IMPACT OF MEDICAL INTERVENTIONS ON BREASTFEEDING

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Objectives

• Explain the origin of laboring alone, fasting, and prohibiting maternal movement in labor and birth
• Discuss risks of induction of labor to mother and baby
• Discuss outcomes of scheduled Cesarean surgery to the breastfeeding mother and baby
• Discuss risks of chemical pain relief methods including epidurals on breastfeeding
• Discuss strategies to help breastfeeding dyads recover from birth interventions
Disclosure

• Karen Peters has no conflict of interest nor influencing financial relationship that could create bias in her presentation
Linda Smith

- Linda Smith is the sole author of *Impact of Birthing Practices on Breastfeeding, Second Edition*
- The late Mary Kroeger was the co-author for the first edition
- Linda prepared this presentation and generously gave it with me to share with you
My journey to this point
Global Importance of BF

- WHO Millennium Development Goals 2000
- WHO Global Health Statistics 2009
- WHO/UNICEF Global Strategy for Infant & Young Child Feeding 2003
- Global Breastfeeding Initiative for Child Survival (gBICS)
- World Breastfeeding Trends Initiative (WBTi)
- Global Health Council Position & Briefing Papers
- UNICEF State of the World’s Children 2009
- WHO Every Newborn Action Plan 2014

http://www.who.int/maternal_child_adolescent/topics/newborn/enap_consultation/en/
Research gaps

- Few studies of birth practices address breastfeeding outcomes
  - *hundreds of studies; only 2 had BF outcomes*

- Few studies of breastfeeding & lactation investigate birth-related factors
  - *reported oxytocin responses, no information on infant suck*

- Politics & Funding of Research
  - “Out of 362 abstracts… awarded ~40.4 million dollars…only 13.7% (5.6 million dollars) was awarded to projects determined to have either a direct or indirect impact on achieving the Healthy People 2000 goals for increasing the incidence and duration of breastfeeding”
Core Research-Based Practice

Theory-driven

New ideas

Observations

Common practice

Trial & error

“What works”

Experimental
“We measure what we value”

- “Because ‘failure to breastfeed’ is not recognized as a possible harmful effect of medication, there are few methodological precedents in this area.
- “This is the first report of a dose–response relationship between intrapartum neuraxial opioid analgesia and infant feeding.
- “When well-established determinants of infant feeding are accounted for, intrapartum fentanyl may impede breastfeeding, particularly at higher doses.”
Failure to breastfeed IS harmful

- Failure to breastfeed MEANS formula feeding
- Formula fed children are more likely to die, even in USA
  - 720 postnatal neonatal deaths per year (Chen & Rogan, *Pediatrics* 2004)
  - “[USA] excess 911 deaths, nearly all of which would be in infants ($10.5$ billion and 741 deaths at 80% compliance” (Bartick & Reinhold, *Pediatrics* 2010)
  - 25% increase in mortality for minorities (Forste, *Pediatrics* 2001)
  - ~doubles the risk of SIDS throughout infancy (Venneman, *Pediatrics* 2009)
  - 1,301,000 (13%) of infant deaths globally (Lancet 2003)

- Increased rates of
  - Acute Otitis Media
  - Gastrointestinal Infections
  - Atopic Dermatitis
  - Lower Respiratory Tract Diseases
  - Asthma
  - Cardiovascular Diseases

- Poorer cognitive development
- Obesity (mother and baby)
- Type I and II Diabetes
- Childhood Leukemia
- Osteoporosis
- Postpartum Depression
- Breast & Ovarian Cancer
  - *(AHRQ 2007)*
First, do no harm

- If the newborn is unable to breastfeed, AND/OR
- If lactogenesis is delayed, or impaired AND/OR
- If the mother is unwilling to bring her baby to breast many times a day,

- The baby will be fed formula, which
  - increases risk of sickness and death, and
  - undermines the mother’s goals
Formula with beetles??

