidence are described using such language as "probably" or "likely"; and results from high certainty of evidence are described without using these qualifiers.

When randomized controlled trial (RCT) evidence was available, it was assessed using GRADE methodology. In instances where RCT evidence was not available, observational studies were assessed using GRADE.

CERTAINTY OF EVIDENCE	How certain we ought to be about an estimate of effect or association
High	Further research is very unlikely to change confidence in the estimate of effect. • This evidence provides a very good basis for decision-making.
Moderate	Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate. • This evidence provides a good basis for decision-making.
Low	Further research is very likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate. • This evidence provides some basis for decision-making.
Very low	Any estimate of effect is very uncertain. • This evidence does not provide much of a basis for decision-making.

Based on: (3–5)

Recommendations in this CPG are based on formal ratings of the certainty of evidence and are described as strong or weak according to the GRADE approach. The strength of recommendation reflects the extent to which the CPG Committee is confident that the benefits of a recommended intervention outweigh its harms, or vice versa. The strength of recommendation is influenced by the certainty of supporting evidence, the balance between desirable and undesirable effects and the perceived variability or uncertainty in clients' values and preferences with respect to the intervention. (3–7) It is for these reasons that weak recommendations within this CPG use the terminology "may" and strong recommendations use the terminology "should."

Good practice statements in this CPG represent guidance that the CPG Committee deemed important but not appropriate for formal ratings of certainty of evidence. Good practice statements are made when the CPG Committee is confident that the action has net benefit to the client and that no sensible alternatives exist. (8)

Complete GRADE evidence tables used to summarize research and inform the recommendations in this guideline are available on the AOM website. A full description of the AOM's approach to clinical practice guideline development using GRADE is also available on the AOM website.

STRENGTH OF RECOMMENDATION	The extent to which the CPG Committee is confident that the benefits of the recommended intervention outweigh its harms (or vice versa)
Strong	Benefits clearly outweigh risks and burdens (or vice versa). *Can be interpreted as:* • Most clients should be offered the intervention, assuming that they have been informed about and understand its benefits, harms and burdens. • Most clients would want the recommended course of action, and only a small proportion would not.
Weak	Benefits, risks and burdens are closely balanced. *Can be interpreted as:* • The majority of clients would want the suggested course of action, but an appreciable proportion would not. • Values and preferences vary widely.

Based on: (3–6)

Literature search

A search of the Medline and CINAHL databases and the Cochrane Library from 1994 to 2010 was conducted using the keywords: vaginal birth after caesarean, VBAC, uterine rupture, and prior CS. Additional search terms were used to provide more detail on individual topics as they related to VBAC. Older studies were accessed in cases of commonly cited statistics or significant impact on clinical practice.

In 2019, this search was rerun in Medline, CINAHL and Cochrane, from 2010 to 2019. Reference lists of relevant systematic reviews and key papers were also reviewed. When synthesizing evidence, systematic reviews were prioritized; if no systematic reviews were found, randomized controlled trials and observational studies were retrieved.

Updating the CPG

In 2021, this CPG was updated to include more recent literature published from 2011 to 2019. Based on consultation with the AOM's CPG Committee and a preliminary review of emerging research, all sections of the guideline were selected for updating. Changes have been made to the current edition of the guideline to reflect this new research.

Recommendations and good practice statements in updated CPGs will now be marked with one of the following labels: [new 2021], [2021] or [2011]. These labels will appear at the end of recommendations and good practice statements. See the table below (Key to Partial Update Labelling for Recommendations and Good Practice Statements) for an explanation of these labels.

Table 1 in the Appendix provides a detailed list of the updated recommendations, good practice and summary statements (i.e., [new 2021] statements) in this guideline, along with an explanation for these changes.

Key to partial update labelling for recommendations and good practice statements	
Recommendation or good practice statement label	**Meaning of label**
[new 2021]	New recommendation or good practice statement as of 2021: • Indicates that the recommendation or good practice statement is new as of 2021. New evidence has prompted a change to or the addition of a recommendation or good practice statement. • An explanation of this change is provided in the Appendix.
[2021]	Reaffirmed recommendation or good practice statement as of 2021: • Indicates that the recommendation or summary statement is consistent with new evidence as of 2021. New evidence has not prompted a change to the original statement. • Small changes may have been made to the wording of the statement, but they do not affect the meaning.
[2011]	Unchanged recommendation from 2011: • Indicates that the recommendation has not been updated since 2011. • Small changes may have been made to the wording of this statement, but they do not affect the meaning.

Review

This CPG was reviewed using a modified version of the AGREE instrument (9) and the AOM Values-based Approach to CPG Development (10), as well as consensus of the CPG Committee, the Quality, Insurance and Risk Management Committee and the Board of Directors.

INTRODUCTION

From the late 1980s to the mid-1990s, rates of vaginal birth after caesarean (VBAC) increased in North America. This occurred in response to public and professional concerns about rising caesarean section (CS) rates and increased evidence indicating that in the absence of contraindications VBAC is a safe choice. (11) However, since the mid-1990s the rate of VBAC has declined dramatically in Canada. This decrease has occurred despite the highest-quality, most current research, reflected in professional guidelines, which articulate VBAC as a safe, appropriate option for most pregnant people who have had a CS. (12–15)

This CPG provides a summary of the research on the risks and benefits of VBAC and ERCS, to aid midwives in facilitating informed choice discussions with clients who have a history of one or more previous LSCS. This information, along with the client's specific clinical circumstances, values and risk tolerance, will factor into decision-making about method and place of birth for the current pregnancy. The midwife's role in promoting informed choice regarding VBAC and ERCS is influenced by the profession's strong belief in the promotion of physiologic birth with minimal intervention, and the Canadian obstetric community's commitment of support for birth as a natural process. (16,17) The midwife's professional responsibility to advocate for VBAC as an option takes place within the broader context of escalating rates of CS, which normalizes technological intervention and undermines confidence in vaginal birth.

Helping clients make informed choices within this context, and discussing risk without instilling fear, requires a high degree of skill and considerable time from midwives. Quantifying, weighing and communicating risk is especially difficult in the perinatal period, given dominant cultural norms of risk aversion and conceptualizations of pregnancy and birth as inherently problematic undertakings that warrant pre-emptive medical intervention. (18,19) The Canadian Association of Midwives provides an apt description of how midwives may best support their clients, through trust and "supporting their ability to trust themselves, their bodies and the birth process." (20) Notwithstanding the midwife's fundamental commitment to physiologic birth, it must be acknowledged that in some situations VBAC is contraindicated and ERCS should be recommended.

This CPG supports VBAC as a safe choice for the majority of clients with a prior CS, and it acknowledges the growing body of evidence that multiple CS have the potential to cause long-term harm

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Implementation tip

Practice groups may wish to create a written protocol specific to the group that documents which of the recommendations within the CPG they are adopting and how they are putting them into practice, including what would be part of an informed choice discussion with each client. Midwives are advised to document clearly that an informed choice discussion has taken place. If the practice group has a written protocol about what should be discussed with each client, that discussion should be followed. Any deviation from or addition to that discussion should also be documented in the client's chart. If there is no protocol about what information is provided, then documentation in the client's chart should give details of that discussion. The discussion and documentation should include a client-specific risk assessment based on the history of previous pregnancies and births and assessments in the current pregnancy. If the midwife makes recommendations for monitoring or intervention that the client declines, the midwife should document that their recommendation was declined.

Incidence

Overall rates of CS have increased in Canada since the mid-1990s. Both the decrease in VBAC and the increase in repeat CS reflects an increase in the rate of overall CS. In 2018-19, primary CS rates in Ontario were consistent with CS rates across Canada: 19.9% in Ontario compared with 19.7% in Canada. Repeat CS rates in Ontario are slightly higher than repeat CS rates across Canada: 83.7% in Ontario vs. 81.8% in Canada as a whole (see Table 1). Individuals over age 35 had an increased rate of primary CS (23.4% in Ontario and 23.5% in Canada) compared with 18.8% and 18.7%, respectively, for those younger than 35 years of age. (21)

An analysis of outcomes specific to Ontario midwifery clients suggests a lower rate of primary and repeat CS among midwifery clients. In 2018-19, the rate of CS for all midwifery clients in Ontario was 19.5%; while lower than the provincial and national average, the rate of CS for midwifery clients has increased by four percentage points since 2008. The proportion of midwifery clients who plan VBAC has also declined in the past decade: from 71% in 2008 down to 52% in 2018-19. In 2018-19, Ontario midwives attended 2042 births to clients with a history of CS; 1070 clients opted for VBAC; and 818/1070 (76.4%) of these labours resulted in vaginal birth. Approximately 11% of these VBACs took place at home. (22)

TABLE 1: CAESAREAN SECTION RATES: CANADA, ONTARIO AND ONTARIO MIDWIFERY CARE (2018-19)

	Overall CS rate % (95% CI)	Primary CS rate % (95% CI)	Repeat CS rate % % (95% CI)
Canada	29.4 (29.2-29.5)	19.7 (19.6-19.9)	81.8 (81.5-82.1)
Ontario	29.8 (29.6-30.1)	19.9 (19.7-20.1)	83.7 (83.2-84.2)
Midwifery (Ontario)	19.5	14.2	64.8

The factors contributing to the decline in VBAC and subsequent increase in CS are not well understood and may be affecting decision-making at the level of the client, health-care provider, hospital and policy. (23) However, some potential factors include:

- Lower tolerance for fetal/neonatal risk and perineal trauma
- Increased rates of induction and using epidural analgesia, as well as EFM without access to fetal scalp sampling
- Increased rates of obesity among birthing parents
- Obstetrician and birthing parent preferences
- Recommendations that VBAC labours take place in hospitals with immediate access to obstetric anaesthesia and surgical personnel should CS be required
- Loss of obstetric skills among health-care providers (particularly in the case of vaginal breech, operative vaginal delivery and vaginal twin births) (18)

Overall, concerns about safety, birth place and medico-legal pressures have shaped past and current discussions and practices regarding VBAC.

Contraindications to VBAC

The contraindications to planning a VBAC are generally accepted to be:

- Previous or suspected classical CS
- Previous or suspected inverted T uterine scar
- Previous hysterotomy or myomectomy entering the uterine cavity
- Previous uterine rupture
- Presence of a contraindication to labour, such as placenta previa or transverse lie
- Declining VBAC and requesting a CS (12,14)

PLANNED VBAC COMPARED WITH ERCS FOLLOWING ONE PREVIOUS CS

The majority of research on VBAC focuses on the risks and benefits of VBAC compared with ERCS, and observational studies provide the bulk of current evidence on this question. Data from these non-randomized study designs may introduce a significant potential for bias, which limits the reliability and validity of findings. Findings from observational studies may not be generalizable to all practice environments, nor Ontario midwifery care specifically. Despite these limitations, the majority of evidence on VBAC comes from observational studies as demonstrated by the publication of only one systematic review of randomized controlled studies comparing both modes of delivery to date. In this systematic review, only one outcome is reported: rates of hemorrhage or the need for a blood transfusion. Data (*low certainty of evidence*) from the small sample (n = 22)

shows little to no difference in rates of hemorrhage or the need for a blood transfusion among clients who plan to have a VBAC or ERCS after one previous CS (RR 1.20, 95% CI 0.20-7.05, p = 0.84). (24) Unfortunately, this systematic review provides no other information on important outcomes for birthing parents or neonates. (24)

Due to the limited data available from RCTs, information from observational studies was reviewed. Ten observational studies examined differences in outcomes for participants who planned to give birth vaginally or elected to have a repeat CS after one prior CS. (25–34) While this observational data can be beset by a lack of rigorous methodology, limited comparability of groups assessed and imprecise or non-standard definitions of important outcomes (13,35)[1], the growing body of evidence

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[1] For instance, the manner in which uterine rupture is defined in a given study (whether or not dehiscence is included and how uterine dehiscence is defined) can greatly affect reported rates of uterine rupture and associated morbidity. Also, many studies compare actual route of delivery rather than intended route, meaning that participants who intended to labour but had a caesarean and those who went into labour before a planned caesarean could be misclassified and their outcomes counted in the wrong research study arm. Such misclassification masks potential adverse effects of desiring one route of delivery but having another.

comparing outcomes associated with VBAC and ERCS offers increasingly precise estimates of effect. Large studies are particularly important when looking at rare events such as mortality among birthing parents and neonates and uterine rupture. This updated guideline draws from a larger body of evidence that increases the precision of our estimates of association, thereby enabling midwives to have greater confidence in the evidence they share with clients.

In all 10 observational studies reviewed, participants in both groups were eligible for a planned VBAC, as they had no contraindications (a previous uterine rupture or uterine surgery, a fetal/congenital anomaly, active genital herpes infection or transverse lie presentation) that would have otherwise excluded them from having a vaginal birth. All participants were at least 36 weeks' gestation, and it is assumed that most had a low-transverse CS.

Birthing parent mortality

Death is a very rare outcome of pregnancy among individuals with prior CS. Pooled results from five observational studies of 41 129 birthing parents (*very low certainty of evidence*) found no difference in birthing parent mortality rates between those with one previous CS who plan VBAC or ERCS (RR 0.53, 95% CI 0.05–5.08, p = 0.58). (25,26,29–31)

Uterine rupture

Though rare, uterine rupture is a significant risk associated with a previous CS. Rupture of the uterus can be catastrophic for both birthing parent and baby, and it requires emergency medical and surgical intervention.

