

New England Obstetrical and Gynecological Society

Sturbridge, MA

Promoting Vaginal Birth

October 18, 2023

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Objectives

- Review the risks associated with unnecessary cesarean births
- Review the "optimal rate" of NTSV cesarean births
- Review the history of Promoting Vaginal Birth (PVB) work in the US
- Describe Dartmouth Hitchcock's PVB project including outcomes

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Figure 1: Estimated frequency of and trends in caesarean section use, as a proportion of livebirths between 2000 and 2015

(A) Global data and (B) regional data.

Boerma T, Ronsmans C, Melesse DY, Barros AJD, Barros FC, Juan L, et al. Global epidemiology of use of and disparities in caesarean sections. Lancet 2018;392:1341–8. doi: 10.1016/s0140-6736(18)31928-7



- Total

•• 🕒 •• Target: **23.6**

Cesarean births among low-risk women with no prior births, 2018-2021



Office of Disease Prevention and Health Promotion. Healthy People 2030. Maternal, infant, and child health. Accessed October 2 2023. Reduce cesarean births among low-risk women with no prior births — MICH-06 - Healthy People 2030 | health.gov

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Why Promote Vaginal Birth?

Cesarean delivery is associated with increased maternal and neonatal morbidity

- PPH, blood transfusion
- Bowel/bladder injury
- Surgical site infection/wound complications
- Urinary tract infections
- VTE
- Hysterectomy
- Risk to future pregnancies including repeat cesarean and placenta accreta spectrum
- Death

- Lower rates of breastfeeding
- Greater likelihood of hospital readmission
- Higher rates of respiratory morbidity for baby including need for ventilation and NICU admissions
- Impact on neonatal microbiome and increased rates of asthma, allergic rhinitis, celiac, Type 1 DM and gastroenteritis

Liu S, Liston RM, Joseph KS, Heaman M, Sauve R, Kramer MS. Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal delivery at term. CMAJ 2007;176:455–60. doi: 10.1503/cmaj.060870 Quiroz LH, Chang H, Blomquist JL, Okoh YK, Handa VL. Scheduled cesarean delivery: maternal and neonatal risks in primiparous women in a community hospital setting. Am J Perinatol 2009;26:271–7. doi: 10.1055/s-0028-1103155 Josef Neu, MDa,b,a,b and Jona Rushing, MDc,c. Cesarean versus Vaginal Delivery: Long term infant outcomes and the Hygiene Hypothesis. Clin Perinatol. 2011 Jun; 38(2): 321–331.



FIGURE 2

Relationship between of hospital CD rates and SMM and unexpected newborn complication rates



Cross sectional study from 2016

831,111 deliveries from 621 hospitals

Mean cesarean rate 30.5%

Every % increase in a hospitals cesarean rate was associated with a 3.3% increase in severe maternal morbidity

No association between cesarean delivery rates and unexpected newborn complications once adjusted

UNC: joint commission perinatal care performance measure-> cohort is term and nonanomalous, weight >2500g and no preexisting conditions (genetic abnormalities/maternal drug exposure)



Moderate Newborn Complications

Relationship between of hospital CD rates and (A) SMM and (B) unexpected newborn complication rates. The unadjusted rates are shown in comparison with the overall CD rates. Because there were over 600 hospitals included in the analysis, counties were grouped by their CD rate (to the nearest 0.5 percentage point) for graphical representation. The marker sizes are reflective of relative delivery volumes.

CD, cesarean delivery; SMM, severe maternal morbidity.

Clapp. Cesarean delivery rates and maternal and neonatal complications. Am J Obstet Gynecol MFM 2021.

Clapp MA, James KE, Little SE, Robinson JN, Kaimal AJ. Association between hospital-level cesarean delivery rates and severe maternal morbidity and unexpected newborn complications. Am J Obstet Gynecol MFM 2021;3:100474. doi: 10.1016/j.ajogmf.2021.100474



Why Promote Vaginal Birth?

