South Carolina Birth Outcomes Initiative

presents:

An ounce of prevention is worth a pound of cure: Antepartum strategies to prevent primary Cesarean delivery

September 23, 2014

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Healthy Connections MOMS & BABIES

South Carolina Hospital Association

continuing medical education and continuing nursing education accreditation and credit

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For any questions about continuing education, please contact Lisa Hobbs by email at hobbslb@dhec.sc.gov or by phone at 803-898-0811.

An ounce of prevention is worth a pound of cure: Antepartum strategies to prevent primary CD

SC Birth Outcomes Initiative
September 23, 2014

Ms. BZ Giese, BSN, RN
Director, SC Birth Outcomes Initiative
SCDHHS

DISCLAIMER

Disclaimer: The information in this webinar is for educational purposes only, and is not meant to substitute for medical or professional judgment. Medical information changes constantly. Therefore the information contained in this webinar or on the linked websites should not be considered current, complete or exhaustive.

This webinar is being recorded

OBJECTIVES

- Describe differences between medically indicated and elective induction and the changes in the revised labor curve, which allow for a longer latent phase of labor
- Utilize procedures to identify women with non-vertex fetal presentation at term and describe procedures of external cephalic version on appropriate candidates.
- Use BMI to tailor recommendations for weight gain in pregnancy and ultrasound estimates of fetal weight to support decisions about mode of delivery.
- Utilize hospital procedures that create the safest environment for laboring twins and evidence based recommendations for attempted vaginal delivery of breech second twin
- Identify which patient education materials are available to help patients understand the benefits of vaginal delivery and the importance of waiting for labor to begin.

AGENDA

I. **Induction of labor: who, when, why and how**
Christopher Robinson, MD, MSCR

II. **Fetal malpresentation**
Scott Sullivan, MD, MSCR

III **Fetal macrosomia and excessive maternal weight gain**
Sharon Keiser, MD, MS

IV. **Twin Gestation**
Stephen Vermillion, MD

V. **Patient Educaiton**
Vinita Leedom, MPH, CIC

VI. **Q & A**

VII. **Survey**

Healthy Connections

Induction of Labor: Who, When, Why, and How

Christopher Robinson, MD, MSCR
Associate Professor
Maternal Fetal Medicine
University of South Carolina School of Medicine

Learning Objectives

- Describe indications for induction, and differences between medically indicated and elective induction
- Describe the Bishop score, and ways it can be used to decrease rates of CD
- Understand how cervical ripening agents can be used to decrease rates of CD
- Understand the difference between latent and active labor, and describe the changes in the revised labor curve which allow for a longer latent phase

WHO: Indications for Induction

- Abruptio placentae
- Chorioamnionitis
- Fetal demise
- Gestational hypertension
- Preeclampsia, eclampsia
- Premature rupture of membranes
- Postterm pregnancy
- Maternal medical conditions (eg, diabetes mellitus, renal disease, chronic pulmonary disease, chronic hypertension, antiphospholipid syndrome)
- Fetal compromise (eg, severe fetal growth restriction, isoimmunization, oligohydramnios)

Obstet Gynecol 2009;114: 386–97.

Medical vs. Elective IOL

- Medically Indicated IOL: when circumstances are present where maternal or fetal conditions indicate the need for delivery in the absence of spontaneous labor
  - Timing Nomenclature:
    - Late-Preterm: 34 0/7 – 36 6/7 weeks gestation
    - Early-Term: 37 0/7 – 38 6/7 weeks gestation

- Elective IOL: induction in the absence of a maternal or fetal condition that indicated the need for delivery in the absence of spontaneous labor.

Table 1. Guidance Regarding Timing of Delivery When Conditions Complicate Pregnancy at or After 34 Weeks of Gestation

Condition	Gestational Age* at Delivery	Grade of Recommendation†
Placental and uterine issues		
Placenta previa‡	**36–37 wk**	B
Suspected placenta accreta, increta, or percreta with placenta previa‡	**34–35 wk**	B
Prior classical cesarean (upper segment uterine incision)‡	**36–37 wk**	B
Prior myomectomy necessitating cesarean delivery‡	37–38 wk (may require earlier delivery, similar to prior classical cesarean, in situations with more extensive or complicated myomectomy)	B
Fetal issues		
Fetal growth restriction-singleton	**38–39 wk:** • Otherwise uncomplicated, no concurrent findings	B
	34–37 wk: • Concurrent conditions (oligohydramnios, abnormal Doppler studies, maternal risk factors, co-morbidity)	B
	Expeditious delivery regardless of gestational age: • Persistent abnormal fetal surveillance suggesting imminent fetal jeopardy	
Fetal growth restriction-twin gestation	**36–37 wk:** • Dichorionic-diamniotic twins with isolated fetal growth restriction	B
	32–34 wk: • Monochorionic-diamniotic twins with isolated fetal growth restriction	B
	• Concurrent conditions (oligohydramnios, abnormal Doppler studies, maternal risk factors, co-morbidity)	B
	Expeditious delivery regardless of gestational age: • Persistent abnormal fetal surveillance suggesting imminent fetal jeopardy	

Fetal congenital malformations‡	**34–39 wk:** • Suspected worsening of fetal organ damage • Potential for fetal intracranial hemorrhage (eg, vein of Galen aneurysm, neonatal alloimmune thrombocytopenia) • When delivery prior to labor is preferred (eg, EXIT procedure) • Previous fetal intervention • Concurrent maternal disease (eg, preeclampsia, chronic hypertension) • Potential for adverse maternal effect from fetal condition	B
	Expeditious delivery regardless of gestational age: • When intervention is expected to be beneficial • Fetal complications develop (abnormal fetal surveillance, new-onset hydrops fetalis, progressive or new-onset organ injury) • Maternal complications develop (mirror syndrome)	B
Multiple gestations: dichorionic-diamniotic‡	**38 wk**	B
Multiple gestations: monochorionic-diamniotic‡	**34–37 wk**	B
Multiple gestations: dichorionic-diamniotic or monochorionic-diamniotic with single fetal death‡	If occurs at or after 34 wk, consider delivery (recommendation limited to pregnancies at or after 34 wk; if occurs before 34 wk, individualize based on concurrent maternal or fetal conditions)	B

Table 1. Guidance Regarding Timing of Delivery When Conditions Complicate Pregnancy at or After 34 Weeks of Gestation (*continued*)

Condition	Gestational Age* at Delivery	Grade of Recommendation†
Multiple gestations: monochorionic-monoamniotic‡	**32–34 wk**	B
Multiple gestations: Monochorionic-monoamniotic with single fetal death‡	Consider delivery; individualized according to gestational age and concurrent complications	B
Oligohydramnios—isolated and persistent‡	**36–37 wk**	B
Maternal issues		
Chronic hypertension—no medications‡	**38–39 wk**	B
Chronic hypertension—controlled on medication‡	**37–39 wk**	B
Chronic hypertension—difficult to control (requiring frequent medication adjustments) ‡	**36–37 wk**	B
Gestational hypertension§	**37–38 wk**	B
Preeclampsia—severe‡	At diagnosis (recommendation limited to pregnancies at or after 34 wk)	C
Preeclampsia—mild‡	**37 wk**	B
Diabetes—pregestational well controlled‡	LPTB or ETB not recommended	B
Diabetes—pregestational with vascular disease‡	**37–39 wk**	B
Diabetes—pregestational, poorly controlled‡	**34–39 wk** (individualized to situation)	B
Diabetes—gestational well controlled on diet‡	LPTB or ETB not recommended	B
Diabetes—gestational well controlled on medication‡	LPTB or ETB not recommended	B
Diabetes—gestational poorly controlled on medication‡	**34–39 wk** (individualized to situation)	B
Obstetric issues		
Prior stillbirth-unexplained‡	LPTB or ETB not recommended	B
	Consider amniocentesis for fetal pulmonary maturity if delivery planned at less than 39 wk	C
Spontaneous preterm birth: preterm premature rupture of membranes‡	**34 wk** (recommendation limited to pregnancies at or after 34 wk)	B
Spontaneous preterm birth: active preterm labor‡	Delivery if progressive labor or additional maternal or fetal indication	B

Evidence based care of yesterday is not the same as evidence based care today.

- Significant changes in obstetrical population over past decade
  - Delayed childbearing / Increased maternal age
  - Increased maternal weight / obesity
  - Rising incidence of multiple gestation
  - Increased “intervention”
  - Reduced acceptance of VBAC
  - Litigation exposure

Evolution of Evidence Based L&D

- Consortium on Safe Labor
  - 12 Centers in the United States representing 19 hospitals
  - Friedman Curve followed for over ½ century
  - U.S. population and demographics changed significantly over time.
  - No change in labor rules / guidelines

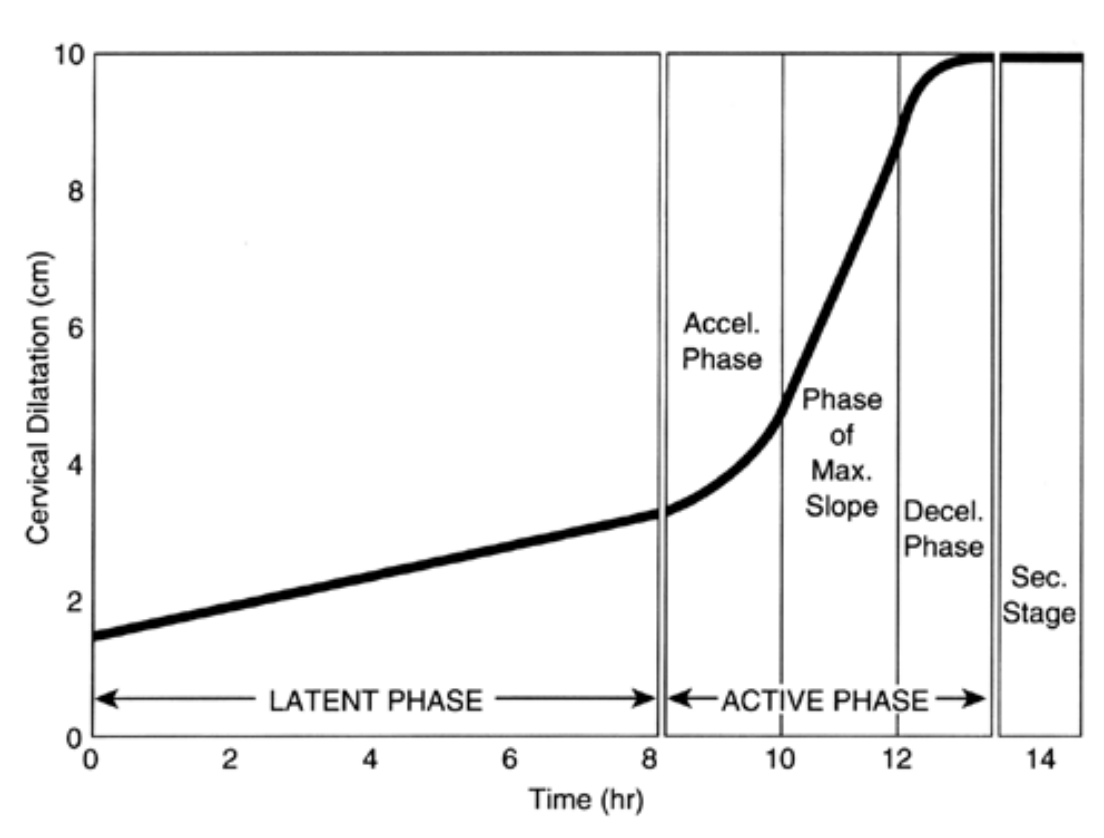
Consortium on Safe Labor

- Friedman curve may no longer be appropriate for contemporary labor practice.

- New, evidence-based definitions of labor protraction and arrest are needed. Goals:
  - Describe contemporary labor progression in the U.S. population; and
  - Determine when is the more appropriate time to perform a cesarean delivery in women with labor protraction and arrest.

Obstet Gynecol 2010; 116:1281-7.