Pooled results from seven studies enrolling 44 168 pregnant people (*very low certainty of evidence*) shows planned VBAC after one previous CS may increase rates of uterine rupture (RR 4.30, 95% CI 2.87-6.44, p < 0.00001). However we are uncertain of this finding, as uterine rupture is a rare outcome and large sample sizes are required to provide precise results. (25,27–32)

Additional considerations regarding uterine rupture
Although the evidence continues to suggest that the risk of uterine rupture is higher for those who plan VBAC, the absolute risk of uterine rupture remains small, regardless of mode of delivery. In absolute terms, the risk of uterine rupture during planned VBAC generally is one in 200 and the risk of adverse perinatal outcome due to uterine rupture is estimated to be one in 2000. (23,36,37)

The difference in rates of uterine rupture between mode of delivery (VBAC or ERCS) is similarly small: out of 1000 birthing parents, four more individuals (from 2 more to 6 more) may experience a uterine rupture after planning a VBAC compared with an ERCS, which has a rate of uterine rupture of one per 1000. (25,27–32)

In studies that analyze the impacts of uterine rupture, outcomes are largely favourable. In an analysis of studies by Guise et al., 6% of uterine ruptures were associated with neonatal death. (23) Among the 17 898 planned VBACs included in Landon et al.'s prospective study, perinatal death associated with rupture occurs in only two of 124 ruptures (1.6%). (36) In a retrospective study from Norway of 18 794 births after a prior CS, perinatal death occurs in 3.7% of cases of uterine rupture. Hysterectomy associated with uterine rupture occurs in 3.8% of cases of rupture. (38)

Given the low likelihood of uterine rupture, and the low likelihood that it will lead to adverse outcomes, the ultimate risk of serious or lasting complications as a result of planned VBAC is low. (39)

Other birthing parent outcomes: morbidity

Evidence from one observational study (*very low certainty of evidence*) suggests higher rates of infection (RR 1.59, 95% CI 1.42-1.78, p < 0.00001) associated with planned VBAC after one previous CS. However, this finding is understandable, as intrapartum infection is unlikely without a period of active labour, as would be expected with ERCS. (30)

Further evidence (*very low certainty of evidence*) suggests that planned VBAC after one previous CS may make little to no difference in rates of hysterectomy (25,26,30–32), transfusion (27,29,30,32) and postpartum infection (25,26,29), although we are uncertain of these results due to inconsistent findings across studies. See Table 2 for a complete analysis of the relative risk and absolute difference for each outcome when VBAC is planned.

Neonatal mortality

A meta-analysis of eight studies of 52 130 neonates (*very low certainty of evidence*) shows that planned VBAC after one previous CS may increase rates of neonatal mortality (RR 2.61, 95% CI 1.33-5.11, p = 0.005). (25–32) While this evidence points to a higher rate of perinatal or neonatal mortality with VBAC vs. ERCS, the absolute difference in rates is small; one more neonate (from 0 more to 2 more) per 1000 may experience mortality because of planned

VBAC. (25–32) This data is congruent with evidence which finds that the absolute risk of adverse neonatal or perinatal outcomes is very small for individuals who have a previous CS, whether they plan VBAC or ERCS. (40–42)

Neonatal morbidity

A meta-analysis of three studies (*very low certainty of evidence*) shows planned VBAC after one previous CS may also increase the likelihood of an Apgar score < 7 at five minutes (RR 2.93, 95% CI 2.03-4.24, p < 0.0001) (25,27,32,43); and a meta-analysis of four studies that included 46 714 neonates shows an increase in neonatal infection (RR 1.40, 95% CI 1.07-1.83, p = 0.01) after planned

VBAC. These results were considered indirect, because the scar status of most participants was unknown. (26,27,29,30)

Further evidence (very low certainty of evidence) suggests little to no difference in rates of transient tachypnea in the newborn (RR 0.90, 95% CI 0.70-1.16, p = 0.42) (26) or rates of respiratory distress syndrome (RR 0.59, 95% CI 0.26-1.36, p = 0.21) (25,26,30,32,44) when comparing planned VBAC with ERCS, although we are very uncertain of these results, as the data relative to mode of delivery is hindered by inconsistent definition and classification of respiratory conditions and small event rates.

TABLE 2: SUMMARY OF FINDINGS – PLANNED VBAC VS. ERCS AFTER ONE PREVIOUS CS

Outcome	Absolute risk with planned VBAC	Direction of effect	Relative risk (95% CI)	Source(s)
Birthing parent outcomes				
Mortality	0 fewer per 1000 (from 0 fewer to 0 fewer)	Little to no difference between groups	RR 0.53 (0.05-5.08)	(25,26,29–31)
Uterine rupture*	4 more per 1000 (from 2 more to 6 more)	Risk increased by planned VBAC	RR 4.30 (2.87-6.44)	(25,27–32)
Hysterectomy	0 fewer per 1000 (from 0 fewer to 1 more)	Little to no difference between groups	RR 1.29 (0.81-2.03)	(25,26,30–32)
Transfusion	1 more per 1000 (from 0 fewer to 2 more)	Little to no difference between groups	RR 1.21 (1.05-1.40)	(27,29,30,32)
Intrapartum infection*	22 more per 1000 (from 15 more to 29 more)	Risk increased by planned VBAC	RR 1.59 (1.42-1.78)	(30)
Postpartum infection	8 more per 1000 (from 0 fewer to 20 more)	Little to no difference between groups	RR 1.44 (0.98-2.12)	(25,26,29)
Neonatal/perinatal outcomes				
Mortality*	1 more per 1000 (from 0 fewer to 2 more)	Risk increased by planned VBAC	RR 2.61 (1.33-5.11)	(25–32)
Neonatal infection*	5 more per 1000 (from 1 more to 9 more)	Risk increased by planned VBAC	RR 1.40 (1.07-1.83)	(25,26,30–32)
Apgar score < 7 at 5 minutes*	9 more per 1000 (from 5 more to 16 more)	Risk increased by planned VBAC	RR 2.93 (2.03-4.24)	(25,27,32)
Transient tachypnea of the newborn (TTN)	3 fewer per 1000 (from 9 fewer to 5 more)	Little to no difference between groups	RR 0.90 (0.70-1.16)	(26)
Respiratory distress syndrome	2 fewer per 1000 (from 4 fewer to 2 more)	Little to no difference between groups	RR 0.59 (0.26-1.36)	(25,26,30,32,44)

Finding significant: p < 0.05

Other important client considerations and benefits associated with planning VBAC

While it is important to carefully review the potential risks and benefits of planned VBAC compared with ERCS, it is equally important for midwives to communicate information about the benefits of vaginal birth and the long-term risks associated with CS. (45) Choosing VBAC gives clients the opportunity to experience person- and family-centred care, as well as a low-intervention physiologic labour and birth. (46) The role of midwifery is "to understand, promote, and facilitate physiologic processes, and to intervene only when necessary."(20) Supporting clients who plan a VBAC is consistent with this role.

Birth experiences

In qualitative studies, clients who had a VBAC describe the experience as meaningful and one that contributed to feelings of accomplishment and empowerment. (45,47,48). When comparing their VBAC to a previous CS, clients reported better postpartum experiences, including improved infant-parent bonding, earlier initiation of skin-to-skin contact and chest/breastfeeding and shorter physical recovery. (47) The feeling of achievement associated with their VBAC is thought to lie at the root of their improved postpartum experiences. (47) These findings complement those from the Maternity Experiences Survey, a Canadian study that explored the labour, birth, parent-infant contact and chest/breastfeeding experiences of more than 6000 participants. Those who had CS reported less optimal parent-infant bonding, such as skin-to-skin contact, and were more likely to experience practices that do not support chest/breastfeeding, though there is little reason for these practices to differ by mode of delivery unless a baby is admitted to the NICU. (49)

In another study, participants who underwent VBAC experienced less postpartum discomfort and described a feeling of wellness sooner than those recovering from CS. (50) Moreover, in a 2014 study reporting on birthing parents' experiences of water VBAC, participants described an improved birth experience, including increased comfort, mobility and relaxation; improved satisfaction; and an improved postpartum mental state. (51) Findings related to postpartum mental health are further elaborated in a 2020 systematic review that examined the association between postpartum depression and mode of birth. While not specific to a VBAC population, individuals who delivered by CS were at increased odds of developing postpartum depression in the short term (within two weeks) and longer term (six months or longer) compared with individuals who experienced a vaginal birth. Postoperative wounds, longer recovery times, feelings of disappointment and a lack of confidence in birthing naturally were all identified as factors that contributed to postpartum depression. (52)

Chest/breastfeeding

Benefits of planning a VBAC include greater rates of initiation of chest/breastfeeding: in one study, birthing parents who had a successful VBAC were more likely to initiate chest/breastfeeding compared with those who had an ERCS (66.6% vs. 58.9%), even after controlling for confounding variables that influence initiation generally, such as age, BMI and socio-economic status. Individuals in this same study who planned a VBAC but ultimately delivered by CS were also found to be more likely to initiate chest/breastfeeding than those who had an ERCS (61.3% vs. 58.98%). (53) One explanation for this difference is that individuals who plan a VBAC are more likely to have the intent to chest/breastfeed. While this may account for some of the difference, other evidence points to CS-related disruptions in the hormonal pathway that stimulates lactogenesis, as well as postoperative care practices that hinder milk production. (53–55)

The act of labouring appears to affect chest/breastfeeding initiation. Robust evidence from a large international systematic review shows that those who had an elective CS (without labour) had lower rates of early chest/breastfeeding when compared with those who had a vaginal birth (OR 0.83, 95% CI 0.8-0.86, p < 0.00001). However, having a CS once labour had begun did not change chest/breastfeeding rates compared with those after vaginal birth (OR 1.00, 95% CI 0.97-1.04, p = 0.086). (54) These findings suggest that it is the metabolic or endocrine milieu of labour that is paramount to initiating lactation, as the magnitude of oxytocin and prolactin responses, which play important mediating roles in milk production and in establishing parent-infant bonding, have been found to differ between individuals delivering by CS vs. vaginally. (54) This difference in levels may contribute to reduced chest/breastfeeding success for those who experience an elective CS. (55) Postpartum prolactin elevations persist for several hours after vaginal birth, which helps to promote milk production, whereas low or absent prolactin levels often follow elective CS.

Following CS, lower prolactin levels have also been observed in newborns, possibly contributing to breathing difficulties and low temperature. These difficulties increase newborns' risk of admission to the NICU, which in turn disrupts parent-infant bonding by delaying skin-to-skin contact, along with early and frequent feedings. This separation further reduces postpartum prolactin levels, contributing once again to challenges with milk production and ongoing chest/breastfeeding success. (55)

Pelvic floor health

Existing evidence does not allow estimations of the risks or benefits of VBAC vs. ERCS with respect to pelvic floor

morbidities, including pelvic organ prolapse and urinary and fecal incontinence, due to the absence of research that evaluates these outcomes among VBAC populations. The most relevant evidence compares pelvic floor morbidities between groups who have had CS only and vaginal delivery only. Research suggests that individuals who deliver exclusively by CS are less likely to experience urinary incontinence (OR 0.56, 95% CI 0.41-0.66, p = 0.000011) and/or pelvic organ prolapse (OR 0.29, 95% CI 0.17-0.51, p = 0.005) than those who have had vaginal births exclusively. (56) The odds of developing fecal incontinence and chronic pelvic pain were equivalent regardless of mode of delivery; however, elective CS was associated with increased odds of dyspareunia at 18 months (OR 1.49, 95% CI 1.11-2.00), even after adjusting for confounding variables such as birthing parent age, pre-pregnancy dyspareunia and birthing parent fatigue. (56,57)

Gut microbiome

There is emerging evidence about the relationship between vaginal birth and CS and the establishment of microbiota in infancy that provides important data related to the implications of VBAC vs. ERCS. The human microbiota is thought to be a significant asset in host defences, and it plays a critical role in functions that sustain overall health. A systematic review in 2016 examined whether mode of delivery, which determines fetal exposure to vaginal and intestinal flora, influences the diversity and colonization pattern of infant gut microbiota. It found that the abundance, diversity and colonization patterns of various types of bacteria were significantly associated with delivery mode during the first three months of life, but that these differences disappeared after six months of life. (58,59)The study found that vaginal delivery, compared with caesarean, was most strongly associated with an enrichment in *Bacteroides* species at five weeks through 31 weeks of infant age. Further studies are needed to investigate microbiota in relation to mode of delivery and the long-term health implications for children.

Childhood outcomes

There is little research on the relationship between VBAC and ERCS and health and development throughout childhood. However, observational studies of individuals who had elective CS, compared with vaginal birth, provide data pertinent to the long-term pediatric implications of VBAC vs. ERCS.

Asthma and allergies

A 2019 meta-analysis of 37 studies (n = 4 937 710) suggests a positive association (RR 1.20, 95% CI 1.15-1.25) between CS and increased risk of asthma in children. (60) A 2018 meta-analysis of eight studies (n = 44 131) of the relationship between

CS and allergic disorders found no significant association between CS and allergies, dermatitis or atopy. (56)

The biological mechanisms linking mode of delivery to long-term asthma are not currently known. One hypothesis is that delivery method influences immune system development, by the direct effect of labour on immune regulatory cells or through exposure to vaginal microbes. A second hypothesis is that infants born by CS are less exposed to chest pressure associated with emptying the lungs of amniotic fluid, resulting in a negative effect on lung function in the long term. (60)

Obesity

A meta-analysis of five studies demonstrates that increased body weight was more common among children born by CS compared with vaginal birth (OR 1.35, 95% CI 1.29-1.41, p < 0.00001). These findings persisted across the life spectrum, whereby increased childhood obesity was observed at five years, six to 15 years and 20 to 28 years. (61) A second meta-analysis of four studies examining the relationship between CS and childhood obesity confirms findings from the first study but suggests a weak association (OR 1.22, 95% CI 1.06-1.42, p = 0.007). (56) The generalizability of these findings is limited, given marked heterogeneity of study populations and methodological differences among the studies included.

