# It Takes Two to Tango

## How the Management of Birth Affects the Breastfeeding Dyad

***Linda J. Smith, BSE, FACCE, IBCLC***

# For Breastfeeding to Succeed

- The baby must be able and willing to feed
- The mother must be able and willing to let her baby nurse
- Breastfeeding should be comfortable and pleasant for both
- Circumstances and surroundings must support the dyad so the mother feels free to continue

# Problem: healthy term babies who

- Latch, but stop & don't continue sucking
- Suck, but don't transfer milk
- Can't coordinate suck-swallow-breathe
- Can only BF in one position or posture
- Aren't satisfied at breast; cry a lot
- Chew, crease, & damage mom's nipple(s)
- May not feed much better from devices

# It isn't "about the bike"

- NOT maternal motivation
- NOT family stress or lack of support
- NOT unrealistic expectations re: infant
- NOT primarily a breast problem
  - But can cause breast & nipple problems
- NOT primarily a milk supply problem
  - But can quickly compromise milk supply

# Suspicious contributing factors

- Epidural anesthesia / analgesia
- Forceps delivery
- Vacuum extractor
- Induction of labor
- Cesarean delivery
- Long, difficult labor, esp. with posterior lie
- Cranial or postural asymmetry

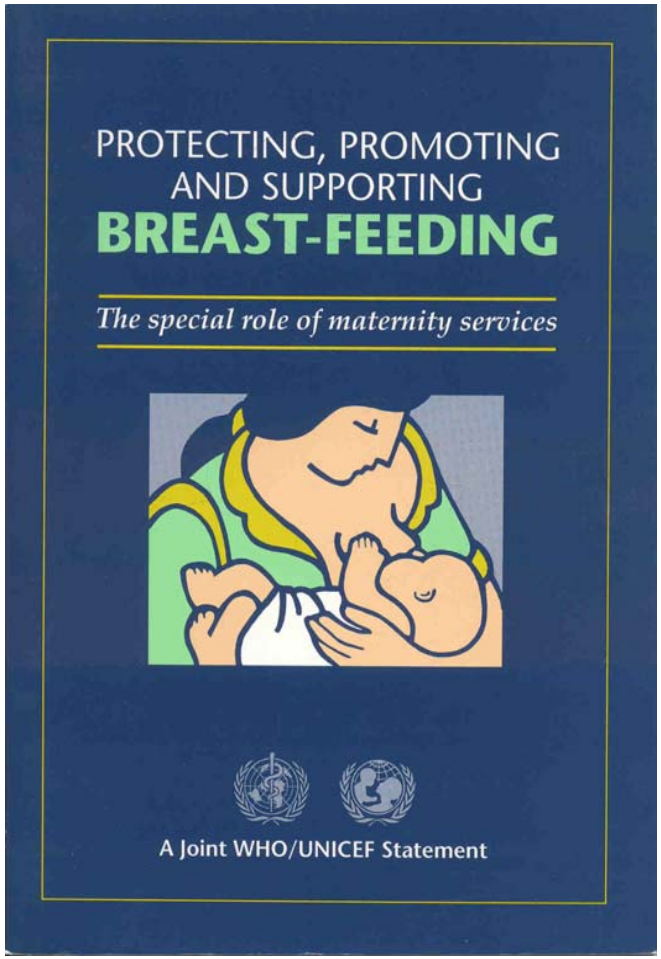
# “The worst enemy of good technique is good luck”

