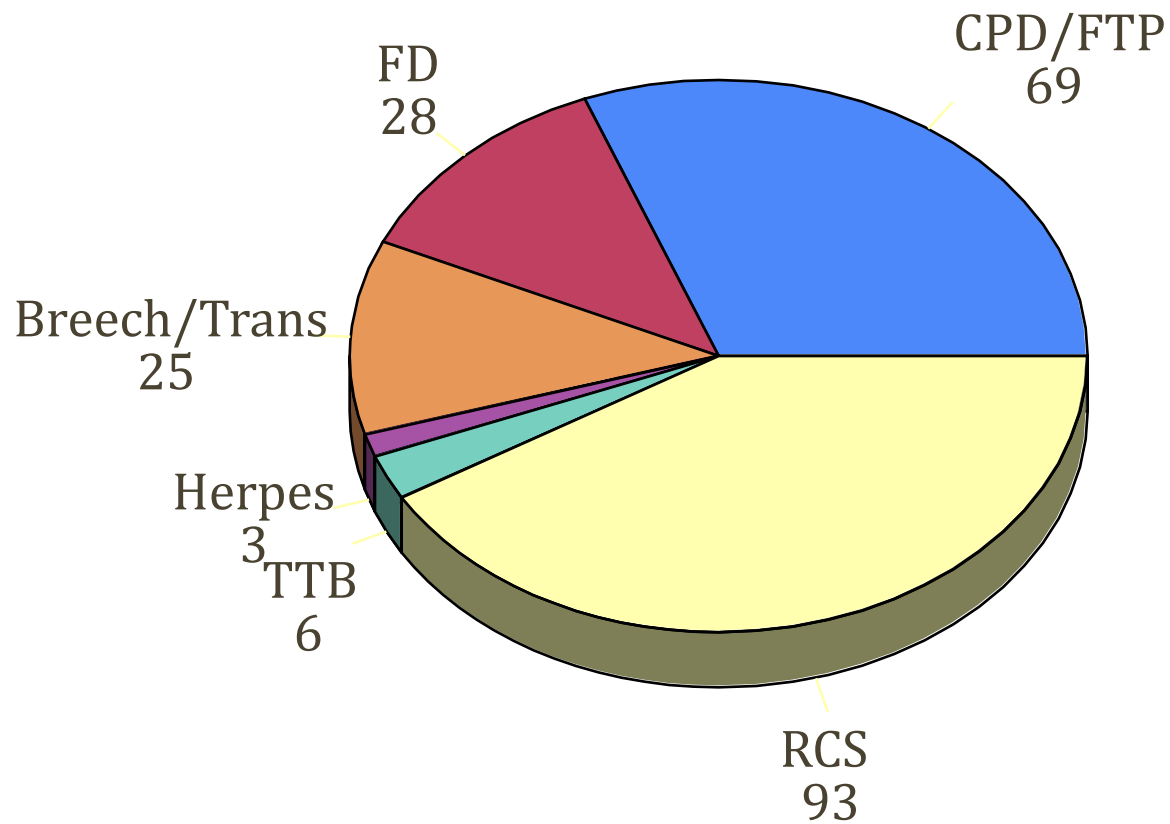


# Strategies for Preventing Unnecessary CS

# Key changes to lowering CSR

- Culture of cesarean being a “good thing to avoid”
- Provider feedback
- Labor support
- Clinical practices

# Indications for CS



May 1988 to Dec 1988

# Flamm's Rule

- Achieve 15% by the following formula.
- Breakdown:
  - 5% rate of dystocia.
  - 5% rate of repeat CS.
  - 5% rate of other.
    - Fetal distress, TTB, herpes, breech, etc.

Bruce Flamm M.D., Kaiser Permanente

# Lessons from a "breakthrough series" collaborative

- Of 28 participating organizations, 15 percent achieved cesarean delivery rate reductions of 30 percent or more during the 12-month period of active collaborative work.
- An additional 50 percent achieved reductions between 10 and 30 percent.
- **CONCLUSIONS:** The Healthy People 2000 goal of a cesarean delivery rate below 15 percent by the year 2000 is attainable.