Diabetes mellitus type 1

A large meta-analysis that included 420 000 children born by CS and 2.3 million born vaginally found no difference in rates of type 1 diabetes among this cohort, suggesting that CS does not increase the risk of metabolic disorders. (61)

Facilitating decision-making with clients

In qualitative studies, clients report health-care provider support for and confidence in planning a VBAC as important factors in their decision-making process. (47) Comprehensive informed choice discussions enable birthing parents to feel like active participants in decision-making; when they are afforded the opportunity to discuss their previous births, are supported in their choices and feel confident in their ability to have a VBAC, their birth is likely to be a positive experience.

Midwives should be mindful to extend informed choice discussions beyond discussions of risk; studies evaluating clients' experiences have found that antenatal education predominantly focuses on the risks of planned VBAC, with little to no information provided about the risks of ERCS or the benefits of vaginal birth more generally. This has the potential to de-prioritize birthing parents' lived experiences, values and preferences, limit true informed choice and reinforce fears about VBAC. (45,62–64)

Decision aids

To inform decision-making, birthing parents utilize a variety of sources, such as social media, blogs and VBAC support groups, in addition to drawing from their own personal experiences. (45,47) Decision aids, including written and electronic forms of client-directed information, may also be helpful. (65,66) My Next Birth is a BC-based, online decision-aid that aims to give clients clear information that supports their values and goals for their next birth after a CS. A 2015 systematic review examined whether the provision of decision aids was associated with increased rates of VBAC. While decision aids did not influence the rate of uptake of VBAC, they did significantly increase participants' knowledge of risks and benefits and certainty in their decision regarding mode of birth after a previous CS. (67)

The AOM's client handout "Deciding How to Give Birth After a Caesarean Section" contains pertinent information for clients regarding VBAC and ERCS. Midwives can share this resource with their clients to facilitate their informed choice discussions.

Recommendation

This recommendation presupposes an absence of contraindications to vaginal birth/VBAC (see list of contraindications on page 5).

1. Midwives should recommend planned VBAC to clients who have had one previous CS. Informed choice discussions should include:

    •   Risks and benefits of planned VBAC compared with ERCS

    •   Risks and benefits of CS and vaginal birth, more generally

    •   The role of planned VBAC in achieving physiologic labour and birth

    •   Local resources and access to timely services available within the client's community

    •   The client's values and preferences and risk tolerance

    This discussion, including the client's decision, should be documented in their chart. [new 2021]

    Strong recommendation: very low certainty of evidence

    This recommendation recognizes that VBAC is a safe choice for the majority of clients with a prior CS. It recognizes the client as the primary decision-maker and that VBAC provides a means to achieve physiologic, low-intervention childbirth.

Equity Considerations for Planned VBAC

Research from the US shows higher rates of CS, as well as higher rates of repeat CS among racialized birthing parents, particularly among Black, Asian and Hispanic populations. (68–72)

Ontario does not have a system of race-based data collection, making the extent of these differences in this province unclear. However, legacies of colonialism and systemic racism persist across Canada, and disparities in access to and using health-care services, as well as outcomes for birthing parents, have been reported. (73,74)Informed choice discussions should consider the labour and birthing experiences of racialized individuals. Midwives' recommendation for VBAC, within the context of disproportionate and inequitable rates of primary and repeat CS, is one way to address these systemic inequities.

PLANNED VBAC COMPARED WITH ERCS FOLLOWING TWO OR MORE PREVIOUS CS

Given the general rise in repeat CS rates and the decline in VBAC within the Ontario midwifery population specifically, there is growing interest in understanding the risks and benefits of planned VBAC and ERCS after an individual has had two or more previous CS. Seven observational studies provide evidence to inform midwives' understanding of differences in outcomes among individuals with multiple previous CS who plan to have a VBAC or an ERCS. (75–81)

Birthing parent mortality

Pooled results from two observational studies (*very low certainty of evidence*) that included 7445 birthing parents shows a small increase in birthing parent mortality rates (RR 2.06, 95% CI 0.08-50.57, p = 0.66), though we are very uncertain of these results due to methodological flaws in the studies, including lack of control for confounding factors in one study such as age, scar type and previous

vaginal delivery. (76,81) While this evidence points to a higher rate of birthing parent mortality with VBAC compared with ERCS after two or more previous CS, the absolute difference in rates is small; mortality will occur in 0 fewer to 8 more per 1000 birthing parents because of planned VBAC.

Uterine rupture

Five observational studies (*very low certainty of evidence*) that included 12 290 birthing parents shows that planned VBAC after two or more previous CS may increase rates of uterine rupture (RR 8.67, 95% CI 0.63-119.21, p = 0.11), but these results lack precision, as indicated by the wide confidence interval. Although the evidence suggests that choosing VBAC after two or more CS may be associated with a risk of uterine rupture eight times higher than the risk experienced by those who choose ERCS, the absolute difference between groups is small: only two more birthing parents per 1000 may experience a uterine rupture when planning VBAC compared with those who plan ERCS.

(75,77–79,81) Studies with larger sample sizes are needed to better capture the rare occurrence of uterine rupture and increase our certainty regarding the likelihood of this outcome.

Other birthing parent outcomes: morbidity

Further meta-analyses (*very low certainty of evidence*) shows that planned VBAC after two or more CS may make little to no difference in rates of hysterectomy (75,80,81), blood transfusion (76–78,81) or endometritis. (76,81) See Table 3 for a complete analysis of the relative risk and absolute difference for each outcome.

Perinatal/neonatal mortality

A meta-analysis of two studies of 7445 neonates (*very low certainty of evidence*) shows that planned VBAC after two or more previous CS may make little to no difference in rates of perinatal or neonatal mortality (RR 1.37, 95% CI 0.10-17.84, p = 0.81). (80,81)

TABLE 3: SUMMARY OF FINDINGS – PLANNED VBAC VS. ERCS AFTER TWO OR MORE PREVIOUS CS

Outcome	Absolute risk with planned VBAC	Direction of effect	Relative risk (95% CI)	Source(s)
Birthing parent outcomes				
Mortality	0 fewer per 1000 (from 0 fewer to 8 more)	Little to no difference between groups	RR 2.06 (0.08-50.57)	(76,81)
Uterine rupture	2 more per 1000 (from 0 fewer to 37 more)	Little to no difference between groups	RR 8.67 (0.63-119.21)	(75,77–79,81)
Hysterectomy	3 fewer per 1000 (from 5 fewer to 6 more)	Little to no difference between groups	RR 0.52 (0.13-2.10)	(75,80,81)
Endometritis	9 more per 1000 (from 1 fewer to 23 more)	Little to no difference between groups	RR 1.43 (0.97-2.10)	(76,81)
Blood transfusion	3 fewer per 1000 (from 13 fewer to 21 more)	Little to no difference between groups	RR 0.82 (0.31-2.13)	(76–78,81)
Neonatal/perinatal outcomes				
Perinatal death	0 fewer per 1000 (from 0 fewer to 8 more)	Little to no difference between groups	RR 1.37 (0.10-17.84)	(80,81)

Note: None of the results in the above table reached statistical significance.

Other important client considerations

In addition to direct evidence comparing the risks and benefits of planned VBAC with those of ERCS after two or more CS, midwives and their clients may also consider the evidence regarding complications associated with multiple deliveries by CS. After a CS, subsequent pregnancies show increased risks of hysterectomy, abnormal placentation and preterm birth. The incidence of postpartum hemorrhage, adhesions, surgery injuries and hysterectomies all increase with the number of CS. (56,82)

A meta-analysis of 10 studies on the relationship between previous CS and placenta previa suggests a strong association (OR 1.74, 95% CI 1.62-1.87, p < 0.00001). (56) When compared with birthing parents who had a previous vaginal delivery, those who had a previous caesarean delivery had increased odds of placenta abruption (OR 1.38, 95% CI 1.27-1.49, p < 0.00001) and placenta accreta (OR 2.95, 95% CI 1.32-6.60, p = 0.008) (56) The risk of placenta accreta, placenta previa and placental abruption all increase with each previous CS. (83,84) The morbidity attributable to placenta accreta is substantial: antepartum hemorrhage and associated preterm birth; and postpartum hemorrhage and associated complications, including disseminated intravascular coagulation, shock and death. Placenta accreta is the most common indication for CS-associated hysterectomy in developing countries. (85)

Individuals with previous CS are three times more likely to experience a hysterectomy (OR 3.85, 95% CI 1.06-14.02, p = 0.04) in a subsequent pregnancy compared with those who had a previous vaginal delivery. (56) Data from a large Danish national register shows that individuals requiring a hysterectomy who have had one or more previous CS have more postoperative complications, such as the need for reoperation, bleeding and wound rupture, than individuals requiring a hysterectomy with no history of CS. (86)

Clients who plan to have more than one child after a prior CS may especially benefit from planning a VBAC over an ERCS. Risk of morbidity increases with number of prior CS, especially for individuals with more than three prior CS, while there are few risks associated with cumulative VBACs. (87) The long-term reproductive choices of clients should be incorporated into counselling about the risks and benefits of VBAC vs. ERCS, and the conversation should include a discussion of the risks of major morbidity associated with caesareans in future pregnancies. (88,89)

Recommendation

This recommendation presupposes an absence of contraindications to vaginal birth/VBAC (see list of contraindications on page 5).

2. Offer planned VBAC to clients who have had two or more previous CS [new 2021]

   Strong recommendation: very low certainty of evidence

   This recommendation recognizes the client as the primary decision-maker in their care, and it recognizes VBAC as a means to achieve physiologic labour and birth.

Good Practice Statement

3. For clients intending to have more than one child after a previous CS, midwives should discuss the benefits of VBAC over ERCS, including the long-term health implications associated with multiple CS. [2021]

   This good practice statement recognizes the increased risks associated with multiple CS and the benefits from cumulative VBACs.

CAN VBAC OUTCOMES BE PREDICTED?

The overall likelihood that a VBAC will occur as planned is 60% to 80%. (23,90) Among clients receiving care from Ontario midwives in 2018-19, 75% of individuals with a history of CS who opted for VBAC ultimately delivered vaginally. (22) In an effort to improve selection of candidates for VBAC and potentially decrease risks, researchers have attempted to identify factors that accurately predict the likelihood of having a vaginal birth or the relatively small proportion who will experience a uterine rupture during VBAC. However, given the low absolute risk of complications, including uterine rupture, and the low relative risks associated with each predictive factor, it is unlikely that midwives can accurately predict which clients face a greater likelihood of adverse outcomes.

The low risk of complications must be considered when interpreting the available evidence on the prediction of adverse outcomes, as much of the research discussed below is from observational studies that provide low to very low certainty of evidence, and use odds ratios to express effect size, with estimates of absolute risk only available in a handful of cases. Both relative risks and odds ratios are used to indicate how many times higher or lower the risk of an outcome is in one group (e.g., individuals who plan

VBAC) compared with another group (individuals who plan ERCS). Though odds ratios tend to approximate true relative risks, when outcomes are rare (i.e., they occur in < 10% of cases) their utility in clinical practice may be limited. (91) To increase the utility of these findings for midwives, each predictive factor has been labelled as contributing to a higher or lower likelihood of a successful vaginal birth or a uterine rupture. Each factor has been further categorized as weakly predictive, moderately predictive or strongly predictive (Table 4 and Table 5) of this likelihood, based on the size of the estimate of association (the OR or aOR). Midwives should be aware that using a relative measure of comparison (such as a relative risk or an odds ratio) without discussing absolute risk in informed choice discussions may hinder clients' understanding of the magnitude of the complication being discussed.

History of previous vaginal birth

Likelihood of vaginal birth: higher
Data from five studies (n = 10 546) shows that a history of previous vaginal birth is a strong predictor of successful VBAC. In a meta-analysis, parents with a prior vaginal birth were two times more likely (aOR 2.15, 95% CI 1.52-3.04) to have a successful VBAC for their current delivery, compared with those who had not had a previous vaginal delivery. (92–96)

Likelihood of uterine rupture: lower
A history of prior vaginal birth is also associated with a moderate decrease in morbidity associated with VBAC. Data from a meta-analysis of four observational studies (n = 76 952) found that a history of vaginal birth is associated with a lower likelihood of uterine rupture (aOR 0.42, 95% CI 0.32-0.56) for birthing parents who plan VBAC. (39,97–99)

Delivery interval < 24 months

Likelihood of vaginal birth: higher
In a meta-analysis of two studies (n = 38 421), a delivery interval of < 24 months after a previous CS was weakly predictive of a successful vaginal birth (OR 1.18, 95% CI 1.12-1.23) during a planned VBAC when compared with birthing parents with a delivery interval ≥ 24 months. (100,101) Although the meta-analysis shows that a delivery interval < 24 months results in slightly higher rates of vaginal birth, the actual difference in rates of vaginal birth between the interval categories is small. Moreover, the lower rates of vaginal birth associated with a delivery interval ≥ 24 months may be confounded by certain variables that influence the decision-making process during planned VBAC, including

the birthing parent's age and BMI. While these results suggest that a shorter delivery interval is not necessarily associated with a decreased chance of vaginal birth during VBAC, further research is required to confirm this finding.