Friedman Curve



Friedman E: Labor: Clinical Evaluation and Management, 2nd ed. New York, Appleton-Century-Crofts, 1978

Contemporary Patterns of Spontaneous Labor With Normal Neonatal Outcomes

Jun Zhang, PhD, MD, Helain J. Landy, MD, D. Ware Branch, MD, Ronald Burkman, MD, Shoshana Haberman, MD, PhD, Kimberly D. Gregory, MD, MPH, Christos G. Hatjis, MD, Mildred M. Ramirez, MD, Jennifer L. Bailit, MD, MPH, Victor H. Gonzalez-Quintero, MD, MPH, Judith U. Hibbard, MD, Matthew K. Hoffman, MD, MPH, Michelle Kominiarek, MD, Lee A. Learman, MD, PhD, Paul Van Veldhuisen, PhD, James Troendle, PhD, and Uma M. Reddy, MD, MPH, for the Consortium on Safe Labor

- Objective: To use contemporary labor data to examine labor patterns in a modern U.S. obstetric population

- Consortium on Safe Labor Centers
  - Multicenter (n=19), retrospective analysis
  - Examined:
    - Normal neonatal outcomes (n=62,415)
    - Vertex singletons w/ spontaneous labor onset
    - Achieved vaginal delivery

Obstet Gynecol 2010; 116:1281-7.

Contemporary Patterns of Spontaneous Labor With Normal Neonatal Outcomes

- Women were grouped by parity.
- Median time and 95% CI were calculated for each dilatory point (defining normal labor)
- Multipara labor curve started at 5 since most presented at this level of dilation.
- Median cervical dilation by parity:
  - 0 = 4 cm
  - 1 = 4.5 cm
  - 2 = 5 cm

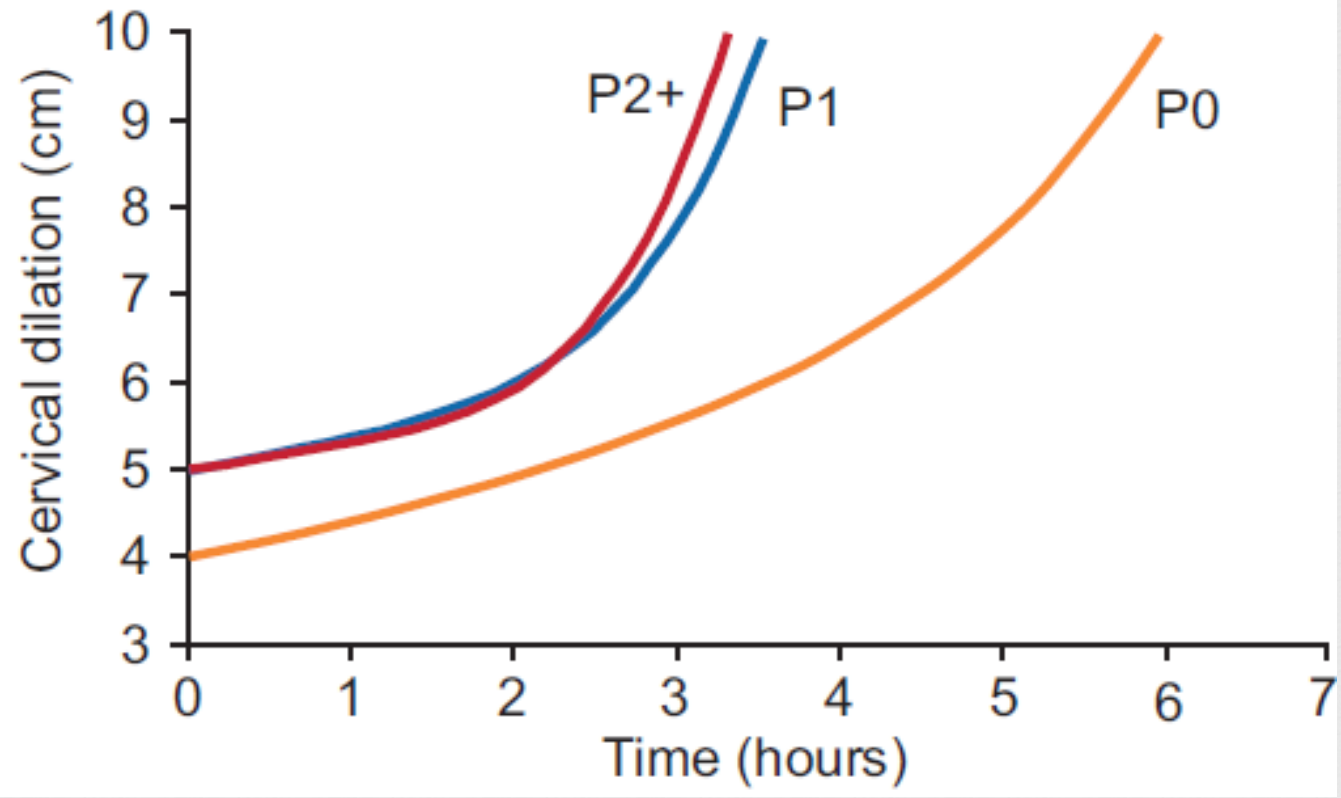
Obstet Gynecol 2010; 116:1281-7.

Contemporary Patterns of Spontaneous Labor With Normal Neonatal Outcomes

- Baseline trends in population studied:
  - Increasing parity → increased maternal age and BMI
  - Oxytocin augmentation was used in 50% of cases.
  - Epidural used in 80% of cases
  - Median number of exams (admit to 10 cm):
    - 5 for nulliparas
    - 4 for multiparas

Obstet Gynecol 2010; 116:1281-7.

Contemporary Patterns of Spontaneous Labor With Normal Neonatal Outcomes



Average labor curves by parity in singleton term pregnancies with spontaneous onset of labor and vaginal delivery

Obstet Gynecol 2010; 116:1281-7.

Duration of Labor in Hours by Parity

- Labor may take more than 6 hours to progress from 4 to 5 cm.
- Labor may take more than 3 hours to progress from 5 to 6 cm.

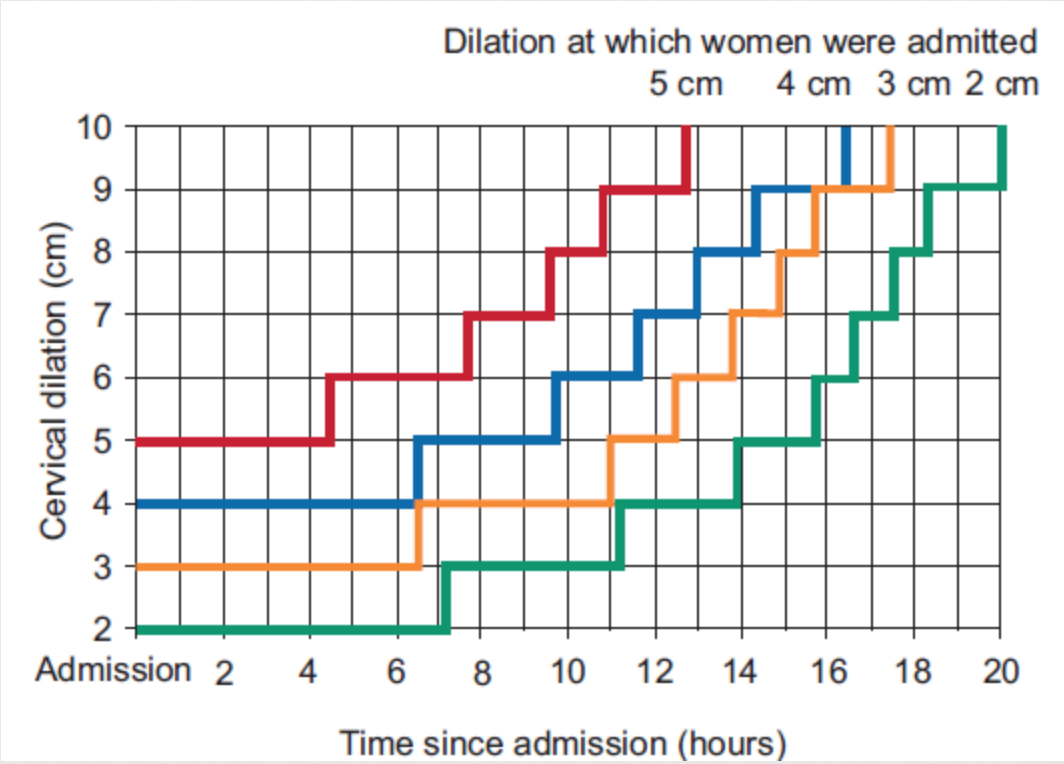
Cervical Dilation (cm)	Parity 0 (n=25,624)	Parity 1 (n=16,755)	Parity 2+ (n=16,219)
3–4	1.8 (8.1)	—	—
4–5	1.3 (6.4)	1.4 (7.3)	1.4 (7.0)
5–6	0.8 (3.2)	0.8 (3.4)	0.8 (3.4)
6–7	0.6 (2.2)	0.5 (1.9)	0.5 (1.8)
7–8	0.5 (1.6)	0.4 (1.3)	0.4 (1.2)
8–9	0.5 (1.4)	0.3 (1.0)	0.3 (0.9)
9–10	0.5 (1.8)	0.3 (0.9)	0.3 (0.8)
Second stage with epidural analgesia	1.1 (3.6)	0.4 (2.0)	0.3 (1.6)
Second stage without epidural analgesia	0.6 (2.8)	0.2 (1.3)	0.1 (1.1)

Data are median (95th percentile).

Obstet Gynecol 2010; 116:1281-7.

Duration of labor in nulliparas by cervical exam at admission – 95%iles

- Normal labor progress is defined by starting point given that labor is not a linear function from 4 cm.
- Any deviation to the right of the 95%ile line is labor arrest given normal uterine activity

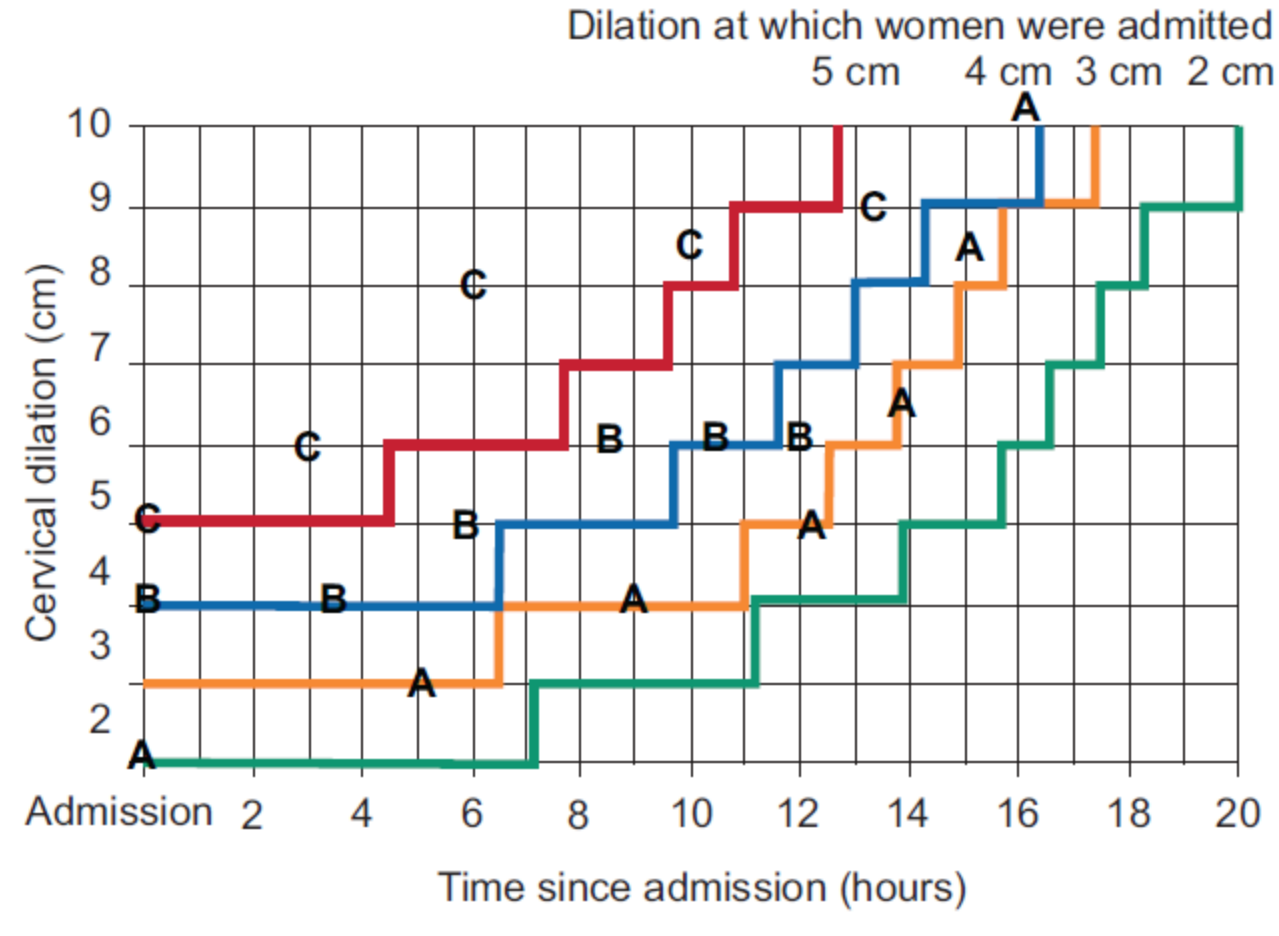


Obstet Gynecol 2010; 116:1281-7.

