

# Novant Perinatal Quality Improvement

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# Novant Women's Council Executive Committee

- Ensure the best practice in women's care to patients across all of Novant's acute care facilities
- Airstrip technology
- New obstetrical standard of Care

# Novant Women's Council Executive Committee

- Prevent early term elective deliveries
- Promote vaginal delivery
- Uniform oxytocin protocol

# Prevention of Early Term Delivery

## Data Form for Scheduling

- Name
- GA and EDC
- If <39 weeks reason for delivery

Placenta

Bleeding

Multigestation

Cholestasis

HIV

Complex Fetal Anomaly

Mature amniocentesis (Classical C/S, etc)

# Oligohydramnios

- AFI < 5.0 cm or DVP < 2.0 cm
- Is there IUGR? Define
- Is the BPP reassuring?
- Is the umbilical artery Doppler normal?
- Deliver no earlier than 37 weeks and no later than 39 weeks

# Induction of Labor Hypertension

- HYPITAT Study: Induction of Labor vs Expectant monitoring for gestational HTN and preeclampsia after 36 weeks
- GHTN  $\geq 95$  mmHg; PE  $\geq 90$  mmHg twice 6 hrs apart at rest
- N=756
- Composite adverse maternal outcome reduced by 29% in induction group (absolute risk reduction 12.76% (HELLP, Severe PIH, etc))

# How Did We Do It at Presbyterian?

- Engaged the physician leaders at the QDT meeting
- Educational conference
- All inductions and C/S scheduled before 39 weeks must have MFM approval