Likelihood of uterine rupture: higher
Meta-analysis of 79 690 participants (four studies) suggests a delivery interval < 24 months is a strong predictor of uterine rupture, resulting in almost two times the risk of uterine rupture (OR 1.99, 95% CI 1.49-2.68) compared with birthing parents with a delivery interval ≥ 24 months. (98,100–102)

BMI > 25 kg/m²

The available literature comparing outcomes for birthing parents with varying BMI who plan VBAC is difficult to interpret, as research studies have used different BMI levels to assess outcomes. To aid in our understanding, two separate analyses were performed where study data was available:

- Birthing parents with a BMI of 25-29.9 kg/m² ("overweight") compared with BMI < 25 kg/m² ("recommended")
- Birthing parents with a BMI > 30 kg/m² ("obese") compared with BMI < 25 kg/m² ("recommended")

Likelihood of vaginal birth: lower
A meta-analysis of 8771 birthing parents (three studies) found a weak association between BMI and vaginal birth. Results suggest that individuals with BMI of 25-29.9 kg/m² or BMI > 30 kg/m² may experience a lower likelihood of vaginal birth compared with those having a BMI in the recommended range (< 25 kg/m²), even when controlling for such confounding risk factors as infant birth weight, gestational age at birth and induction of labour. (96,103,104)

Research on intervention rates for individuals with BMI ≥ 25 kg/m² is potentially confounded by a "labelling effect." Researchers have noted a tendency to intervene sooner and more often in individuals with BMI ≥ 25 kg/m², observing higher rates of using oxytocin, epidural analgesia, forceps and vacuum extraction, and earlier decisions to perform CS persisting after adjusting for the higher prevalence of gestational diabetes, pre-eclampsia and macrosomia in this group. (105)

Likelihood of uterine rupture: no difference noted
Data from two studies that included 20 860 birthing parents detects no difference in rates of uterine rupture among

participants with a BMI of 25-29.9 kg/m² or a BMI > 30 kg/m² when compared with birthing parents having a BMI < 25 kg/m². (103,106) As uterine rupture is a rare outcome, larger sample sizes are required to provide precise results that would enable us to understand how BMI impacts rates of uterine rupture.

For more information on management of pregnancy in clients with high BMI, see AOM Clinical Practice Guideline No. 12: The Management of High or Low Body Mass Index during Pregnancy – 2019 Update. (107)

Age ≥ 35 years

Likelihood of vaginal birth: lower

Risk of CS increases with advancing age regardless of past obstetric history. (108) Research to assess the relationship between age ≥ 35 years and the likelihood of a successful VBAC similarly suggests a moderate possibility of repeat CS. For example, results from 826 birthing parents (two studies) found that participants ≥ 35 years who planned a VBAC were less likely (OR 0.61, 95% CI 0.41-0.90) to have a vaginal birth than those aged ≤ 35. (92,94) Both studies adjusted for potential confounders, such as uterine closure technique and neonatal weight, which increases our confidence in these findings.

Likelihood of uterine rupture: may be higher

Age ≥ 35 may also moderately increase the risk of uterine rupture. After controlling for other confounding factors, such as neonatal weight and uterine closure technique, results from 11 134 participants shows that age ≥ 35 is associated with a greater likelihood of uterine rupture during a planned VBAC when compared with birthing parents < 35 years of age (OR 1.44, 95% CI 0.64-3.26). (100,109)

Thickness of lower uterine segment < 2 mm

In general, individuals with a history of CS have a thinner lower uterine segment (LUS) at term. Ultrasonographic measurement of the LUS is one approach used to assess the risk of uterine rupture. Measurement techniques include measuring the thinnest portion or the full thickness of the LUS. (110) Inter- and intra-observer accuracy of measurements has shown to be reliable when technicians are well trained. (111)

Likelihood of uterine rupture: higher

A meta-analysis of 21 studies (n = 2776) reported on the accuracy of different LUS thicknesses to predict the risk of uterine rupture. Study authors found that a full LUS thickness cut-off of 3.1-5.1 mm and a myometrium thickness cut-off of 2.1-4.0 mm provides a strong negative predictive power. Conversely, a full LUS thickness < 2.0 mm was found to have a strong positive predictive power for the occurrence of uterine rupture, suggesting that individuals with a thinner lower uterine segment who plan VBAC were more likely to experience a uterine rupture. (112)

These findings are supported by Canadian research that measured the full thickness of the LUS in 236 participants between 35 and 38 weeks' gestation, which found that a full LUS thickness of < 2.3 mm (compared with a full thickness of ≥ 2.3 mm) was associated with a significant increase in uterine rupture (aOR 4.66, 95% CI 1.04-20.91). In this study, the LUS was examined longitudinally and transversely and measured at three different points, with the lowest value selected. (111)

The full-thickness measurement of the LUS shows some promise as a screening tool. However, the currently available research fails to identify a standard for measuring LUS thickness, as there is no consensus about which layers of the LUS should be measured, nor by which route (transabdominal or transvaginal sonographic measurement). Furthermore, the available studies have not yet identified an absolute cut-off at which the risk of uterine rupture is significantly increased. Future research and standardization of technique may change this, yet this approach to predicting risk increases the use of technology and interventions during pregnancy, without substantiating evidence that these interventions will improve outcomes.

CS closure technique (single-layer closure)

Likelihood of uterine rupture: higher

Variation in surgical technique for CS has been suggested as a factor that influences risk of uterine rupture among birthing parents who plan a VBAC. Four observational studies (n = 48 159) that compared rates of uterine rupture between birthing parents with a prior CS with a single-layer vs. a double-layer closure of the uterus were identified. (98–100,109) Results suggest that a single-layer closure is moderately predictive of an increase in the likelihood of uterine rupture when compared with a double-layer closure (OR 1.73, 95% CI 1.17-2.55).

Two or more prior CS

Likelihood of vaginal birth: lower

Data from six observational studies (n = 55 250) found a weak association between a history of two or more prior CS and successful vaginal birth. Results suggest that individuals with two or more CS are less likely to delivery vaginally (OR 0.78, 95% CI 0.73-0.83) during planned VBAC than individuals with only one prior CS. (113)

Likelihood of uterine rupture: higher
A history of two or more CS is a strong predictor of uterine rupture. In a meta-analysis of 55 250 birthing parents, those with two prior CS were two times more likely (OR 2.36, 95% CI 1.82-3.07) to experience a uterine rupture during planned VBAC when compared with birthing parents with only one prior CS. (113)

There is very little research available on adverse outcomes associated with three or more prior CS. A 2010 study compared birthing parent morbidity with three or more prior CS vs. only one or two prior CS. Study participants who chose VBAC (89/860) experienced rates of vaginal delivery that were not significantly different from those with only one or two prior CS. There were no uterine ruptures. This study, although small, begins to address a significant research gap in knowledge of outcomes for those who have had three or more prior CS. (114)

Unknown uterine scar
There is little evidence available on the association of unknown uterine scars with uterine rupture during planned VBAC. Reported uterine rupture rates across all scar types are:

* Low-transverse incision: 0.7%
* Low vertical incision: 2.0%
* Unknown uterine scar: 0.5%
* Prior classical, inverted T or J incision (and presented in advanced labour and planned a VBAC): 1.9% (36)

Likelihood of uterine rupture: lower
One prospective observational study was identified that examined differences in rates of uterine rupture between birthing parents having a planned VBAC with an unknown uterine scar vs. a known (i.e., LSCS) uterine scar. (36) Birthing parents with an unknown uterine scar may be less likely to experience a uterine rupture during a planned VBAC when compared with birthing parents with a LSCS uterine scar (OR 0.64, 95% CI 0.37-1.11). However, the small sample size leads to imprecise results and a wide confidence interval, which limits our ability to draw definitive conclusions about the predictive nature of this factor.

Twin gestation
Likelihood of uterine rupture: higher
Data from two observational studies (n = 25 191) shows that twin gestation may increase the likelihood of uterine rupture (OR 1.36, 95% CI 0.51-3.67), but the studies were not adequately powered to provide precise results. (115,116)

Macrosomia
Macrosomia is associated with a higher likelihood of primary CS, irrespective of obstetric history. (117) Research also shows a decreased likelihood of VBAC in babies weighing ≥ 4000 g; babies weighing ≥ 4500 g are even less likely to be delivered via VBAC compared with infants weighing 4000-4499 g. (23) Though macrosomia is associated with a lower likelihood of VBAC, it is very difficult to predict which babies will be more than 4000 g before they are born, as neither ultrasound nor physical exam can accurately predict macrosomia. (118) As with BMI and age, research assessing obstetric birth outcomes relative to birth weight may be confounded by a "labelling effect." (19)

Likelihood of vaginal birth: lower
We identified one retrospective study (n = 9960) that reported on differences in rates of vaginal birth among birthing parents having a planned VBAC after only one previous CS with varying neonatal birth weights. Individuals were included in this study if they had a singleton gestation and a history of one previous CS. Study authors found that VBAC occurred in:

* 68% of deliveries with birth weights of < 4000 g
* 52% of deliveries with birth weights of 4000-4249 g
* 45% of deliveries with birth weights of 4250-4500 g
* 38% of deliveries with birth weights of > 4500 g. (119)

In an additional analysis of the relationship between participants' likelihood of a successful VBAC and the method of their previous deliveries, study authors found that birth weight was significantly associated with a likelihood of vaginal birth only in participants with no prior vaginal deliveries. Among participants who had a history of both vaginal delivery and CS, the likelihood that VBAC would occur as planned was not influenced by birth weight. (119) In this retrospective study, as the neonate's birth weight increased > 4000 g, the likelihood of VBAC decreased.

Likelihood of uterine rupture: higher
Among participants who had a history of both vaginal delivery and CS, the risk of uterine rupture is not associated with birth weight. In comparison, a history of no previous vaginal delivery and birth weights of ≥ 4000 g is strongly predictive of uterine rupture; participants meeting that criteria were two times more likely to experience uterine rupture than those with no previous vaginal deliveries and birth weights of < 4000 g (OR 2.35, 95% CI 1.39-3.99, p = 0.0014). (119)

TABLE 4: FACTORS PREDICTIVE OF VAGINAL BIRTH

Predictive factor	Pooled OR or aOR	Interpretation
Strong predictive factor (OR > 1.75 or < 0.25)		
Previous vaginal birth	2.15 (95% CI 1.52-3.04)	Increases likelihood of successful vaginal birth
Moderate predictive factor (OR 1.25-1.75 or 0.26-0.75)		
Age ≥ 35	0.61 (95% CI 0.41-0.90)	Decreases likelihood of successful vaginal birth
Weak predictive factor (OR < 1.25 and > 0.76)		
Delivery interval < 24 months	1.17 (95% CI 1.12-1.23)	Increases likelihood of successful vaginal birth
BMI 25-29.9	0.78 (95% CI 0.67-0.90)	Decreases likelihood of successful vaginal birth
BMI > 30	0.76 (95% CI 0.20-2.94)	May decrease likelihood of successful vaginal birth
Multiple CS	0.78 (95% CI 0.73-0.83)	Decreases likelihood of successful vaginal birth
Macrosomia • (4000-4249 g) • (4250-4500 g) • (> 4500 g)	0.85 (95% CI 0.77-0.93) 0.77 (95% CI 0.66-0.89) 0.70 (95% CI 0.57-0.87)	Decreases likelihood of successful vaginal birth

TABLE 5: FACTORS PREDICTIVE OF UTERINE RUPTURE

Predictive factor	Pooled OR or aOR	Interpretation
Strong predictive factor (OR > 1.75 or < 0.25)		
Multiple CS	2.36 (95% CI 1.82-3.07)	Increases likelihood of uterine rupture
Macrosomia	2.35 (95% CI 1.39-3.99)	Increases likelihood of uterine rupture
Delivery interval < 24 months	1.99 (95% CI 1.49-2.68)	Increases likelihood of uterine rupture
Moderate predictive factor (OR 1.25-1.75 or 0.26-0.75)		
Prior vaginal birth	0.42 (95% CI 0.32-0.56)	Lowers likelihood of uterine rupture
CS closure technique (single-layer closure)	1.73 (95% CI 1.17-2.55)	Increases likelihood of uterine rupture
Age ≥ 35	1.44 (95% CI 0.64-3.26)	May increase likelihood of uterine rupture
Unknown uterine scar	0.64 (95% CI 0.37-1.11)	May decrease likelihood of uterine rupture
Twins	1.36 (95% CI 0.51-3.67)	May increase likelihood of uterine rupture
Weak predictive factor (OR < 1.25 and > 0.76)		
BMI 25-29.9	1.10 (95% CI 0.72-1.66)	No difference noted
BMI > 30	0.92 (95% CI 0.60-1.41)	No difference noted

4. Midwives should discuss with their clients the relevant factors that may influence the likelihood of VBAC or the risk of uterine rupture. Inform clients that such factors are not contraindications to planning VBAC, but they may be considerations in their care during labour. [2021]

    This good practice statement recognizes the client as the primary decision-maker. It recognizes that the presence of one or more of these factors is not necessarily predictive of uterine rupture or successful VBAC, and therefore it does not limit choice.