- Abbott Recalls Infant Formula On Bug Contamination
  - by The Associated Press

- WASHINGTON September 22, 2010, 08:47 pm ET
- Drugmaker Abbott Laboratories said Wednesday it is recalling millions of containers of its best-selling Similac infant formula that may be contaminated with insect parts.
- The voluntary action affects up to 5 million Similac-brand powder formulas sold in the U.S., Puerto Rico, Guam and some Caribbean countries. The company said the products may contain a small beetle or larvae, which could cause stomach ache and digestion problems.
Baby Friendly Hospital Initiative

- Roots: WHO code, 1981
  - Worldwide protest to unethical marketing
- UNICEF launch 1992
- May 2010: 22,000 hospitals in 156 nations
- Aug 2014: 195 facilities in the USA
- WHO: “Best Practice” intervention
- USA: [www.babyfriendlyusa.org](http://www.babyfriendlyusa.org)
BFHI 2009: added “Mother-friendly care” to Steps 2 & 3

- Continuous companion in labor (doula, family, friend)
- Light foods & fluids during labor
- Move about freely including delivery
- Non-drug pain relief
- Avoid unnecessary interventions
COMPANION OF THE MOTHER’S CHOICE

No study has confirmed the safety and efficacy of laboring alone
How did we get here?

- Women have always had labor companion(s)
- Obstetric care replaced midwives - 1840s
- Birth moved into hospitals by the late 1940’s
  - Companions prohibited – “sterile” concept
- 1980: Sosa, Kennell and Klaus’ research
- Doula-training organizations multiply
- Staff reactions mostly positive
Breastfeeding Outcomes
Strongly supports breastfeeding

- Reduction in labor length & complications
  - 50% fewer Cesareans ($p<.002$)
  - 25% shorter labors ($p<.001$)
  - 30% less Pitocin inductions ($P<.001$)
  - 30% less analgesia, vacuum extractors
  - 40% fewer forceps deliveries
  - Less meconium aspiration, asphyxia

- Mother cares for baby as she was cared for in labor
- More exclusive breastfeeding
  - More flexible feeding interval, finds mothering easy
  - Less “feeding problems, baby with poor appetite”
FREELY MOVE ABOUT IN LABOR AND BIRTH

“GRAVITY WORKS”

No study has confirmed the safety and efficacy of horizontal and/or immobile positions for labor or birth
How did we get here?

• Women have always moved freely and usually choose upright positions for birth
• 1857: Simpson introduced ether (chloroform)
• 1913: DeLee promoted lithotomy
• 1979: Caldeyro-Barcia’s research on upright positions
• Staff responses: mixed
Breastfeeding outcomes

- Horizontal position = longer 1st stage, poorer fetal oxygenation
- Horizontal position = longer 2nd stage, excess molding, more fetal distress, more instruments & surgery
- Long labors = delayed lactogenesis (Chen)
- No direct research on BF outcomes
Freely move about (Gravity works)
No direct research re: breastfeeding

Ohio, USA home birth (LJS)

Cambodia, hospital birth (MK)
EAT AND DRINK FREELY

“LABOR IS WORK”

No study has confirmed the safety and efficacy of withholding food and drink during labor and birth
How did we get here?

- Women have always consumed food and drink until hard labor begins and liquids thereafter
- 1857: Simpson introduced ether (chloroform)
- 1946: Mendelson studied gastric aspiration
  - 44,016 births with general anesthesia
    - 66 aspirations (0.15%) (40 aspirated liquid, 5 aspirated food)
    - 2 deaths (0.005%) (probably from solid food)
- This was before intubation, cricoid pressure, H2 antagonists, regional anesthesia, and training of OB anesthesiologists was widespread
Light eating & drinking in labor

No direct research re: breastfeeding

- Labor is vigorous exercise / work
- Fasting & starvation slows, complicates labor
- “Most obstetric anesthesiologists agree that a rigid NPO policy in labor is no longer appropriate”
- “Consumption of a light diet during labour did not influence obstetric or neonatal outcomes in participants, nor did it increase the incidence of vomiting.”
  ◦ O'Sullivan, BMJ 2009

*Cambodia 2001 - Offering oral fluids was “new” policy for these midwives (MK)*
2009 Policy changes

• “The oral intake of modest amounts of clear liquids may be allowed for patients with uncomplicated labor. The patient without complications undergoing elective cesarean delivery may have modest amounts of clear liquids up to 2 hours before induction of anesthesia.

Breastfeeding Outcomes

• When oral liquids are withheld, IV hydration is given
• Delayed onset of lactogenesis; excess newborn weight loss


More outcomes

• “EWL was more common in this population than reported previously and was independently related to intrapartum fluid balance. This suggests that intrapartum fluid administration can cause fetal volume expansion and greater fluid loss after birth, although other mechanisms are possible.”