Labor progression example based on initial cervical exam at admission

Admission:
A – 2 cm
B – 4 cm
C – 5 cm

Labor:
A – normal
B – arrested 6 cm
C – arrested 9 cm



Obstet Gynecol 2010; 116:1281-7.

Implementing Best Practices
"The Safe Prevention of the First Cesarean"

- Slow but progressive labor in the first stage of labor should rarely be an indication for cesarean delivery

- Six centimeters defines the active phase in most laboring women.
  - Active phase standards not applicable prior to 6 cm
  - Implement new Labor Curve definition

How can we impact CD rate?

- 1 in 3 nulliparious women delivered by CD
  - Reduce IOL rate (2x fold CD risk over spontaneous labor)
  - Implement modified labor curve
- Approximately 1/3 multiparious women delivered by CD
  - Primary reason – prelabor CD secondary prior uterine scar
  - Low VBAC acceptance rate
- CD much more common among obese population
  - Dose effect pattern
  - Labors were not significantly different in this group
- Changes in management of IOL – Bishop Score – Cervical Ripening

Am J Obstet Gynecol 2010; 203:326e1-10

Assessment of Favorability: Bishop Screening System

Score	Dilation (cm)	Effacement (%)	Station*	Consistency	Position of Cervix
0	Closed	0-30	-3	Firm	Posterior
1	1-2	40-50	-2	Medium	Midposition
2	3-4	60-70	-1,0	Soft	Anterior
3	≥5	≥80	+1,2		

*station reflects a -3 to +3 scale

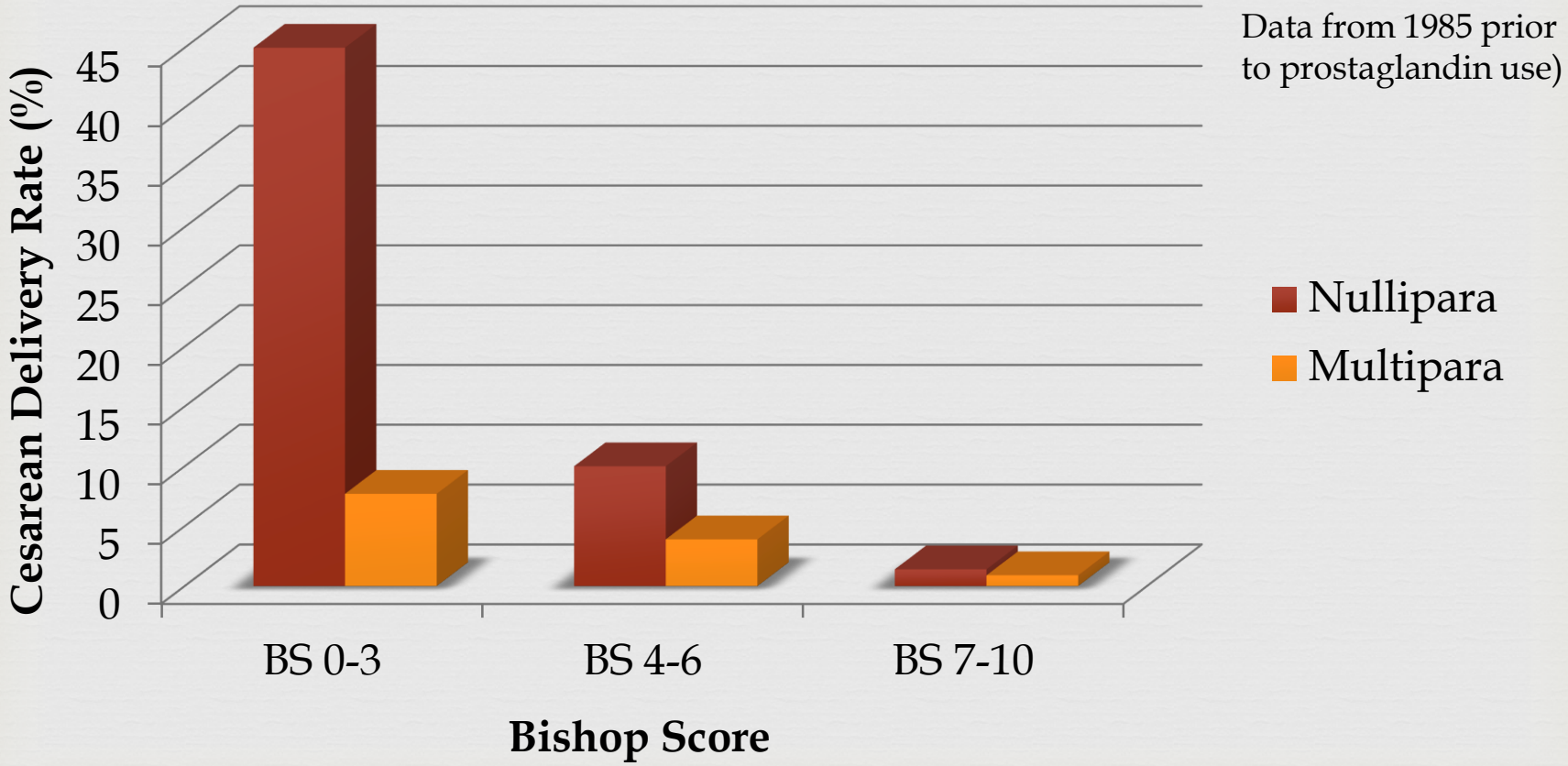
Bishop EH. (Obstet Gynecol, 1964)

Does the cervical exam favor IOL?

- Unfavorable – Bishop score of 6 or less (used in RCT)
  - Benefit from cervical ripening agent prior to IOL
- Favorable – Bishop score of 8 or greater
  - Probability of SVD after IOL is similar to spontaneous labor
  - Useful criterion for counseling and management of risk of elective IOL

Obstet Gynecol 2009;114: 386–97.

Cesarean Delivery Rate for Failed IOL by Bishop Score and Parity



Data from 1985 prior to prostaglandin use)

Aust N Z J Obstet Gynaecol 1985; 25:190

Methods of Cervical Ripening

- Nonpharmacologic
  - Stripping of membranes
  - Amniotomy
  - Mechanical dilator – Foley Bulb
- Pharmacologic methods
  - Prostaglandins
    - PGE2 – Cervidil (10mg released at 0.3 mg/hr)
    - PGE1 – Misoprostol/Cytotec 25µg q 4 hrs

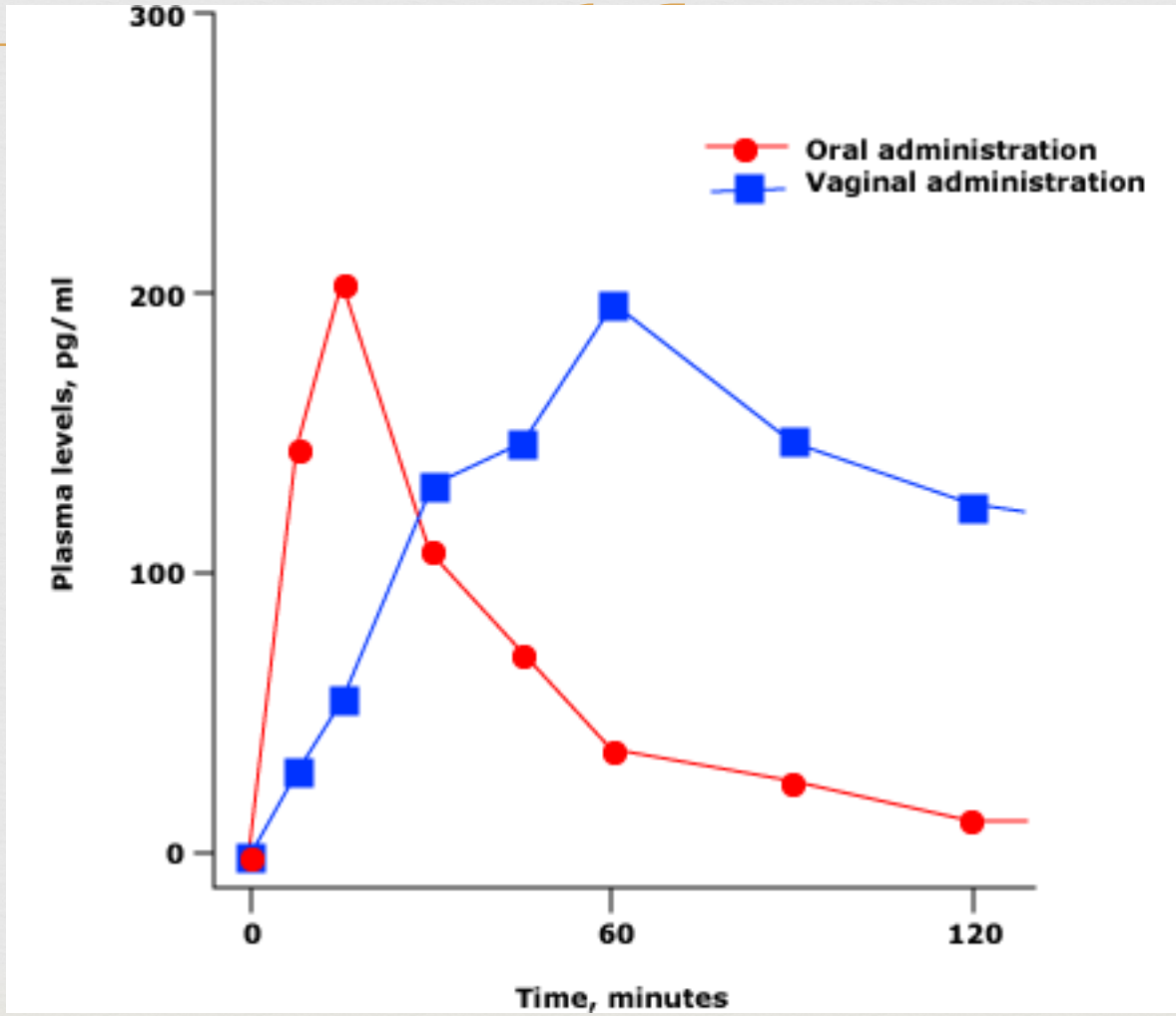
Misoprostol vs. Cervidil for Induction of Labor

	Misoprostol (25 µg q 4 hrs) n=99	Dinoprostone (0.3 mg/hr) n=101	p
Insertion to vag delivery	1296 min	1360 min	0.97
Vaginal delivery <12 hrs	20.2%	19.4%	0.96
Cesarean delivery	18.2%	20.4%	0.69
Tachysystole*	7.1%	18.4%	0.02
Hyperstimulation**	1.0%	4.1%	0.21

* six or more contractions in 10 minutes for two consecutive 10-minute periods.
** tachysystole or hypertonus associated with abnormal FHR pattern

Am J Obstet Gynecol. 1997;177(3):612

Misoprostol Levels: Oral vs. Vaginal Administration



Obstet Gynecol 2004; 103:866.

Clinical Decision: Cervical Ripening

1. Indication for Induction of Labor

YES

NO

STOP

Table 1. Bishop Scoring System

	Factor				
Score	Dilation (cm)	Position of Cervix	Effacement (%)	Station*	Cervical Consistency
0	Closed	Posterior	0–30	–3	Firm
1	1–2	Midposition	40–50	–2	Medium
2	3–4	Anterior	60–70	–1, 0	Soft
3	5–6	—	80	+1, +2	—

*Station reflects a –3 to +3 scale.

Modified from Bishop EH. Pelvic scoring for elective induction. Obstet Gynecol 1964;24:267.