5. In developing the plan for care of a client who plans a VBAC, the midwife should make their best effort to obtain a copy of the operative record from the previous CS. Inability to obtain the previous record is not a contraindication to planned VBAC, but it should be documented in the client's chart. [2021]

    This good practice statement recognizes midwives as primary care providers with the knowledge, skills and judgment to care for clients who plan a VBAC.

MANAGEMENT OF LABOUR FOR CLIENTS PLANNING VBAC

The care of a client with a history of LSCS falls within the midwife's scope of practice; a previous CS is in itself not an indication for consultation or transfer of care to a physician. In the absence of complications, the midwife would be expected to remain the primary caregiver for clients with a history of a previous LSCS for the duration of pregnancy and the first six weeks postpartum.

Antenatal considerations

The midwife will typically discuss the intrapartum management of VBAC labour in the context of a client's specific clinical circumstances. This information, along with the client's values and risk tolerance, will factor into the decision-making surrounding labour and birth. While the highest-quality, most current research, as well as Canadian guideline groups (AOM, PCMCH, SOGC), support VBAC as a safe choice for the majority of individuals with a prior LSCS, not all hospital and community standards are reflective of evidence-based practice. Nevertheless, community standards regarding VBAC, and hospital and practice group protocols, as well as relevant midwifery and obstetric clinical guidelines should be discussed in the antenatal period with clients who plan VBAC, as these considerations may influence the course of care. Informed choice discussions should include: fetal monitoring practices, pain management options, intravenous access, choice of birthplace and access to and timing of emergency surgical support, if needed.

Induction of labour during planned VBAC

Induction vs. expectant management
One observational study was identified that compared outcomes for 6033 participants with one prior CS who experienced induction of labour with individuals who were expectantly managed. (120) This comparison is relevant, as the expectant management group includes participants who experienced spontaneous labour and those who were ultimately induced.

Findings from this study (*low certainty of evidence*) suggests that induction of labour may increase rates of CS (RR 1.43, 95% CI 1.34-1.54) as well as birthing parent morbidity/mortality (RR 1.49, 95% CI 1.08-2.06), but they make little to no difference in rates of neonatal morbidity/mortality (RR 0.57, 95% CI 0.18-1.79). (120)

Induction vs. spontaneous labour
While an expectantly managed population provides a more appropriate comparison with birthing parents who are induced, most available data comes from studies that compare outcomes between those who were induced and those who had spontaneous labour. Nine observational studies (n = 32 458) were identified that compared outcomes for parents who received an induction using oxytocin, prostaglandins, Foley catheters, misoprostol or amniotomy (or a combination of these) with outcomes for those who had spontaneous labour. The methods of induction reported in each study were analyzed together to form the "induction" group. Variations in the methods of induction used in included studies, in addition to variations in the timing of inductions, may potentially confound our results, and as such should be interpreted with caution.

Six observational studies (*very low certainty of evidence*) that included 25 646 labouring parents shows induction of labour during planned VBAC may reduce rates of vaginal birth (RR 0.89, 95% CI 0.85-0.93, p < 0.00001), resulting in potentially 83 fewer participants per 1000 (from 113

fewer to 53 fewer) delivering vaginally when compared with those who laboured spontaneously. (121–126) Our certainty in this evidence was rated very low due to lack of adjustment for confounders in some of the included studies, and observable differences between participants who were induced or experienced labour spontaneously (such as a higher rate of comorbidities in the induction groups, as well as wide variations between groups in age and BMI).

Pooled results from nine observational studies (*very low certainty of evidence*) that included 31 032 participants shows that induction of labour may increase uterine rupture rates (RR 1.66, 95% CI 1.39-1.98, p < 0.00001) among those who plan a VBAC, although we are uncertain of these results. (92,98,121–125,127,128)

Three observational studies (*low certainty of evidence*) that included 6333 labouring parents shows an increase in CS rates with induction of labour compared with spontaneous

labour: 116 more participants (from 23 more to 236 more) per 1000 may experience a CS when induced (RR 1.45, 95% CI 1.09-1.92, p = 0.01). (123,126,127)

Further results (*very low certainty of evidence*) suggest that induction of labour among those who plan a vaginal birth with one prior CS makes little to no difference in rates of instrumental/operative vaginal delivery (121,123,126), perinatal mortality (121,127), blood transfusion (122,125,127), intrapartum or postpartum infection (122,123,125,127) and Apgar score < 7 at five minutes (92,121,123,125,126) compared with those experiencing spontaneous labour. These results lack precision, as very few study participants experience the outcome prompting wide confidence intervals, which limit our certainty in the results.

See Table 6 for a complete analysis of the relative risk and absolute difference for each outcome.

TABLE 6: SUMMARY – INDUCTION VS. SPONTANEOUS LABOUR DURING PLANNED VBAC

Outcome	Relative effect (95% CI)	Absolute difference for birthing parents who were induced
Vaginal birth	RR 0.89 (0.85-0.93)	83 fewer per 1000 (from 113 fewer to 53 fewer)
Caesarean section	RR 1.45 (1.09-1.92)	116 more per 1000 (from 23 more to 236 more)
Instrumental/operative vaginal delivery	RR 1.05 (0.81-1.38)	5 more per 1000 (from 21 fewer to 42 more)
Uterine rupture	RR 1.81 (1.36-2.41)	8 more per 1000 (from 4 more to 14 more)
Perinatal mortality	RR 1.22 (0.25-6.04)	0 fewer per 1000 (from 1 fewer to 7 more)
Blood transfusion	RR 1.74 (0.89-3.38)	4 more per 1000 (from 2 fewer to 14 more)
Intrapartum and postpartum infection	RR 1.71 (0.94-3.12)	18 more per 1000 (from 2 fewer to 55 more)
Apgar score < 7 at 5 minutes	RR 1.12 (0.81-1.54)	2 more per 1000 (from 4 fewer to 11 more)

Augmentation during planned VBAC

Three observational studies were identified that reported on differences in outcomes among birthing parents who were augmented with oxytocin and those who laboured spontaneously during planned VBAC. (97,98,129) Participants in all three studies had only one previous low-segment CS and were, on average, at term (at least 37 weeks' gestation).

Findings from one observational study (*very low certainty of evidence*) that included 790 labouring parents suggest that augmentation of labour during planned VBAC may make little to no difference in rates of vaginal birth when compared with those who experience spontaneous labour (RR 0.99, 95% CI 0.91-1.08, p = 0.87), though we are uncertain of these results. (129)

Pooled data from two observational studies (*very low certainty of evidence*) that included 1246 labouring parents shows that augmentation of labour during planned VBAC may increase rates of uterine rupture (RR 2.08, 95% CI 1.24-3.47, p < 0.05), resulting in potentially 199 more participants per 1000 (from 44 more to 454 more) who will experience uterine rupture when compared with those who labour spontaneously, though we are very uncertain of these results. (97,98)

Dystocia, which creates the need for augmentation, may be the causal factor that influences the likelihood of such outcomes as vaginal birth and uterine rupture, rather than augmentation itself. It is possible that augmentation may actually increase the likelihood of vaginal birth when dystocia is identified, though it would be difficult to clearly differentiate this relationship in research settings. Furthermore, the variation in augmentation protocols used (high dose, low dose) may confound results.

Recommendation

6.   Midwives should review the risks and benefits of induction and augmentation for planned VBAC with their clients. When induction or augmentation is medically indicated, midwives can offer it to their clients.

   •   For clients undergoing midwifery-led induction or augmentation of labour, maintain a clear plan for ongoing communication with the on-call physician and interprofessional team about progress in labour and the well-being of the birthing parent and fetus. [new 2021]

Strong recommendation: very low certainty of evidence

This recommendation recognizes the client as the primary decision-maker in their care and that VBAC provides a means to achieve physiologic birth. It also values the importance of respectful care and interprofessional collaboration to provide client access to care options.

Research Gap: Induction Alternatives – Membrane Sweeping, Acupuncture and Herbs

Some clients who plan VBAC may be interested in alternatives to pharmacological methods of induction.

One small study (n = 213) found that membrane sweeping at term in birthing parents who plan VBAC does not shorten pregnancy duration nor affect induction or repeat CS rates. (130) However, other larger studies not specific to VBAC have found membrane sweeping effective in reducing the duration of pregnancy and increasing rates of spontaneous labour. (131–135) Further research is required to understand the effectiveness of membrane sweeping in this population.

Furthermore, there is no evidence about the safety and effectiveness of commonly used herbs, homeopathics, acupuncture or castor oil for induction and/or augmentation of labour for birthing parents who plan VBAC. This lack of evidence should be discussed with clients before considering their use.

Considerations for Induction of Labour: Optimal Methods

Research questions regarding methods of induction during planned VBAC were not examined as part of the guideline development process for the VBAC CPG in 2011. However, since then research related to optimal methods of induction has become important to midwives. In 2019, the College of Midwives of Ontario (CMO) revised its Prescribing and Administering Drugs Standard, permitting Ontario midwives to administer oxytocin on their own authority for induction and augmentation, provided they have the skills, knowledge and judgment to do so. (136) Following this change to the standard, midwives in many communities have begun to order and manage oxytocin induction and augmentation of labour on their own authority.

As a review of the research regarding optimal methods of induction was outside the scope of this update, the CPG Committee advised that midwives should refer to the Society of Obstetricians and Gynecologists of Canada (SOGC) guideline Trial of Labour after Caesarean (2019) for recommendations regarding methods of induction of labour for clients who plan VBAC.

Intrapartum monitoring

To date, there is very limited evidence comparing fetal monitoring methods during planned VBAC. Only one randomized control trial (*very low certainty of evidence*) conducted in India (n = 100) was identified for this review. The evidence suggests that EFM during planned VBAC may decrease rates of vaginal birth (RR 0.89, 95% CI 0.68-1.16, p = 0.39),

increase rates of CS (RR 1.55, 95% CI 0.81-2.96, p = 0.19) and make no difference to rates of postpartum hemorrhage, infection, APGAR scores or neonatal sepsis. These results lack precision due to the study's small sample size and wide confidence intervals, which limits our certainty in the findings. Data on rates of uterine rupture and severe neonatal morbidity were also unavailable, due to the study's small sample size. (137)

Despite the absence of high-quality, relevant studies comparing IA with EFM during planned VBAC, it is important for midwives to understand when prompt delivery is warranted. One sign that has consistently shown to be predictive of uterine rupture is abnormal fetal heart rate. (138) A case-control study compared fetal heart rate characteristics of births with uterine rupture during VBAC (n = 36) compared with rupture-free VBACs (n = 100). The only findings that differentiated cases of uterine rupture from successful VBACs were increased rates of fetal bradycardia identified by EFM in the first stage (p < .01) and second stage of labour (p < .01). No significant differences were found in rates of mild or severe variable decelerations, late decelerations, prolonged decelerations, fetal tachycardia or loss of uterine tone. (139)

Other classical signs of uterine rupture include birthing parent hypotension or tachycardia, hematuria and excessive vaginal bleeding. Other possible signs may be birthing parent restlessness or loss of fetal station. (140) Pain over the previous uterine incision has been found to be an unreliable sign, since abdominal pain is hard to evaluate during active labour. (137,141) However, an individual may experience abnormal pain, a sudden change in pain or an abnormal level of concern. Although these last symptoms may be difficult to evaluate objectively, midwives should be alert to clients' verbal and non-verbal cues. There is a need for more research into the client experience of uterine rupture during midwifery care.

There continues to be incomplete evidence regarding the comparative risks and benefits of fetal monitoring methods and erroneous interpretations of fetal heart tracings that may result in increased rates of interventions such as CS that are otherwise unwarranted. Nevertheless, routine continuous EFM for birthing parents who plan VBAC has become standard in many communities and is recommended by the SOGC. (12) The ability of routine EFM to predict uterine rupture in clients with a previous CS has not been definitively established. Furthermore,

the benefit of EFM in the prevention of poor long-term outcomes in normal pregnancies and births is unclear. (137) The general use of EFM is associated with a higher rate of CS, which may be an important consideration for clients who attempt a VBAC. (138,142)

As the majority of research on the safety and outcomes of VBAC has been conducted using EFM, there is little evidence on the relative and absolute risks of severe adverse events in its absence. (137) In particular, there is scant research on the safety and outcomes of VBAC using IA within a midwifery context that includes the provision of one-to-one continuous support. There is also no high-quality evidence to identify the optimal frequency of IA during labour. The preponderance of EFM in clinical research may contribute to perceptions that EFM is a "safer" option despite little evidence of its effectiveness in preventing adverse outcomes.

In the absence of clear evidence, the American College of Nurse-Midwives suggests the following IA protocol: every 15 to 30 minutes during the active phase, every 15 minutes during the second stage prior to expulsive efforts and every five minutes after initiation of pushing may be reasonable. (143) Using IA to monitor VBAC labour may cause some delay in diagnosis of uterine rupture compared with EFM if uterine rupture occurs in the absence of other signs and symptoms. It is possible that a delay of up to 15 minutes may be experienced if the uterine rupture occurs directly after the midwife has monitored the fetal heart rate and no other signs or symptoms of uterine rupture are present other than fetal bradycardia.

