

For the management of labor, patience is a virtue

Start using the ACOG/SMFM labor management guidelines in your practice



Robert L. Barbieri, MD

Editor in Chief, OBG MANAGEMENT
Chair, Obstetrics and Gynecology
Brigham and Women's Hospital, Boston, Massachusetts
Kate Macy Ladd Professor of Obstetrics,
Gynecology and Reproductive Biology
Harvard Medical School, Boston

During the past 45 years, the cesarean delivery (CD) rate in the United States has increased from 5.5% in 1970 to 33% from 2009 to 2013, followed by a small decrease to 32% in 2014 and 2015.¹ Many clinical problems cause clinicians and patients to decide that CD is an optimal birth route, including: abnormal labor progress, abnormal or indeterminate fetal heart rate pattern, breech presentation, multiple gestation, macrosomia, placental and cord abnormalities, preeclampsia, prior uterine surgery, and prior CD.² Recent secular trends that contribute to the current rate of

CD include an adversarial liability environment,^{3,4} increasing rates of maternal obesity,⁵ and widespread use of continuous fetal-heart monitoring during labor.⁶

Wide variation in CD rate has been reported among countries, states, and hospitals. The variation is due, in part, to different perspectives about balancing the harms and benefits of vaginal delivery versus CD. In Europe, in 2010 the CD rates in Sweden and Italy were 17.1% and 38%, respectively.⁷ In 2010, among the states, Alaska had the lowest rate of CD at 22% and Kentucky had the highest rate at 40%.⁸ In 2015, the highest rate was 38%, in Mississippi (FIGURE).⁹ In 2014, among Massachusetts hospitals with more than 2,500 births, the CD rate ranged from a low of 22% to a high of 37%.¹⁰

Clinicians, patients, policy experts, and the media are perplexed and troubled by the "high" US CD rate and the major variation in rate among countries, states, and hospitals. Labor management practices likely influence the rate of CD and diverse approaches to labor management likely account for the wide variation in CD rates.

A nationwide effort to standardize and continuously improve

labor management might result in a decrease in the CD rate. Building on this opportunity, the American College of Obstetricians and Gynecologists (ACOG) and the Society of Maternal-Fetal Medicine (SMFM) have jointly recommended new labor management guidelines that may reduce the primary CD rate.⁸

The ACOG/SMFM guidelines encourage obstetricians to extend the time for labor progress in both the 1st and 2nd stages prior to recommending a CD.⁸ These new guidelines emphasize that for a modern obstetrician, **patience is a virtue**. There are 2 important caveats to this statement: to safely extend the length of time of labor requires both (1) a reassuring fetal heart rate tracing and (2) stable maternal health. If the fetus demonstrates a persistent worrisome Category II or a Category III heart-rate tracing, decisive intervention is necessary and permitting an extended labor would not be optimal. Similarly, if the mother has rapidly worsening preeclampsia it may not be wise to extend an induction of labor (IOL) over many days.

There are risks with extending the length of labor. An extended duration of the 1st stage of labor is associated with an increased rate of maternal