• Indirect Maternal Risks
  • Psychological risks
  • Pain & stress
  • Restriction of movement

• Indirect Newborn Risks
  • Electrolyte imbalances
  • Fluid overload, excess loss of birth weight
  • Separation from mother
  • Disruption in early breastfeeding
INDUCTION OF LABOR

WHO: ~10% is medically justified
Chance or Choice? Induction

• This isn’t new!
  • The U.S. Food and Drug Administration disapproved of elective inductions in the 1970s due to iatrogenic prematurity, overcrowded neonatal intensive care units, and huge unnecessary costs

• Increased risk of infant death

• Doubled risk of Cesarean
“Insufficient evidence”

- “The evidence regarding elective induction of labor prior to 41 weeks of gestation is insufficient to draw any conclusion.
- There is a paucity of information from prospective RCTs examining other maternal or neonatal outcomes in the setting of elective induction of labor.”


**NEW:** “Induction of labor for non-recognized indications at term is associated with an increased risk of adverse outcomes.”

Higher risk of Cesarean


• RESULTS: The overall cesarean delivery rate was 30.5%.
  • The 31.2% of nulliparous women were delivered by cesarean section.
  • Prelabor repeat cesarean delivery due to a previous uterine scar contributed 30.9% of all cesarean sections.
  • The 28.8% of women with a uterine scar had a trial of labor and the success rate was 57.1%.
  • The 43.8% women attempting vaginal delivery had induction.
  • Half of cesarean for dystocia in induced labor were performed before 6 cm of cervical dilation.

• CONCLUSION
  • To decrease cesarean delivery rate in the United States, reducing primary cesarean delivery is the key. Increasing vaginal birth after previous cesarean rate is urgently needed. Cesarean section for dystocia should be avoided before the active phase is established, particularly in nulliparous women and in induced labor.
No information on BF outcomes

• As of Aug. 12, 2014:

• I have found no studies that have specifically investigated or reported breastfeeding outcomes related to induction.
Indirect outcomes

- Synthetic oxytocin = stronger contractions
  - ↑ pressure on baby’s head
  - Increased cranial molding, probably stressful
- ↑ infant pain ?
- ↑ maternal pain
  - ↑ Maternal desire for pain relief drugs
  - Reduced natural endorphins in mother & baby/fetus

- Less-mature baby
  - “Mild- and moderate-preterm birth infants are at high relative risk for death during infancy and are responsible for an important fraction of infant deaths” (Kramer, JAMA 2000)
Excess forces to baby’s head

- Induction & augmentation
- Pushing on fundus
- Supine position
- Immobility
- Instruments and Cesarean
- **Result**: more molding; abnormal molding
More / excessive molding

• Facial and/or jaw asymmetry

• Torticollis
Clinical implications

- Immaturity: more respiratory problems
- Difficulty coordinating suck/swallow/breathe
- ? Effect on lactogenesis ?
  - May contribute to delayed lactogenesis
- Head pain from excess forces?
- More drugs to metabolize
- Begins a cascade of interventions
- Reduces chance for unassisted vaginal birth (Tracy)
ELECTIVE CESAREAN SURGERY

ANY CESAREAN SURGERY
Immediate Skin-to-Skin after Cesarean
Elective Cesarean: Infant respiratory problems

• Results Of 24,077 repeat cesarean deliveries at term, 13,258 were performed electively;
  • of these, 35.8% were performed before 39 completed weeks of gestation (6.3% at 37 weeks and 29.5% at 38 weeks) and 49.1% at 39 weeks of gestation. One neonatal death occurred.
  • As compared with births at 39 weeks, births at 37 weeks and at 38 weeks were associated with an increased risk of the primary outcome (adjusted odds ratio for births at 37 weeks, 2.1; 95% confidence interval [CI], 1.7 to 2.5; adjusted odds ratio for births at 38 weeks, 1.5; 95% CI, 1.3 to 1.7; P for trend <0.001).
  • The rates of adverse respiratory outcomes, mechanical ventilation, newborn sepsis, hypoglycemia, admission to the neonatal ICU, and hospitalization for 5 days or more were increased by a factor of 1.8 to 4.2 for births at 37 weeks and 1.3 to 2.1 for births at 38 weeks.
• Conclusions Elective repeat cesarean delivery before 39 weeks of gestation is common and is associated with respiratory and other adverse neonatal outcomes.
Elective Cesarean:
Infant respiratory morbidity, fetal laceration, deaths

• “ECD is associated with greater risk for neonatal respiratory morbidity and fetal laceration and potentially decreased risk for brachial plexus injury, neonatal sepsis, intracranial hemorrhage, intrapartum asphyxia, and neonatal encephalopathy.