If labour is prolonged, if fetal heart rate abnormalities are heard or if there are any other signs or symptoms associated with uterine rupture, continuous EFM should be initiated. The one-to-one nature of IA caregiving and offering clients informed choice about types of fetal monitoring may improve satisfaction with labour and birth. (144)

Signs and Symptoms of Uterine Rupture

- Fetal bradycardia in the first and second stage
- Birthing parent hypotension or tachycardia, hematuria and excessive vaginal bleeding
- Birthing parent restlessness or loss of fetal station

Recommendations

7. Fetal heart rate monitoring may occur by:

    - Intermittent auscultation q 15 minutes in active labour and q 5 minutes in the second stage; or

    - Using continuous EFM per current protocols.

    Prior to labour, the risks and benefits of IA and EFM should be discussed with clients and documented in their charts. [new 2021]

    Strong recommendation: very low certainty of evidence

    This recommendation recognizes the client as the primary decision-maker in their care. It recognizes midwives' expertise in using IA and providing continuous one-to-one care.

8. Continuous EFM should be used if labour is prolonged or if any fetal heart rate abnormalities are noted with IA. [2011]

    Strong recommendation: very low certainty of evidence

    This recommendation recognizes the midwife's ability to identify emerging complications and escalate care as the clinical picture requires.

Labour progress

Research has demonstrated that dystocia may be a factor that decreases rates of vaginal birth after CS and increases risks of uterine rupture. A 2019 systematic review of 94 studies that included 239 000 birthing parents who planned VBAC found that labour dystocia was strongly associated with a decreased likelihood of having a vaginal birth (OR 0.54, 95% CI 0.41-0.70). (145)

A 2012 population-based cohort study (n = 240 189) examined the independent risk factors for uterine rupture and found an OR of 5.69 (95% CI 3.21-10.07) for dystocia during the first stage of labour and an OR of 9.47 (95% CI 5.76-15.55) for dystocia during the second stage. (146) Research suggests a strong association between uterine

rupture and stage of labour; birthing parents are at greater risk of uterine rupture when dystocia occurs in the second stage (at advanced dilations) than during the first stage. (146,147)

Consequently, it is important for midwives attending a VBAC labour to accurately diagnose the onset of active labour and to be vigilant for prolonged labour. If progress in active labour is deemed abnormally slow, consultation should be initiated. If dystocia is identified, obstetric consultation should be requested; and continuous fetal monitoring, intravenous access and necessary blood work in preparation for CS or epidural should be initiated, if not already in place while awaiting consultation.

Good Practice Statements

9. For clients with a prior history of CS, it is important for midwives to accurately diagnose and document the onset of active labour and be vigilant for prolonged labour. [2021]

    This good practice statement recognizes the evidence base that links labour dystocia to the risk of uterine rupture. It also recognizes midwives' ability to assess clients in labour and determine the need for timely decision-making.

10. For clients with a prior history of CS in whom prolonged labour has been identified, IV access and continuous EFM should be initiated, if not already in place. If midwives' attempts to manage slow progress are unsuccessful, obstetric consultation should be requested. [new 2021]

    This good practice statement recognizes continuity of care and the midwife's ability to assess the need for interprofessional collaboration as the clinical picture requires.

Epidural use during planned VBAC

There is no evidence to demonstrate that clients having a VBAC should be restricted in their choice of analgesia or anaesthesia for pain relief. Evidence from three observational studies examined differences in outcomes for those who received or did not receive an epidural during a planned VBAC. (148–150).

Pooled results from three observational studies (*very low certainty of evidence*) that included 7587 birthing parents shows that using epidural anaesthesia during planned VBAC may decrease rates of spontaneous vaginal birth (RR 0.79, 95% CI 0.65-0.97, p = 0.02) (148–150). Inversely, two studies (*very low certainty of evidence*) that included 7248 labouring participants shows that epidural

use may triple the risk of instrumental/operative vaginal birth (RR 3.56, 95% CI 2.02-6.29, p < 0.0001). (149,150) However, these results are considered indirect, because the population included preterm and term infants and postdate pregnancies.

Evidence from one study (*very low certainty of evidence*) that included 7149 birthing parents shows that epidural use during planned VBAC may triple the likelihood of oxytocin use during labour (RR 3.47, 95% CI 3.01-4.01, p < 0.00001), although we are uncertain of these results. (150) It was unclear whether participants were given oxytocin before or after the administration of an epidural, making it difficult to conclude whether epidural analgesia creates the need for oxytocin augmentation.

Further meta-analyses (*very low certainty of evidence*) show that epidural use during planned VBAC may make little to no difference in rates of CS (n = 7587; RR 2.25, 95% CI 0.55-9.24, p = 0.26), uterine rupture (n = 7149; RR 1.50, 95% CI 0.68-3.34, p = 0.32) and postpartum hemorrhage (n = 7149; RR 0.96, 95% CI 0.71-1.28 p = 0.77). (148–150) Our confidence in these results is very low, because there were serious concerns about the lack of controlling for confounding factors that may influence these outcomes, including gestational age, history of previous vaginal birth and induction of labour.

Additional considerations regarding epidural use
While an epidural may streamline preparation for surgery, should it be required, this potential benefit should be balanced with the associated risks of epidural, which include

lower plasma levels of oxytocin after epidural insertion (151) and increased use of oxytocin augmentation with epidural use. (152) As with all medical forms of pain relief, the risks and benefits of epidural analgesia should be discussed with the client in assisting them to make an informed decision.

Further considerations about using epidural anaesthesia during planned VBAC are the association between epidural dosing and the risk of uterine rupture. One case-control study sought to estimate the association between epidural dosing and the risk of uterine rupture with attempted VBAC. (153) The dose timing, frequency and quantity were compared. Among 804 participants, 504 (62.7%) had epidural anaesthesia. A dose-response relationship was identified between the number of epidural doses and risk of uterine rupture. After controlling for overall length of labour, four or more doses of epidural in the last 90 minutes of labour corresponded to an eightfold increase in risk of rupture (95% CI, 5.4-18.2). (153)

A second consideration is the potential for epidural anaesthesia to mask abdominal pain associated with uterine rupture. A retrospective study compared the experiences of 200 participants who underwent repeat CS with or without persistent lower abdominal pain. Persistent lower abdominal pain was strongly associated with uterine rupture (OR 28.36, 95% CI 2.12-379.42). (154) Lower abdominal pain was not related to uterine contractions, and, importantly, epidural anaesthesia did not mask the pain. As noted above, fetal bradycardia remains the primary marker of uterine rupture, and as most clients who receive an epidural will be monitored using EFM, the risk of missing signs of uterine rupture and delaying necessary intervention remains small.

Recommendation

11. For clients with a prior history of CS, epidural anaesthesia is not contraindicated.

   - For clients interested in this method of pain relief, the risks and benefits of epidural use with planned VBAC should be discussed. [new 2021]

   Strong recommendation: very low certainty of evidence

   This recommendation acknowledges the client as the primary decision-maker, reflects an evidence base that epidural use does not mask symptoms of uterine rupture, and supports midwives in retaining primary care for the monitoring and maintaining of epidural analgesia.

Good Practice Statement

12. Prompt consultation should be initiated if the labouring client experiences any unusual pain or if epidural anaesthesia is being used but is not effective. [2011]

   This good practice statement recognizes the midwife's ability to identify emerging complications and work interprofessionally to provide safe, excellent client care.

CHOICE OF BIRTHPLACE DURING PLANNED VBAC

Although the safety and outcomes of planned VBAC in out of hospital settings remains understudied, research over recent years has provided a strong basis to guide decision-making.

A 2016 sub-analysis of the landmark Birthplace in England national prospective cohort study examined differences in outcomes among participants who planned to give birth at home or in the hospital after at least one previous CS. As part of the original sub-analysis, study authors stratified participants who planned VBAC according to a predetermined risk status, assigning "higher-risk" status to participants with such underlying risk factors as gestational diabetes, previous postpartum hemorrhage requiring treatment or blood transfusion, or a BMI > 35 kg/m². For the purposes of this CPG, those higher-risk participants were excluded from our meta-analyses to provide a more direct comparator to the "low-risk" population receiving Ontario midwifery care. (155)

Results from the analysis of 1104 low-risk participants (*low certainty of evidence*) shows that planning a home birth, as compared with a hospital birth, after at least one previous CS may increase rates of vaginal birth: 170 more vaginal births may occur (from 106 more to 234 more) per 1000 (RR 1.24, 95% CI 1.15-1.33, p < 0.00001). (155)

Further evidence (*very low certainty*) from this same study suggests that home VBAC may make little to no difference in rates of blood transfusion or admission for higher-level care (RR 0.97, 95% CI 0.38-2.59, p = 0.96) as well as rates of stillbirth or Apgar score < 7 at five minutes (RR 1.12, 95% CI 0.33-3.82, p = 0.86), although the wide confidence intervals limit our certainty in these results. About one-third (39%) of participants required transfer to hospital during their planned VBAC. The most common reason for transfer was failure to progress in the first and second stages of labour.

Outcomes	VBAC planned for out of hospital (%)	VBAC planned in hospital (%)
Vaginal birth	88.2	70.7
Blood transfusion or admission for higher-level care	2.53	3.0
Apgar score < 7 at 5 minutes or stillbirth	1.7	1.7

Additional considerations regarding choice of birthplace and planned VBAC

It is ideal to draw evidence from studies that complete a head-to-head comparison of planned VBAC out of hospital and in hospital. In the absence of large datasets that examine these two choices, data from descriptive studies that report on outcomes associated with VBAC out of hospital can be informative.

A 2009 study conducted in British Columbia compared the outcomes of all planned home births attended by midwives between 2000-2004 with those of planned hospital births attended by midwives or physicians. (156) Among the 2889 participants who planned to have a home birth, 88 planned to have a VBAC. However, the comparison group of hospital births did not include those who had a previous CS, which limited the researchers' ability to compare VBAC outcomes based on birthplace. In a subgroup analysis, researchers restricted the home birth group to individuals who had not had a previous CS. Removing the 88 participants who planned home VBAC from the analysis did not significantly

change the relative risks of interventions or any of the examined adverse outcomes for birthing parents or neonates. No uterine ruptures were reported in the home birth group.

A retrospective cohort study of Ontario midwifery clients from 2003-2008 showed that 3262/47 923 births (6.8%) occurred in individuals with a prior CS. While 25.3% of all participants in this study planned a home birth, only 10% with a prior CS planned to give birth at home. (157). The intrapartum transfer rate from home to hospital was 36.5% among clients with prior CS, compared with 24.6% for clients with no history of CS (RR 0.84, 95% CI 0.78-0.91). (157) VBAC candidates who planned a home birth were more likely to deliver vaginally, regardless of where the birth ultimately took place. For clients with a history of CS who planned a home VBAC at the onset of labour, the rate of vaginal birth was 81.2%; this was higher than the rate of vaginal birth (71.2%) for all clients with a history of CS who chose to labour at home or in hospital. The proportion of clients with previous vaginal births was also higher in the home birth group than in the VBAC group

as a whole (60% vs. 45% respectively). This may account for some of the difference in successful VBAC rates, as having a previous vaginal birth increases the likelihood of successful VBAC. Clients may have also been more likely to plan home birth in the absence of risk factors associated with decreased likelihood of VBAC success, as part of midwives' risk screening for those who plan VBAC. Incidence of uterine rupture could not be accurately calculated from this data set. There were no stillbirths or neonatal deaths associated with uterine rupture, and the neonatal morbidity/mortality composite measure did not differ between clients with a history of CS and those without. Further research is needed to directly compare outcomes for VBAC among midwifery clients who choose home birth vs. hospital birth. (157)

A 2004 study conducted in the United States examined outcomes of birthing parents who planned to have a VBAC in a free-standing birth centre with certified nurse midwives from 1990-2000 (n = 1913). (158) Eighty-seven percent of participants who started labour and planned to give birth at one of the 41 birth centres included in this study delivered vaginally. The intrapartum transfer rate before birth was 24%.

Of the six uterine ruptures that occurred (a rate of 0.4%), two resulted in fetal/neonatal death, equivalent to a perinatal mortality rate of 5/1000. When participants with multiple prior CS and gestational age ≥ 42 weeks were excluded from the results (accounting for 10% of total births in the study), perinatal mortality was 2/1000. The rate of overall adverse outcomes (defined as perinatal death, hysterectomy or an Apgar score < 7 at 5 minutes) was 1.4%. (158)

Birthing parents' experience of home birth after caesarean (HBAC)

In qualitative research that examined the reasons for choosing HBAC, birthing parents reported wanting to avoid factors that contributed to negative experiences in their previous birth by CS, including: feeling restricted by hospital protocols, feeling a lack of control over the birthing process and being unable to make informed choices. Participants relayed that they associated their HBAC with feelings of empowerment and that it helped in their healing process following a previous negative birth experience. (159) Participants' midwives, partners, doulas and HBAC support groups constituted key supports in their ability to prepare for and navigate HBAC.