Increasing rates of cesarean NOT associated with improved neonatal morbidity or mortality

 No change in cerebral palsy rates over the last 3 decades despite a 5 fold increase in the rate of cesarean birth

> Continuous External Fetal monitoring introduced



Download : Download full-size image

Figure. Cerebral palsy prevalence (*black bars*) in developed countries and the United States. *Dark gray bars*, Cesarean section rate. (Based on pooled data from Sweden, Australia, Canada, Scotland, Denmark, England, United States, Norway, and Ireland.6, 7, 8, 9, 11, 12, 13, 14, 16, 17, 25, 27, 32, 37, 51)



Data



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Reproductive Health

Reproductive Health

Data and Statistics

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Features

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ΆλΙΜ

Healthy People 2030 Alliance for Innovation on Maternal Health (AIM) State wide Perinatal Quality Collaboratives (PQC's)



Home » Objectives and Data » Browse Objectives » Pregnancy and Childbirth » Reduce cesarean births among low-risk women with no prior births — MICH-06

Reduce cesarean births among low-risk women with no prior bi MICH-06



Data Source: National Vital Statistics System - Natality (NVSS-N), CDC/NCHS

About Perinatal Quality Collaboratives Perinatal Quality Collaboratives (PQCs) are state or

Print

multistate networks of teams working to improve the quality of care for mothers and babies. PQC members identify health care processes that need to be improved and use the best available methods to make changes as quickly as possible.

Perinatal Quality Collaboratives

PQCs have contributed to important improvements in health care and outcomes for mothers and babies, including:



Perinatal Quality Collaboratives: Working Together to Improve Maternal Outcomes

ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

A quality improvement initiative to support best practices that make birth safer, improve maternal health outcomes and save lives.



SAFE REDUCTION OF PRIMARY CESAREAN BIRTH

How do we measure performance?

- Use of nulliparous, term, singleton, vertex (NTSV) cesarean delivery rate
 - Excluded population: multiple gestation (including demise of one twin), placenta previa, fetal demise, malpresentation includes face/brow
 - Trying to define a "Low Risk" population
- Balancing measures from The Joint Commission Perinatal Care performance measures
 - PC06- Unexpected Complications in Term Newborns
 - Term and non-anomalous, weight >2500g and no preexisting conditions (genetic abnormalities/maternal drug exposure)
 - PC-07 Severe Obstetric Complications (new risk-adjusted measure)

Dartmouth
Health

How many is too many? Not the right question. How do we reduce overall morbidity?

These are TOTAL Cesarean Births not NTSV

	Table 1. Summ	Table 1. Summary of International Population-Level Studies Evaluating Optimal			
	Study	Population, Year(s)	Outcome	Optimal Rate	
Healthy People 2030	Molina et al ²²	194 WHO countries, 2012	Maternal mortality ratio, neonatal mortality rate	19%	
NTSV goal 23.6%	Ye et al ²³	19 "high-income" countries, 1980–2010	Maternal, neonatal, and infant mortality rates	10–15%	
	Xie et al ²⁴	31 "high-income" countries, 2010	Infant mortality rate	None identified; higher cesarean delivery rate associated with higher infant mortality	
	Althabe et al ²⁵	119 medium-income or high- income countries, 1991–2003	Maternal and neonatal mortality rates	None identified; no association with cesarean delivery rate	
	Betran ⁸²	Systematic review including 8 ecological studies, 2000–2014	Maternal, neonatal, and infant mortality rates	9–16%	

WHO, World Health Organization.

Office of Disease Prevention and Health Promotion. Healthy People 2030. Maternal, infant, and child health. Accessed October 2 2023. Reduce cesarean births among low-risk women with no prior births — MICH-06 - Healthy People 2030 | health.gov

Bruno AM, Metz TD, Grobman WA, Silver RM. Defining a Cesarean Delivery Rate for Optimizing Maternal and Neonatal Outcomes. Obstet Gynecol. 2022 Sep 1;140(3):399-407. doi: 10.1097/AOG.0000000000004876. Epub 2022 Aug 3. PMID: 35930389.



2009 data from 593 US hospitals nationwide, cesarean rates varied tenfold across hospitals, from 7.1 percent to 69.9 percent.