2. Calculate Bishop Score

Bishop Score
6 or less

Bishop Score
7/8 or greater

3. Cervical Ripening Indicated

No Cervical Ripening Indicated

Pharmacologic: Cytotec (PGE1) / Cervidil
Mechanical: Foley bulb

Proceed with AROM / Oxytocin

SVD

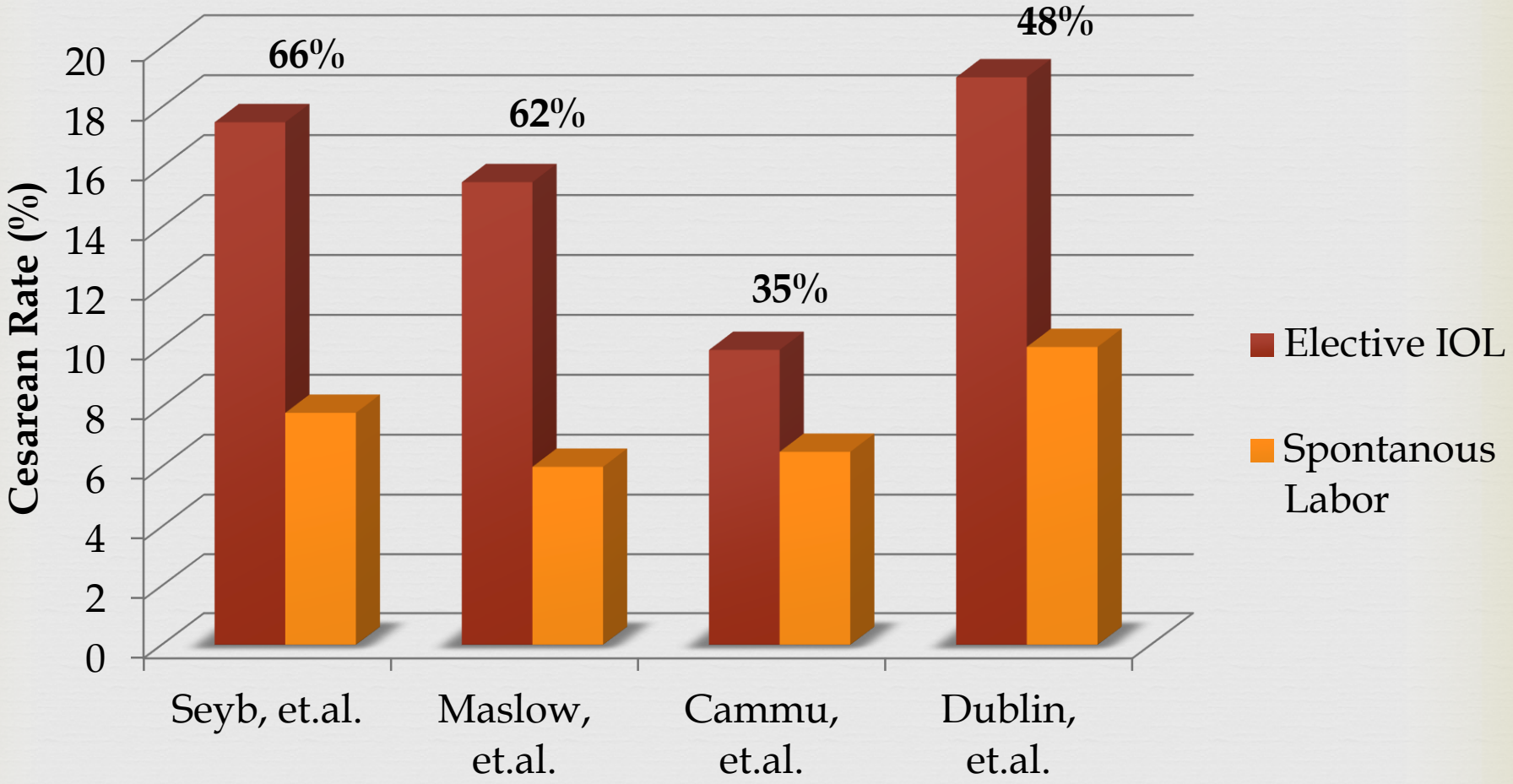
Bishop Score = 7/8 or greater

Supporting vaginal birth:

- Utilizing modern labor curves in labor management
- Assessing candidacy for IOL according to evidence
- Assessment of Bishop score for cervical readiness
- Cervical ripening instituted when indicated
- Focus on prevention of first cesarean

Proceed with caution . . .

Cesarean rate in nulliparas: Elective IOL vs. Spontaneous Labor



Fetal Malpresentation

Scott A Sullivan MD MSCR

Associate Professor, Director Maternal-Fetal Medicine

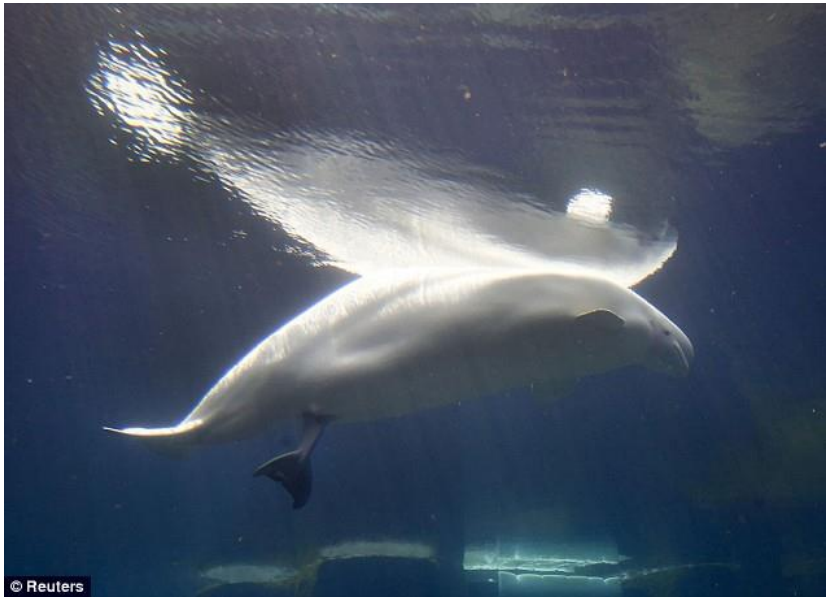
MUSC

September, 2014

Fetal Malpresentation

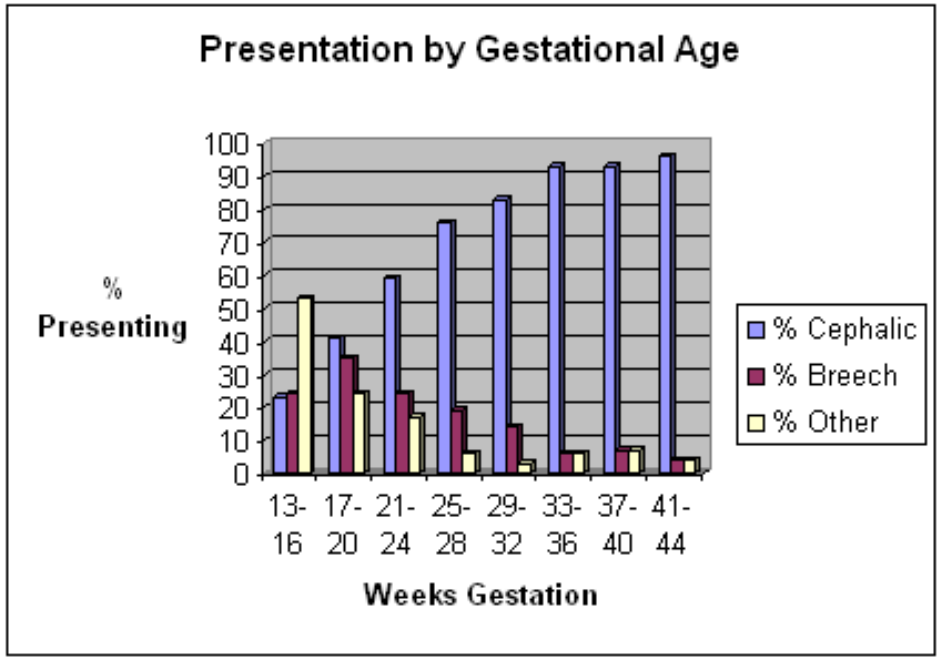
- Breech
- Transverse
- Oblique
- Compound
- Face/Brow

- Malposition (OP)



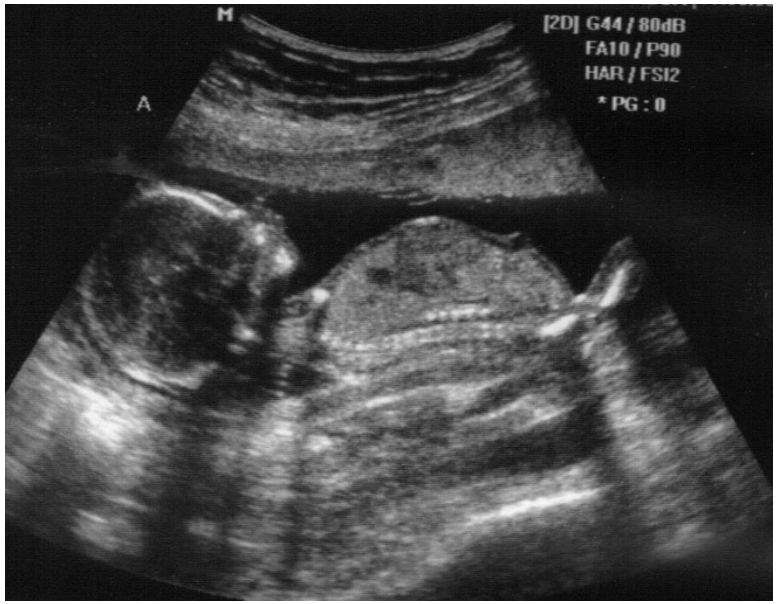
Malpresentation

- 25-40 % : < 28 weeks
- 7-10% : 32 weeks
- 4-6 % : term



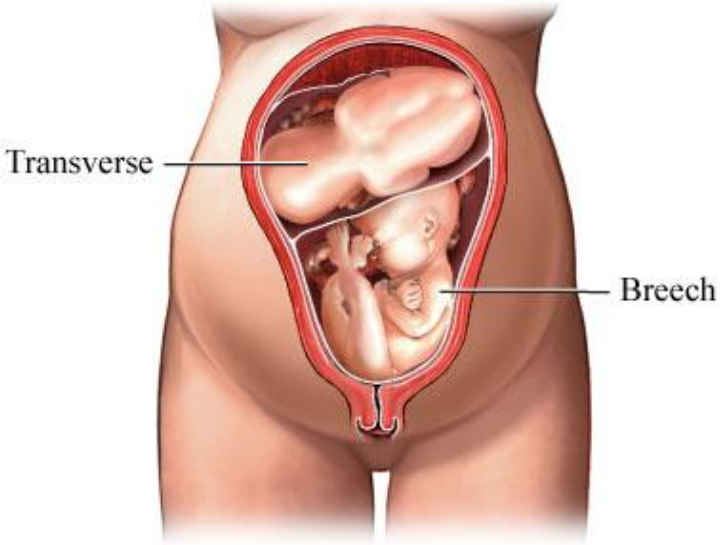
Identification

- Physical Exam
- Maternal symptoms
- Ultrasound



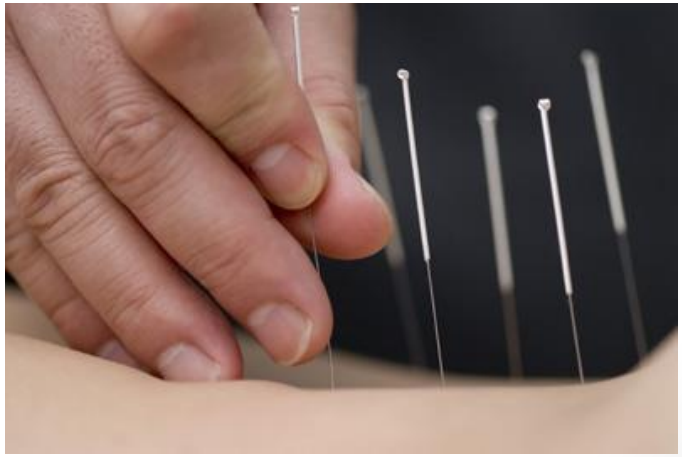
Risk Factors

- Fetal anomalies
- Uterine anomalies
- Multiparity
- Multiple gestations
- Polyhydramnios
- Previa
- Fibroids



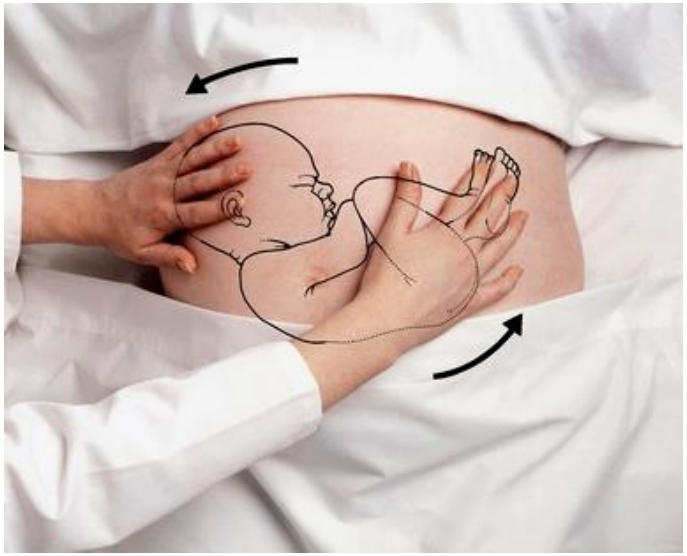
Management Options

- Expectant management (time)
- External cephalic version
- Cesarean section
- Vaginal Breech Delivery **
- Alternative approaches



External Cephalic Version (ECV)

- VanDorsten (1981)
- Success 50-60 %
- Emergent outcome 1-2 %



ECV

- Perfect candidate

- Normal fluid
- Normal EFW
- Normal BMI
- 37-40 weeks

- Reconsider

- Anomaly
- Oligo
- BMI > 50 (?)
- Previa
- Bleeding/UPI

ECV - Technique

- Prepared for emergency
- Anesthesia +/-
- Ultrasound guidance

Emergency!