# Early Term Deliveries

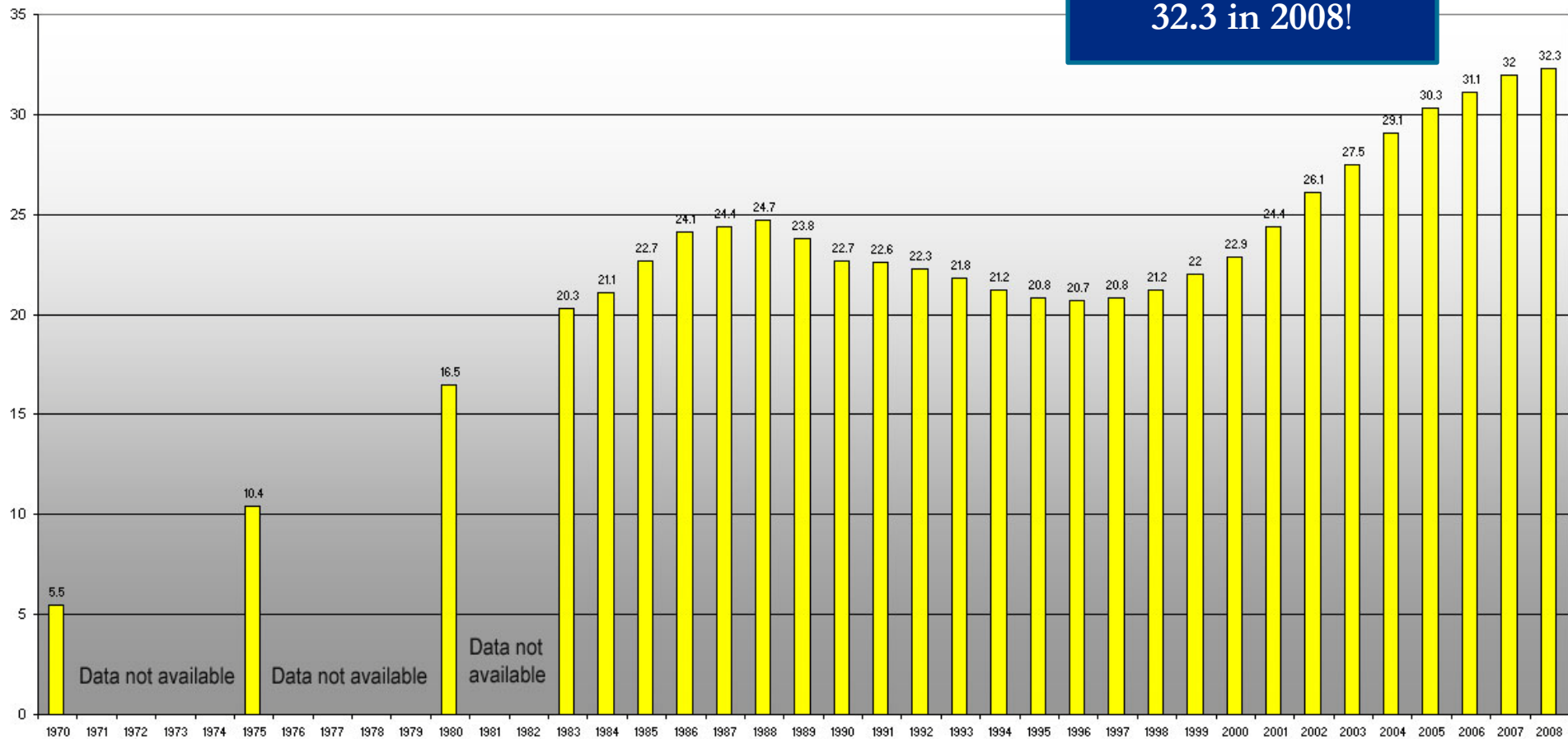
## Bumps in the Road

- Physician complaining
- Misleading indications
- Misrepresenting EDD
- Threats to deliver at other hospital in town
- Took 6-12 months for the process to start running smoothly



