Midwives' Association of Washington State
CLINICAL GUIDELINE VAGINAL BIRTH AFTER CESAREAN IN THE OUT-OF-HOSPITAL SETTING

1. INTRODUCTION:

In the face of a national epidemic of primary cesarean section, limited opportunities for women to access vaginal birth after cesarean (VBAC) and the strong desire of a portion WA midwifery consumers to have their VBACs at home, the purpose of these guidelines is to present the current evidence regarding VBAC deliveries, to assist midwives with shared decision making with clients and to offer a guide to clinical decision-making for any reasonably prudent midwife in Washington State providing care to women with a history of prior cesarean section in the OOH setting.

Vaginal birth after cesarean (VBAC) rates in the United States increased during the late 1980's through the mid-1990's but have decreased steadily each year since 1996 after a study (McMahon, 1996) showed an increase in major morbidity with failed VBAC, followed by American Congress of Obstetrics and Gynecologists (ACOG) guidelines (1998, 1999) that recommended continuous physician availability throughout all VBAC trials of labor. Following the 2010 National Institutes of Health Consensus Summit on VBAC ACOG revised its position on VBAC to acknowledge that "most women with one previous cesarean delivery with a low-transverse incision are candidates for…TOLAC", but it and other North American obstetric professional bodies (SOGC 2005) continue to recommend that Trials of Labor after Cesarean (TOLAC) be undertaken in facilities with staff immediately available to provide care in the event of a rare catastrophic emergency.

The most recent Centers for Disease Control (CDC) data (2009) available estimates the cesarean section rate nationally to stand at 32.3%. This represents a 56% increase since 1996. Nationally VBAC rates are approximately 10% (NIH 2010). In Washington State the total cesarean section rate in 2008 was 29.2%. According to the CDC, the rate of VBAC in Washington State decreased from 22.4% to 13.2% between 2000 and 2005. Anecdotally there are decreasing numbers of practicing obstetricians in Washington State who provide care to women desiring VBAC. The option for a trial of labor (TOL) has become non-existent in areas with small community hospitals lacking 24-hour in-house surgical capability pursuant to ACOG's VBAC policy. Increasing use of OB hospitalists and 24hr OB staff have, in some instances, increased access to VBAC in metropolitan hospitals. Both the American Congress of Obstetricians and Gynecologists and The American Academy of Family Practice have noted that current risk management policies surrounding VBAC "appear to be based on malpractice concerns, rather than statistical or scientific evidence."(AAFP, 2005, ACOG 2010)

Numerous studies indicate that in the absence of contraindications VBAC is a safe choice for women. One recent study found that the absolute risk of an adverse perinatal outcome for a woman with a history of one prior low –transverse cesarean section is approximately the same as the background risk for any nulliparous client.(Rozen 2009). However, maternal and fetal risks are still perceived to be increased in VBAC and concerns about the appropriate place of birth, safety, and medico-legal issues influence the

discussions shaping practices and access to VBAC options. Midwives face hostility from the medical community if they consider attending VBAC deliveries in the home setting. The lack of research regarding out-of-hospital (OOH) VBAC, and the fact that the current professional liability insurance provider for midwives in WA excludes VBAC deliveries makes the decision to provide care for women desiring a home birth after a cesarean section an individual choice for each provider.

Although there is an abundance of literature on the subject of VBAC and elective repeat cesarean section (ERCS), there are many flaws inherent in the research and deficiencies in the literature about the risks and benefits of TOL versus ERCS for low risk, healthy women. This makes it difficult for pregnant women and clinicians alike to make truly informed decisions about appropriate delivery choices. Specifically, there is scant research regarding outcomes and best practice in OOH VBAC.(Lieberman 2004, David 2009) The ambiguous conclusions of the literature regarding the safety of VBAC, particularly with regard to site of delivery, have resulted in limited delivery choices for women with prior cesarean sections. Yet some women who have undergone prior cesarean sections still desire vaginal birth and out-of-hospital birth site options. There is a clear demand for OOH VBAC services provided by midwives in Washington State.
The studies, reports, and guidelines cited in this document were identified using multiple searches of the PubMed database, Cochrane systematic reviews and controlled trials registry from reference lists of systematic reviews, and from local and national experts. Search terms included: vaginal birth after cesarean, safety, trial of labor, out-of-hospital, clinical practice guidelines, uterine rupture, birth center, uterine thinning, maternal and fetal morbidity.