- Unavoidable
- Plan in place / simulation
- Get help

Vaginal Breech

- Don’t pull

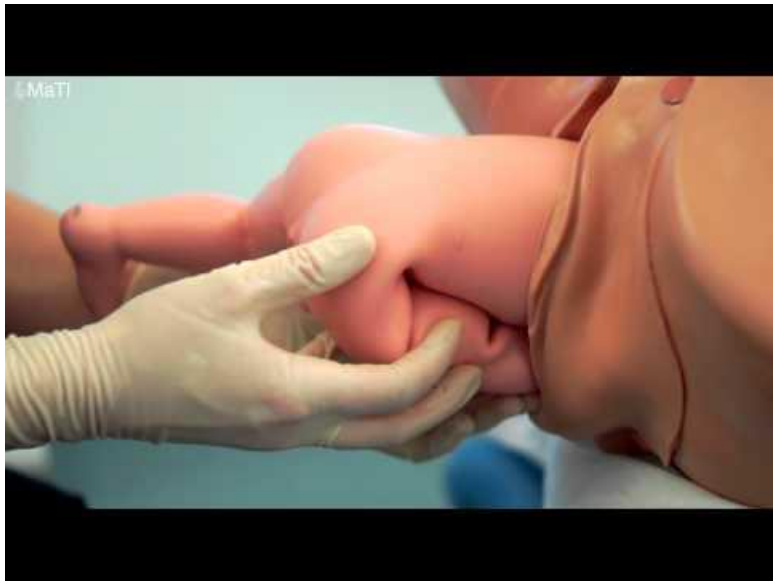
- Maneuvers

  Flex knees/hips

  rotate abd

  sweep arms

  flex head



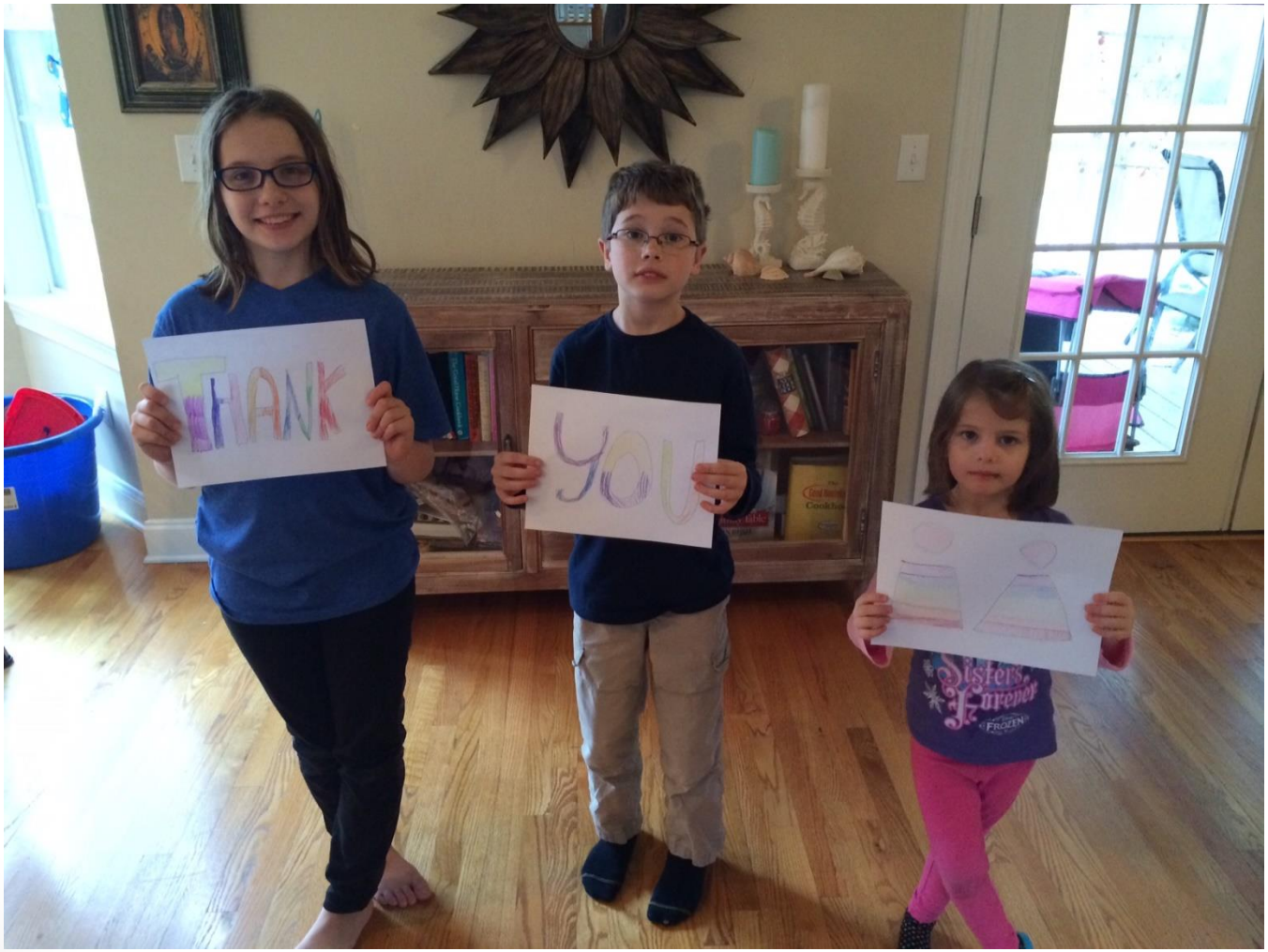
Head entrapment

- Flex head
- Nitroglycerin
- Duhrssen’s Incisions
- Piper forceps

Second Twin

- Rabinovici RCT
- Peaceman review
- No significant differences in mortality, pH, seizures

Thank you!



Fetal Macrosomia and Excessive Maternal Weight Gain

Sharon D. Keiser, MD, MS

Assistant Professor

Maternal-Fetal Medicine, Obstetrics and Gynecology

University of South Carolina School of Medicine - Greenville

Objectives

- Use the ultrasound estimates of fetal weight to support decisions about mode of delivery
- Use BMI to tailor recommendations about weight gain during pregnancy

Prevalence* of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2013

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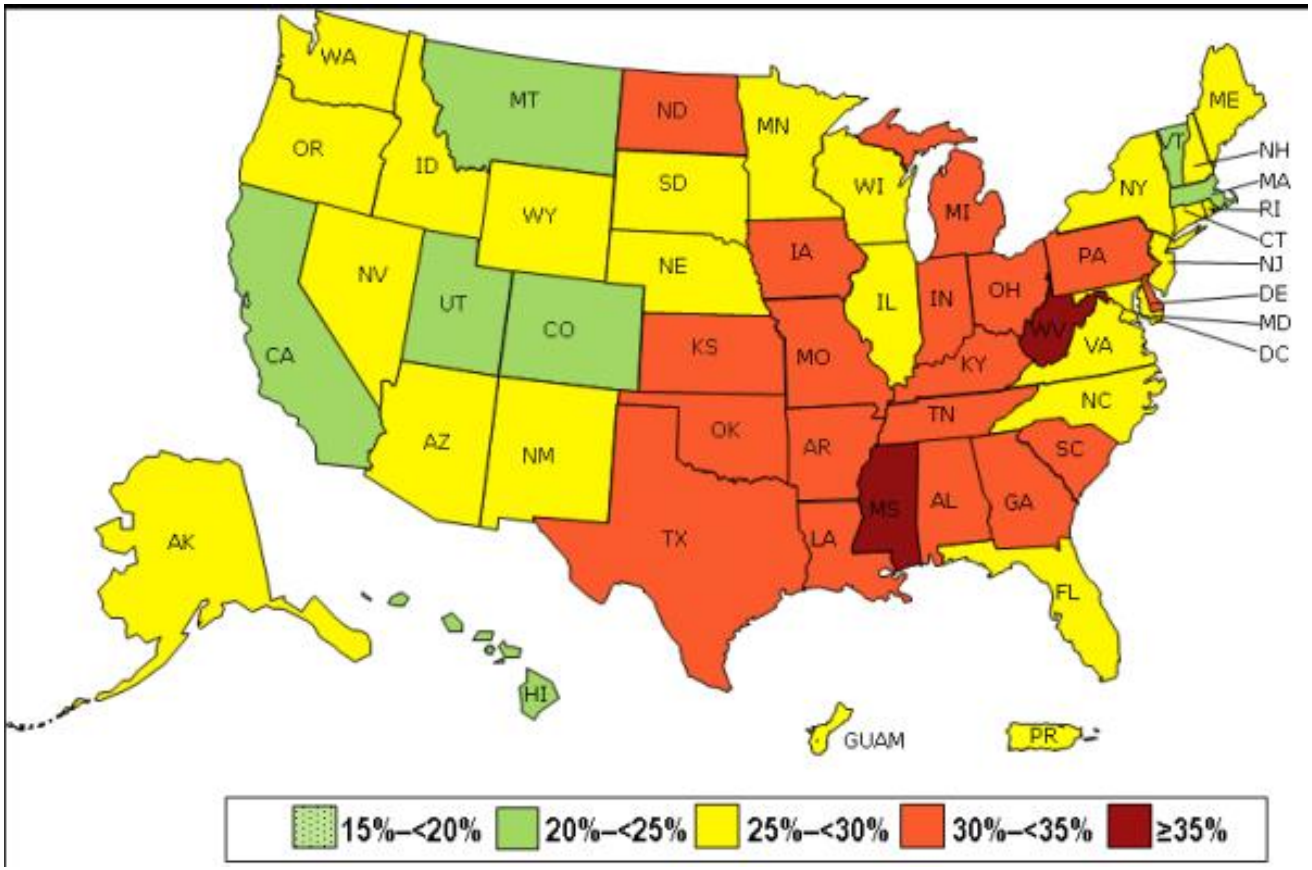
***Prevalence estimates reflect BRFSS methodological changes started in 2011. These estimates should not be compared to prevalence estimates before 2011.**



Behavioral Risk Factor Surveillance System

Taken from Table - Risk of Adverse Pregnancy Outcomes by Maternal Prepregnancy BMI

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Rate of Cesarean Delivery	N/Total (%)	All Women OR (95%CI)	Women without Complications OR (95%CI)
BMI ≥30	3142/9817 (32.0)	2.9 (2.7, 3.1)	2.7 (2.5, 2.9)
BMI 25.0-29.9	4084/17571 (23.2)	1.8 (1.7, 2.0)	1.8 (1.6, 1.9)
BMI 20.0-24.9	8326/50425 (16.6)	1.3 (1.2, 1.4)	1.3 (1.2, 1.3)
BMI <20	2384/18988 (12.6)	1.0	1.0

Am J Public Health 2001

Weight Gain Recommendations by Body Mass Index

GREENVILLE HEALTH SYSTEM

Pre-pregnancy weight category	BMI Weight (Kg)/Height (m^2)	Recommended range of weight gain (Lb)	Recommended Rates of weight gain in the 2nd and 3rd trimesters (Lb/wk) (mean and range)
Underweight	<18.5	28-40	1 (1-1.3)
Normal Weight	18.5-24.9	25-35	1 (0.8-1)
Overweight	25-29.9	15-25	0.6 (0.5-0.7)
Obese	≥30	11-20	0.5 (0.4-0.6)

