

## Strategies to Reduce the Cesarean Section Rate

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## Outline

- Strategies to decrease the rate of first cesarean section in nulliparous patient
- Strategies to increase the availability and success of TOLAC

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## Learning Objectives

- Understand the most common indications for a first time cesarean section.
- Understand strategies to reduce the first time cesarean section
  - Induction of labor
  - Management of labor course
  - Management of intrapartum FHR tracing
- Understand the ACOG recommendations on TOLAC
- Understand strategies to increase the success of TOLAC and safety of VBAC

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**Goals for Cesarean Section for  
Healthy People 2020**

- **Reduce cesarean births among low-risk women with no prior cesarean births.**
  - Target: 23.9 percent
  - Baseline: 26.5 percent of low-risk women with no prior cesarean section had a cesarean section in 2007
- **Reduce cesarean births among low-risk women giving birth with a prior cesarean birth.**
  - Target: 81.7 percent
  - Baseline: 90.8 percent of low-risk women giving birth with a prior cesarean birth had a cesarean birth in 2007

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**Reducing the Rate of First Time  
Cesarean Section**

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**Minnesota Community Measures:  
Primary Cesarean Rate**

- Safe and healthy pregnancies and births are a primary goal for society and particularly for expectant mothers and their families, healthcare providers, and payers. While most births are positive experiences with healthy outcomes, childbirth also brings substantial risks for both the mother and the infant.
- For consumers, Minnesota lacks publicly reported maternity measures to aid and inform decision making. Several other states have public reporting for maternity care measures, most commonly cesarean section (C-section) and vaginal birth after C-section delivery (VBAC) rates due to the high volume, high costs and increased morbidity associated with C-section procedures.
- Recently, new clinical guidelines offering more direction regarding the care and management of pregnant women and childbirth have been released along with new quality measures that can be used to highlight variation and underscore appropriate maternal care

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Contemporary cesarean delivery practice in the United States

Main recorded indications for cesarean delivery

Indication	Prelabor CS %	Intrapartum CS %
Previous CS	45.1	8.2
FTP/CPD	2.0	47.1
Elective	26.4	11.7
Nonreassuring fetal status	6.5	27.3
Fetal malpresentation	17.1	7.5
Hypertensive disorders	3.1	1.6
Fetal macrosomia	3.3	1.2
Multiple gestation	2.8	0.8

Zang J, et al, AJOG 2010;203:326.e1-10

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- Conclusions
- 1 in 3 nulliparous women underwent a CS
  - Prelabor repeat CS accounts for 30% of all CS
  - Of all CS for dystocia 50% occurred at < 6 cm
  - Focus of reducing CS rate should be on primary CS
  - Strategies
    - Reduce the rate of induction
    - Avoid CS for dystocia prior to active labor
    - Perform CS for clinically acceptable reasons
    - Increase access to TOLAC
- Zang J, et al, AJOG 2010;203:326.e1-10

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- Comparative analysis of international cesarean delivery rates using 10-group classification identifies significant variation in spontaneous labor
- The study utilized a 10-group classification system for cesarean sections to identify relevant comparisons between groups of physicians and within groups of physicians.
  - Trends in data obtained through this classification system can be used to monitor practice trends before and after intervention strategies to reduce the cesarean section rate.
- Brennan DJ, Robson MS, et al AJOG 2009;201:308.e1-8.

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### Conclusions

- The overall cesarean section rate correlated with the cesarean section rate for singleton cephalic nullipara.
- The cesarean section rate for induced labors was similar across all institutions.
- The greatest institution variation in cesarean section rates is observed in spontaneous laboring multiparas (6.7 fold difference) and nulliparas (3.7 fold difference).
- **The largest impact on cesarean section rate will be achieved through strategies that focus on labor management in spontaneously laboring women.**

Brennan DJ, Robson MS, et al AJOG 2009;201:308.e1-8.