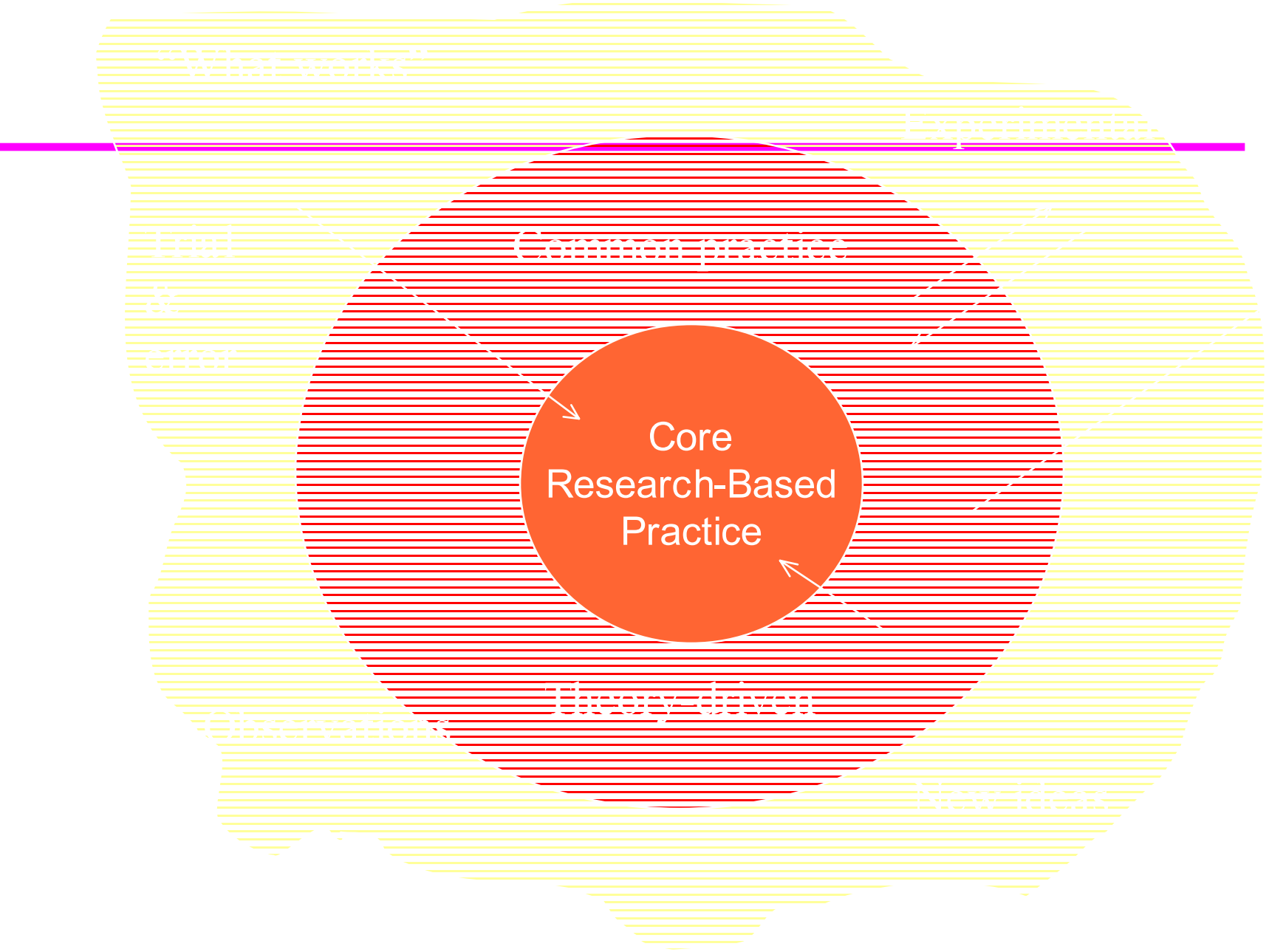
- Carl Bromer

Stellar Sales Concepts

# Birth practices affect breastfeeding

- This isn't new.
- WHO Fortelaza 1985
- WHO-UNICEF Joint Statement, 1989
- Indonesia MFHI 1995
- Zambia study, 1997
- CIMS / MFCI (USA) 1996




Core
Research-Based
Practice

# How does birth affect BF?

- Mother's confidence & trust in her ability to birth spills over to become confidence in her ability to breastfeed her baby
- Attitude of attendants matters a LOT
  - "You can do this!"

# Part 1- “mechanical” issues

Physics, forces, & mechanics affecting the baby’s bones, muscles & nerves

# Baby's "hardware"

- Skull: 22 bones, 34 sutures / joints
  - Some fuse by adulthood; others don't
- Muscles move the parts
  - 60 muscles for suck-swallow-breathe
    - » Tongue: set of muscles
    - » Muscles of mastication (chewing)
    - » Pharynx and muscles of swallowing
    - » Muscles of breathing
  - Airway MUST be preserved

# Infant skull

# Infant skull; cranial base

# Complexity of suck-swallow-breathe

- 6 cranial nerves
- 22 bones
- 34 sutures/articulations
- 60 muscles - voluntary and involuntary
- 40-60 cycles a minute for 10-30 minutes
- 8-16 sessions a day or more
- Learn quickly - or starve - or die!