Even for women with lower-risk pregnancies, in which more limited variation might be expected, cesarean rates varied fifteen-fold, from 2.4 percent to 36.5 percent

HOSPITAL CULTURE IS THE VARIABLE

HOW DO WE CHANGE CULTURE??





LOW RISK BIRTHS= NTSV



EXHIBIT 2.

Caption: Distribution Of Hospital Cesarean Rates In US Hospitals Among Lower-Risk Pregnancies, 2009

Source/Notes: SOURCE Authors' calculations based on data from the 2009 Nationwide Inpatient Sample of the Healthcare Cost and Utilization Project (HCUP). NOTES Distribution of lower-risk cesarean delivery rates in a representative sample of US hospitals with at least 100 births in 2009 (N= 593). "Lower-risk cesarean" is calculated as the percentage of cesareans among women with term, singleton, and vertex pregnancies with no prior cesarean deliveries. Hospital lower-risk cesarean rates ranged from 2.4 percent to 36.4 percent-a fifteenfold variation across hospitals.

EXHIBIT 1.

Caption: Distribution Of Hospital Cesarean Rates In The United States, 2009 **Source/Notes:** SOURCE Authors' calculations based on data from the 2009 Nationwide Inpatient Sample of the Healthcare Cost and Utilization Project (HCUP). NOTES Distribution of cesarean delivery rates in a representative sample of US hospitals with at least 100 births in 2009 (*N*= 593). Hospital cesarean rates ranged from 7.1 percent to 69.9 percent--a tenfold variation across hospitals.





Cesarean Birth in California (2014)

CMQCC

Image source: CMQCC Toolkit to Support Vaginal Birth and Reduce Primary Cesareans



Toolkit to Support Vaginal Birth and Reduce Primary Cesareans – Published in 2016



Toolkit to Support Vaginal Birth and Reduce Primary Cesareans

- Key Strategies for Improving the Culture of Care, Awareness, & Education for Cesarean Reduction *(Readiness)*
- II. Key Strategies for Supporting Intended Vaginal Birth *(Recognition & Prevention)*
- III. Key Strategies to Manage Labor Abnormalities & Safely Reduce Cesarean Births (*Response*)
- IV. Key Strategies for Using Data to Drive Reduction in Cesareans (*Reporting*)



Statewide Hospital Collaborative to Support Vaginal Birth





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BIRTH EQUITY

CARDIOVASCULAR DISEASE

EARLY ELECTIVE DELIVERIES

HYPERTENSIVE DISORDERS OF PREGNANCY

-238 hospitals -statewide rate of severe unexpected newborn complications decreased from 2.1% to 1.5% between January 2015 and June 2019. Original Investigation

April 27, 2021

FOR FAMILIES CI

Quality Care Collaborative

Hospital Quality Improvement Interventions, Statewide Policy Initiatives, and Rates of Cesarean Delivery for Nulliparous, Term, Singleton, Vertex Births in California

Melissa G. Rosenstein, MD, MAS^{1,2}; Shen-Chih Chang, MS, PhD^{1,3}; Christa Sakowski, MSN¹; et al

» Author Affiliations

JAMA. 2021;325(16):1631-1639. doi:10.1001/jama.2021.3816

 Findings In this observational study of 7 574 889 NTSV births that compared the rates of cesarean delivery between 2014 and 2019, the rates in California had a statistically significant decrease from 26.0% to 22.8% (relative risk, 0.88). The cesarean delivery rate for NTSV births in the US (excluding California) was 26.0% in both 2014 and 2019.



Landscape of Cesarean Birth in California

(compared to United States, pre- and post- collaborative)



Source of US Data: National Vital Statistics System – Natality (NVSS-N), CDC/NCHS Source of CA Data: CMQCC Maternal Data Center based on linked patient discharge and birth certificate data

Image source: CMQCC Toolkit to Support Vaginal Birth and Reduce Primary Cesareans



What is happening at your institution?