Ethical Considerations: VBAC and Choice of Birthplace

A 2014 commentary by two Ontario midwives examined the potential ethical dilemmas midwives face concerning vaginal HBAC. This is a contentious issue due to the increased risk of mortality and morbidity in the event of uterine rupture and the delay in accessing emergency surgical support outside of a hospital. Guideline groups such as SOGC and PCMCH highlight the importance of timely access to a CS in case of an emergency during planned VBAC, as the risk of adverse outcomes for birthing parents and neonates increases when an emergency CS is delayed. (12,160) For this reason, the hospital is viewed as the safest location to give birth, although the available research on well-selected, planned VBAC at home does not seem to indicate that planned home birth is less safe than planned hospital birth. For midwives, ethical dilemmas that may arise in supporting clients' HBAC include:

- Upholding informed choice and autonomy, two core midwifery principles, within a broader context that may not support HBAC

- Balancing the desire to prevent clients from harm (non-maleficence) while supporting clients' choices

- Providing care according to their professional standards and duties while conscientiously objecting to clients' decision(s)

- Presenting all options regarding VBAC and choice of birthplace "equally and fairly," thereby doing justice to the informed choice process

In grappling with complex decision-making, midwives can refer to the College of Midwives of Ontario's VBAC and Choice of Birthplace Position Statement, which asserts clients as primary decision-makers in their care and instructs midwives to "provide care during labour and birth in the setting chosen by the client." (161)

Considerations for choice of birthplace and VBAC

A comprehensive informed choice discussion on choice of birthplace should be conducted with all clients who plan VBAC. Midwives should consider incorporating the following points as part of the informed choice discussion:

- The limited evidence available relating to outcomes for the birthing parent and newborn outside of hospital. Most research about planned VBAC involves physician-attended hospital births, largely in tertiary centres.
- Support for keeping birth "close to home" for Indigenous, remote and rural communities. It is particularly "vital that Indigenous Peoples are surrounded with all the love and support possible, which includes their families, community members and the land." (162)
- The availability of local resources, such as access to pain relief or surgery, which differs by hospital level in Ontario.[2] Hospital policies on VBAC also vary, including requirements about whether a physician must be on site during VBAC labour or be able to provide emergent care within a specified time.

- For clients who choose to give birth out of hospital vs. in a level I hospital, it is important to clearly review the small but significant risk of uterine rupture and the implications of potential increased delays in accessing hospital resources. Out-of-hospital settings increase the time required to access emergency care, and this interval can be further affected by distance from hospital, response times of emergency services and weather conditions. Any delay to surgical intervention may have serious short- or long-term impacts for the client and their baby.
- The midwifery practice protocol for managing VBAC in the home setting, along with any mechanisms to ensure coordination with emergency medical services and the hospital should assistance be required.

Midwives are encouraged to refer to the AOM's Choice of Birthplace Guideline for further information about choice of birthplace.

Recommendation

13. Midwives should offer choice of birthplace to all clients, including those who plan VBAC but are otherwise at low risk of complications. The informed choice discussion regarding risks and benefits of planned VBAC and choice of birthplace should be comprehensive and well documented. [new 2021]

    - Documentation of the discussion should include: an outline of risks and benefits discussed, the client's values and preferences, and any recommendations made by the midwife, if applicable.

    Strong recommendation: very low certainty of evidence

    This recommendation recognizes the client as the primary decision-maker in their care, as well as the fundamental principle of choice of birthplace within midwifery care.

Hospital Policies and VBAC

Midwives have a responsibility to ensure that evidence-based VBAC protocols exist in hospitals. By advocating for clients who plan VBAC, midwives can help keep them from feeling as if their only option for avoiding unnecessary intervention is birth outside of hospital.

Midwives should familiarize themselves with any existing hospital procedures for clients who choose not to follow hospital protocols. For instance, many hospitals have a refusal of treatment form the client may sign if they wish to decline intervention. Such documents may help prevent or alleviate friction or conflict with other health-care professionals.

If ongoing conflict regarding a client's choice is not resolved by discussion among the parties involved, midwives may consider requesting a consultation with the hospital ethics service, if available.

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[2] For further explanation of maternal and newborn levels of care in Ontario, see "Standardized Maternal and Newborn Levels of Care Definitions, Provincial Council on Maternal and Child Health" (164): https://www.pcmch.on.ca/wp-content/uploads/2015/07/Level-of-Care-Guidelines-2011-Updated-August1-20131.pdf

POSTPARTUM CARE

Immediate postpartum

In some situations, postpartum hemorrhage may be evidence of uterine rupture in the immediate postpartum period. (163) Midwives should consider uterine rupture in the differential diagnosis if a client has postpartum hemorrhage following VBAC or ERCS.

Prior to discharge from midwifery care

Counselling clients after their VBAC or ERCS about future options related to mode of delivery can help with decision-making for future pregnancies. Midwives have an opportunity to share information on pregnancy spacing and the likelihood of further VBACs. If a planned VBAC results in an unplanned repeat CS, the midwife should review considerations for future pregnancies, including:

- Pregnancy spacing
- Emerging evidence on the safety and success rate of VBAC after multiple CS
- An opportunity for the client to discuss their experience if an unplanned CS took place

Good Practice Statement
14. For clients who have undergone a CS, discuss the association between delivery interval and risk of uterine rupture and considerations for family planning prior to discharge from midwifery care. [2011]
This good practice statement recognizes continuity of care and midwives' skill in providing health information to clients.

CONCLUSION

Clients who have had a CS in one or more previous pregnancies face complex choices. While overall rates of complications are low for clients who plan a VBAC or who choose a repeat ERCS, each option has associated risks and benefits. A client's values and risk tolerance will factor into decision-making about method and place of birth in the current pregnancy. The midwife's role is to ensure that clients are well informed of the risks and benefits of the choices they face in the course of their pregnancy, labour and postpartum care.

The evidence summarized in this CPG suggests VBAC should be recommended to clients who have had previous low-segment CS and have no contraindications for vaginal birth in the current pregnancy. As with all clients, a midwife who provides care to a client with a previous CS uses assessment skills, a commitment to appropriate use of technology and one-to-one support to minimize risks and provide optimal care. According to the Canadian Association of Midwives, the role of midwifery is to "understand, promote and facilitate physiologic processes and to intervene only when necessary." (20) VBAC is the best option for clients who wish to avoid unnecessary intervention and who value birth as a physiologic process. In providing care to a client with a previous CS, the highest-quality and most current research supports VBAC as a valid, safe choice for the majority of clients with a prior LSCS.

Midwives need to spend sufficient time ensuring that a thorough informed choice discussion takes place about the choice of VBAC or ERCS. Options for care during labour also warrant thorough discussion, particularly when clients choose care different from that of the local community's standard of care. It is recommended that care in labour include regular assessment of progress and fetal well-being, and prompt consultation for any concerns about slow progress in labour and/or abnormal fetal heart rate patterns or unusual pain or bleeding. Finally, given the additional risks associated with any birth after CS, midwives have an important role to play in using evidence-based best practices to reduce the incidence of primary CS.

SUMMARY OF GOOD PRACTICE STATEMENTS & RECOMMENDATIONS

1. Midwives should recommend planned VBAC to clients who have had one previous CS. Informed choice discussions should include:

   - Risks and benefits of planned VBAC compared with ERCS
   - Risks and benefits of CS and vaginal birth, more generally
   - The role of planned VBAC in achieving physiologic labour and birth
   - Local resources and access to timely services available within the client's community
   - The client's values and preferences and risk tolerance

   This discussion, including the client's decision, should be documented in their chart. [new 2021]

   Strong recommendation: very low certainty of evidence

   This recommendation recognizes that VBAC is a safe choice for the majority of clients with a prior CS. It recognizes the client as the primary decision-maker and that VBAC provides a means to achieve physiologic, low-intervention childbirth.

2. Offer planned VBAC to clients who have had two or more previous CS [new 2021]

   Strong recommendation: very low certainty of evidence

   This recommendation recognizes the client as the primary decision-maker in their care, and it recognizes VBAC as a means to achieve physiologic labour and birth.

   Note: Recommendation 1 and 2 presupposes an absence of contraindications to vaginal birth/VBAC (see list of contraindications on page 5.

3. For clients intending to have more than one child after a previous CS, midwives should discuss the benefits of VBAC over ERCS, including the long-term health implications associated with multiple CS. [2021]

   Good practice statement

   This good practice statement recognizes the increased risks associated with multiple CS and the benefits from cumulative VBACs..

4. Midwives should discuss with their clients the relevant factors that may influence the likelihood of VBAC or the risk of uterine rupture. Inform clients that such factors are not contraindications to planning VBAC, but they may be considerations in their care during labour. [2021]

   Good practice statement

   This good practice statement recognizes the client as the primary decision-maker. It recognizes that the presence of one or more of these factors is not necessarily predictive of uterine rupture or successful VBAC, and therefore it does not limit choice.

5. In developing the plan for care of a client who plans a VBAC, the midwife should make their best effort to obtain a copy of the operative record from the previous CS. Inability to obtain the previous record is not a contraindication to planned VBAC, but it should be documented in the client's chart. [2021]

   Good practice statement

   This good practice statement recognizes the client as the primary decision-maker. It recognizes that the presence of one or more of these factors is not necessarily predictive of uterine rupture or successful VBAC, and therefore it does not limit choice.

6. In developing the plan for care of a client who plans a VBAC, the midwife should make their best effort to obtain a copy of the operative record from the previous CS. Inability to obtain the previous record is not a contraindication to planned VBAC, but it should be documented in the client's chart. [2021]

- For clients undergoing midwifery-led induction or augmentation of labour, maintain a clear plan for ongoing communication with the on-call physician and interprofessional team about progress in labour and the well-being of the birthing parent and fetus. [new 2021]

Strong recommendation: very low certainty of evidence

This recommendation recognizes the client as the primary decision-maker in their care and that VBAC provides a means to achieve physiologic birth. It also values the importance of respectful care and interprofessional collaboration to provide client access to care options.

7. Fetal heart rate monitoring may occur by:

- Intermittent auscultation q 15 minutes in active labour and q 5 minutes in the second stage; or
- Using continuous EFM per current protocols.

Prior to labour, the risks and benefits of IA and EFM should be discussed with clients and documented in their charts. [new 2021]

Strong recommendation: very low certainty of evidence

This recommendation recognizes the client as the primary decision-maker in their care. It recognizes midwives' expertise in using IA and providing continuous one-to-one care.

8. Fetal heart rate monitoring may occur by:

Strong recommendation: very low certainty of evidence

This recommendation recognizes the midwife's ability to identify emerging complications and escalate care as the clinical picture requires.

9. For clients with a prior history of CS, it is important for midwives to accurately diagnose and document the onset of active labour and be vigilant for prolonged labour. [2021]

Good practice statement

This good practice statement recognizes the evidence base that links labour dystocia to the risk of uterine rupture. It also recognizes midwives' ability to assess clients in labour and determine the need for timely decision-making.

10. For clients with a prior history of CS in whom prolonged labour has been identified, IV access and continuous EFM should be initiated, if not already in place. If midwives' attempts to manage slow progress are unsuccessful, obstetric consultation should be requested. [new 2021]

Good practice statement

This good practice statement recognizes continuity of care and the midwife's ability to assess the need for interprofessional collaboration as the clinical picture requires.

11. For clients with a prior history of CS, epidural anaesthesia is not contraindicated.

- For clients interested in this method of pain relief, the risks and benefits of epidural use with planned VBAC should be discussed. [new 2021]

Strong recommendation: very low certainty of evidence

This recommendation acknowledges the client as the primary decision-maker, reflects an evidence base that epidural use does not mask symptoms of uterine rupture, and supports midwives in retaining primary care for the monitoring and maintaining of epidural analgesia.

12. Prompt consultation should be initiated if the labouring client experiences any unusual pain or if epidural anaesthesia is being used but is not effective. [2011]

Good practice statement

This good practice statement recognizes the midwife's ability to identify emerging complications and work interprofessionally to provide safe, excellent client care.

13. Midwives should offer a choice of birthplace to all clients, including those who plan VBAC but are otherwise at low risk of complications. The informed choice discussion regarding risks and benefits of planned VBAC and choice of birthplace should be comprehensive and well documented. [new 2021]

   - Documentation of the discussion should include: an outline of risks and benefits discussed, the client's values and preferences, and any recommendations made by the midwife, if applicable.

Strong recommendation: very low certainty of evidence

This recommendation recognizes the client as the primary decision-maker in their care, as well as the fundamental principle of choice of birthplace within midwifery care.

14. For clients who have undergone a CS, discuss the association between delivery interval and risk of uterine rupture and considerations for family planning prior to discharge from midwifery care. [2011]

Good practice statement

This good practice statement recognizes continuity of care and midwives' skill in providing health information to clients.

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Table 1. Updated 2021 Recommendations, Good Practice Statements and Explanation of Changes		
Original Recommendation or Summary Statement [2011]	Updated Recommendation, Good Practice Statement, or Summary Statement [2021]	Explanation of Change(s)
Planned VBAC compared with ERCS following one previous CS		
1. The risks and benefits of VBAC compared with ERCS should be discussed with clients who have a history of CS. This discussion, including the client's decision, should be appropriately documented in the client's chart. II-2B	**1.** Midwives should recommend planned VBAC to clients who have had one previous CS. Informed choice discussions should include: • The risks and benefits of planned VBAC compared with ERCS • The risks and benefits of CS and vaginal birth, more generally • The role that planned VBAC has in achieving physiologic labour and birth • Local resources and access to timely services available within the client's community • The client's values and preferences and risk tolerance This discussion, including the client's decision, should be documented in the client's chart. [new 2021] *This recommendation presupposes an absence of contraindications to vaginal birth/VBAC (see list of contraindications on page 5)* **Strong recommendation; very low certainty of evidence** *This recommendation recognizes VBAC is a safe choice for the majority of clients with a prior CS. It recognizes the client as the primary decision-maker and that VBAC provides a means to achieve physiologic, low intervention childbirth.*	Recommendation remains largely consistent with original although the previous CPG's first two recommendations were combined to form this one: • Aspects of informed choice discussion found in Recommendation #2 in the original CPG are now included as bullet points here.
2. Recommend planned VBAC as a means to achieve the benefits of normal childbirth, while being sensitive to each client's concerns and values and respecting her informed decision. III-C	Included as part of Recommendation above.	Included as part of Recommendation above.