2. DEFINITIONS

ERCS	Elective Repeat Cesarean Section
HBAC	Home Birth After Cesarean
OOH	Out of Hospital
TOL	Trial of Labor
TOLAC	Trial of Labor after Cesarean
VBAC	Vaginal Birth After Cesarean

3. RISKS/BENEFITS

For the woman with a prior uterine scar, neither ERCS nor VBAC trial of labor is risk-free. When VBAC is successful, it is associated with less morbidity than repeat cesarean birth. However, when a VBAC TOL results in another cesarean, maternal morbidity is often higher. It is critical that clients have a clear understanding of the risks and benefits of VBAC compared with ERCS, and the issues specific to VBAC in the out of hospital setting.

3.1 BENEFITS OF VAGINAL BIRTH AFTER CESAREAN

Successful VBAC results in a decrease in maternal morbidity and increase in satisfaction compared to ERCS:

- Lower rates of infection* (6.7% VBAC versus 8.6-9.7% ERCS) (AHRQ, 2003)
- Shorter hospital stays (Loebel 2004, Mozurkewich, 2000; McMahon, 1996)
- Increased feeling of control in decision-making process (Ridley, 2002)

- Increased maternal satisfaction (Enkin, 2000)
- Less postpartum discomfort & faster recovery (Fawcett, 1994)

It should be noted that in the subgroup of women who have an unsuccessful VBAC trial of labor, studies consistently report a higher rate of maternal morbidity than in those having an ERCS (see next section).

Although only two studies currently exist for out-of-hospital VBAC with midwives, the evidence is favorable:

- The VBAC success rate is higher with midwives in birth centers, than in hospital (87% (Lieberman et al, 2004)- 73.5% (David et al 2009) vs. 60-82% success rate in hospital (AHRQ, 2003)
- OOH deliveries are not assisted by forceps or vacuum (associated with a higher risk of rupture
- OOH labors are not induced or augmented with oxytocin or prostaglandins, resulting in:
    - higher VBAC success rates by about 10% (AHRQ, 2003)
    - lower risk of uterine rupture by 35-45% (AHRQ, 2003)

3.2 RISKS OF VAGINAL BIRTH AFTER CESAREAN

Unfortunately, there are no controlled trials that compare all maternal and fetal/neonatal risks amongst spontaneous VBAC trials of labor, induced or augmented trials of labor, and ERCS.

The most-discussed risk for VBAC/TOL is uterine rupture. The risk of uterine rupture in a woman with no prior cesarean is about 0.006%, or 6 in 10,000 (Miller, 1997). In reviewing the literature, it is important, and difficult, to distinguish between symptomatic uterine rupture and asymptomatic uterine dehiscences. Symptomatic uterine rupture is most often characterized by FHR disturbances or maternal bleeding, and is definitively diagnosed upon cesarean section. There is no significant difference in the rates of asymptomatic rupture between VBAC and ERCS. The risk of symptomatic uterine rupture for women undergoing a TOL is 0.47%, 10 times higher than for women undergoing an ERCD (0.03%) (AHRQ 2010).

The overall risk of rupture with any induction method at term was 1.5% and 1.0% (AHRQ 2010) The rates of uterine rupture by induction/ augmentation status in one large study were as follows (Landon, 2004):

- Spontaneous labor: 0.4%
- Augmented labor: 0.9%
- Induced labor: 1.0%
- with prostaglandins, with or without oxytocin: 1.4%
- with prostaglandin alone: 0
- with no prostaglandins: 0.9%
- with oxytocin alone: 1.1%
- Elective repeat cesarean: 0

When symptomatic uterine rupture does occur, it can be a catastrophic event for both mother and baby, and it requires emergency medical and surgical intervention. Significant risks to the

mother include hemorrhage, bladder damage, and an increased risk of hysterectomy (4.8/10,000) (Leung, 1993; Helewa, 1999; AHRQ, 2003). Consequences to the baby may include neurological injury (30%) and death (5%) (AHRQ, 2003).