# IHI “Top 10” Changes

- Admission criteria/triage
- Activity in labor
- Walking epidurals
- Epidurals after 4 cm
- Labor support
- Intermittent auscultation
- VBAC guidelines
- VBAC education
- Therapeutic rest
- Data and feedback

# General Strategies

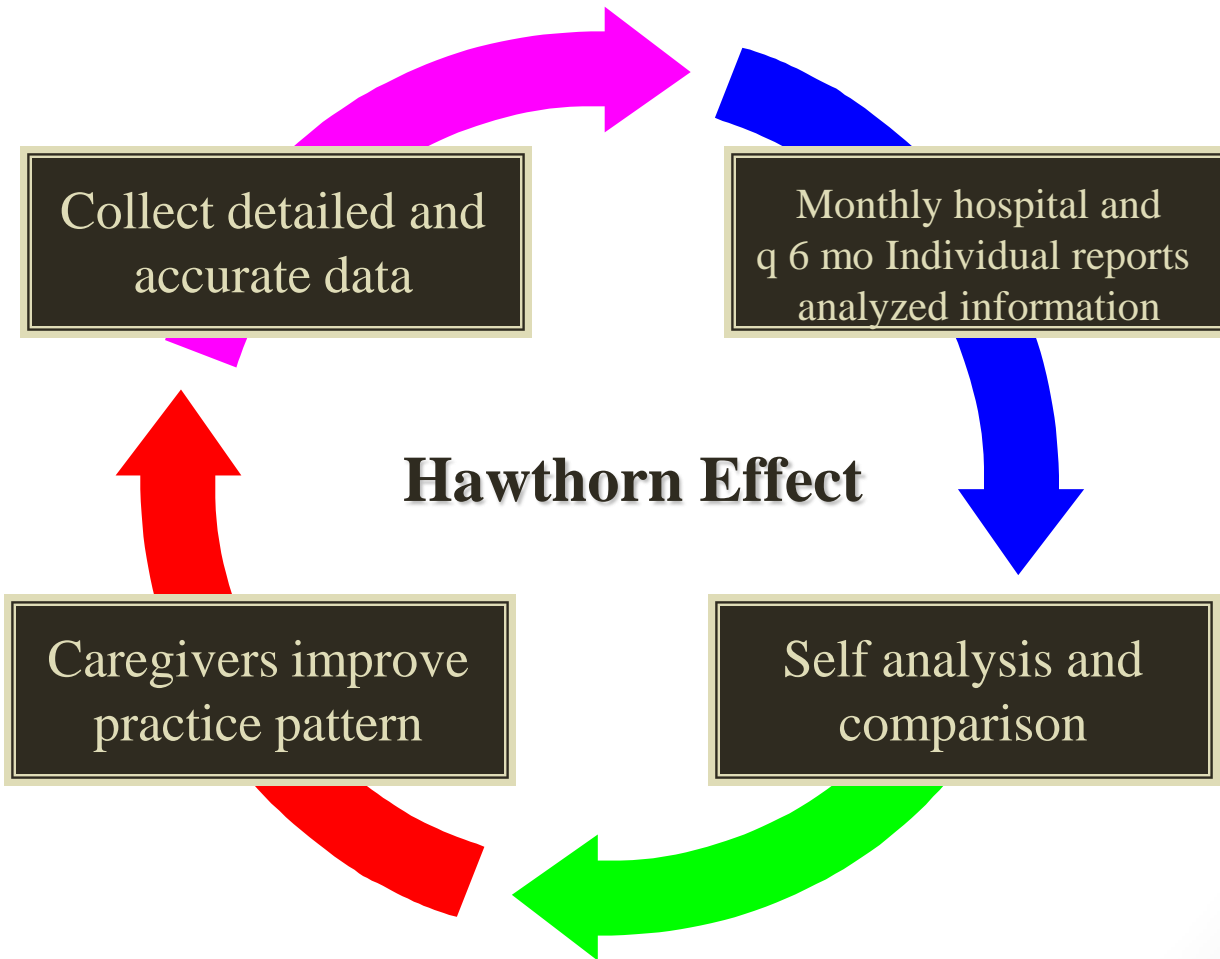
- Education to staff
- Physician leadership/ownership: local champion
- Provider feedback
- Peer review/2<sup>nd</sup> opinion
- CBE: induction risks, labor support, VBAC class
- Hospitalist/laborist
- Doulas and specialized support staff
- Call schedule changes