# Hard Palate Structure & Function

- Maxillary arch and palate
  - rugae, suture
  - dimensions & shape affect oral pressures and muscle function
- Palatine bone and suture
- Trigeminal, Facial nerve receive sensory input

# Baby's "software"

- 6 Cranial nerves
  - Trigeminal V: lower jaw, face, tongue
  - Facial VII: mouth, tongue, taste, shape, texture
  - Glossopharyngeal IX: pharynx, taste, tongue
  - Vagus X: pharynx, larynx, lungs, heart, GI
  - Spinal Accessory XI: neck muscles
  - Hypoglossal XII: tongue muscles
- Sensory and motor components

# Soft Palate Structure & Function

- Palate moves in response to tongue, muscles
- Juncture with hard palate: placement of nipple tip
- Vagus, Facial, Glossopharyngeal = sensory innervation

# Trigeminal N (V)

- Sensory: palate, tongue, lower jaw, nose (smell)
- Motor: muscles of mastication
- Forceps placement?
- Effect of pain meds?
  - Numb palate & tongue?
  - Can't effectively latch?

# Facial nerve (VII)

- Sensory: palate, ant. 2/3 of tongue, tear ducts
- Motor: facial muscles, lips, cheeks, jaw

# Glossopharyngeal N (IX)

- Sensory: posterior palate and tongue - Triggers gag response
- Motor: muscles of mastication

# Vagus nerve (X)

- Motor: Larynx, heart, lungs, trachea, GI tract
- Sensory: heart, lungs, trachea, bronchi, larynx, pharynx, GI tract, external ear
- Hi-pitched squeal?
- Reflux?
- Coordinate suck with breathe?

# Spinal Accessory N (XI)

- SCM muscle
- Trapezius
- Torticollis?
- Head position?
- Airway patency?

# Hypoglossal Nerve (XII)

- Motor fibers control tongue
- Ant and Post branches
- Sequential, smooth contraction
- Voluntary and involuntary movements can be conditioned or mis-patterned

# The Tongue is a SET of Muscles

- Longitudinal and oblique/diagonal fibers
- Intrinsic and Extrinsic fibers
- Complex contraction patterns
  - Depression, elevation, extension, retraction, spread
  - cupping, arching - lengthwise & transverse
  - peristalsis:- anterior-to-posterior & reverse
- Hypoglossal is primary motor nerve