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### Preventing the first cesarean section

- **Proceeding and conclusions from a workshop convened by NICHD, SMFM and ACOG on February 7-8, 2012**
  - Objective was to synthesize the available information regarding factors leading to the first cesarean section, including obstetric, maternal, and fetal indications for cesarean delivery, labor management and induction practices, and nonmedical factors.
  - Goal was to identify the scope of the problem and identify opportunities to reduce unnecessary first cesarean deliveries.

Spong CY, etal Obstet Gynecol 2012;120:1181-93

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### Box 1. Quality Measures to Track and provide Feedback for Each Obstetrician-Gynecologist Physician\*

- Rate of non-medically indicated cesarean delivery
- Rate of non-medically indicated induction
- Rate of labor arrest or failed induction diagnosed without meeting accepted criteria
- Rate of cesarean deliveries for non-reassuring fetal status using NICHD criteria

\*For singleton gestation, vertex presentation, at 37 0/7 to 41 6/7 weeks of gestation

Spong CY, etal Obstet Gynecol 2012;120:1181-93

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Box 2. Key Points

- A CS performed without an acceptable indication should be called a “non-indicated CS” not an elective CS.
- Labor inductions should be for medical indications; if non-medical then must be > 39 weeks with favorable cervix.
- A failed induction is defined as failure to generate regular contractions with cervical change after 24 hours of oxytocin and AROM when feasible.
- Adequate time should be allowed for the latent phase, active phase and second stage of labor using new data and not the traditional Friedman Curve

Spong CY, etal Obstet Gynecol 2012;120:1181-93

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Box 2. Key Points

- In the presence of reassuring maternal and fetal status, the diagnosis of arrest of labor should not be made until adequate time has elapsed, i.e. at >6 cm for up to 4 hours with adequate contractions, and no progress for 2-4 hours in second stage depending on parity and anesthesia.
- Intermittent auscultation is acceptable in low risk women
- Moderate variability has low association with acidosis.
- Operative vaginal delivery is acceptable is indicated and operator is trained appropriately.
- Financial incentives should not be encouraged that have the potential to limit time spent in managing labor.
- Both short-term and long-term risks associated with CS should be reviewed with all patients including risk for repeat CS, uterine rupture and abnormal implantation

Spong CY, etal Obstet Gynecol 2012;120:1181-93

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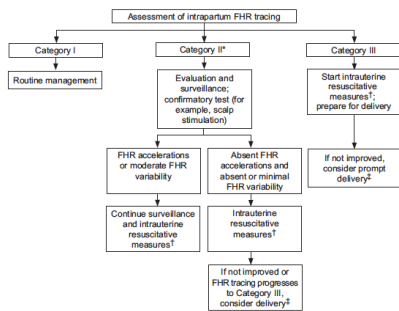
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Appropriate Management of Intrapartum FHR Tracing



Spong CY, etal Obstet Gynecol 2012;120:1181-93

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## Update on VBAC



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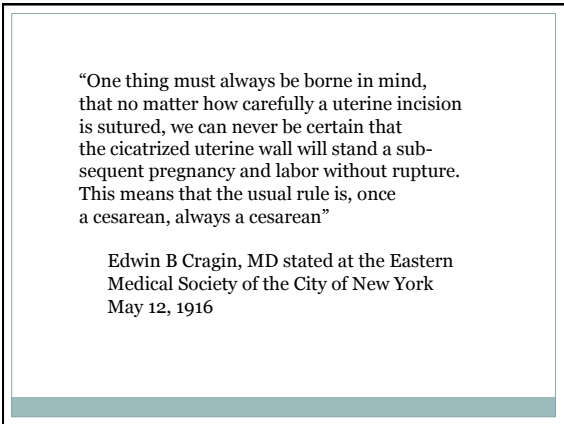
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“One thing must always be borne in mind, that no matter how carefully a uterine incision is sutured, we can never be certain that the cicatrized uterine wall will stand a subsequent pregnancy and labor without rupture. This means that the usual rule is, once a cesarean, always a cesarean”

Edwin B Cragin, MD stated at the Eastern Medical Society of the City of New York  
May 12, 1916