Modified from Institute of Medicine (U.S.). Weight gain during pregnancy: reexamining the guidelines. Washington, DC. National Academies Press; 2009

2011 Pregnancy Nutrition Surveillance

Nation Summary of Health Indicators

GREENVILLE HEALTH SYSTEM

Maternal Weight Gain	National Prevalence N=718,099 %
< Ideal	21.0
Ideal	30.9
>Ideal	48.0

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Excessive Maternal Weight Gain - Outcomes

GREENVILLE HEALTH SYSTEM

- ***Cesarean Delivery***
- Fetal macrosomia
- Large-for-gestational-age fetuses
- Maternal postpartum weight retention
- Preterm birth

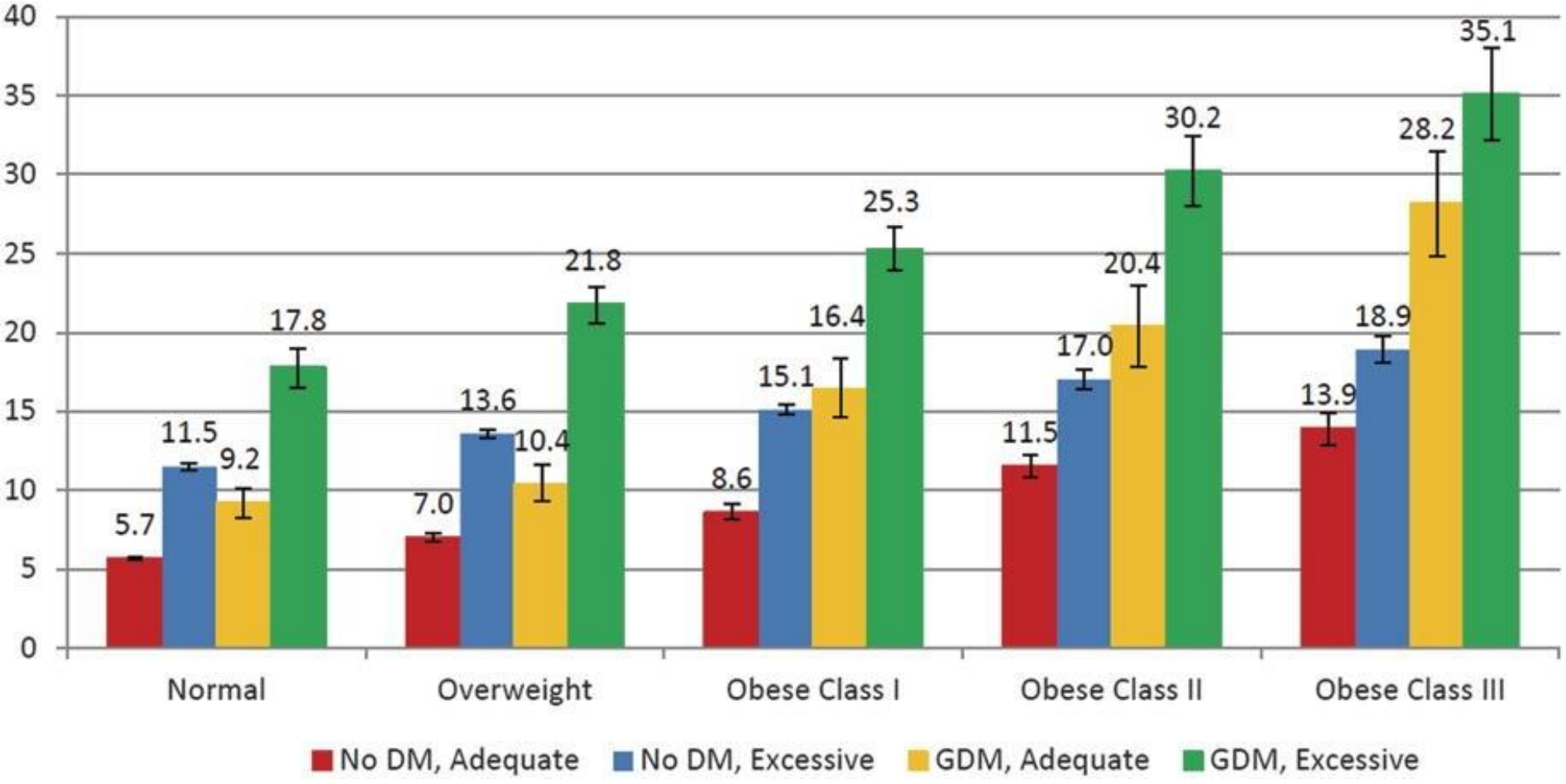
Fetal Macrosomia vs Large for Gestational Age

GREENVILLE HEALTH SYSTEM

- Large for Gestational Age = Birth weight ≥90th percentile for a given gestational age
- Macrosomia = Growth beyond a specific weight, usually 4,500g (regardless of gestational age)
  - Accurately diagnosed after delivery

Prevalence of LGA at ≥90th percentile by BMI, GDM status, and gestational weight gain for births of gestational age at 37–41 weeks.

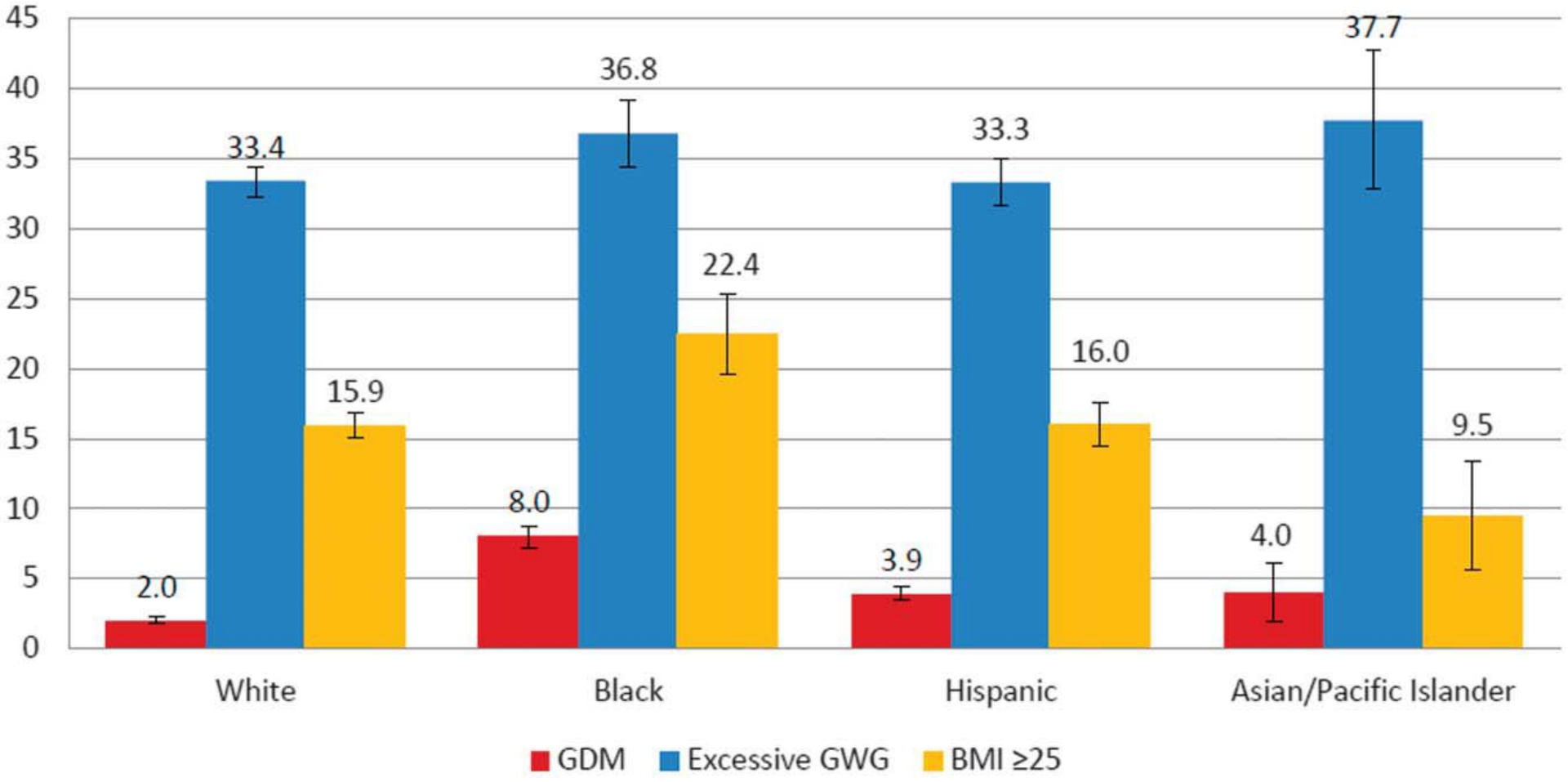
GREENVILLE HEALTH SYSTEM



Kim. Contributions to Large-for-Gestational-Age Births. Obstet Gynecol 2014.

Contributions to Large for Gestational Age Births across Ethnic Groups

GREENVILLE HEALTH SYSTEM



Kim. Contributions to Large-for-Gestational-Age Births. Obstet Gynecol 2014.

Risks Associated with Fetal Macrosomia

- Maternal
  - Cesarean Delivery
  - Postpartum hemorrhage
  - Vaginal lacerations
- Neonatal
  - Birth Trauma
    - Shoulder dystocia
    - Clavicular fracture, brachial plexus injuries

Factors predisposing to macrosomia

GREENVILLE HEALTH SYSTEM

- Pregestational/Gestational DM
- Abnormal 1-hour glucola
- History of macrosomia
- Weight/weight gain
- Multiparity
- Male fetus
- EGA>40 weeks
- Ethnicity/maternal height/birth weight

Diabetes and Macrosomia

GREENVILLE HEALTH SYSTEM

- Fetal macrosomia associated with diabetes is different!
  - More body fat
  - Greater upper extremity skin-fold measurements
  - Smaller head-to-AC ratios
- Improved glycemic control will help curb fetal growth in patients with diabetes

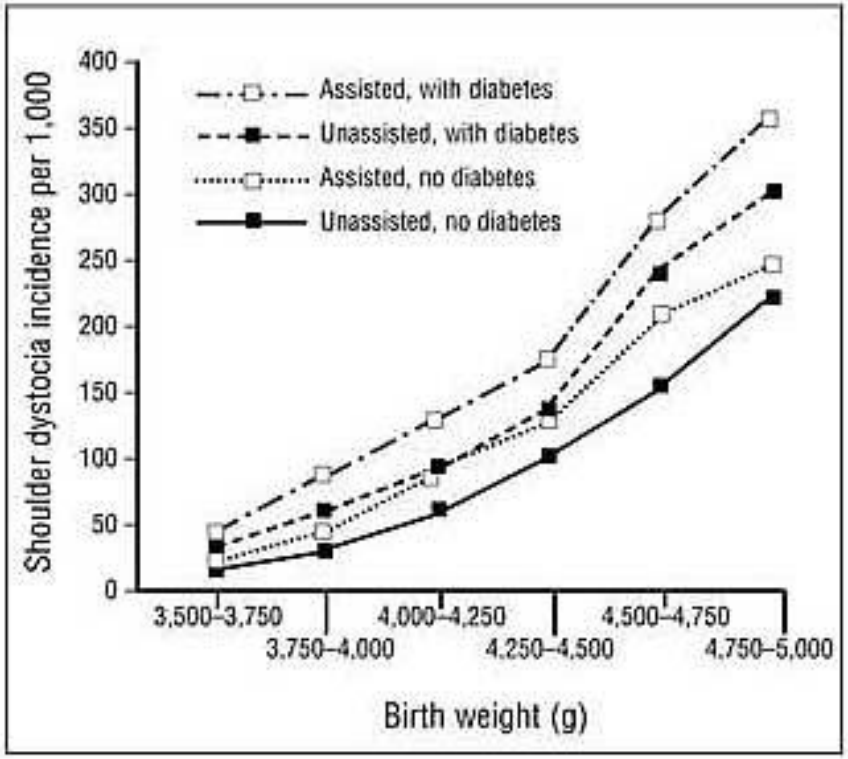


Figure 1. Frequency of shoulder dystocia for increasing birth weight by maternal diabetes status and method of vaginal delivery—spontaneous or assisted. (Nesbitt TS, Gilbert WM, Herrchen B. Shoulder dystocia and associated risk factors with macrosomic infants born in California. Am J Obstet Gynecol 1998;179:476–480)

Accuracy of estimating fetal weight

GREENVILLE HEALTH SYSTEM

Table 2. Comparison of Weight Estimations

Method	Mean error (g)	Standardized error (g/kg)
Maternal	305 ± 273	86.8 ± 78.0
Clinical	314 ± 277	90.2 ± 84.8
Ultrasound	564 ± 438	155.8 ± 118.0

Data are presented as mean ± SD.