# Opinion Leaders Vs. Audit/feedback

- 76 physicians in 16 community hospitals
- Looked at trial of labor
- After 24 months no difference between control and groups in audit and feedback group
- Opinion leader groups were 85% higher than controls and 46% higher than audit groups
- No adverse outcome differences

**Lomas et al, JAMA 1991;265:2202**

# Using Clinical Data for Lowering the Cesarean Section Rate



# Provider Feedback

- Computerized delivery database based on delivery summary report of each delivery
- Accurate and up-to-date data provided
- Routinely analyzed for completeness and accuracy
- Provided two major sources of feedback
  - Monthly hospital wide statistics of mothers and infants
    - Total CSR, primary CSR, repeat CSR, indications, trial VBAC rates, etc.
  - Biannual individual physician reports

# Individual Physician Reports

- Confidential report generated every 6 months
- Detailed information
  - Various CSRs given
  - Breakdown of indication CSR (CPD, FD, etc.)
  - Trial VBAC and VBAC success rates given
  - Patient demographics for risk factors
- Hospital-wide and group means given for comparison
- "Tips" given in accompanying letter

**VAGINAL vs C-SECTION**

DELIVERY TYPES	Tot	% Tot	EPISIOTOMIES	Tot	% Tot	BREAKDOWN BY LACERATIONS	Tot	% Tot
Total Vaginal Deliveries:	71	91.0%	None:	59	83.1%	Vaginal:	4	5.6%
Total C-Sections:	7	9.0%	Midline:	12	16.9%	Cervical:	0	0.0%
Primary CS**:	5	7.4%	Mediolateral:	0	0.0%	Periurethral:	0	0.0%
Repeat CS:	2	2.6%				Sulcus:	0	0.0%
Hysterotomy:	0	0.0%				1° Perineal:	0	0.0%
Other:	0	0.0%				2° Perineal:	44	62.0%
<b>Total Deliveries:</b>	<b>78</b>					3° Perineal:	2	2.8%
						4° Perineal:	0	0.0%

\*\*Primary CS rate calculated on  
Total Deliveries - Previous CS

**PREVIOUS C-SECTIONS MANAGEMENT**

REPEAT C/S	Total Repeat C/S	% Repeat C/S	VBAC	Total VBAC	% VBAC
Repeat C/S - Labor:	1	10.0%	VBAC - Spontaneous:	5	50.0%
Repeat C/S - No Labor:	1	10.0%	VBAC - Forcep:	0	0.0%
Repeat C/S - Failed VBAC:	0	0.0%	VBAC - Vacuum:	3	30.0%
<b>Repeat C/S - Total:</b>	<b>2</b>	<b>20.0%</b>	<b>VBAC - Total:</b>	<b>8</b>	<b>80.0%</b>
<i>Total Patients with Previous C/S: 10 ( 12.8% of all deliveries)</i>			<i>Trial VBAC Rate: 80.0%</i>		
			<i>VBAC Success Rate: 100.0%</i>		

BREAKDOWN BY LOW BIRTH WEIGHTS	Total	Rate	BY STATUS	Total	Rate	BY ADD'L PROCS	Total	Rate
Low Birth Weight (under 2500 gms):	0	0.0/1000	Livebirths:	79		Hysterectomy:	0	0.0%
Very Low Birth Weight (under 1500 gms):	0	0.0/1000	Stillbirths:	0	0.0/1000	Tubal Lig:	4	5.1%
Very Low Birth Weight (under 1000 gms):	0	0.0/1000	TAB/SABs:	0		ppD&C:	0	0.0%
<i>(excludes TAB/SAB)</i>						Emergent CS:	0	0.0%
						Vacuum Assisted C/S:	0	0.0%
						B-Lynch Suture:	0	0.0%
						Tamponade Balloon:	0	0.0%