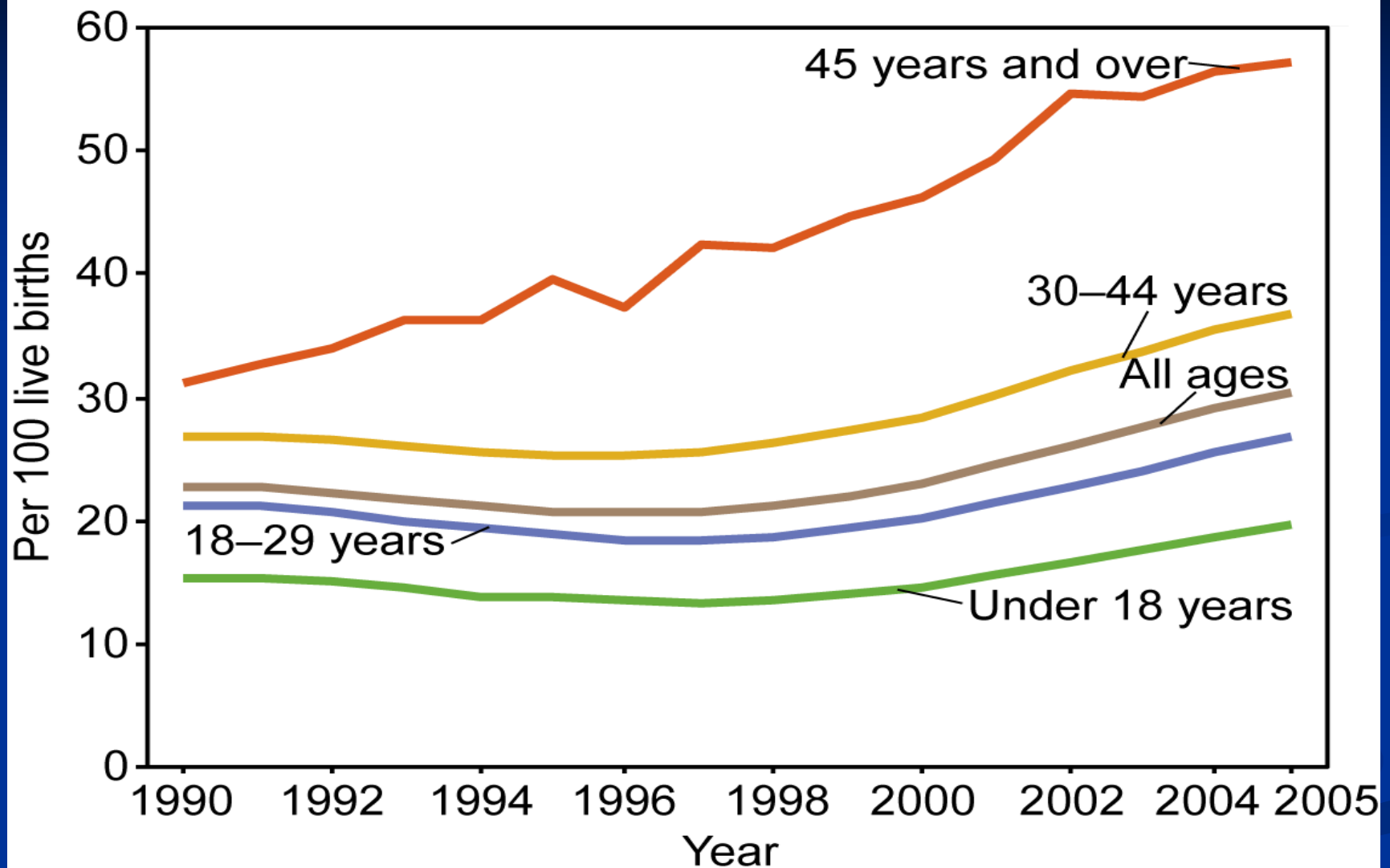
## U.S. Cesarean Rate 1970 - 2008

32.3 in 2008!



SOURCES: [http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58\\_16.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_16.pdf)  
[http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54\\_04.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_04.pdf)  
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1647267/?page=2>  
<http://www.cdc.gov/mmwr/preview/mmwrhtml/00036845.htm>

# Cesarean delivery rates



SOURCES: CDC/NCHS, *Health, United States, 2008*, Figure 26. Data from the National Vital Statistics System.

# Obesity

	BMI < 30	BMI ≥ 30 & ≤39.9	BMI ≥40
Oxytocin duration if induced	6.5 hr	7.7 hr	8.5 hr
Time in active labor	14.9 hr	16 hr	19.3 hr
Time in active labor if del vag	14.4 hr	15.2 hr	17.8 hr
Birth Weight	3286	3399	3489
CS	21.3%	29.8%	36.5%
CS for FTP	12.4%	12.0%	22%

36 week of greater, ≤Para 3, singletons; secondary analysis of an RCT

Effect of maternal obesity on duration & outcomes of PG  
Cervical ripening and labor induction. Pevzner et al, *Obstetrics & Gynecology*, Dec 2009

# Labor Induction and the Risk of Cesarean in Nulliparous Women at Term

- Retrospective cohort
- N=7804
- Labor induction in 43.6%, of which 39.9% were elective
- Induction associated with cesarean delivery (aOR 2.67, 1.71-2.2)
- Contribution of labor induction to CD rate approximately 20%

# Elective Induction

- Availability of cervical ripening agents
- Pressure from patients
- Convenience for physicians
- Logistic factors
- Psychosocial reasons

# Elective Induction Compared With Expectant Management

- Retrospective Cohort
- Nulliparous women
- Singleton
- Favorable cervix (BS of  $\geq 5$ )
- 39-40 6/7 weeks GA
- Primary outcome cesarean section

# Elective Induction Compared with Expectant Management

	<b>Expectant Management (N=294)</b>	<b>Electively Induced (N=294)</b>	<b>P-value</b>
<b>Hours in labor</b>	9.0(5.1)	12.7(4.8)	.001
<b>Labor greater than 12h</b>	30.3	47.6	.001
<b>Cesarean delivery</b>	20.1	20.8	.84
<b>Chorioamnionitis</b>	9.5	10.9	.77