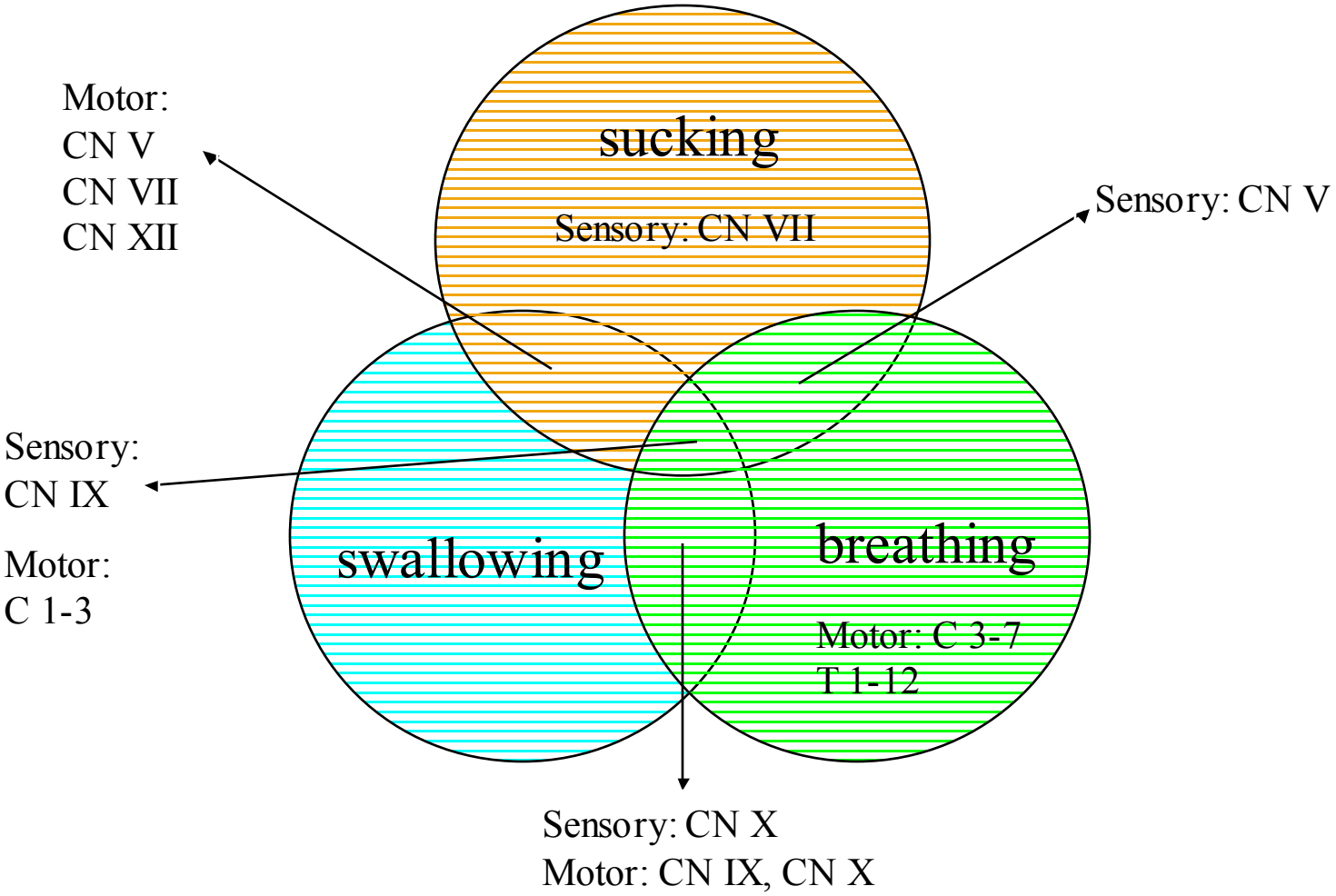
# Tongue musculature

# Other Muscles Affecting Suck

- Neck and jaw muscles stabilize bony structures
- Extrinsic muscles maintain airway patency
- Internal muscles coordinate suck-swallow-breathe
- All are relatively weak in the newborn
- All are affected mechanically, chemically, nutritionally

# Suck-swallow-breathe triad



# Elements of Milk Transfer

- Positive pressure: Milk Ejection Reflex
  - Most reliable; rarely disrupted
- Negative pressure: “Suck” fills the sinuses
  - Overuse of facial muscles traumatizes nipple
- Mechanical pressure: Peristalsis moves milk
  - Most complex; most subject to interference
  - Poor  peristalsis compromises milk flow
  - Can compress nipple tip against hard palate