# Feedback Principles

- ***Prompt***
- ***Accurate***
- ***Detailed***
- ***Does it seem right?***

# Individual Physician Reports

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# Dissemination of CSR Statistics

- Many authors have recommended publication of CSR in effort to decrease individual variation
- Difficult in the private setting because 1) detailed appropriate statistics are confusing to the public, 2) provider opposition, 3) legal restrictions
- Analysis of raw CSRs without analyzing by risk factors may cause the public to make inappropriate and unwise selections
- Our confidential system appeared to accomplish a similar goal with minimal interference to staff and physicians
- Mandated sharing of statistics with health care purchasing agents is beginning- detailed analysis will provide protection

# Pre-Labor Strategies

- Reducing unnecessary inductions:  $\geq 39$  weeks and ACOG indications
- Macrosomia management changes
- Management of “oligohydramnios”
- No admission prior to 3 cm and other labor evaluation techniques
- Breech: detection and version

# Meta Analysis Induction/CSR

- Our searches identified 3,722 potentially relevant articles, of which 76 articles met inclusion criteria. Nine RCTs compared expectant management with elective induction of labor. We found that overall, expectant management of pregnancy was associated with an approximately 22 percent higher odds of **cesarean** delivery than elective induction of labor (OR 1.22, 95 percent CI 1.07-1.39; absolute risk difference 1.9, 95 percent CI: 0.2-3.7 percent). The majority of these studies were in women at or beyond 41 weeks of gestation (OR 1.21, 95 percent CI 1.01-1.46).
- Despite the evidence from the prospective, RCTs reported above, there are concerns about the translation of such findings into actual practice, thus, there is a great need for studying the translation of such research into settings where the majority of obstetric care is provided