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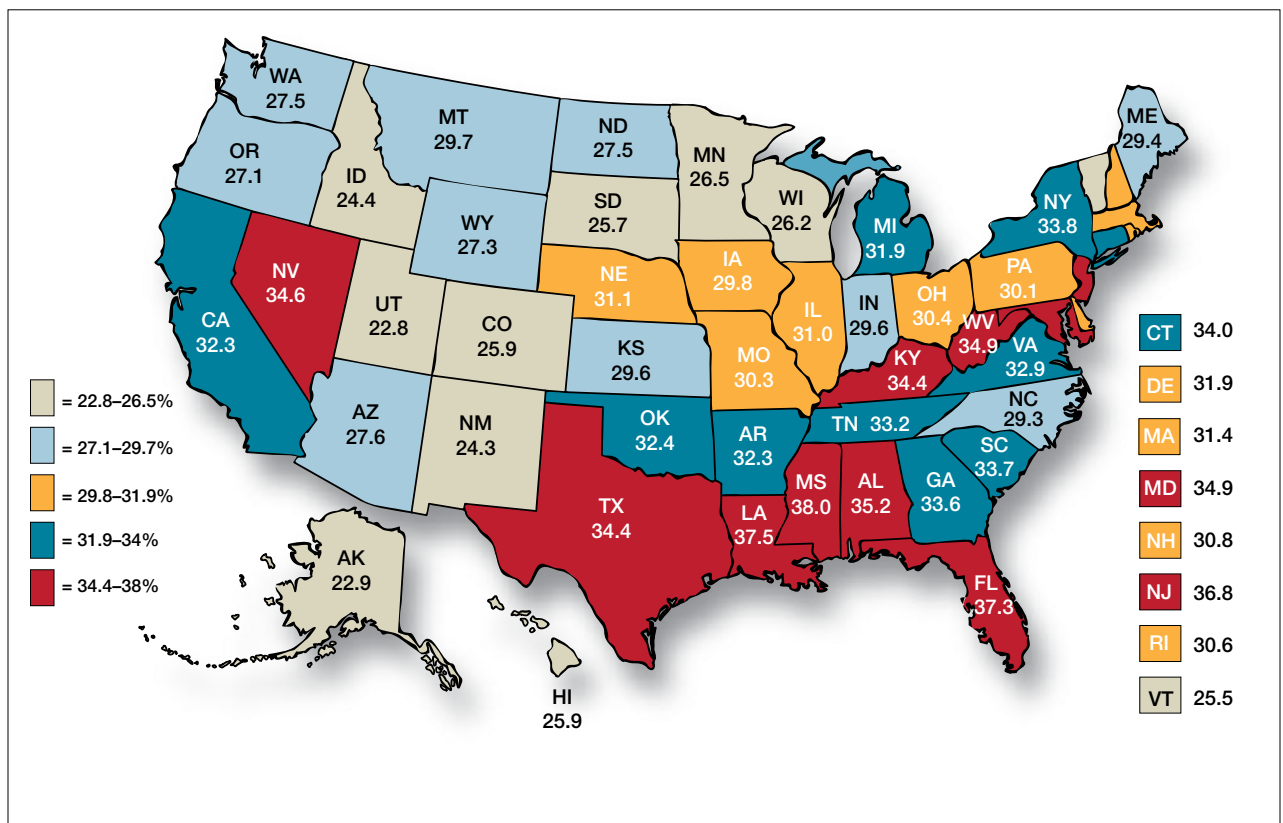


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FIGURE US total cesarean delivery rates by state, 2015⁹



chorioamnionitis and shoulder dystocia at birth.¹¹ An extended duration of the 2nd stage of labor is associated with an increase in the rate of maternal chorioamnionitis, anal sphincter injury, uterine atony, and neonatal admission to an intensive care unit.¹² Clinicians who adopt practices that permit an extended length of labor must weigh the benefits of avoiding a CD against these maternal and fetal complications.

Active phase redefined

Central to the ACOG/SMFM guidelines is a new definition of the active phase of labor. The research of Dr. Emmanuel Friedman indicated that at approximately 4 cm of cervical dilation many women in labor transition from the latent phase, a time of slow change in cervical dilation, to

the active phase, a time of more rapid change in cervical dilation.^{13,14} However, more recent research indicates that the transition between the latent and active phase is difficult to precisely define, but more often occurs at about 6 cm of cervical dilation and not 4 cm of dilation.¹⁵ Adopting these new norms means that laboring women will spend much more time in the latent phase, a phase of labor in which patience is a virtue.

The ACOG/SMFM guidelines

Main takeaways from the ACOG/SMFM guidelines are summarized below. Interventions that address common obstetric issues and labor abnormalities are outlined in the box on page 9.

Do not perform CD for a prolonged latent phase of labor, defined as regular contractions of >20 hours duration in nulliparous women and >14 hours duration in multiparous women. Patience with a prolonged latent phase will be rewarded by the majority of women entering the active phase of labor. Alternatively, if appropriate, cervical ripening followed by oxytocin IOL and amniotomy will help the patient with a prolonged latent phase to enter the active phase of labor.¹⁶

For women with an unfavorable cervix as assessed by the Bishop score, cervical ripening should be performed prior to IOL. Use of cervical ripening prior to IOL increases the chance of achieving vaginal delivery within 24 hours and

may result in a modest decrease in the rate of CD.^{17,18}

Failed IOL in the latent phase should only be diagnosed following 12 to 18 hours of both ruptured membranes and adequate contractions stimulated with oxytocin. The key ingredients for the successful management of the latent phase of labor are patience, oxytocin, and amniotomy.¹⁶