Landon et al (2004) examined the effect of successful versus unsuccessful VBAC on the rates of maternal morbidity and found significantly greater morbidity with unsuccessful VBAC in all of the following risk areas:

	Successful VBAC	**Unsuccesful TOL**	**ERCS**
Uterine rupture	0.1%	2.3%	0
Uterine dehiscence	0.1%	2.1%	0.5%
Hysterectomy	0.1%	0.5%	0.3%
Transfusion	1.2%	3.2%	1.0%
Endometritis	0.1%	7.7%	1.8%

3.3 BENEFITS OF ELECTIVE REPEAT CESAREAN BIRTH

The benefits of ERCS include:

- Decreased rates of uterine rupture and its associated fetal and maternal morbidities compared to VBAC trial of labor
- Decreased maternal morbidity compared to an unsuccessful VBAC (Landon, 2004)

3.4 RISKS OF ELECTIVE CESAREAN BIRTH

The risks of ERCS are the same as risks associated with all cesarean delivery, which have been relatively well documented but poorly quantified.

3.4.1 Maternal risks include:

- Increased infectious morbidity (Mozurkewich, 2000, ARQH 2010)
- Placenta previa or accreta in future pregnancies
- Anesthesia complications
- ERCD is associated with embolic events at higher rates than TOL (0.1% versus 0.04%) (ARQH 2010)
- Rehospitalization (RR 1.8, 95% CI 1.6-1.9) (Lydon Rochelle)
- Longer hospital stay
- Interruption of infant bonding in the immediate postpartum period

3.4.2 Neonatal risks include:

- A higher rate of transient tachypnea of the newborn and persistent pulmonary hypertension, and concomitant admission to the Neonatal Intensive Care Unit, septic work up and maternal-newborn separation (OR 2.3, 95% CI 1.4 – 3.8) (Hook, 1997)
- In all cesarean birth, there is a small risk to the baby of laceration (0.5-1.5%) (Haas, 2002; Wiener, 2002)

4. RISK ASSESSMENT AND PREDICTORS OF SUCCESS

Reports of successful VBAC rates range from 60-80% (16) but, to date, VBAC has not been well studied in OOH settings. It is critical that clients have a clear understanding of the risks and benefits of VBAC compared with ERCS, and the issues specific to VBAC in the OOH setting.

When evaluating a client's suitability for a VBAC in an OOH setting, the midwife and client should examine closely those factors that may favorably impact the likelihood of success and minimize the risk of adverse perinatal outcomes.

Several factors have been consistently identified as being strong predictors of VBAC success:

- Prior vaginal delivery (Zelop 1999, Macones 2006, Landon 2006)
- Spontaneous labor (not induced or augmented) (Huang et al. 2002, Macones et al. 2005, Landon 2004)
- One or more prior successful VBAC (Macones 2001,Grobman 2007, Landon 2004)
- Non- recurrent reason for the prior cesarean section (breech presentation, multiple gestation or placenta previa) (Flamm 1990)
- Maternal age <40 years (Flamm 1990, Shipp et al 2002)
- Favorable cervical factors (Pickhardt 1992, Flamm 1990, Macones et al 2001)
- Strong maternal desire for a vaginal birth (Enkin 2000)

Factors, which have been associated with decreased likelihood of VBAC success:

- More than one prior cesarean section (Macones et al 2005)
- Maternal age >40 (Shipp et al. 2002)
- Maternal obesity (Srinivas et al. 2007)
- Fetal macrosomia (>4000g) (Zelop 2001)
- Gestational age greater than>40wks (Coassolo et al. 2005)

Factors associated with reduced risk of uterine rupture during VBAC:

- Double, versus single layer closure of the uterus during prior cesarean surgery (Bujold, 2002 Gyamfi et al 2006)
- Interdelivery interval >18-24 months (Huang et al. 2002, Bujold et al. 2002)
- Term, versus preterm cesarean section (Scisione 2008, Harper 2009)
- Both prior vaginal birth and prior successful VBAC have been confirmed as being protective for uterine rupture (Landon 2011)