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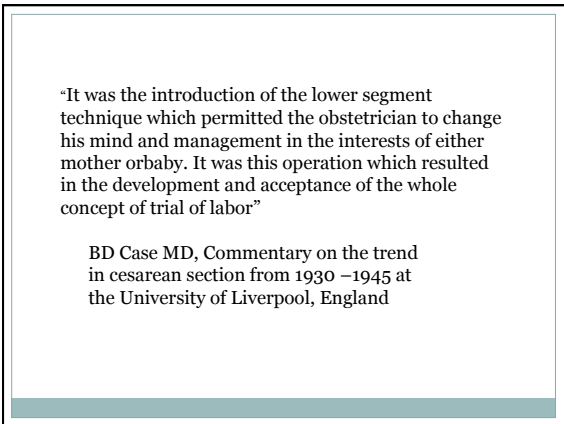
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“It was the introduction of the lower segment technique which permitted the obstetrician to change his mind and management in the interests of either mother or baby. It was this operation which resulted in the development and acceptance of the whole concept of trial of labor”

BD Case MD, Commentary on the trend in cesarean section from 1930 –1945 at the University of Liverpool, England



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VBAC – Health Policy Perspective

- Health People 2010 Objective:
  - The VBAC rate for a multiparous woman with one previous cesarean section should be 37%.
  - Using evidence-based practice and careful patient selection, VBAC attempt should be an accepted part of current obstetric practice.

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Ob-Gyns Issue Less Restrictive VBAC Guidelines  
July 21, 2010

“These VBAC guidelines emphasize the need for thorough counseling of benefits and risks, shared patient-doctor decision making, and the importance of patient autonomy. Moving forward, we need to work collaboratively with our patients and our colleagues, hospitals and insurers to swing the pendulum back to fewer cesareans and more reasonable VBAC rates.”

Richard N. Waldman MD, President of the College

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Ob-Gyns Issue Less Restrictive VBAC Guidelines  
July 21, 2010

The college maintains that a TOLAC is most safely undertaken where staff can immediately provide an emergency cesarean section, but recognizes resources may not be universally available.

“Given the onerous medical liability climate for ob-gyns, interpretation of The College’s earlier guidelines led many hospitals to refuse allowing VBACs altogether,” said Dr. Waldman. “Our primary goal is to promote the safest environment for labor and delivery, not restrict women’s access to VBAC.”

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### ACOG Practice Bulletin, 2010

Following are selection criteria useful in identifying candidates for VBAC:

- 1) One previous low transverse cesarean delivery should be counseled on VBAC and offered TOLAC.
- 2) Women with 2 prior LTCS are candidates for TOLAC.
- 3) Women with 1 prior LTCS and twins may attempt a VBAC
- 4) Induction of labor for maternal/fetal reasons is acceptable.
- 5) A previous unknown scar is a candidate for TOLAC
- 6) External version may occur if patient is candidate for TOLAC
- 7) Epidural may be used for TOLAC.
- 8) Misoprostil should not be used for cervical ripening.

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### ACOG Bulletin 2010

#### **Level C – Consensus and Clinical Opinion**

A trial of labor after previous cesarean delivery should be undertaken at facilities capable of emergency deliveries.

The College recommends TOLAC be undertaken in facilities with staff immediately available to provide emergency care.

When resources for immediate cesarean delivery are not available, the College recommends that health care providers and patients considering TOLAC discuss the hospital's resources. Respect for patient autonomy supports that patients should be allowed to accept increased levels of risk...