CD for the indication of active phase arrest requires cervical dilation ≥ 6 cm with ruptured membranes and no change in cervical dilation for ≥ 4 hours of adequate uterine activity. In the past, most obstetricians defined active phase arrest, a potential indication for CD, as the absence of cervical change for 2 or more hours in the presence of adequate uterine contractions and cervical dilation of at least 4 cm. Given the new definition of active phase arrest, slow but progressive progress in the 1st stage of labor is not an indication for CD.^{11,19}

“A specific absolute maximum length of time spent in the 2nd stage beyond which all women should be offered an operative delivery has not been identified.”⁸ Diagnosis of arrest of labor in the 2nd stage may be considered after at least 2 hours of pushing in multiparous women and 3 hours of pushing in nulliparous women, especially if no fetal descent is occurring. The guidelines also state “longer durations may be appropriate on an individualized basis (eg, with use of epidural analgesia or with fetal malposition)” as long as fetal descent is observed.

Patience is a virtue, especially in the management of the 2nd stage of labor. Extending the 2nd stage up

to 4 hours appears to be reasonably safe if the fetal status is reassuring and the mother is physiologically stable. In a study from San Francisco of 42,268 births with **normal newborn outcomes**, the 95th percentile for the length of the 2nd stage of labor for nulliparous women was 3.3 hours without an epidural and 5.6 hours with an epidural.²⁰

In a study of 53,285 births, longer duration of pushing was associated with a small increase in the rate of neonatal adverse outcomes. In nulliparous women the rate of adverse neonatal outcomes increased from 1.3% with less than 60 minutes of pushing to 2.4% with greater than 240 minutes of pushing. Remarkably, even after 4 hours of pushing, 78% of nulliparous women who continued to push had a vaginal delivery.²¹ In this study, among nulliparous women the rate of anal sphincter injury increased from 5% with less than 60 minutes of pushing to 16% with greater than 240 minutes of pushing, and the rate of postpartum hemorrhage increased from 1% with less than 60 minutes of pushing to 3.3% with greater than 240 minutes of pushing.

I am not enthusiastic about patiently watching a labor extend into the 5th hour of the 2nd stage, especially if the fetus is at +2 station or lower. In a nulliparous woman, after 4 hours of managing the 2nd stage of labor, my patience is exhausted and I am inclined to identify a clear plan for delivery, either by enhanced labor coaching, operative vaginal delivery, or CD.

Operative vaginal delivery in the 2nd stage of labor is an acceptable alternative to CD. The rate of operative vaginal delivery in the United States has declined over the past 2 decades (TABLE). In Sweden

TABLE Percent of live births delivered by forceps or vacuum in the United States in 2015¹

Year	Forceps	Vacuum
1995	3.48%	5.90%
2000	2.07%	4.85%
2005	0.93%	3.87%
2010	0.66%	2.96%
2015	0.56%	2.58%

in 2010 the operative vaginal delivery rate was 7.6% with a CD rate of 17.1%.⁷ In the United States in 2010 the operative delivery rate was 3.6%, and the CD rate was 33%.¹ A renewed focus on operative vaginal delivery with ongoing training and team simulation for the procedure would increase our use of operative delivery and decrease the overall rate of CD.

Encourage the detection of persistent fetal occiput posterior position by physical examination and/or ultrasound and consider manual rotation of the fetal occiput from the posterior to anterior position in the 2nd stage. Persistent occiput posterior is the most common fetal malposition.²² This malposition is associated with an increased rate of CD.²³ There are few randomized trials of manual rotation of the fetal occiput from posterior to anterior position in the 2nd stage of labor, and the evidence is insufficient to determine the efficacy of manual rotation.²⁴ Small nonrandomized studies report that manual rotation of the occiput from posterior to anterior position may reduce the CD rate.²⁵⁻²⁷

For persistent 2nd stage fetal occiput posterior position in a woman with an adequate pelvis,

Interventions to reduce the cesarean delivery rate

Labor is often associated with clinical conditions that increase the risk of cesarean delivery. Potential interventions that may reduce the cesarean delivery rate are summarized below.