# Transvaginal Cervical Length and Bishop Score

## Predictors of Successful Induction

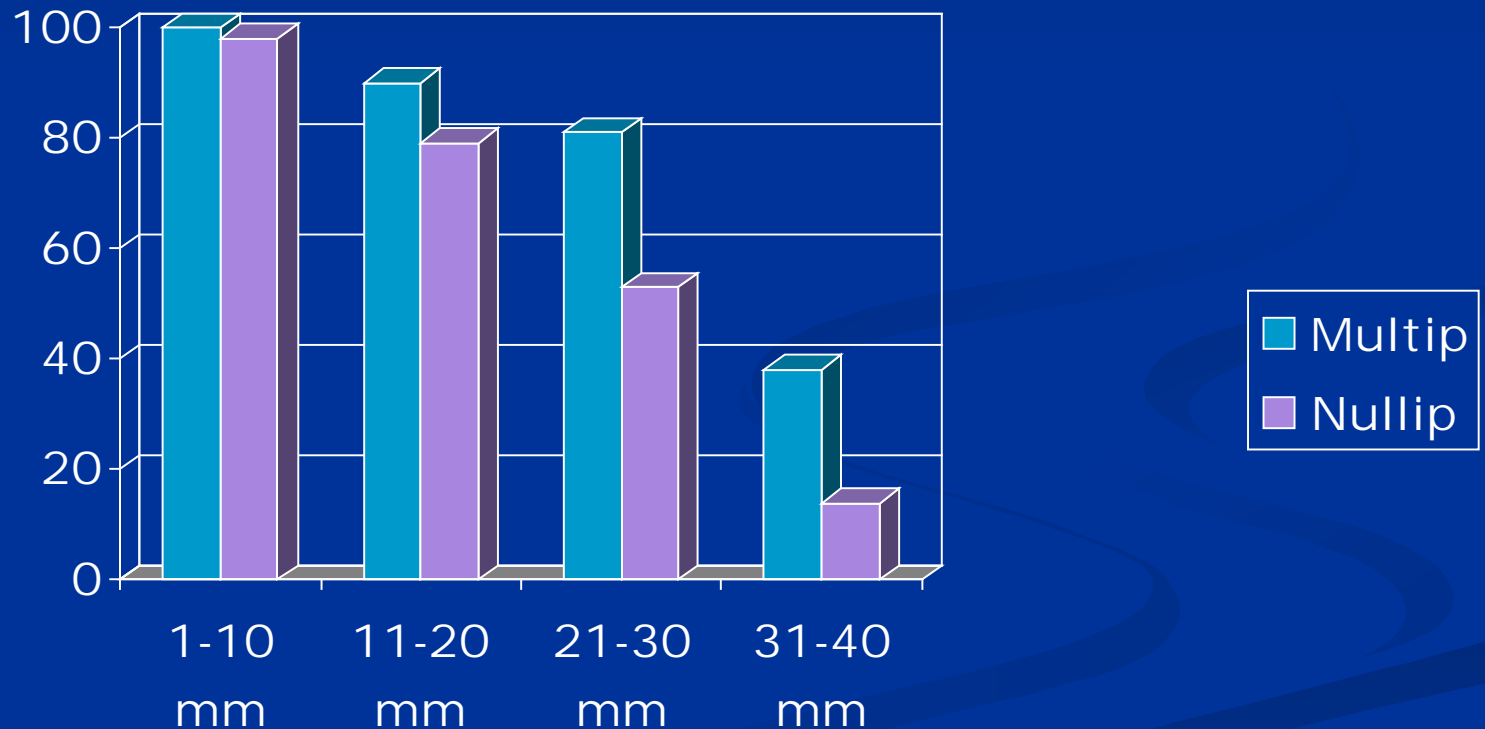
- N=231 patients scheduled for induction
- 37-42 weeks
- Intact membranes
- Vertex
- Success defined as delivery within 24 hrs