Obstet Gynecol 1992

Accuracy of ultrasound to predict EFW

GREENVILLE HEALTH SYSTEM

N	EGA (Weeks)	Birth Weight (g)	Method of estimation	Mean absolute %error	BW ± 10% (% of estimates)	Findings
1717	24-43	6990-5320	Clinical 3 U/S Formulas	7.9% 8.4%	72% 69%	Clin ≥ U/S Clin < U/S (BW <2.5Kg)

Conclusion – Accuracy of estimation of fetal weight decreases at extremes of EFW

Taken from table "Accuracy and Differences between Clinical and Ultrasonic Estimated Fetal weight. Obstet Gynecol 1998

Cesarean delivery to prevent brachial plexus injury

GREENVILLE HEALTH SYSTEM

- Cutoff of 4500g EFW – 51 Cesarean deliveries would have to be performed to prevent one injury
- Cutoff of 5000g EFW – 19 Cesarean deliveries would have to be performed to prevent 1 injury

Ecker et al, Obstet Gynecol 1997

Fetal Macrosomia Recommendations

GREENVILLE HEALTH SYSTEM

- Ask the patient to estimate her fetus' weight!
- Cesarean delivery does not eliminate the risk of birth trauma in a macrosomic fetus
- Brachial plexus injury with long-term sequelae is rare
- Suspected fetal macrosomia is not an indication for induction of labor

Macrosomia Recommendations

- The prevalence of birth weight of 5,000g or more is rare
- EFW, particularly late in gestation and at extremes of weight, is imprecise.
- Cesarean delivery to avoid potential birth trauma should be limited to EFWs of ≥5000g in women without diabetes and ≥4500g in women with diabetes

Maternal Weight Gain Recommendations

GREENVILLE HEALTH SYSTEM

- Normalize pre-pregnancy weight
- Counsel patients about weight-gain guidelines
- Assess pre-pregnancy BMI
- Track weight gain during pregnancy
- Encourage physical activity
- Assist with return to pre-pregnancy weight after delivery
- Utilize a perinatal dietician

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ACOG Committee Opinion #548, Jan 2013

TWIN GESTATIONS: CONTROVERSIES REGARDING MODE OF DELIVERY

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Maternal Fetal Medicine
Spartanburg Regional Heatlhcare System
Medical Group of the Carolinas

Objectives

- Review epidemiologic statistics regarding twin gestations
- Understand recent evidence-based recommendations regarding mode of delivery for twin gestations
- Describe indications and contraindications for attempted vaginal breech delivery of a second twin

Twin Gestations: Epidemiology

- 3-4% of all live births in U.S. (2011)
- 70% increase since 1980s
- Risks:
  - ART increases 20X
  - Advanced maternal age: 4X
  - Increased parity
  - Increased BMI
  - Family History

Twin Gestation: Intrapartum Risks

- Increased risk for:
  - NRFT
  - Abruption
  - Medically indicated and spontaneous PTB
    - 50% ALL Twins
  - Malpresentations
  - Cord prolapse

- **~ 60% of ALL twins delivered by Cesarean**

Twins: Optimal Timing of Delivery

- Controversial
- Uncomplicated DI/DI
  - 38-39+ wks
  - Perinatal Morbidity nadirs at 38 wks
    - Respiratory risks
      - 36-37 wks 27%
      - 37-38 wks 7%
  - **ABOG: 38 wks**
- Uncomplicated DI/MO
  - 32-37 wks
  - Perinatal Morbidity nadirs at **36-37 wks**

Twin Gestation Presentation

- Vertex/Vertex 42%
- Non-Vertex/Other 20%
- Vertex/Non-Vertex 38%
  - Breech 26%
  - Transverse 11%
  - Oblique 1%

Should Routine Cesarean be offered to ALL twins regardless of presentation?

- **Support IN FAVOR**
  - Cesarean may be protective against increased composite neonatal morbidity and mortality of the 2nd twin REGARDLESS of presentation.
  - Very limited number: 4 studies
    - Retrospective
    - Poorly designed
    - Small sample sizes

Should Routine Cesarean be offered to ALL twins regardless of presentation?

- Support AGAINST
- Rabinovici et al (AJOG 1987)
  - Only RCT
  - 60 twin pairs, all V/NV, 35+ wks
  - 33 planned vag delivery vs 27 planned c-section
  - No difference in neonatal outcomes
- Multiple meta-analyses support trial of labor for Vtx presenting twin REGARDLESS of Twin B presentation

Mode of Delivery: Other Considerations

- Data do NOT support routine c-section for VLBW alone
- Data are inconsistent for safety for breech vaginal delivery < 1500 gm
- Weak retrospective data support cesarean for Non-Vtx Twin B in discordant twins, but was not supported unless discordance > 40% !

Twin Gestation: TOLAC
3 Retrospective Studies

- MFMU Cesarean Registry (AJOG 2005)
  - 186/412 desired TOL
  - Successful VBAC 65%
  - C-section/Combined 45%
  - 34 wks = no differences in outcomes/uterine rupture
- Ford et al (AJOG 2006)
  - 1850 twin pairs underwent TOLAC
  - 0.9% uterine rupture
  - 45% successful VBAC
- Cahill et al (AJOG 2005)
  - Twin TOLAC vs Singleton VBAC
  - Successful VBAC similar in both groups
  - No diff in neonatal outcomes/uterine rupture

Twin Gestation: TOLAC Expert Opinions

- ***TOLAC after 1 prior c-section should be equally as safe***
  - Spontaneous labor
  - Continuous EFM
  - Anesthesia availability
  - Usual VBAC criteria / guidelines

Maneuvers for Delivery of Non-Vertex Twin B

- Cesarean
- External Cephalic Version after delivery of Twin A
- Breech Extraction / Internal podalic version

ECV vs Breech Extraction Twin B

- **Gocke et al (AJOG 1989)**
- 136 pairs Vtx/Non-Vtx
- Physician preference
  - ECV 1st, then attempt breech extraction
  - Breech extraction then attempt ECV
- Breech Extraction 1st = 96% success
- ECV 1st = 46% success

- Subsets of other studies support:
  - Lower success of vag delivery AND worse neonatal outcomes with ECV 1st compared to breech extraction

Criteria for Vaginal Delivery of Non-Vertex Twin B

Expert opinions (data lacking)

1. Maternal informed consent
2. > 28 weeks (more support for 30-32 weeks)
3. > 1500-2000 gms (accounting for u/s accuracy)
4. Twin B growth discordance < 20-25%
5. Ability to have continuous EFM for BOTH twins
6. Staff available to handle emergency c-section
7. Anesthesia present
8. Preferred delivery in OR with double set up
9. Ultrasound capabilities in delivery suite
10. ***Experienced Obstetrician***

Presentation of Twins: Mode of Delivery General Consensus

- Non-Vertex A > C-section
- Vertex/Vertex > TOL
  - 15-20% of 2nd twins convert to NON-Vertex
  - Delivery in OR with double set up
  - Ultrasound capabilities

Mode of Delivery for Twins Expert Statements

- *"The route of delivery for twins should be determined by the position of the fetuses, the ease of fetal heart rate monitoring, and the maternal and fetal status"*
  - ~ACOG

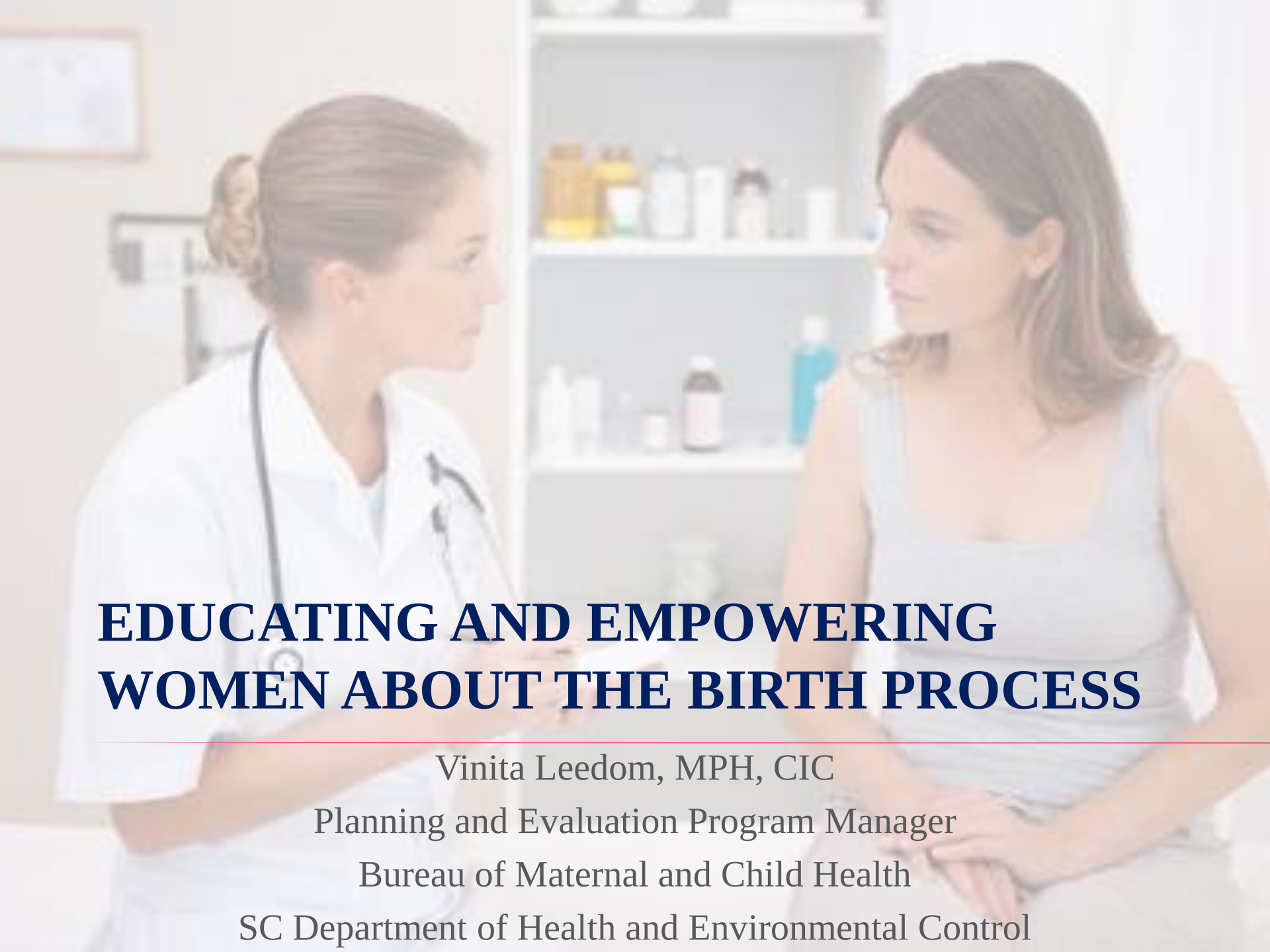
- *"Delivery of cephalic twin A/non-cephalic Twin B: Estimated weight 1500-4000 g. Vaginal delivery is indicated as long as the obstetrician is comfortable with and skilled in vaginal breech delivery"*
  - ~Canadian Consensus Statement 20

Mode of Delivery for Twins Conclusions

- Data are limited and vary
- Most based on synthesized expert opinions
- Routine Cesarean for ALL twins exclusive of presentation of Twin B does not appear to be protective
- TOLAC of a twin gestation after 1 prior C-section appears to carry similar risks to singleton gestation provided usual criteria are met
- Trial of vaginal delivery for vertex/non-vertex presentation appears to be supported provided strict criteria are met

Mode of Delivery for Twins Conclusions

- Ultimately, delivery of a non-vertex second twin depends on:
  - Maternal informed consent
  - Obstetrician experience
  - Obstetrician willingness to perform a breech vaginal delivery



EDUCATING AND EMPOWERING WOMEN ABOUT THE BIRTH PROCESS

Vinita Leedom, MPH, CIC
Planning and Evaluation Program Manager
Bureau of Maternal and Child Health
SC Department of Health and Environmental Control

LEARNING OBJECTIVE

Know what types of patient education materials are available to help patients understand the benefits of vaginal delivery, and the importance of waiting for labor to begin