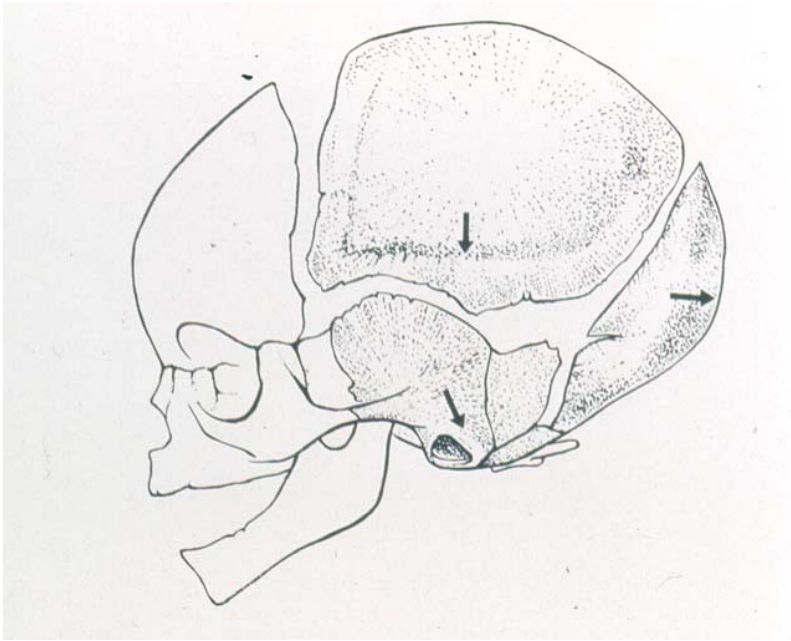
# Milk transfer - Woolridge

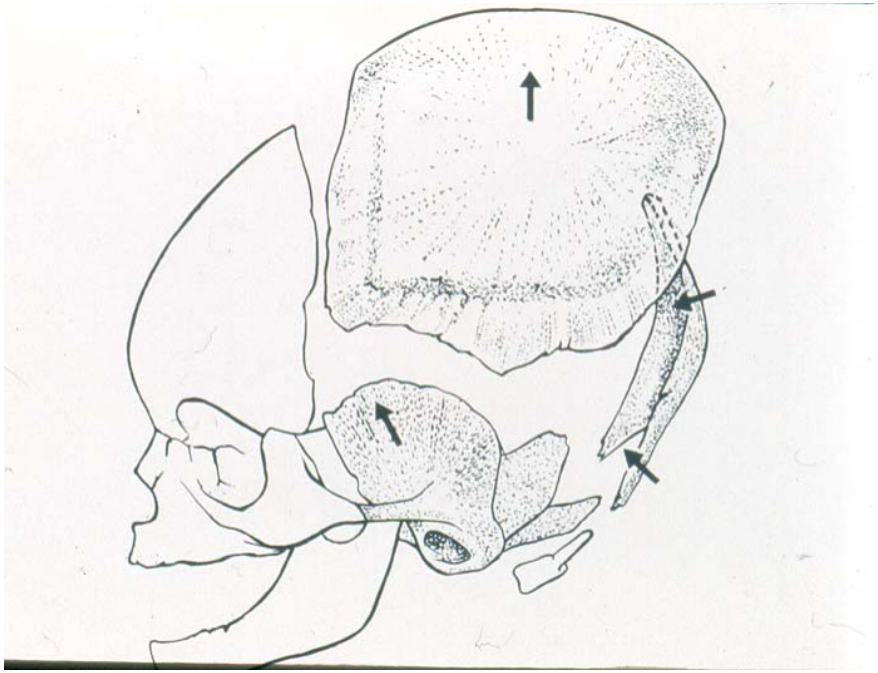
# Birth Affects Breastfeeding

- Birth affects mother's psyche, sense of self, body integrity
- Affects baby:
  - Physically
  - Pharmacologically
  - Physiologically
  - Neurologically

# Cranial molding during birth





# FDA Public Health Advisory: Need for CAUTION When Using Vacuum Assisted Delivery Devices (May 21, 1998)

- Although **all infants exposed to vacuum assisted delivery devices will have a caput succedaneum**, care providers need to be aware that **two major life-threatening complications** following use of vacuum assisted devices have been reported to us:
- **Subgaleal hematoma (Subaponeurotic hematoma)**
  - This occurs when emissary veins are damaged and blood accumulates in the potential space between the galea aponeurotica (epicranial aponeurosis) and the periosteum of the skull (pericraniaum). Since the subaponeurotic space has no containing membranes nor boundaries, the subgaleal hematoma may extend from the orbital ridges to the nape of the neck. This condition is dangerous because of the large potential space for **blood accumulation** and the possibility of **life-threatening hemorrhage.**
  - **Signs:** diffuse swelling of the head and signs of hypovolemic shock (e.g., **pallor, hypotension, tachycardia and increased respiration rate**). The signs may be present at delivery or may not become clinically apparent until several hours or **up to a few days following delivery**. The swelling is usually diffuse, shifts dependently when the infant's head is repositioned and indents easily on palpation. However, in some cases the swelling is difficult to distinguish from the edema of the scalp. On occasion, the hypotension and pallor are the dominant signs while the cranial findings are unremarkable.
- **Intracranial Hemorrhage**
  - This may include subdural, subarachnoid, intraventricular, and/or intraparenchymal hemorrhage.
  - **Signs:** indications of cerebral irritation, including convulsions, **lethargy**, obtundation, **apnea**, bulging fontanelle, **poor feeding, increased irritability**, bradycardia and/or shock. The signs and symptoms are sometimes delayed until several hours after birth.

- www.fda.gov/cdrh/safety.html

# New research

- “Vacuum vaginal delivery was a strong predictor of early cessation of breastfeeding”
  - Hall RT, Mercer AM, Teasley SL, et al. 2002. A breastfeeding assessment score to evaluate the risk for cessation of breastfeeding by 7 to 10 days of age*. J Ped* 141:659–664.
- Poor feeding is one sign of intercranial bleeding
  - Avrahami E, Amzel S, Katz R, et al. 1996. CT demonstration of intracranial bleeding in term newborns with mild clinical symptoms. *Clin Radiol* 51:31–34.