Reporting Period for 2023 Surveys - CY2022

Inclusions: nulliparous, term singleton, vertex

Exclusions: placenta previa, fetal demise

Dartmouth-Hitchcock Medical Center

1 Medical Center Drive Lebanon, New Hampshire 03756-0001 Survey Submission Date: June 30, 2023 Facility info, location, and more

Show all

Meacure name	Loopfrog's Standard	Hospital's Progress
weasure name		Hospital S Progress
High-Risk Deliveries	Hospitals should deliver at least 50 very-low birth weight babies per year OR the hospital must maintain a lower-than-average morbidity/mortality rate for very-low birth weight babies.	
Cesarean Sections	This is defined as first-time mothers giving birth to a single baby, at full-term, in the head-down position who deliver their babies through a C-section. Hospitals should have a rate of C-sections of 23.6% or less.	
	SHOW LESS	
	This hospital's rate of Cesarean sections is 27.3%	
Early Elective Deliveries	This is defined as mothers being scheduled for cesarean sections or medication inductions prior to 39 weeks gestation without a medical reason. Hospitals should have a rate of early elective deliveries of 5% or less.	ACHIEVED THE STANDARD
	▼ SHOW MORE ON THIS HOSPITAL'S PERFOR	MANCE 🔻
Episiotomies	This is defined as mothers having an incision made in the perineum (the birth canal) during childbirth. Hospitals should have a rate of episiotomies of 5% or less	

ACHIEVED THE STANDARD



Variation Across New England -

State • AMC •

• 74 hospitals

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- Connecticut: 19
- Massachusetts: 33
- Maine: 11
- New Hampshire: 5
- Rhode Island: 5

Range: 16.7% to 44.1%

• Vermont: 1











Hospitals with volume >2000 deliveries per year Range 19.5% – 34.7%







Average Hospital NTSV (not by patient volume) reporting to Leapfrog

VT: only one hospital reported



Safety Story

"[The patient] is very despondent after the cervical check. She was really hoping that she was going to have some change in the cervix, and is able to express a lot of anger towards the process of her labor induction. She feels that she was given mixed messages from the staff, the induction started and stopped twice, she hasn't slept and is exhausted. She would like to think about her options for moving forward and is asking about a primary elective cesarean"



		Define the business problem, identify key stakeholders, and capture customer feedback
	X MEASURE	Measure the current state of the process through data collection and process-mapping
Act Do Study	X ANALYZE	Analyze the problem to determine root causes
	X JMPROVE	Improve the process by testing solutions aimed at eliminating the root causes
		Control the process to sustain the gains and practice continuous improvement



Charter – Promoting Vaginal Birth

	Problem Statement	Projec	et Scope	Reso	urce Plan
Define	Vaginal delivery is the safest mode of delivery for most birthing people and	In Scope: Births at Birthing Pavilion at DHMC, term, singleton and vertex		Project Lead(s):	Ella Damiano Emily Donelan
	newborns, compared to cesarean birth. The goal is to build a culture that supports vaginal delivery. The decision for cesarean	Scope Exclusions: S cesarean deliveries	Scheduled repeat	Project Sponsor(s):	llana Cass
	birth is complex and involves a multidisciplinary team including obstetrics,	Goal	Metric	Team	Members
	anesthesia, midwifery, and nursing across multiple settings, including prenatal care and intrapartum. For 2021 and 2022, our NTSV	Provider and RN specific NTSV rates	Yes/No on dashboard	Emily Brayton Petrice DiDominic	Emily Bearse Emma Hyde
	HealthyPeople 2023 goal is 23.6%. Our goal is to decrease the rate of cesarean birth for low-risk patients without increasing morbidity to the pregnant person or newborn.	Intermittent auscultation use	Percent of NTSV patients	Kate Stokes Caroline Stroup Nora Workman Heather Bonneau Ellen Joyce	Allie Morgan Emily Osborne Jessica Densmore Karen Schabot Kelsey Murray Jenn Martin Jennie Marchant Amy Lee Colleen Whatley Anna Childs Join us!
		Standardized patient education	Rate of use		
	Business Case	Appropriate indication for cesarean is present	Documented using ACOG/SMFM criteria (goal of 100%)	Chelsea Whitney	
	Vaginal birth is a safest mode of delivery for most pregnancies and is less expensive to the healthcare system compared to cesarean birth. Benefits to the birthing person include improving patient experience,			Holly Old Kristen Murphy Elizabeth Kinsley	
		Operative vaginal delivery rate	Track percentages	Kristen Murphy Kathy Wohlfort	
	decreased length of stay, increased success	Unexpected	Track total number,	Mile	estones
	avoidance of surgical risks, and decreased surgical risk for future pregnancies or	complications to term newborns	days between	February 2023	Charter / Define
	gynecologic procedures. For the healthcare	NTSV and TSV rates	Tracking on	June 2023	Measure / Analyze
	allow additional acute transfers and focus resources on other high-risk patients.		uasnboard	July 2023	Improve
		Postpartum bemorrhage	Percentage of NTSV with OBL >1000ml	December 2023	Control