Obstetric condition	Potential interventions to reduce the cesarean delivery rate
Abnormal labor progress- Prolonged latent phase	<ul style="list-style-type: none"> • Supportive counseling and patience¹ • Therapeutic rest with morphine^{2,3} • Induction of labor⁴
Abnormal labor progress- Active phase and second stage abnormalities	<ul style="list-style-type: none"> • Patience with labor progress in the 1st and 2nd stage⁴ • Expertise with operative vaginal delivery to complete the 2nd stage of labor⁴ • Manual rotation of the occiput for the fetus with a persistent occiput posterior position in the 2nd stage⁴
Abnormal or indeterminate fetal heart-rate (FHR) pattern	<ul style="list-style-type: none"> • Fetal scalp stimulation as an adjunctive measure to assess fetal status⁵ • Interventions to resolve abnormal or indeterminate FHR patterns: discontinue oxytocin infusion, change maternal position, amnioinfusion for recurrent variable decelerations^a and/or administration of a tocolytic for uterine tachysystole⁴
Fetal breech presentation	<ul style="list-style-type: none"> • External cephalic version^{6,a}
Multiple gestation	<ul style="list-style-type: none"> • Recommend fertility treatments that reduce the rate of multiple gestation, including single embryo transfer in in vitro fertilization^{7,a} • Encourage vaginal delivery for twin pregnancies when the presenting twin is vertex^{8,9,a}
Gestational age ≥41 weeks	<ul style="list-style-type: none"> • Induction of labor at 41 weeks' gestation compared with expectant management increases the rate of vaginal delivery^{10,a}
Trial of labor after cesarean (TOLAC)	<ul style="list-style-type: none"> • Develop maternity care systems that encourage the use of TOLAC.¹¹ TOLAC may increase rate of vaginal delivery with a small increase in neonatal morbidity.

^aRecommendation based, in part, on data from randomized clinical trials.

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where manual rotation was not successful and the fetus is at +2 station or below, operative vaginal delivery is an option. "Vacuum or forceps?" and "If forceps, to rotate or not to rotate?" those are the clinical questions. Forceps delivery is more likely to be successful

than vacuum delivery.²⁸ Direct forceps delivery of the occiput posterior fetus is associated with more anal sphincter injuries than forceps delivery after successful rotation, but few clinicians regularly perform rotational forceps.²⁹ In a study of 2,351 women in the 2nd stage of

labor with the fetus at +2 station or below, compared with either forceps or vacuum delivery, CD was associated with more maternal infections and fewer perineal lacerations. Neonatal composite morbidity was not significantly different among the 3 routes of operative delivery.³⁰

Amnioinfusion for repetitive variable decelerations of the fetal heart rate may reduce the risk of CD for an indeterminate fetal heart-rate pattern.³¹

IOL in a well-dated pregnancy at 41 weeks will reduce the risk of CD. In a large clinical trial, 3,407 women at 41 weeks of gestation were randomly assigned to IOL or expectant management. The rate of CD was significantly lower in the women assigned to IOL compared with expectant management (21% vs 25%, respectively; $P = .03$).³² The rate of neonatal morbidity was similar in the 2 groups.

Women with twin gestations and the first twin in a cephalic presentation may elect vaginal delivery. In a large clinical trial, 1,398 women with a twin gestation and the first twin in a cephalic presentation were randomly assigned to planned vaginal delivery (with cesarean only if necessary) or planned CD.³³ The rate of CD was 44% and 91% for the women in the planned-vaginal and planned-

cesarean groups, respectively. There was no significant difference in composite fetal or neonatal death or serious morbidity. The authors concluded that, for twin pregnancy with the presenting twin in the cephalic presentation, there were no demonstrated benefits of planned CD.

Develop maternity care systems that encourage the use of trial of labor after cesarean (TOLAC). The ACOG/SMFM guidelines focus on interventions to reduce the rate of primary CD and do not address the role of TOLAC in reducing CD rates. There are little data from clinical trials to assess the benefits and harms from TOLAC versus scheduled repeat CD.³⁴ However, our experience with TOLAC in the 1990s strongly suggests that encouraging TOLAC will decrease the rate of CD. In 1996 the US rate of vaginal birth after cesarean (VBAC) peaked at 28%, and the rate of CD achieved a recent historic nadir of 21%. Growing concerns that TOLAC occasionally results in fetal harm was followed by a decrease in the VBAC rate to 12% in 2015.¹ A

recent study of obstetric practices in countries with high and low VBAC rates concluded that patient and clinician commitment and comfort with prioritizing TOLAC over scheduled repeat CD greatly influenced the VBAC rate.³⁵

Labor management is an art

During labor obstetricians must balance the unique needs of mother and fetus, which requires great clinical skill and patience. Evolving concepts of normal labor progress necessitate that we change our expectations concerning the acceptable rate of progress in the 1st and 2nd stage of labor. Consistent application of these new labor guidelines may help to reduce the rate of CD. 📌



RBARBIERI@FRONTLINEMEDCOM.COM

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