Risk of other complications:

- Abnormal placental implantation on or around the uterine scar can increase the incidence of placenta accreta and percreta, as well as placenta previa. (Gabbe., Singh et al. 1981, Chattopadhyay et al. 1993)

Because of the additional risks involved, an OOH VBAC should not be undertaken by a woman who:

- Has had a prior vertical (classical) cesarean incision, or if the incision was extended during the surgery.
- Has a baby in a non-vertex presentation
- Has a multiple pregnancy
- Has had more than one prior cesarean section
- Has had a single layer, rather than double layer closure of her primary incision

5. CONSIDERATIONS FOR PRACTICE

Midwifery is based on mutual trust and respect, both for the birth process and for the unique qualities of clients and their families. To that end, safe midwifery services develop practice protocols grounded in evidence, which guide the midwife's clinical judgment.

As the issue of VBAC has political implications in modern obstetrics, the OOH birth midwife choosing to offer VBAC services is charged with additional responsibilities for herself, her clients, and the midwifery community.

5.1 SHARED DECISION-MAKING

Shared decision making is a key component of midwifery philosophy and practice. The client's partner must be supportive of and equally involved in every aspect of decision making, all relevant documents being co-signed by the partner. The process of shared decision-making must be documented thoroughly and shall include:

- A consultation between the client and an OB physician consisting of a discussion of the risks and benefits of OOH VBAC versus the risks and benefits of ERCS
- Full disclosure of the midwife's experience with OOH VBAC and that of any attending birth assistant
- Receipt of surgical records revealing the circumstances surrounding the prior cesarean section and the surgery itself
- Signed VBAC shared decision-making documents
- Receipt by the client of ACOG's most current statement regarding VBAC and the MAWS VBAC Guideline
- A signed statement in which the client outlines, in her own words, her understanding of the risks and benefits of TOL and reasons for choosing a OOH VBAC.

The midwife may also recommend that the client read other midwifery and obstetrical guidelines on VBAC as they explore their options, and contact International Cesarean Awareness Network (ICAN) and other VBAC support services in order to be as fully informed as possible.

5.2 EVIDENCE BASED PRACTICE

Any midwife offering OOH VBAC delivery must remain current with the latest research regarding VBAC. She can then incorporate this information into her discussions with clients and update her protocols accordingly.

5.3 PROFESSIONAL LIABILITY (MALPRACTICE) COVERAGE

The Washington State Professional Liability (malpractice) insurance carrier (JUA) presently excludes coverage of VBAC births in the out-of-hospital setting. Clients must be informed of this, preferably via a signed disclosure statement.

5.4 CLOSE MONITORING OF MATERNAL AND FETAL VITAL SIGNS

Studies indicate the following may be signs of impending or actual uterine rupture. During labor the midwife should be vigilant in monitoring for:

- Abnormal fetal heart rate patterns such as bradycardia, or decelerations of any kind.

(Ridgeway et al 2004, Menihan 1998, Ayres et al 2001, Leung 1993)

- Abnormal maternal vital signs: Abnormal abdominal pain, increased vaginal bleeding, hematuria, maternal tachycardia, or hypotension as well as loss of fetal station or palpable uterine defect. (Fang et al. 2006)
- Dystotic labor pattern: deviation from normal progression of labor may be significant risk factor for uterine rupture. (Hamilton et al 2001, Khan et al 1995)

5.5 DISTANCE TO THE NEAREST HOSPITAL

Consideration must be given to distance and time required for transport when planning an OOH VBAC. Studies indicate that timing of the cesarean section is critical in the event that a uterine rupture occurs. Increased morbidity/mortality occurs when cesarean section is delayed with a uterine rupture. (Leung et al. 1993) If possible, the nearest hospital with emergency cesarean capability should be less than 20 minutes from the planned birth site. The client should understand that, in the unlikely event of a catastrophic uterine rupture, an emergency cesarean delivery even within this timeframe will not necessarily guarantee a healthy outcome. Midwife and client should also consider factors such weather, traffic, and the resources and staffing available at the nearest hospital.