Project Launch

- Grand Rounds in December 2022
- Chartered workgroup in January 2023
- Nursing Staff Meetings in February 2023



- What is your role on the Birthing Pavilion?
- Years of experience / Shifts per month
- What do you think our unit is doing well for promoting vaginal birth?
- What do you think DHMC should do less of in order to promote vaginal birth?
- What do you wish DHMC did better or more of to support vaginal birth?







Affinity Diagram – Answers to what we are already "doing well"

Labor support	Fetal monitoring	Movement in labor	Care team	Evidence-Based Medicine	Culture
Quality: 1:1 RN to patient support in active labor,RN: regular dietsRN: allowing po intake in laborRN: 1:1 patient ratio for RNs with laboring patients.RN: therapeutic birthing space for patientsRN: therapeutic birthing space for patientsAttending: many employees try to offer pts low intervention deliveryAttending: judicious use of operative vaginal deliveryRN: we are patientRN: we are patientSW: Having low intervention options available, like the birthing tub, birthing ball, etc	Quality: access to IA Attending: intermittent monitoring RN: generally we are Intermittent Auscultation auscultation RN: Following Clark's algorithm RN: IA use RN: IA use RN: Intermittent auscultation when appropriate RN: IA use RN: IA use IRN: IA use Auscultation when appropriate RN: IA use	Quality: positional devices, movement in laborAttending: Labor support with position changes, Jacuzzi tub, etc.Attending: water therapy, upright positioning Delemetry positioningDelemetry positioningRelemetry movementRN: promoting movementRN: Multiple options to promote movement and pain management.RN: I also really like our use of peanut balls when they have an epidural and are resting in bed.RN: Birth ball and peanut ball use Encouraging movementRN: Position changes with peanut ball (spinning babies)	Attending: CNM - MD - RN collaboration Attending: Has midwifery as a model Attending: Having Centering available Midwife Care RN: Having CNM team RN: having CNM's take healthy labor patients/provide the midwife model of care to uncomplicated patients. CNM: Centering Lactation: prenatal education discussing vaginal birth CNM: education RN: getting spinning babies courses Resident: For the most part adhering to ACOG guidelines for allowing enough time in the active phase for progress to occur	Attending: Frequent review of literature, evidence-based practice Resident: Resident: Lots of education on the topic Attending: journal clubs, updating guidelines Attending: Encouraging patients to consider TOLAC if appropriate Spinning Babies Journal Clubs taking too long. Midwife: Midwife: giving inductions of labor ample time to get into active labor. I've worked at other institutions that you are basically guaranteed a c-section on day 3 regardless of your labor (or lack of labor) course.	Attending: i think at our core, all of us want vaginal birth for our pts (culture is pro vaginal delivery) Attending: Motivated to work on this RN: taking pts who can't go to other places d/t TOLAC or BMI RN: The majority of the time we do a good job at starting with cervical ripening and giving those meds a chance to work before immediately jumping to pitocin. RN: Unit culture Resident: Resident: Always start with optimism for vaginal birth. RN: When the MD-RN or CNM-RN team communicate respectfully and listen to each other's perspectives this helps ensure that the patient's wishes and the medical advice are both part of the decision-making process. Unknown: Not enough