Original Recommendation [2010]	Updated Recommendation [2021]	Explanation of Change(s)
	Planned VBAC compared with ERCS following one previous CS	
	NEW: Recommendation **2.** Offer planned VBAC to clients who have had two or more previous CS [new 2021] *This recommendation presupposes an absence of contraindications to vaginal birth/VBAC (see list of contraindications on page 5)* **Strong recommendation: very low certainty of evidence** *This recommendation recognizes the client as the primary-decisions maker and recognizes VBAC as a means to achieve physiologic labour and birth.*	This new recommendation has been included in order to support midwifery management of VBAC after two or more previous cesarean sections. The recommendation is based on a body of evidence which shows little to no difference in outcomes for birthing parents and the neonate when comparing VBAC after two or more CS to ERCS while also considering the risks associated with multiple CS.
3. Recommend planned VBAC for clients intending to have more than one child after the previous CS. Increased maternal and perinatal morbidity associated with ERCS and multiple CS has long-term health implications. II-2	**3.** For clients intending to have more than one child after the previous CS, midwives should discuss the benefits of VBAC over ERCS including the long-term health implications associated with multiple CS. [2021] *This good practice statement recognizes the increasing risks associated with multiple CS and the benefits from cumulative VBACs.*	Following GRADE methodology, this recommendation is now considered as a Good Practice Statement. Good practice statements in this CPG represent guidance that the WG deemed important but that were not appropriate for formal ratings of certainty of evidence. Good practice statements are made when the Committee is confident that the action has net benefit to the client and that sensible alternatives do not exist.
4. Midwives should discuss the relevant factors which may influence the likelihood of success or risk of VBAC with their clients. Inform clients that such factors are not contraindications to VBAC but may be considerations in their care during labour. III-C	**15.** Midwives should discuss the relevant factors which may influence the likelihood of VBAC or risk of uterine rupture with their clients. Inform clients that such factors are not contraindications to planning VBAC but may be considerations in their care during labour. [2021] *This good practice statement recognizes the client as the primary decision-maker. This recommendation recognizes that the presence of one or more of these factors is not necessarily predictive of uterine rupture or of successful VBAC, and therefore does not limit choice.*	Following GRADE methodology, this recommendation is now considered as a Good Practice Statement. Good practice statements in this CPG represent guidance that the WG deemed important but that were not appropriate for formal ratings of certainty of evidence. Good practice statements are made when the Committee is confident that the action has net benefit to the client and that sensible alternatives do not exist.

Original Recommendation [2010]	Updated Recommendation [2021]	Explanation of Change(s)
Planned VBAC compared with ERCS following one previous CS		
5. In developing the plan for care of a client planning a VBAC, request and review a copy of the operative record from the previous caesarean section(s). Inability to obtain the previous record should be documented in the client's chart. III-C	**16.** In developing the plan for care of a client planning a VBAC, the midwife should make their best effort to obtain a copy of the operative record from the previous caesarean section. Inability to obtain the previous record is not a contraindication to planned VBAC but should be documented in the client's chart. [2021] *This good practice statement recognizes midwives as primary care providers with the knowledge, skills, and judgement to care for clients planning VBAC.*	Following GRADE methodology, this recommendation is now considered as a Good Practice Statement. Good practice statements in this CPG represent guidance that the WG deemed important but that were not appropriate for formal ratings of certainty of evidence. Good practice statements are made when the Committee is confident that the action has net benefit to the client and that sensible alternatives do not exist.
Management of labour for clients planning VBAC		
6. For clients planning VBAC, induction of labour should be avoided unless the benefits outweigh the risks. When necessary, midwives should consult obstetrics and review the risks and benefits of methods of induction with the client and the consultant. As with any clinical situation in which midwives manage care, a clear plan for ongoing communication with the consultant about progress in labour and maternal and fetal well-being is recommended when midwives are primary care providers for induction of VBAC labour. III-C.	**6.** Midwives should review the risks and benefits of induction and augmentation for planned VBAC with their clients. When medically indicated, midwives should offer an induction or augmentation to their clients. • For clients undergoing midwifery-led induction or augmentation of labour, maintain a clear plan for ongoing communication with the on-call physician and interprofessional team about progress in labour and the wellbeing of the birthing parent and fetus. [new 2021] **Strong recommendation: low/very low certainty of evidence** *This recommendation recognizes clients as the primary decision makers in their care and that VBAC provides a means to achieve physiologic childbirth. It also values the importance of respectful care and interprofessional collaboration to provide client access to care options.*	After reviewing the evidence and considering the risks and benefits of induction and augmentation of labour, the CPG committee chose to revise the original wording and move away from language that inductions should be avoided. This change reflects the increasing body of evidence that indicates that though IOL is associated with higher rates of uterine rupture than spontaneous labour, the absolute risk of uterine rupture remains low Rather, the CPG committee strongly recommended that all midwives engage in an informed choice discussion with clients about the risk and benefits. The CPG committee articulated that if/when a medical induction is necessary, one should be offered. The recommendation wording was also updated by removing language regarding consulting obstetrics as management of induction is within midwives' scope of practice.

Original Recommendation [2010]	Updated Recommendation [2021]	Explanation of Change(s)
Management of labour for clients planning VBAC		
7. When augmentation or induction of labour is required during a VBAC labour and the midwife is the primary care provider, the midwife should take into account how quickly the obstetrical and pediatric team will be available in the event that emergency assistance is required. This may include ongoing communication with the team about progress in labour and maternal and fetal well being. III-C.	Included as part of Recommendation above.	This recommendation is now part of the larger recommendation on induction and augmentation of labour (Recommendation #6) as it speaks to specific aspects of management of induction and augmentation of labour during planned VBAC.
8. Fetal heart monitoring may occur by: • intermittent auscultation q 15 minutes in active labour and q 5 minutes in the second stage; or • using continuous EFM per current protocols The relative and absolute risks of severe adverse events in the absence of continuous electronic fetal monitoring are unknown. III-C	**7.** Fetal heart rate monitoring may occur by: • Intermittent auscultation q 15 minutes in active labour and q 5 minutes in the second stage; or • Using continuous EFM per current protocols. Prior to labour, the risks and benefits of IA and EFM should be discussed with clients and documented in the client's chart. [new 2021] **Strong recommendation: very low certainty of evidence** *This recommendation recognizes the clients as the primary-decision maker. It recognizes midwives' expertise in the use of IA and provision of continuous 1:1 care.*	Recommendation remains largely consistent with original, however an emphasis on the discussions of risks and benefits of both fetal monitoring methods has been added to the statement.
9. Continuous EFM should be used if labour is prolonged or if any fetal heart rate abnormalities are noted with intermittent auscultation. II-2A	**8.** Continuous EFM should be used if labour is prolonged or if any fetal heart rate abnormalities are noted with intermittent auscultation, and are unresponsive to corrective steps. [2011] **Strong recommendation: very low certainty of evidence** *This recommendation recognizes the midwife's ability to identify emerging complications and escalate care as the clinical picture requires.*	Recommendation remains consistent with original with a small addition that EFM should be initiated after the fetal heart rate is unchanged/unresponsive to corrective steps.

Original Recommendation [2010]	Updated Recommendation [2021]	Explanation of Change(s)
Management of labour for clients planning VBAC		
10. For clients with a prior history of CS it is important for midwives to diagnose and document the onset of active labour accurately and to be vigilant for prolonged labour. II-2A	9. For clients with a prior history of CS it is important for midwives to diagnose and document the onset of active labour accurately and to be vigilant for prolonged labour. [2021] *This good practice statement recognizes the evidence base which links labour dystocia to the risk of uterine reupture. It also recognizes midwives' ability to assess clients in labour and to determine the need for timely decision-making.*	Following GRADE methodology, this recommendation is now considered as a Good Practice Statement. Good practice statements in this CPG represent guidance that the WG deemed important but that were not appropriate for formal ratings of certainty of evidence. Good practice statements are made when the Committee is confident that the action has net benefit to the client and that sensible alternatives do not exist.
11. For clients with a prior history of CS in whom prolonged labour has been identified, obstetric consultation should be requested and IV access and continuous EFM monitoring should be initiated, if not already in place, while awaiting obstetric consultation. III-A	10. For clients with a prior history of CS in whom prolonged labour has been identified, IV access and continuous EFM monitoring should be initiated, if not already in place, If midwives' attempts to manage slow progress go unsuccessful, obstetric consultation should be requested. [new 2021] *This good practice statement recognizes continuity of care and the ability of the midwife to assess the need for interprofessional collaboration as the clinical picture requires.*	Following GRADE methodology, this recommendation is now considered as a Good Practice Statement. Good practice statements in this CPG represent guidance that the WG deemed important but that were not appropriate for formal ratings of certainty of evidence. Good practice statements are made when the Committee is confident that the action has net benefit to the client and that sensible alternatives do not exist.
N/A	**NEW: Recommendation** **11.** For clients with a prior history of CS, the use of epidural during planned VBAC is not contraindicated. • For clients who are interested in this method of pain relief, risk and benefits of epidural with planned VBAC should be discussed. [new 2021] **Strong recommendation: very low certainty of evidence** *This recommendation acknowledges the client as the primary decision maker, reflects evidence base that epidural does not mask symptoms of uterine rupture and supports midwives to retain primary care for the monitoring and maintaining of epidural analgesia.*	The information that is currently in this new recommendation was provided in the body of the text in the 2010 CPG but not in the form of a recommendation. This new recommendation has been included to make explicit the evidence related to epidural and planned VBAC (it is not contraindicated, in that it does not mask signs of uterine rupture), while also recognizing that risks and benefits of epidural (increased use of oxytocin augmentation, increased risk of operative delivery, decrease in rate of vaginal birth) should be discussed with clients as part of the informed choice discussion.

Original Recommendation [2010]	Updated Recommendation [2021]	Explanation of Change(s)
Management of labour for clients planning VBAC		
12. Prompt consultation should be initiated if the client labouring after a previous CS experiences any unusual pain or if epidural anaesthesia is being used and is not effective. III-C	**12.** Prompt consultation should be initiated if the labouring client labouring experiences any unusual pain or if epidural anaesthesia is being used and is not effective. [2011] *This good practice statement recognizes the ability of the midwife to identify emerging complications and work interprofessionally to provide safe, excellent client care.*	Following GRADE methodology, this recommendation is now considered as a Good Practice Statement. Good practice statements in this CPG represent guidance that the WG deemed important but that were not appropriate for formal ratings of certainty of evidence. Good practice statements are made when the Committee is confident that the action has net benefit to the client and that sensible alternatives do not exist.
Choice of birthplace and planned VBAC		
13. An informed choice discussion regarding the risks and benefits of VBAC and choice of birth place should be comprehensive and well documented. Documentation of this discussion should include: an outline of risks and benefits discussed, the client's values and preferences, and any recommendations made by the midwife, if applicable. III-C	**13.** Midwives should offer choice of birthplace to all clients, including those planning VBAC who are otherwise at low risk of complications. The informed choice discussion regarding risks and benefits of planned VBAC and choice of birthplace should be comprehensive and well documented. [new 2021] • Documentation of the discussion should include: an outline of risks and benefits discussed, the clients' values and preferences, and any recommendations made by the midwife, if applicable. **Strong recommendation: low/very low certainty of evidence** *This recommendation recognizes clients as the primary decision makers in their care and the fundamental principle of choice of birthplace within midwifery care.*	Recommendation remains consistent
14. Clients should be informed that there is little published evidence on the outcomes, including safety, of VBAC in the out-of-hospital setting. While the quality of these studies varies, they do not demonstrate increased risk. III-C	Removed recommendation statement	This information is captured in a section in the CPG entitled *Considerations for Choice of Birthplace and VBAC* (p. 42) that explicitly outlines important considerations for the informed choice discussion about place of birth for clients planning VBAC.

Original Recommendation [2010]	Updated Recommendation [2021]	Explanation of Change(s)
Choice of birthplace and planned VBAC		
15. For clients planning VBAC, describe the VBAC policies in place at the hospital(s) where the attending midwives have hospital privileges. Client's informed choices to accept or decline recommended interventions in hospital should be respected. III-C	Removed recommendation statement	This information is captured in a section in the CPG entitled *Considerations for Choice of Birthplace and VBAC* (p. 42) that explicitly outlines important considerations for the informed choice discussion about place of birth for clients planning VBAC.
Postpartum considerations		
16. For clients who have undergone a CS, discuss the association between delivery interval and risk of uterine rupture and considerations for family planning prior to discharge from midwifery care. II-2B	**14.** For clients who have undergone a CS, discuss the association between delivery interval and risk of uterine rupture and considerations for family planning prior to discharge from midwifery care. [2011] *This good practice statement recognizes continuity of care and the skill of midwives in providing health information to clients.*	Following GRADE methodology, this recommendation is now considered as a Good Practice Statement. Good practice statements in this CPG represent guidance that the WG deemed important but that were not appropriate for formal ratings of certainty of evidence. Good practice statements are made when the Committee is confident that the action has net benefit to the client and that sensible alternatives do not exist.