# Part 2: Chemical, physiological issues

Effects of birth drugs

Effects of birth injuries

Effects of postbirth practices

# Drugs for pain relief

- All cross placenta (Loftus)
- IV or Epidural: rapid transfer
  - 15 seconds to 1-2 minutes
- Epidural: higher dose than IV
- Highly lipid soluble
- Redistribute to fetus/infant brain
  - can’t always find in cord blood

# Pediatric half-life

- Bupivicaine: 8.1 hours
- Mepivacaine: 9 hours
- Fentanyl: up to 24 hours depending on dose
- ***5 half-lives to clear from baby's system!***

- Observed effects for at least 30 days *(Sepkoski)*

# Effects of pain-relievers

- CNS depression
  - breathing, sucking, muscle tone
- CV depression; more resuscitation
- Neurobehavioral
  - Motor, orientation *(Sepkoski)*
- Sensory effects on mouth (?)
- Psychotrophic effects (“floating”)

# Epidural effects

- Maternal fever (Fusi)
  - infant fever = more tests (Klaus)
  - antibiotic therapy = more thrush (Amir)
- More catheters, Cesareans = more pain
- Psychological
  - Less interaction with baby (Sepkoski)
  - Spectator role (Danner)
  - Less mastery (Poore)

# “smoking gun” research?

- “Labor epidural anesthesia had a negative impact on breastfeeding in the first 24 hours of life, even though it did not inhibit the percentage of breastfeeding attempts in the first hour.”
- Baumgarder DJ, Muehl P, Fischer M, Pribbenow B. **“Effect of labor epidural anesthesia on breastfeeding of healthy full-term newborns delivered vaginally”** J Am Board Family Practice Jan-Feb 2003; 16(1): 7-13.

# Setting the stage for BF problems

- Laboring alone
- In bed, supine
- Immobile
- Food & drink withheld
- Chemical inducation and/or augmention
- Narcotics for pain

# Instruments = injuries & insults

- Forceps
  - Compromise trigeminal nerve, parietal bones
  - Bruising
- Vacuum extractor
  - Disrupt parietals, occiput, internal bones
  - J Peds Nov 2002
- Cesarean: pressure at cranial base

# Internal monitor + vacuum =

# Cesarean + vacuum = trouble

- Baby couldn’t latch, suck or get milk at breast
- Baby chewed and flattened mother’s nipple
- Mother stopped breastfeeding & blamed herself

# Suctioning & airway management

- Oral aversion
- Superstimulus; reverse muscle patterns
- Actual trauma to tissues of oropharanyx
- Research by Widstrom, Righard
- Environment & optimal response patterns
- Mucus has a purpose (Klaus)

# Affect suck if done before 1st BF

- Separation from mother for **any reason**
- Weighing
- Measuring
- Vitamin K shot
- Heel stick for metabolic tests
- Circumcision
- Infant hypothermia

# Radiant warmers

- Expensive mother-substitute
- Separation compromises suck
- Symbolic separation from mother
- Inconsistent temperature regulation
- May dehydrate infant
- Tilting may compromise respiration
- Foreign bacterial milieu & environment

# Practices can be delayed

- Eye prophylaxis
- Bathing & shampooing
- Weighing
- Measuring length, head
- ID tags
- Thorough physical exam
- Metabolic tests

# Pre-lacteal Feeds

- Bad idea; violates BFHI Step 6
- Symbolic – mom not “good enough”
- Introduce foreign pathogens & substances
- Alter intra-oral muscle patterns
- Compromise suck-swallow-breathe
- No evidence of physiological need
- Good evidence of consequences

# Physical Problems

- Check for tongue-tie
  - Restricted range of motion
  - Alters tongue mobility
  - Nipple damage
  - Compromised ability to suck-swallow-breathe
- Treat with frenotomy and immediate BF
  - *Messner 2000; Ballard Peds 2002*

# Trauma related to birth

- Prebirth communication (Chamberlain)
- Evidence that babies remember birth
- Post-traumatic stress disorders
- Self-destructive behavior in adulthood
  - Addictions (Jacobson)
  - Suicide method corresponded to birth events
- Internet: www.birthpsychology.com

# Long-Term Effects of Feeding

- Facial structural development
- Dental development
- Airway patency
- Sleep patterns
- Eye-hand coordination
- Reading ability
- Trust and autonomy issues

# Role of Breastfeeding Care Providers

- Discuss with pregnant parents and birth care providers
- Document problems with breastfeeding
  - Verbally to parents & professionals
  - Written reports to professionals
- Spread the word about these links
  - Read and study existing research
  - Write up case reports for publications
  - Conduct new research & ask others to do so too!