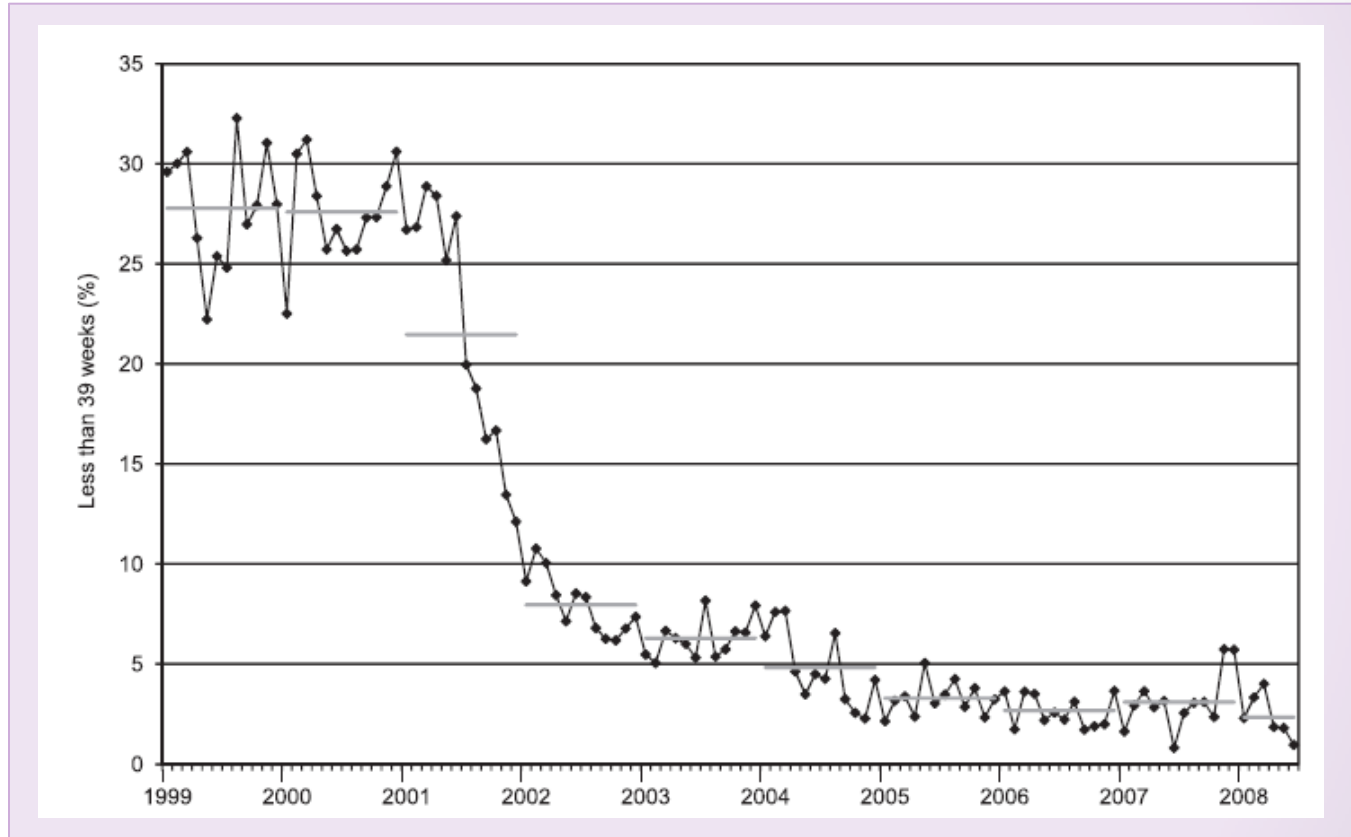
# Intermountain Healthcare's Experience

- Intermountain Healthcare is a vertically integrated healthcare system that operates 21 hospitals in Utah and southeast Idaho and delivers approximately 30,000 babies annually.
- Computerized L&D system.
- MFMs hired by system, but OBs are independent.
- January 2001: 9 urban facilities participated in a process improvement program for elective deliveries.
- 28% of elective deliveries were occurring before 39 completed weeks of gestation.



Oshiro, B. et al. *Obstet Gynecol* 2009;113:804-811.