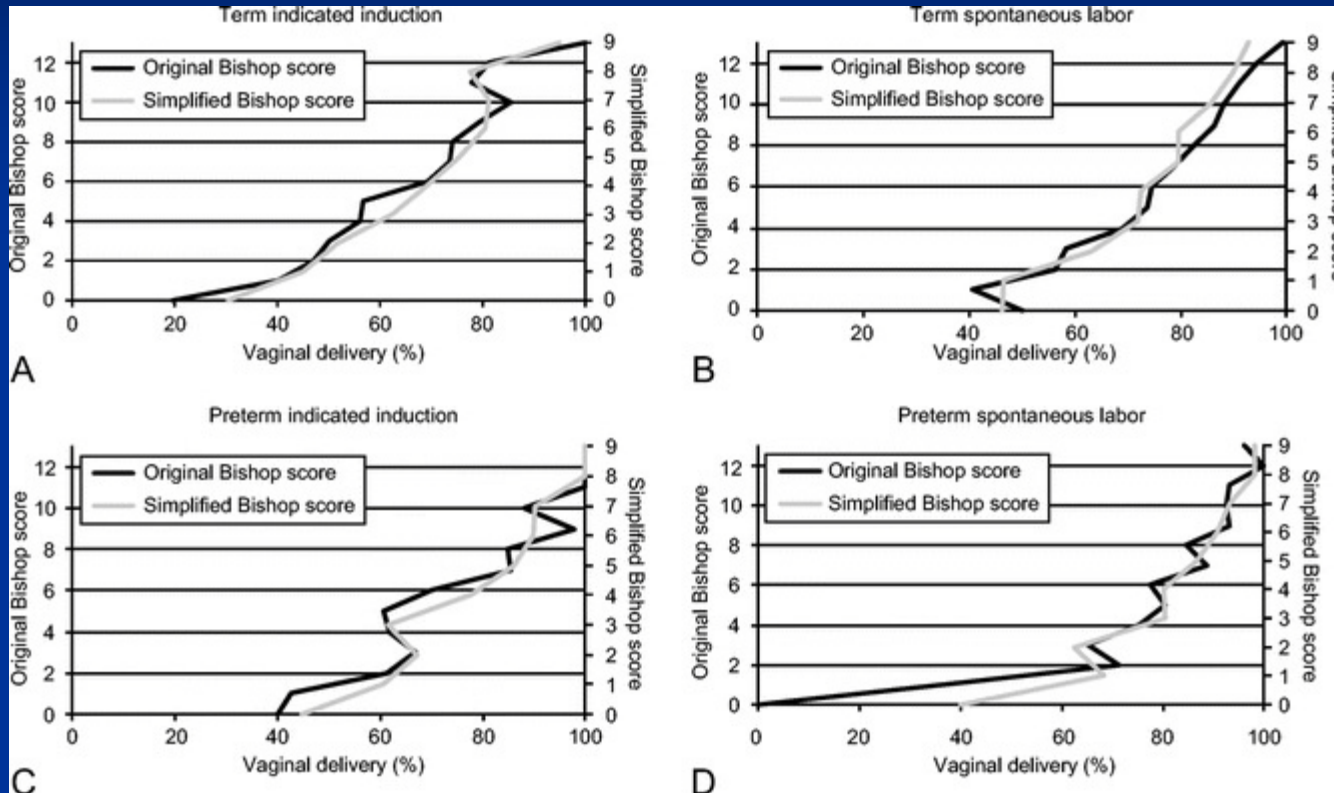
# Transvaginal Cervical Length & Bishop Score as Predictors of Successful Induction

- 68% Delivered within 24 hours
- $CL \leq 20$  mm: nullip: PPV 69%, NPV 77%
- $CL \leq 20$  mm multip: PPV 98%, NPV 21%
- $BS \geq 6$  nullip: PPV 56%, NPV 69%
- $BS \geq 6$  multip: PPV 94%, NPV 21%