SVB PATIENT EDUCATION IS NEEDED

- Educational materials for providers to use
- Patient education & conversation tools
- Appropriate methods to effectively address patient education across varied populations

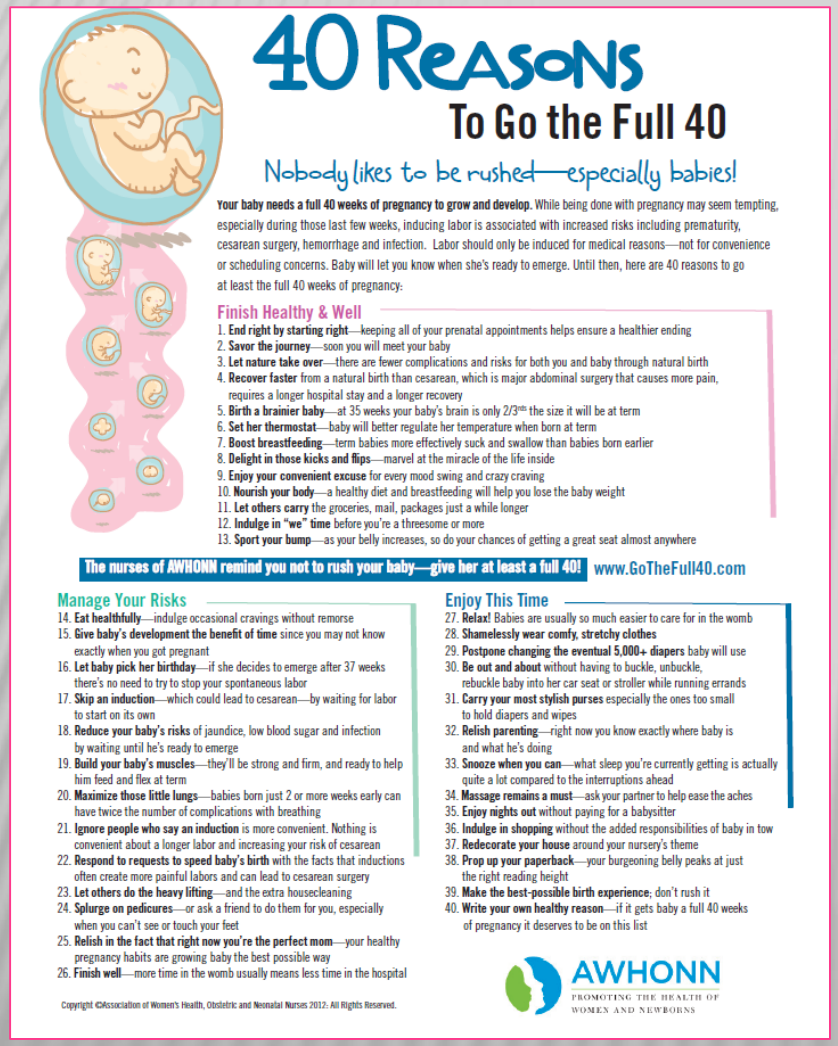
POTENTIAL BARRIERS TO PATIENTS SVB

- Gaps in patient knowledge regarding birth
- Lack of patient self-efficacy
- Unrealistic patient expectations

POTENTIAL BARRIERS TO PATIENTS SVB

- Timing
- Physical complaints
- Existing cultural paradigms

“40 REASONS TO GO THE FULL 40”



40 Reasons To Go the Full 40

Nobody likes to be rushed—especially babies!

Your baby needs a full 40 weeks of pregnancy to grow and develop. While being done with pregnancy may seem tempting, especially during those last few weeks, inducing labor is associated with increased risks including prematurity, cesarean surgery, hemorrhage and infection. Labor should only be induced for medical reasons—not for convenience or scheduling concerns. Baby will let you know when she's ready to emerge. Until then, here are 40 reasons to go at least the full 40 weeks of pregnancy:

Finish Healthy & Well

1. **End right by starting right**—keeping all of your prenatal appointments helps ensure a healthier ending
2. **Savor the journey**—soon you will meet your baby
3. **Let nature take over**—there are fewer complications and risks for both you and baby through natural birth
4. **Recover faster** from a natural birth than cesarean, which is major abdominal surgery that causes more pain, requires a longer hospital stay and a longer recovery
5. **Birth a brainier baby**—at 35 weeks your baby's brain is only 2/3rds the size it will be at term
6. **Set her thermostat**—baby will better regulate her temperature when born at term
7. **Boost breastfeeding**—term babies more effectively suck and swallow than babies born earlier
8. **Delight in those kicks and flips**—marvel at the miracle of the life inside
9. **Enjoy your convenient excuse** for every mood swing and crazy craving
10. **Nourish your body**—a healthy diet and breastfeeding will help you lose the baby weight
11. **Let others carry** the groceries, mail, packages just a while longer
12. **Indulge in "we" time** before you're a threesome or more
13. **Sport your bump**—as your belly increases, so do your chances of getting a great seat almost anywhere

The nurses of AWHONN remind you not to rush your baby—give her at least a full 40! www.GoTheFull40.com

Manage Your Risks

14. **Eat healthfully**—indulge occasional cravings without remorse
15. **Give baby's development the benefit of time** since you may not know exactly when you got pregnant
16. **Let baby pick her birthday**—if she decides to emerge after 37 weeks there's no need to try to stop your spontaneous labor
17. **Skip an induction**—which could lead to cesarean—by waiting for labor to start on its own
18. **Reduce your baby's risks** of jaundice, low blood sugar and infection by waiting until he's ready to emerge
19. **Build your baby's muscles**—they'll be strong and firm, and ready to help him feed and flex at term
20. **Maximize those little lungs**—babies born just 2 or more weeks early can have twice the number of complications with breathing
21. **Ignore people who say an induction** is more convenient. Nothing is convenient about a longer labor and increasing your risk of cesarean
22. **Respond to requests to speed baby's birth** with the facts that inductions often create more painful labors and can lead to cesarean surgery
23. **Let others do the heavy lifting**—and the extra housecleaning
24. **Splurge on pedicures**—or ask a friend to do them for you, especially when you can't see or touch your feet
25. **Relish in the fact that right now you're the perfect mom**—your healthy pregnancy habits are growing baby the best possible way
26. **Finish well**—more time in the womb usually means less time in the hospital

Enjoy This Time

27. **Relax!** Babies are usually so much easier to care for in the womb
28. **Shamelessly wear comfy, stretchy clothes**
29. **Postpone changing the eventual 5,000+ diapers** baby will use
30. **Be out and about** without having to buckle, unbuckle, rebuckle baby into her car seat or stroller while running errands
31. **Carry your most stylish purses** especially the ones too small to hold diapers and wipes
32. **Relish parenting**—right now you know exactly where baby is and what he's doing
33. **Snooze when you can**—what sleep you're currently getting is actually quite a lot compared to the interruptions ahead
34. **Massage remains a must**—ask your partner to help ease the aches
35. **Enjoy nights out** without paying for a babysitter
36. **Indulge in shopping** without the added responsibilities of baby in tow
37. **Redecorate your house** around your nursery's theme
38. **Prop up your paperback**—your burgeoning belly peaks at just the right reading height
39. **Make the best-possible birth experience**; don't rush it
40. **Write your own healthy reason**—if it gets baby a full 40 weeks of pregnancy it deserves to be on this list

AWHONN
PROMOTING THE HEALTH OF WOMEN AND NEWBORNS

- AWHONN
- www.gothefull40.com

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“WHAT EVERY PREGNANT WOMAN NEEDS TO KNOW ABOUT CESAREAN SECTION”

- Childbirth Connection
- http://www.childbirthconnection.org/pdfs/cesareanbooklet.pdf

Questions to Ask:

1. What is the benefit of a c-section for me or my baby?
2. What problems might happen if I continue with my plan for a vaginal birth?
3. How likely are those problems if I plan for a vaginal birth?
4. Could they still happen if I have a c-section?
5. What are the possible harms of a c-section?
6. How likely are these possible harms?

“THINGS TO THINK ABOUT FOR THE BIRTH OF YOUR BABY”

WISCONSIN ASSOCIATION for Perinatal Care

Things to Think About for the Birth of Your Baby

What to Talk about With Your Provider

A vaginal birth is the safest way to deliver most babies. The possibility of a first birth by Cesarean (birth by surgery) is important. You should discuss this possibility with your health care provider during your pregnancy. A Cesarean birth can affect you, your baby, and future pregnancies. It is important for you to talk to your health care provider. Talk about any concerns you may have about the birth.

You can use the following information and questions as a guide to talk to your health care provider.

Your Baby's Due Date	Questions to ask my provider:
Early in pregnancy, your health care provider gave you a due date for your baby. A due date for your baby is not the same as a due date for things like bills. The due date is the best estimate of when your baby will be born. Your health care provider usually uses one or both of the following to estimate your baby's age: • Your last menstrual period (sometimes called LMP) • Ultrasound Babies are rarely born on their due dates. Most babies are born between three weeks before and two weeks after their due dates.	*When is my due date?* *What is a safe range of dates for my baby's birth?* *What happens if I go past my due date?*

Labor	Questions to ask my provider:
In most cases, you will go into labor naturally. We don't know what causes labor. A lot of changes take place in your baby and you at the end of pregnancy. These changes could cause your body or your baby's body to make hormones (chemicals) that let your uterus know it's time to start labor.	*How will I know if I'm in labor?* *When should I call you?* *How long does labor take?* *Am I at risk for problems during labor?*

Benefits of Labor	Questions to ask my provider:
Labor gives your baby's lungs time to get ready for birth. Babies who go through labor are less likely to have problems with breathing.	*How does labor help my baby's breathing?* *How else does labor help my baby?*

Induction of Labor	Questions to ask my provider:
Induction of labor is a way to get labor started. Sometimes health care providers have to do things to get labor started. Sometimes women have problems that can't be treated until the baby is born. Other times, health care providers have to get the baby delivered to help it.	*Why would I need an induction?* *What happens in an induction?* *What are the benefits of an induction?* *What are the risks of an induction?*

Reducing Cesarean Births in Wisconsin

Wisconsin Association for Perinatal Care
211 S. Paterson Street, Suite 250 | Madison, WI 53703
www.perinatalweb.org | wapc@perinatalweb.org
April 2013

- Wisconsin Association for Perinatal Care
- http://www.perinatalweb.org/assets/cms/uploads/files/cesarean_reduction_consumer_13_final(2).pdf
- Includes questions to ask the provider

"I'M READY TO HAVE THIS BABY! WHAT'S THE BIG DEAL?"

- March of Dimes
- http://www.marchofdimes.org/materials/infographic-healthy-babies-are-worth-the-wait.pdf

PROVIDERS CAN ADDRESS BARRIERS

PROVIDERS CAN PROVIDE INFORMATION

- Most patients don't know the risks and benefits of a cesarean section versus vaginal delivery
  - For the mom
  - For the baby
- Most first-time moms have very little knowledge of various methods of delivery
- Many patients don't know the stages of labor or when to go to the hospital

PROVIDERS CAN IMPROVE A PATIENT'S SELF-EFFICACY

- Help shape positive but realistic patient expectations
- Encourage the patient to ask and write down questions
- Encourage the patient to establish a "team" of labor support (not just birth coach)
  - Suggest she identify friends or family who will encourage her in seeking healthy behaviors

PROVIDERS CAN HELP PATIENTS ACHIEVE A POSITIVE SELF-IMAGE

- Helping mom to understand important new role
- Concerns over body changes/body image
  - Scarring
  - Tearing
  - Incontinence
  - Breast changes
  - Sexual function

PROVIDERS CAN DISCUSS CONCERNS ABOUT TIMING OF DELIVERY

- Mental preparation/preparing for a marathon
- Concern about visitors
- Professional concerns
  - When she will be out of work
  - When she will be back

PROVIDERS CAN ADDRESS PHYSICAL COMPLAINTS

- Addressing physical symptoms of late pregnancy
  - Swollen feet
  - Insomnia
  - Back pain
  - Leg cramps
  - Exhaustion
  - Heartburn
  - Urinary frequency

PROVIDERS CAN ADDRESS EXISTING CULTURAL PARADIGMS

- Culture of instant gratification
  - Fast food, Amazon, microwave meals
- Providing a sense of value to hard work of waiting
  - Keeping best health outcomes in mind

WAYS TO DELIVER SVB MESSAGE

- SVB Education: Preconception & interconception care
- Coordinated team efforts
- Patient education materials
- Method of delivery

NEXT STEPS & BRAINSTORMING

Email: leedomvo@dhec.sc.gov

Questions?

SC Birth Outcomes Initiative

Healthy Connections