• Although neonatal deaths may be increased among infants delivered via elective cesarean, overall perinatal mortality may be reduced because of prevention of antepartum stillbirths.

• To minimize potential neonatal risks in ECDs, these deliveries should not be undertaken before 39 weeks’ gestation.

• Patients considering ECD should be made aware of available data on potential risks and benefits to fetus and neonate.
Elective Cesarean: Infant respiratory problems, NICU

- RESULTS: Neonates born by cesarean delivery had higher NICU admission rates compared with the VBAC group (9.3% compared with 4.9%, \(P = .025\)) and higher rates of oxygen supplementation for delivery room resuscitation (41.5% compared with 23.2%, \(P < .01\)) and after NICU admission (5.8% compared with 2.4%, \(P < .028\)).
- Neonates born by VBAC required the least delivery room resuscitation with oxygen, whereas neonates delivered after failed VBAC required the greatest degree of delivery room resuscitation.
- The costs of elective repeat cesarean were significantly greater than VBAC. However, failed VBAC accounted for the most expensive total birth experience (delivery and NICU use).
- CONCLUSION: In comparison with vaginal birth after cesarean, neonates born after elective repeat cesarean delivery have significantly higher rates of respiratory morbidity and NICU-admission and longer length of hospital stay.
Elective Cesarean:
Increased infant mortality

• RESULTS: The unadjusted neonatal mortality rate for cesarean deliveries with no labor complications or procedures was 2.4 times that for planned vaginal deliveries.

• In the most conservative model, the adjusted odds ratio for neonatal mortality was 1.69 (95% CI 1.35-2.11) for cesareans with no labor complications or procedures, compared with planned vaginal deliveries.

• CONCLUSIONS: The finding that cesarean deliveries with no labor complications or procedures remained at a 69 percent higher risk of neonatal mortality than planned vaginal deliveries is important, given the rapid increase in the number of primary cesarean deliveries without a reported medical indication.

Elective Cesarean: Poorer maternal health

- **RESULTS:** Women requesting cesarean section experienced their health as less good (p<0.001) and were more often planning for one child only (p<0.001).
- They more often reported anxiety for lack of support during labor (p<0.001), for loss of control (p<0.001), and concern for fetal injury/death (p<0.001).
- After planned cesarean section women in this group reported a better birth experience compared to women planning a vaginal birth (p<0.001).
- They were breastfeeding to a lesser extent three months after birth (p<0.001).

Any Cesarean: Increased Allergies / atopy

• RESULTS: After adjustment for other covariates, children born by cesarean section had 2-fold higher odds of atopy than those born by vaginal delivery (odds ratio, 2.1; 95% CI, 1.1-3.9). In multivariate analyses birth by cesarean section was significantly associated with increased odds of allergic rhinitis (odds ratio, 1.8; 95% CI, 1.0-3.1) but not with asthma.

• CONCLUSIONS: Our findings suggest that cesarean delivery is associated with allergic rhinitis and atopy among children with a parental history of asthma or allergies. This could be explained by lack of contact with the maternal vaginal/fecal flora or reduced/absent labor during cesarean delivery.

Any Cesarean: Increased Risk of Asthma

- Cesarean section, with a total prevalence of 8.5%, was associated with an increased risk of asthma (odds ratio [OR], 1.79; 95% confidence interval [CI], 1.27-2.51).
- This association was stronger among predisposed children (with two allergic parents: OR, 2.91; 95% CI, 1.20-7.05; with only one: OR, 1.86; 95% CI, 1.12-3.09) than in children with non-allergic parents (OR, 1.36; 95% CI, 0.77-2.42).
- The association between cesarean section and sensitization at the age of 8 years was significant only in children of non-allergic parents (OR, 2.14; 95% CI, 1.16-3.98).

CONCLUSIONS: Children born by cesarean section have a higher risk of asthma than those born by vaginal delivery, particularly children of allergic parents. Cesarean section increases the risk for sensitization to common allergens, in children with non-allergic parents only.