# % Non-medically Indicated Deliveries <39 Weeks, January 1999 – December 2005



# Stillbirths Before and After Implementation of Guidelines at Intermountain Healthcare

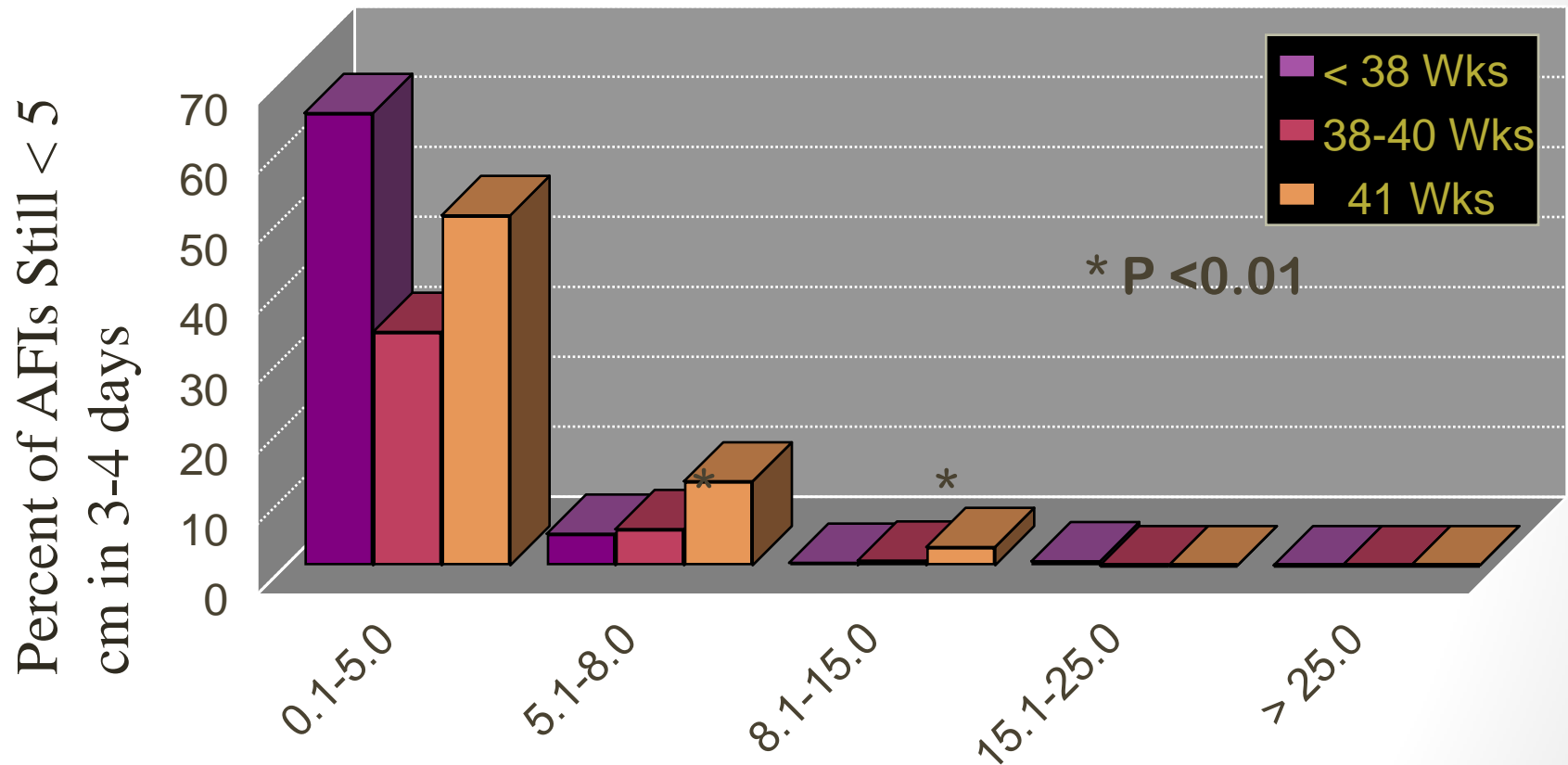
1999-2000				July 2001 to June 2006				
Weeks of Gestation	Stillbirths	Deliveries	%	Stillbirths	Deliveries	%	Odds Ratio	95% CI
37	17	4,117	0.41	22	13,077	0.17	0.406	0.22-0.77
38	19	9,954	0.19	21	28,209	0.07	0.390	0.21-0.72
39	10	13,752	0.07	28	51,721	0.05	0.744	0.36-1.53
40	10	7,925	0.13	14	24,140	0.06	0.459	0.20-1.03
41	2	1,938	0.10	3	5,571	0.05	0.522	0.09-3.12
All	58	37,686	0.15	88	122,718	0.07	0.466	0.33-0.65

Oshiro, B. et al. Obstet Gynecol 2009;113:804-811.

# “Tips” for Labor/induction

- Careful to have good indication for induction
- Avoid macrosomia and oligohydramnios inductions
- Induce only with a ripe cervix
- Avoid serial inductions

# Follow by Gestational Age



Lagrew, Pircon, et al, Am J Obstet Gynecol 1992;167:1129-33.

# Suspected Fetal Macrosomia (Non-Diabetic Population)

- Does not reduce risk of shoulder dystocia
- Doubles risk of cesarean delivery
- 262 pregnancies EFW >90%
- Elective group:
  - 57% cesarean delivery rate
  - 5.3% shoulder dystocia
- Spontaneous labor group:
  - 31% cesarean delivery rate
  - 2.5% shoulder dystocia

Combs et al. Obstet Gynecol 1993; 81:492-496

# EBM- Non-Clinical CSR

## Reduction

- Implementation of guidelines with mandatory second opinion can lead to a small reduction in **caesarean section rates**, predominately in intrapartum sections.
- Peer review, including pre-caesarean consultation, mandatory secondary opinion and post cesarean surveillance can lead to a reduction in repeat **caesarean section rates**.
- Guidelines disseminated with endorsement and support from local opinion leaders may increase the proportion of women with previous caesarean sections being offered a trial of labor in certain settings.
- Nurse-led relaxation classes and birth preparation classes may reduce **caesarean section rates** in low-risk pregnancies