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### Maternal and Perinatal Complications from Uterine Rupture in 142,075 Attempts at VBAC

- Rate of uterine rupture was 6.2 per 1000 attempts
- For every 1000 attempts at VBAC the uterine rupture-related complication rates were:
  - 1.8 for PRBC transfusion
  - 1.5 for pathological fetal acidosis
  - 0.9 for hysterectomy
  - 0.8 for genitourinary injury
  - 0.4 for perinatal death
  - 0.02 for maternal death ~ 1 in 50,000

Chauhan SP, et al AJOG 2003

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Maternal and neonatal outcomes after uterine rupture in labor

- 38,027 deliveries at San Francisco Moffett-Long Hospital from 1978 – 1998
- Attempted VBAC rate 61.3%
- Successful VBAC rate 65.3%
- 21 cases of rupture – 17 VBAC and 4 no previous uterine surgery
- Maternal outcomes
  - 2 hysterectomies, 3 transfusions, 0 deaths
- Neonatal outcomes
  - 2 neonatal deaths (23 weeks and 25 weeks with anomalies)
  - No neurological abnormalities at discharge

Yap OWS et al AJOG 2001

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Can a prediction model for vaginal delivery after cesarean also predict the probability of morbidity related to a trial of labor?

Probability of total morbidity stratified by probability of VBAC and delivery intent

	Trial of labor	Elective repeat cesarean	
	% morbidity	% morbidity	p
<60%	3.1	1.5	<.001
60-69%	2.0	0.83	.01
70-79%	1.7	1.9	.76
80-89%	1.1	0.75	.62
>/=90%	0.65	1.1	.37

Morbidity = fever, transfusion, wound infection, hysterectomy, or operative injury (rupture only if any of above occurred)

Grobman WA, et al AJOG 2009;200:56.e1-56.e6.

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Probability of neonatal morbidity stratified by probability of VBAC and delivery intent

	Trial of labor	Elective repeat cesarean	
	% morbidity	% morbidity	p
<60%	13.6	8.6	<.001
60-69%	8.8	8.4	.78
70-79%	8.7	7.9	.51
80-89%	7.7	8.2	.71
>/=90%	4.7	10.9	.001

Neonatal morbidity = Apgar < 4 at 5 min, umbilical artery pH , 7.0, admission to NICU, HIE, or death

Grobman WA, et al AJOG 2009;200:56.e1-56.e6.

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### Probability of TOLAC Success Calculator

<http://www.bsc.gwu.edu/mfmu/vagbirth.html>  
variables include age, BMI, ethnicity, prior vaginal delivery, prior VBAC, and potential recurrent indication for cesarean section

<http://www.bsc.gwu.edu/mfmu/vagbrth2.html>  
variables include age, BMI, ethnicity, prior vaginal delivery, prior VBAC, indication for prior C/S, EGA, HTN disorder, cervical exam, and labor induction

Grobman WA, Lai Y, Landon MB, Spong CY, Leveno KJ, Rouse DJ, Varner MW, Moawad AH, Caritis SN, Harper M, Wapner RJ, Sorokin Y, Miodovnik M, Carpenter M, O'Sullivan MJ, Sibai BM, Langer O, Thorp JM, Ramin SM, Mercer BM: National Institute of Child Health and Human Development (NICHD) Maternal-Fetal Medicine Units Network (MFMU). "Development of a nomogram for prediction of vaginal birth after cesarean delivery." *Obstetrics and Gynecology*, volume 109, pages 806-12, 2007.

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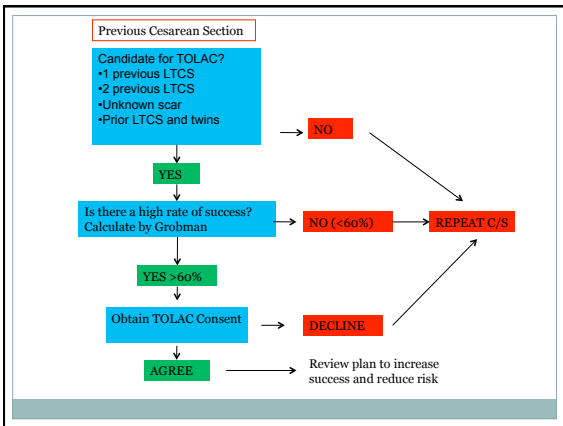
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### Key Points

- Strict adherence to contraindications to VBAC attempt
- Proper counseling on both short- and long-term risk and benefits
- Providing an safe environment to conduct a trial of labor
- Selection of patients with a high success rate

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