Any Cesarean: Maternal Amniotic fluid embolism

- The incidence of amniotic fluid embolism was higher with cesarean section, 5,000 of 22,937,000 (22/100,000) than with vaginal delivery, 7,000 of 89,775,000 (8/100,000) (relative risk 2.80, 95% CI 2.70-2.90) (p < 0.0001).

- CONCLUSIONS: The incidence of amniotic fluid embolism has decreased since the early 1990s. The risk is higher with cesarean section and higher in women aged > or =30 years.
Any Cesarean: Higher risk of stroke

- RESULTS: The regression model indicated that, compared with patients who delivered vaginally, the hazard ratio for postpartum stroke among those who delivered by cesarean section was 1.67 times greater within 3 months of delivery (95% CI, 1.29-2.16), was 1.61 times greater within 6 months of delivery (95% CI, 1.31-1.98), and was 1.49 times greater within 12 months of delivery (95% CI, 1.27-1.76).

- CONCLUSION: Our data indicates that cesarean section delivery is an independent risk factor for stroke.
Any Cesarean: More lasting pain

- RESULTS: The most frequently cited postpartum difficulty was among mothers with a cesarean section, 79 percent of whom reported experiencing pain at the incision in the first 2 months after birth, with 33 percent describing it as a major problem and 18 percent reporting persistence of the pain into the sixth month postpartum.

- Mothers with planned cesareans without labor were as likely as those with cesareans with labor to report problems with postpartum pain.

- Almost half (48%) of mothers with vaginal births (68% among those with instrumental delivery, 63% with episiotomy, 43% spontaneous vaginal birth with no episiotomy) reported experiencing a painful perineum, with 2 percent reporting the pain persisting for at least 6 months.

- CONCLUSIONS: Substantial proportions of mothers reported problems with postpartum pain. Women experiencing a cesarean section or an assisted vaginal delivery were most likely to report that the pain persisted for an extended period.

Any Cesarean:
Delayed onset of lactogenesis

- Risk factors for delayed lactation were being primiparous (adjusted OR 3.16, 95% CI 1.58-6.33) and having delivered by caesarean section (adjusted OR 2.40, 95% CI 1.28-4.51).
- We failed to find a negative association with maternal body mass index reported in previous studies.
- While a greater proportion of women who experienced delayed lactation were overweight or obese compared with those who did not experience delayed lactation (40.8% vs. 32.1%), this difference was not statistically significant.
Any Cesarean: Barrier to BF initiation

- Cesarean section was negatively related to breastfeeding initiation in multivariable logistic regression models (odds ratio = .64; 95% CI = 0.51-0.81) after controlling for confounding variables.
ACOG: 2010 VBAC guidelines

For Release: July 21, 2010

Ob-Gyns Issue Less Restrictive VBAC Guidelines

Washington, DC -- Attempting a vaginal birth after cesarean (VBAC) is a safe and appropriate choice for most women who have had a prior cesarean delivery, including for some women who have had two previous cesareans, according to guidelines released today by The American College of Obstetricians and Gynecologists.

www.acog.org/from_home/publications/press_releases/nr07-21-10-1.cfm
ACOG and Society for Maternal-Fetal Medicine

• March 2014: Safe Prevention of the Primary Cesarean Delivery

• In 2011, one in three women who gave birth in the United States did so by cesarean delivery. Cesarean birth can be life-saving for the fetus, the mother, or both in certain cases. However, the rapid increase in cesarean birth rates from 1996 to 2011 without clear evidence of concomitant decreases in maternal or neonatal morbidity or mortality raises significant concern that cesarean delivery is overused. Variation in the rates of nulliparous, term, singleton, vertex cesarean births also indicates that clinical practice patterns affect the number of cesarean births performed.

• The most common indications for primary cesarean delivery include, in order of frequency, labor dystocia, abnormal or indeterminate (formerly, nonreassuring) fetal heart rate tracing, fetal malpresentation, multiple gestation, and suspected fetal macrosomia.

• Safe reduction of the rate of primary cesarean deliveries will require different approaches for each of these, as well as other, indications.

• For example, it may be necessary to revisit the definition of labor dystocia because recent data show that contemporary labor progresses at a rate substantially slower than what was historically taught.

• Additionally, improved and standardized fetal heart rate interpretation and management may have an effect. Increasing women’s access to nonmedical interventions during labor, such as continuous labor and delivery support, also has been shown to reduce cesarean birth rates.