Culture	Inductions	Pain Management	Intervention
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Team Culture / Training	Birth Preparation	Services Offered	Labor Management
Quality: team-based care supporting physiologic birth and easy timely access to relevant data Rt la Spinning Babies RN: send all staff to spinning	Attending: Have more patients go to WHRC labor floor classes institute a work flow to get them signed up so it is almost an 'opt out' process Attending: promoting more prenatal education about weight Childbirth	Attending: better counseling re: TOLAC and ECV RN: Allow pts to receive Miso, stay on the monitor for 4 hours and then go home and return the next day. Resident: Option for water births	Resident: I think we should be MORE aggressive with inductions (early AROM, increase pit more aggresively). Prolonged inductions Actively manage inductions
babies Resident: Both formal and on the fly education for all staff on evidence based inductions.	At Education of and support people, having a doula service RN - MORE PRENATAL EDUCTION ABOUT LABOR/HOW	Movement in Labor RN: More promotion of movement in active labor and during second stage. RN: Limited ability to do EFM with	Attending: requires a culture change; vaginal birth often requires inaction/sitting on hands/trusting the process. there is a culture in medicine where we are rewarded for action (c-
RN: Encourage pts to consider a doula	TO PREAPRE FOR LABOR (even pt's desire is to ultimately get an epidural, there should be more teaching about how to cope with labor pre epidural, how to move, how to move with epidural, how you can push) Resident: Preparing patients for long inductions and expectation	actively moving pts d/t our current tele monitore limited birthing bolls W Position F changes in p labor pusming unit priceers arge to bear down	Patience with spontaneous labor RN: not just encourage pitthink of the 5 Ps, not just "power."
families who want more support. Doula support is proven to help with positive birth outcomes. Midwife: We should develop a doula training program at DH that doulas in-training are offered on admission to every patient for free. (they have this program in Burlington VT)	setting Fetal Monitoring RN: More intermittent auscultation Attending: better eval of fetal position in late part of 1st stage of labor.	Unknown: See above. Stop massage perineums just before babies are crowing and teach all providers to encourage women to follow their voices and pant while crowning to decrease our mad tear rates.	RN: Patience with ripening - instead of moving to pitocin with a bishop score of 5, we should be waiting for 6 with multips, 8 with primips. RN: Overall, I think we do a really great job at supporting our patients to have a vaginal birth. I think the biggest thing is keeping our patients as rested as possible.

Dartmouth Measure / Analyze

Methodology for data analysis

- Review NTSV cases per The Joint Commission definition
- All manual chart review
- ACOG / SMFM criteria for cesarean delivery
- Challenges with automating data analysis:
 - Missing fields
 - Incorrect indications for surgery



Historical DHMC NTSV Data

Year	Percentage
2020	27.3%
2021	27.5%
2022	27.3%
	×

- Dartmouth Hitchcock Medical Center
 - Rural academic medical center
 - Tertiary care center
 - Approx. 1200-1300 deliveries per year

Project start after December 2022



All Team NTSV by Quarter

Jan 2020 - Dec 2022

Mean 27.1%





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Fig. 3. Indications for primary cesarean delivery. (Data from Barber EL, Lundsberg LS, Belanger K, Pettker CM, Funai EF, Illuzzi JL. Indications contributing to the increasing cesarean delivery rate. Obstet Gynecol 2011;118:29–38.) 🗢







ACOG / SMFM Criteria for Cesarean Delivery in Labor

Criteria for Failed Induction/Augmentation in Latent Labor

- All three must be met:
- Cervix < 6m dilation (latent labor)
- Membranes ruptured

Dartmouth Health

• Oxytocin administered a <u>minimum</u> of 12 hours (up to 24 hours) after membrane rupture without achieving active labor

Criteria for Arrest of Dilation in Active Labor

All three must be met:

- \circ Cervix \geq 6cm dilation (active labor)
- o Membranes ruptured
- No cervical change after:
 - At least 4 hours of adequate uterine activity defined as MVU ≥ 200 with an IUPC in place
 - o At least 6 hours of oxytocin administration with inadequate uterine activity

Criteria for Arrest of Descent

- At least 4 hours of pushing in nulliparous patient with epidural
- At least 3 hours of pushing in nulliparous patient without epidural
- At least 3 hours of pushing in multiparous patient with epidural
- o At least 2 hours of pushing in multiparous patient without epidural
- o Failed trial of operative vaginal delivery

Criteria for Indeterminate Fetal Status

- Category III FHR
- Category II FHR remote from delivery that is not responsive to resuscitation efforts such as: maternal repositioning, fluid administration, maternal blood pressure support if hypotensive, scalp stimulation, correction of uterine tachysystole, amnioinfusion if repetitive variable decelerations *provider discretion regarding which category II tracings require delivery vs observation

American College of Obstetrics and Gynecology, Society for Maternal-Fetal Medicine. Obstetric care consensus no. 1: safe prevention of the primary cesarean delivery. Obstet Gynecol. 2014;123(3):693-711.











Improve

- Education to Providers and Nurses
 - Quarterly Grand Rounds and nursing staff meetings
 - Twice monthly PVB team meetings (open invitation)
- Adherence to SMFM / ACOG criteria for labor dystocia
 - EPIC dot phrase
- Induction of labor standardization
 - Dual Ripening



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	3	DECISIONFORCESAREAN	
Decision for Cesarean Delivery:		Description	Populate
I discussed with @NAME@ my recommendation that we proceed with cesarean section at this time. She meets sMFM/ACOG criteria for:		SMFM/ACOG criteria for cesarean delivery during labor.	
{Decision for cesarean:37788}			
We discussed the ricks of cost	= 200) or	6 hours of oxytocin administration with inadequate uterine	activity —
antibiotic prophylaxis. Surgical State induction or augmentation based on the fact that she is <6cm dilated (latent labor) with oxytocin administration for >= 12 hours after membrane rupture without achiev	ng active	labor	
Second stage arrest based on the fact that she has been pushing for: {2nd stage arrest criteria:37955}			
@ME@ Indeterminant fetal status based on: {Indeterminate fetal status:38245}			
O The patient does not currently meet criteria sMFM/ACOG criteria for *** however my clinical judgement deems this cesarean delivery indicated given the presence of ***			
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Decision for Cesarean Delivery:	Descripti	on Populate fr	om Text
Beelden for Geodelan Beirtery.	SMEM/A	ACOG criteria for cesarean delivery during labor	

I discussed with @NAME@ my recommendation that we proceed with cesarean section at this time. She meets sMFM/ACOG criteria for:

Second stage arrest based on the fact that she has been pushing for: {2nd stage arrest criteria:37955}

We discussed the ris antibiotic prophylaxi @ME@ Umatch remplater or matung reep smartching of the station. Although this does not technically meet criteria for arrest of descent, given the low likelihood of vaginal delivery it is my clinical opinion that the risk/morbidity associated with continued pushing outweighs any potential benefit.



Additional Considerations for Promoting Vaginal Birth: Induction of Labor Process and Outcomes





Step One: Analyze Current IOL Data

Induction of Labor Sample: June-December 2022

	All Patients (n=50)	Nulliparous (n=18)
Median time from first agent to delivery (hours)	29	40.5
Rate of Cesarean Section (%)	22%	39%

- Average time from start of induction to 6cm: 24 hours, (IQR 13-30)
- Average time from 6cm to delivery: 4 hours (IQR 2-6)





American Journal of Obstetrics & Gynecology MFM Volume 1, Issue 2, May 2019, Pages 101-111



Systematic Review

Maternal and neonatal outcomes with mechanical cervical dilation plus misoprostol compared to misoprostol alone for cervical ripening; a systematic review of literature and metaanalysis

<u>Dimitrios Nasioudis MD</u>^a ♀ ⊠, <u>Sun Woo Kim MD</u>^a, <u>Corina Schoen MD</u>^b, <u>Lisa D. Levine MD, MSCE</u>^a **Shorter time to vaginal delivery** (mean difference, -4.53 hours; 95% CI, -5.79, -3.27)