5.6 CONSULTATION/TRANSFER OF CARE

Because a midwife attending OOH VBAC may be interfacing with an unsupportive medical community or personnel, she will find herself best able to deal with adversity if she consults according to the MAWS document "Indications for Discussion, Consultation and Transfer in an Out-of–Hospital Midwifery Practice" and utilizes the MAWS document "Planned Out-of-Hospital Birth Transport Guideline." It is critical that the midwife accompany her client to the hospital in the event of a transfer during labor. This also includes providing all relevant medical records to the admitting facility.

5.7 INDUCTION OF LABOR

Pharmacologic induction or augmentation of labor has been found to increase the likelihood of uterine rupture in women undergoing TOLAC (Zelop et al 1999, Lyndon Rochelle 2001) Other non-pharmacological methods commonly employed by midwives for induction purposes including but not limited to castor oil, evening primrose oil or herbs have not been adequately studied in VBAC candidates and thus cannot be recommended here.

Several recent studies have investigated the risks associated with mechanical ripening of the cervix using foley catheters. Rupture rates of between 0.76% (Ravasia 2000) and 6.5% (Hoffman 2004) have been identified. Cervical ripening with a foley balloon in women undergoing TOLAC in the OOH setting cannot be recommended given the limited and conflicting data.

5.8 DIAGNOSTIC TESTING

Ultrasound may be useful in the third trimester to assess a variety of factors that have been associated with poor outcomes: placenta previa, lower uterine segment thinning (Bujold 2009), and fetal macrosomia.

6. RECOMMENDATIONS FOR PRACTICE

The following recommendations are not meant to be an exhaustive list and are intended to serve as a guide for practice rather than to replace the midwife's own clinical judgment, which is based on her experience, common sense, and knowledge.

- Engage in a thorough shared decision-making process including but not limited to risks and benefits of TOL in both a hospital and OOH setting, political issues, lack of malpractice coverage, expectations regarding the client's personal responsibility in her care, and the midwife's practice protocol for OOH VBAC
- Obtain written statement in client's own words of her understanding of the risks and benefits of OOH VBAC and her reasons for choosing it and her agreement to transfer care at any point should the midwife deem it necessary
- Clear documentation of plan for ongoing risk assessment
- Close monitoring of maternal and fetal vital signs in labor. (AWHONN Guidelines for Intermittent Auscultation)
- Surgical records to confirm that the following occurred: a low transverse incision was made, the uterus was repaired with a double layer closure, there was no tearing of the uterus during the cesarean, there was no post-operative infection, and timing between cesarean and EDD is greater than 18 months
- Studies indicate that timing of the cesarean section is critical in the event that a uterine rupture occurs. Increased morbidity/mortality occurs when cesarean section is delayed with a uterine rupture. (Leung et al. 1993) Women should understand that the nearest hospital with emergency cesarean capability should be less than 20 minutes from the planned birth site, and that this does not guarantee a good outcome in the unlikely event of a catastrophic uterine rupture at home.
- An obstetric ultrasound should be performed in the third trimester to determine placental location, assess lower uterine thinning and/or fetal macrosomia
- Close maternal and fetal monitoring throughout labor and delivery and timely transport with non-reassuring fetal heart rate patterns. Fetal heart tones should be closely monitored according to established guidelines for intermittent auscultation (for 60 seconds every 15-30 minutes in the first stage of labor and every 5 minutes in the second stage of labor (AWHONN/SOGC 2002). The midwife should be alert to any signs of maternal tachycardia or hypotension, abnormal abdominal pain, abnormal vaginal bleeding, or hematuria. Use of a partogram (and regular vaginal exams to identify abnormal labor patterns or lack or descent of the fetus) may also be useful.
- In the event of a hospital transport, the midwife must accompany the client in order to facilitate the transfer and ensure that all relevant records are given to the hospital staff. Midwives should refer to the MAWS document "Indications for Discussion, Consultation, and Transfer in an Out-of-Hospital Midwifery Practice" for further information.

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