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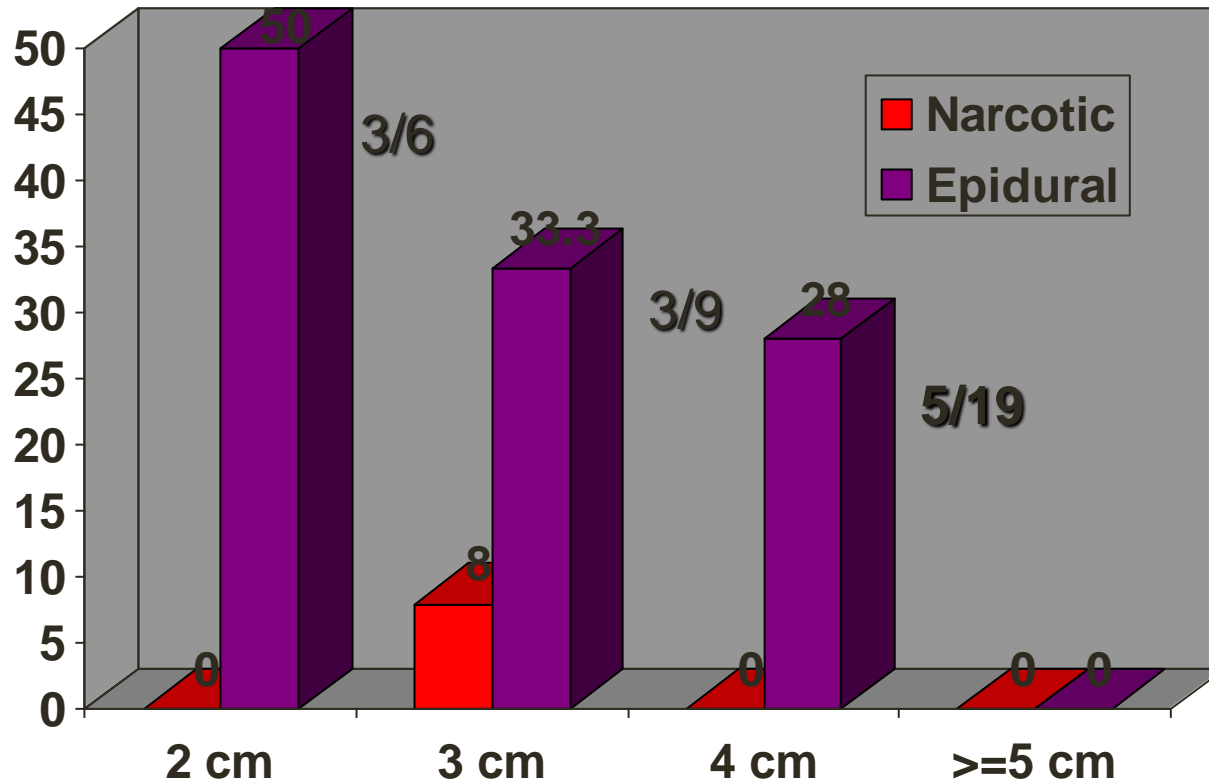
# Labor Strategies

- RN labor support and technique changes (ambulation, telemetry, 2<sup>nd</sup> stage)
- Anesthesia/Comfort Measures: aroma therapy, acupuncture, walking epidural
- Oxytocin protocols
- Active Management
- FHR interpretation training
- VBAC trials

# Changing Labor Techniques

- More aggressive dosing and interval techniques for oxytocin administration
- Cervical ripening with prostaglandin gel
  - Outpatient procedure, multiple doses if required
- Collaborative practice
  - Care manager met with induction and CS patients
  - Detailed hourly care-mapping for inductions
    - More timely beginning and advancements
  - Staff education on laboring techniques, oxytocin administration and active management
- Encouragement of ambulation and upright laboring positioning