# Pre-induction Sonographic Cervical length: Prediction of Successful Delivery



# Comparing Traditional to Modified Bishop's Score

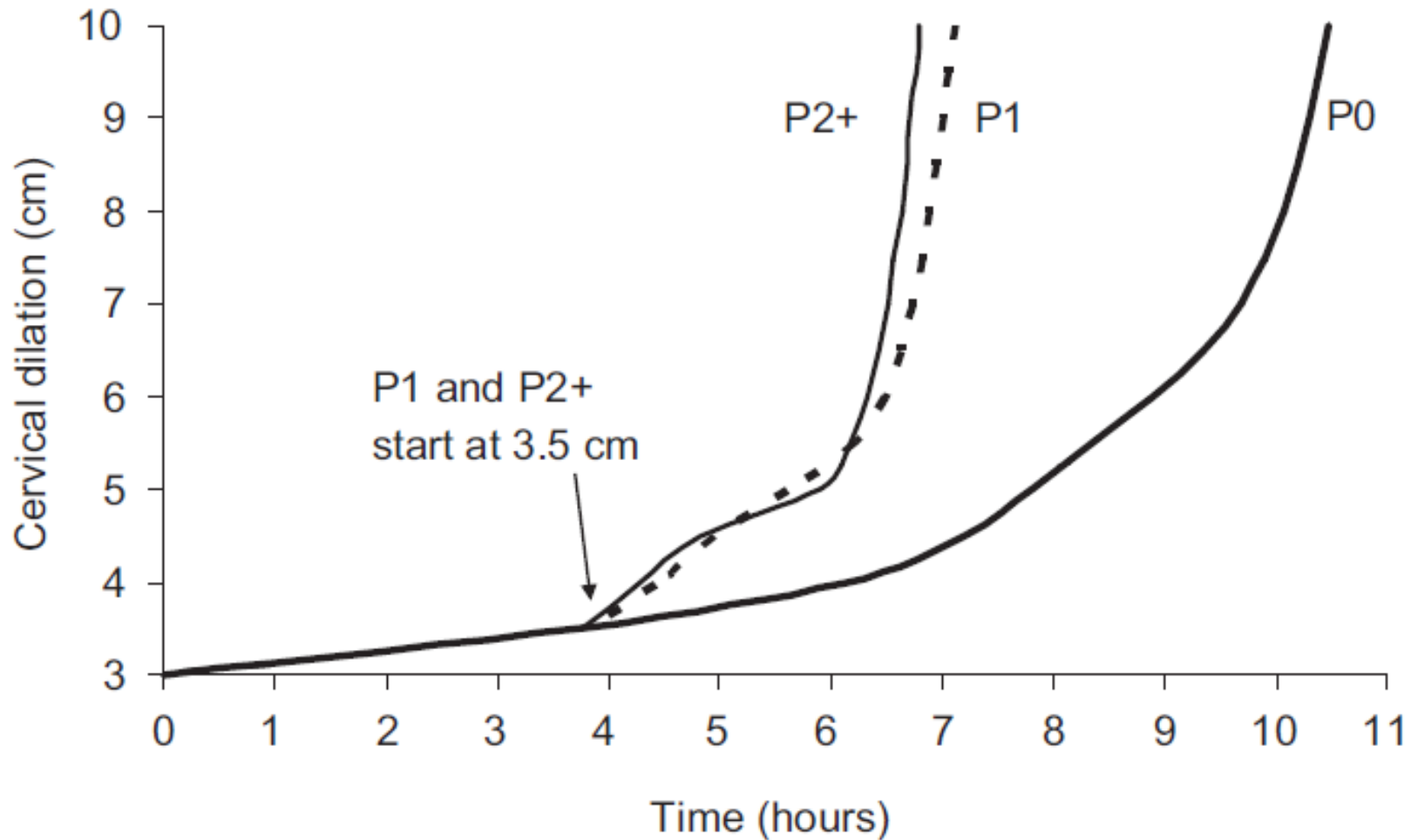


# Cervical Ripening PQCNC Data

0 cm Dialated	C-Section	Vaginal Birth
Cx Ripening	52.0%	48.0%
No Cx Ripening	69.2%	30.8%

RR 0.75 of C/S with Ripening

# Duration of Labor



Zhang et al, 2010

# Contemporary C/S Delivery Practice in the US

- Study of >200,000 deliveries >23 weeks
- Overall C/S rate was 30.5%
- Induction risk of C/S 21.1% v. 11.8% with spontaneous labor
- Nullip C/S rate 31.4% associated with induction of labor
- 47.1% of intrapartum C/S for FTP or failure to wait
- 27.3% for NR FHR pattern

# Contemporary C/S Delivery Practice in the US

- Half the intrapartum C/S for dystocia were performed before 6 cm
- One-third of 2<sup>nd</sup> stage C/S were done <3 hours in nullips
- One-fourth of 2<sup>nd</sup> stage C/S were done <2 hours in multips
- C/S performed at earlier cervical dilations in induced patients compared to spontaneous labor patients

# Novant Quality Initiative

## Promoting Vaginal Delivery

- C/S rate 35 %
- 45% of C/S are repeat C/S
- Induction of labor in 20.5% of deliveries in 2011
- Elective inductions 14.3% of deliveries
- C/S rate for EIOL 19.5%
- C/S rate for EIOL in P0 42.1% and in  $\geq$ P1 7.2%



# Promoting Vaginal Delivery

- Advanced Maternal Age
- Maternal health
- Risk of liability
- Multiple pregnancy
- Maternal request
- BMI (patience, diet)
- VBAC (Consent)
- Induction of labor (CL requirement, ripening and willingness to reload)

# How Do You Change Behavior

- Narrow your focus
- Prioritize
- Be realistic in your expectations for change
- Expect ups and downs
- Create visual reminders
- Measure progress by trends
- Reward success, (avoid criticism and punishment)

# Novant Goals 2011

- Elective induction only if Bishop Score  $\geq 6$  or cervical length  $< 2.0$  cm
- All medical inductions with unfavorable cervix must have pharmacologic and if possible mechanical cervical ripening
- Physicians must complete a data sheet for each cesarean section
- No elective inductions  $< 39$  weeks