• External cephalic version for breech presentation and a trial of labor for women with twin gestations when the first twin is in cephalic presentation are other of several examples of interventions that can contribute to the safe lowering of the primary cesarean delivery rate.
Clinical Implications

• WHO: 10 – 15% probably medically justified
• NIH: Trial of Labor is a reasonable option for many pregnant women with a prior low transverse uterine incision. *NIH Consensus Development Conference: Vaginal Birth After Cesarean: New Insights* March 8–10, 2010
• ACOG: VBAC guidelines 2010; Cesarean prevention guidelines 2014

• Watch for possible infant respiratory and suck problems
  • Effect on direct breastfeeding; need for feeding devices
• Watch for possible delayed onset of lactation
  • Prenatal expression of colostrum from 36 weeks?
• Plan for extended maternal pain
  • Most pain relievers are compatible with BF
• Assure close skilled follow up!
EPIDURAL EFFECTS ON INFANT NEUROBEHAVIOR HORMONAL EFFECTS
All drugs reach the fetus/baby

• “Although the degree of placental transfer of sufentanil appeared greater than that of fentanyl, lower MV sufentanil concentrations resulted in less fetal exposure to sufentanil.
• The lower NACS (Neurologic and Adaptive Capacity Score) at 24 hours in group B-F may reflect the continued presence of fentanyl in the neonate.”
  • Randomized; double-blind study of epidural sufentanil and fentanyl infused with bupivacaine
All drugs reach the baby…
even local lidocaine

"It has not previously been reported that the use of analgesia via pudendal block has an adverse effect on the initiation of developing breastfeeding behavior including sucking."

Evidence of consequences

• “Among women who breast-fed previously, those who were randomly assigned to receive high-dose labor epidural fentanyl were more likely to have stopped breast-feeding 6 weeks postpartum than women who were randomly assigned to receive less fentanyl or no fentanyl.”


  • Note: “high dose” was more than 150 µg fentanyl
Cyanosis, unresponsive, visual skills, alertness, state, response to stress

• “infants with greater exposure to bupivacaine in utero were more likely to be cyanotic and unresponsive to their surroundings.

• Visual skills and alertness decreased significantly with increases in the cord blood concentration of bupivacaine, particularly on the first day of life by also throughout the next six weeks.

• Adverse effects of bupivacaine levels on the infant's motor organization, his ability to control his own state of consciousness and his physiological response to stress were also observed.”

Cueing, sucking, maternal attention

- “The epidural group showed poorer performance on the orientation and motor clusters during the first month of life. Epidural mothers reported spending less time with their infants in the hospital.”
- “a dose effect was found for the mean orientation and motor cluster scores.” (i.e., cueing and sucking)
- “The results are discussed in terms of possible effects of the infant's early disorganization on the mother-infant interaction.”
  - Bupivicaine by epidural; observed for 30 days (then stopped)
Hand-to-mouth, temperature, crying

• “All infants made finger and hand movements, but the infant's massage-like hand movements were less frequent in infants whose mothers had received labor analgesia.
• “A significantly lower proportion of group 3 infants made hand-to-mouth movements (p < 0.001), and a significantly lower proportion of the infants in groups 2 and 3 touched the nipple with their hands before suckling (p < 0.01), made licking movements (p < 0.01), and sucked the breast (p < 0.01).
• “Nearly one-half of the infants, all in groups 2 or 3, did not breastfeed within the first 2.5 hour of life.
• “The infants whose mothers had received analgesia during labor had higher temperatures (p = 0.03) and they cried more (p = 0.05)”
  • mepivacaine via pudendal block; pethidine or bupivacaine or combination
Poor suck (IBFAT); early weaning

• “infants of unmedicated mothers had higher IBFAT suckling scores than those of medicated mothers (x = 11.1 vs. x = 8.2 respectively, P = .001).
• “dyads with low IBFAT scores weaned earlier”
  • Bupivacaine, lidocaine, chloroprocaine, fentanyl, sufentanil by epidural
More instruments, less SVD, longer labors, maternal fever, septic workups

- “lower rate of spontaneous vaginal delivery, a higher rate of instrumental vaginal delivery and longer labors, particularly in nulliparous women.
- “Women receiving epidural are also more likely to have intrapartum fever and their infants are more likely to be evaluated and treated for suspected sepsis.”
- Not reported: Infant sucking ability
  - Epidurals; systematic review
Ineffective feeds; bottle supplements

• “more likely to receive a bottle supplement while hospitalized (OR 2.63; P < .001)"

• “Labor epidural anesthesia had a negative impact on breast-feeding in the first 24 hours of life even though it did not inhibit the percentage of breast-feeding attempts in the first hour”
  
  • Epidurals
  
Breastfeed for shorter duration

• “In the subgroup of women with spontaneous onset of labour and vaginal deliveries, after controlling for other obstetric and demographic factors, epidural analgesia but not narcotic analgesia was significantly associated with reduced breast-feeding duration (adjusted hazard ratio 1.44, 95% confidence interval 1.04-1.99).”
  