# CSR by Dilation at Placement



# “Tips” for Epidurals

- Placement at only 4 cm or greater
- Less local more narcotic
- Maintain upright position changes
- Describe technique and philosophy in childbirth classes
- No pushing until descent and rotation
- An epidural is better than a c-section

# A Clinical Trial of Active Management of Labor

- 1934 nulliparous women at low risk of complications assigned before 30 weeks
- No difference in CSR (10.5% vs. 11.5%)
- Shortened median labor 2.7 hrs (6.2 vs. 8.9 hrs)
- Percent of women in labor longer than 12 hours was 3 times higher with usual management (9% vs. 26%)
- Lower incidence of fever in labor (7% vs. 11%)

# EBM: Active Management

- CS rates in the active management group were statistically significantly lower than in the routine care group (RR 0.77 95% CI 0.63 to 0.94).
- More women in the active management group had labors lasting less than twelve hours, but there was wide variation in length of **labor** within and between trials.
- There were no differences between groups in use of analgesia, rates of assisted vaginal deliveries or maternal or neonatal complications
- It is possible that some components of the active management package are more effective than others

# Increasing the VBAC Rate

- Individual physician feedback
- "Opinion leader" role
- VBAC class
  - Pros/cons of trial labor
  - Refresher course on labor
  - 90% trial of labor from participants

# IHI Changes leading to VBAC

- VBAC Class
- Hospital rates distributed
- Individual and group rates distributed
- Education office staff
- Consent forms
- Patient testimonials
- In-house anesthesia and OB-Gyn
- Care map after 1st C-Section, info on VBAC
- Mail brochure at 2 weeks
- “What if it was your wife?”
- “Do what’s easiest for the patient”
- Explain pain control
- Posters in M.D. office
- Previa-previous c-section
- Dr. Flamm’s book
- Follow-up patients to inquire about counselling

# Other Strategies

- General
  - More analysis between providers with "IDEAL" target rate for provider by risk analysis
  - Changing of call patterns and delivering attendants (midwives)
  - External benchmarking with other institutions
- Breech
  - Analysis of success of breech version, enhanced detection (third trimester office standard practices), better counseling
- Fetal distress
  - Better interpretation and categorization

# Version Success

- The total success **rate** was 62%, and after a successful ECV 84% of the fetuses were delivered vaginally.
- No severe complications were registered during the ECVs and all babies had normal Apgar Scores at delivery.
- Attempting ECV at least once or even twice, seems to be appropriate since a successful ECV can decrease the **rate** of **cesarean section** in this group of patients and by so doing also may decrease the risk of **cesarean section** in future pregnancies

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# Everyone has a role...

- Patients
  - VBAC class, labor class - epidural placement, ambulation
- RN staff
  - Care map development, new techniques like labor management changes, amnioinfusion, encouraging ambulation; Education
- Physicians
  - Jointly developing care maps; Encouraging patients, analyzing their practice to the best practice guidelines
- Hospital
  - Funding for educational programs; Dedicated staff for quality improvement; Developing systems for care map development and adoption; Funding for data acquisition

# Tort Reform?

- Malpractice premiums were positively associated with **rates of cesarean section** (beta = 0.15, P = 0.02) and primary **cesarean section** (beta = 0.16, P = 0.009), and negatively associated with VBAC **rates** (beta = -0.35, P = 0.01).
- These estimates imply that a \$10,000 decrease in premiums for obstetrician-gynecologists would be associated with an increase of 0.35 percentage points (1.45%) in the VBAC rate and decreases of 0.15 and 0.16 percentage points (0.7% and 1.18%) in the **rates of cesarean section** and primary **cesarean section**, respectively; this would correspond to approximately 1600 more VBACs, 6000 fewer **cesarean** sections, and 3600 fewer primary **cesarean** sections nationwide in 2003.
- Two types of tort reform-caps on noneconomic damages and pretrial screening panels-were associated with lower **rates of cesarean section** and higher **rates** of VBAC.