40% reduction in the incidence of meconium passage (RR, 0.62; 95% CI, 0.43–0.90)

30% Reduction in risk of NICU admission (RR, 0.71; 95% CI, 0.53–0.96)





American Journal of Obstetrics and



Available online 16 July 2023

Gynecology

In Press, Corrected Proof 🕜 What's this? 🤊

Systematic Review

Single-balloon catheter with concomitant vaginal misoprostol is the most effective strategy for labor induction: a meta-review with network meta-analysis

Luis Sanchez-Ramos MD^a A M, Lifeng Lin PhD^b, Gustavo Vilchez-Lagos MD^c, Jose Duncan MD^d, Niamh Condon DO^a, Jason Wheatley DO^a, Andrew M. Kaunitz MD^a



- Reduced odds of a prolonged induction compared to:
 - Slow-release PGE2 (ie Cervidil) (OR, 0.08; 95% CI, 0.01-0.61)
 - Low dose oral misoprostol (OR, 0.36; 95% CI, 0.13-0.96)
- Reduced odds of NICU admission compared to:
 - PV misoprostol (OR, 0.68; 95% CI, 0.52-0.88)
 - PGE2 slow release (OR, 0.65; 95% CI, 0.43–0.97)
- Reduced rate of cesarean delivery compared to:
 - Oxytocin alone (OR, 0.60; 95% CI, 0.44-0.83)
 - Single-balloon catheter (OR, 0.75; 95% CI, 0.57-0.96)

Sanchez-Ramos, Luis, et al. "Single-balloon catheter with concomitant vaginal misoprostol is the most effective strategy for labor induction: a meta-review with network meta-analysis." American Journal of Obstetrics and Gynecology (2023)



Quality Improvement Process

Policy Changes

Cervical Ripening balloon volume

Timing of Misoprostol doses

Staff Education

- Staff Meetings
- Grand Rounds
- Journal club
- Resident Didactics



Outcomes

- Process Measures
 - Compliance with SMFM / ACOG criteria
 - Duration of induction of labor
 - Dual Ripening Rate
- Outcomes Measure
 - NTSV Cesarean Rate
- Balancing Measures
 - TJC PC-06: Unexpected Complications to Term Newborns
 - TJC PC-07: Severe Obstetric Complications (future work)







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IOL Outcomes following Dual Ripening Policy Changes and Education

	June-Dec 2022 (n=127)	March-August 2023 (n=197)	P-Value
Median Length of Induction in hours (Q1-Q3)	27 (17-38)	19 (11-26)	<0.00001
Dual ripening (%)	20.5%	52.8%	<0.00001
Rate of CS (%)	23.8%	17.4%	0.05
Rate of CS for patients with initial SVE <3cm (%)	26.7%	22.1%	0.2



Outcomes for Nulliparous Patients

	June-Dec 2022 (n=54)	March-August 2023 (n=94)	P-Value
Median Length of Induction in hours (Q1-Q3)	35 (25-46)	24 (17-31)	0.0001
Rate of CS (%)	35.2%	26.6%	0.18
Rate of CS for patients with initial SVE <3cm (%)	40.9%	30.1%	0.11



Health Balancing Measures – Unexpected Complications to Term Newborns

PC-06: Unexpected Complications in Term Newborns, Overall Rate Lower rate is better – Data – UCL – Mean – LCL 10% 8% 6% 4% 2% 0% May-22 Sep-22 Mar-23 Jul-23 Sep-23 Nov-23 Jan-22 Mar-22 Jul-22 Nov-22 Jan-23 May-23 Jan-21 Mar-21 May-21 Jul-21 Sep-21 Nov-21

PC-06: Unexpected Complications in Term Newborns, Severe Rate

Lower rate is better





Additional Balancing Measures





Future Directions

- Doula program
- Category 2 management
- Operative vaginal delivery and reverse breech extraction workshops
- NTSV nursing-specific data



Discussion and Questions