  • Epidural
“Not enough milk;” formula use

• “67% of the mothers who had laboured with epidural analgesia and 29% of the mothers who laboured without epidural analgesia reported partial breast feeding or formula feeding (P = 0.003).

• The problem of "not having enough milk" was more often reported by those who had had epidural analgesia”

• Not reported: infant sucking ability
  - Epidural
Breastfeeding difficulties, stop BF sooner

• “Intrapartum analgesia and type of birth were associated with partial breastfeeding and breastfeeding difficulties in the first postpartum week (p < 0.0001).

• “Analgesia, maternal age and education were associated with breastfeeding cessation in the first 24 weeks (p < 0.0001), with women who had epidurals being more likely to stop breastfeeding than women who used non-pharmacological methods of pain relief (adjusted hazard ratio 2.02, 95% CI 1.53, 2.67).

• “CONCLUSION: Women in this cohort who had epidurals were less likely to fully breastfeed their infant in the few days after birth and more likely to stop breastfeeding in the first 24 weeks”


• epidural
Reduced warming effect of STS

• “Skin temperature increased significantly (p=0.001) during the entire experimental period in the infants belonging to the control group.
• The same response was observed in infants whose mothers received OT intravenously during labour (p=0.008).
• No such rise was observed in infants whose mothers were given an EDA during labour.

CONCLUSION: The results show that the skin temperature in newborns rises when newborns are put skin-to-skin to breastfeed two days postpartum. This effect on temperature may be hampered by medical interventions during labour such as EDA.”

• Epidural
Delayed spontaneous breastfeeding; increased formula supplementation

- “Significantly fewer babies of mothers with EDA during labour suckled the breast within the first 4 hours of life [odds ratio (OR) 3.79].
- These babies were also more often given artificial milk during their hospital stay (OR 2.19) and fewer were fully breast fed at discharge (OR 1.79).
- Delayed initiation of breast feeding was also associated with a prolonged first (OR 2.81) and second stage (OR 2.49) and with the administration of oxytocin (OR 3.28).
- Key conclusions: the study shows that EDA is associated with impaired spontaneous breastfeeding including breastfeeding at discharge from the hospital.”
Hormone effects

- **Reduced oxytocin**

- **Reduced pulsatile oxytocin**

- **Reduced maternal socialization; increased anxiety and aggression**

- **Lowered endogenous oxytocin with epidural + oxytocin infusion**
Natural pain relief: endorphins

• “beta-endorphin is 18 to 33 times more potent than morphine”
  • Loh, *Proc Natl Acad Sci USA* 1976

• Epidurals reduce maternal endorphins

• Cesarean without labor reduces endorphins in milk
Clinical implications

• Babies with altered neurobehavior **do not feed effectively**, leading to…
  • **Inadequate nutrition for infant**
    • Risk of formula supplementation
  • **Milk retention in breast**
    • Suppressed onset of lactation / lactogenesis
    • Maternal pain
  • **Undermining of mothers’ confidence**
Clinical implications

• Epidurals reduce / block maternal endorphins released in labor
  • unrelieved maternal pain
• Birth without labor (C/S) reduces endorphins in fetus/baby
• Epidurals & birth without labor reduce endorphin concentrations in milk
  • Unrelieved infant pain?
  • Inability to access pain-relieving effect of breastfeeding
Clinical implications

- Non-pulsatile oxytocin: reduced milk release
  - Milk retention; compromised lactogenesis
  - Inadequate infant nutrition
  - Increased risk of formula supplementation
- Suppressed oxytocin: behavioral effects
  - Reduced maternal socialization
  - Increased anxiety and aggression
  - Reduced digestion, healing
  - Reduced trust
  - Reduced facial recognition
Cumulative effect of interventions

“RESULTS: We observed increased rates of operative birth in association with each of the interventions offered during the labour process. For first time mothers the association was particularly strong.

CONCLUSIONS: This study underlines the need for better clinical evidence of the effects of epidurals and pharmacological agents introduced in labour.

At a population level it demonstrates the magnitude of the fall in rates of unassisted vaginal birth in association with a cascade of interventions in labour and interventions at birth particularly amongst women with no identified risk markers and having their first baby.”


Rate of unassisted vaginal birth in association with instrumental and caesarean births amongst ‘low risk’ first time mothers, Australia, 2000—2002.
Traumatic birth impedes BF

**RESULTS**: Eight themes emerged about whether mothers' breast-feeding attempts were promoted or impeded. These themes included (a) proving oneself as a mother: sheer determination to succeed, (b) making up for an awful arrival: atonement to the baby, (c) helping to heal mentally: time-out from the pain in one's head, (d) just one more thing to be violated: mothers' breasts, (e) enduring the physical pain: seeming at times an insurmountable ordeal, (f) dangerous mix: birth trauma and insufficient milk supply, (g) intruding flashbacks: stealing anticipated joy, and (h) disturbing detachment: an empty affair.

**CONCLUSIONS**: The impact of birth trauma on mothers' breast-feeding experiences can lead women down two strikingly different paths. One path can propel women into persevering in breast-feeding, whereas the other path can lead to distressing impediments that curtailed women's breast-feeding attempts.”

Birth Trauma and Breastfeeding

For Breastfeeding to Succeed

• The baby is able to feed: able to cue, suck, swallow, and breathe smoothly

• The mother is producing milk and willing to bring her baby to breast many times a day

• Breastfeeding is comfortable for both

• Surroundings support the dyad
PRACTICE CHANGES
Results of the BFHI on birth practices

• Ukraine: “When MFM was introduced, the OB community changed practices ‘from the top down’ in 6 months”
  • Dr. Elena Sherstyuk and Dr. Lidiia Romanenko, June 2008, WHO biannual meeting of BFHI National Coordinators, Geneva
Reports from BFUSA

• “Several hospitals have reported that the process of making improvements with such positive outcomes became addictive, and caused them to think about what other improvement processes they could implement to further mother-baby health.”
  • Cindy Turner-Maffei, BFUSA, April 2009
RECOVERY AND RESTORATION
Recovery and restoration

- Immediate and sustained skin-to-skin contact “Place babies in skin-to-skin contact with their mothers immediately following birth for at least an hour and encourage mothers to recognize when their babies are ready to breastfeed, offering help if needed.” BFHI Step 4
- 24-hour rooming-in with safe bedding-in
  - BFHI Step 7
- Lactation support from skilled provider teams
- Follow-up care & support in the community
  - BFHI Step 10
Support the mother!

• Listen to mothers tell their birth story until they don’t need to tell it any longer
• Provide sensitive lactation support as long as mother wants / needs help
• Help her start, maintain, or wind down BF
• Document, share evidence with all MDs
• Other?
Be prepared for difficulties

- Immediate & sustained Skin-to-Skin
- Begin milk expression by 2 hours PP
- Donor milk available on prescription
- Keep mothers and babies together
- Close skilled follow-up (teams)
  - During and after hospital stay
  - Ongoing community support
Role of Lactation Professionals

- Document labor profiles of difficult breastfeeding situations and discuss with providers
- Request joint discussions on problem cases and investigate the possible reasons and contributing factors for BF difficulties
- Communicate and collaborate with obstetric and pediatric physicians, midwives and nurses
- Form / join / connect local birth & breastfeeding coalitions

Community breastfeeding activist and baby, Malawi (MK)
For Breastfeeding to Succeed

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Summary

- Failure to breastfeed is harmful
- Cesarean surgery (planned or emergent) can negatively affect breastfeeding initiation
- All labor pain-relief drugs including narcotics given via epidural negatively affect infant neurobehavior
- Cumulative effects of interventions on BF
- Mother-Friendly Practices now integrated in BFHI
- Recovery may be challenging and long
Thanks to…

- UNICEF for integrating Mother-Friendly birth practices into BFHI
- the late Mary Kroeger, CNM, MPH
- ILCA for support of BFHI worldwide
- Jones & Bartlett Learning (Publishers)

- To all of you for thinking about this issue from now on!
Thank you!

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- Impact of Birthing Practices on Breastfeeding, 2nd Ed.
  - www.jblearning.com