# Prevention

- Mother-Friendly™ birth practices
  - Midwifery model
  - Doula care
- Non-pharmacological pain relief strategies
- Baby-Friendly™ practices
  - Delivery self-attachment; at-breast within 1st hr
  - 24-hour rooming-in with bedding-in
  - No supplements / teats unless specific medical indication and infant cannot take/get colostrum

# Early interventions / actions

- Skin to skin contact from birth
  - 24 hour rooming-in with bedding in
- Feed the baby!
- Support the mother's milk supply
- Work on the problem
  - Specific massage for sensory integration
  - Lower sensory input; carry vertically; posture; meds?
- Close follow-up
- Evaluate need for further interventions

# The new frontier?

- Osteopathic Manipulative Therapy (OMT)
- Cranio-sacral therapy (Upledger)
- Fascial release and similar therapies (PT, OT)
- Kangaroo Care and infant massage
- Therapeutic massage
- Rebirthing / repatterning (Harris)
- Other?

# Keep the dyad together

# Rule #1: Feed the baby

- If at-breast feeding is not working, *DO SOMETHING DIFFERENT to FEED the BABY*
- Select alternative method carefully
- Goal: calorie intake & CNS organization
- Continue
  - Access: 24 hour bedding-in
  - At-breast attempts before or after other feeds
  - Believing BF will WORK

# Milk intake & stomach size

| Day | Milk intake – ml | Stomach size – ml | # feeds to get enough |
|---|---|---|---|
| 1 | 10-100 | 5-7 | 6-14 |
| 2 | 10-100 | 10-13 | 5-10 |
| 3 | 200 | 22-27 | 7-10 |
| 4 | 400 | 32-36 | 11-13 |
| 5 | 600+ | 43-57 | 10-14 |
| 6 to 6mos | 550-950 [avg 750 ml (24 oz)] | 60 (2 oz) | 9-16 |

# Feeding norms/ranges

- # feeds *avg* **10.5** per day (wide range)
- Length *avg* **16.6** min (6.1-27.1 min)
- Intake *avg* **72** ml (4-194 ml)
- MER *avg* **60-120** sec (0.5-3.5 min)
- # MER's *avg* **2.2** per breast per feed
- Intake per MER *avg* **35** ml
- *Ref: Hartmann, Mitoulis, Daly, Kent, & researchers at Univ of Western Australia in Perth*

# Normalizing Infant Feeding

- **Respect baby's oral cavity!**
- ABC Protocol
  - Access: Get the baby in the Restaurant!
  - Breastmilk transfer: Make sure the baby is actually eating
  - Comfort: Keep the cook happy
- Refer to La Leche League or other Mother Support Groups for ongoing support

# Mother-friendly care supports BF

- Sensitivity to mother's beliefs, values
- Birth companion(s) of her choice
- Freedom to walk, move, adopt positions
- Minimize routine practices unsupported by evidence (IV, no food, AROM, EFM, enema, shaving)
- Minimize invasive procedures (episiotomy, ARM)
- Non-drug pain relief
- Stay with & care for sick baby
- Collaborate with community resources
- Policies & training to support all of these issues

# Coach Smith's Rules

- #1 - Feed the baby.
- #2 - The mother is right.
- #3 - It's her baby.
- #4 - Nobody knows everything.
- #5 - There's another way.

# First, do no harm

- Direct breastfeeding is the norm
- All other fluids have risks to the baby
- All other feeding devices have risks
- Separating the mother and baby has risks
- Obtain informed consent before using any manufactured fluid and/or device to feed baby!

# First, do no harm

- ***All*** birth drugs affect the baby and mother
- Instruments and interventions affect both
- "Alert and active participation by the mother in childbirth [as] a help in getting breastfeeding off to a good start" (LLLI Ten Concepts, 1985)
- Direct breastfeeding is the norm
  - All other fluids have risks to the baby
  - All other feeding devices have risks
  - Separating the mother and baby has risks

# Birth affects babies: Summary

- Bony structures affect oral function
  - 6 cranial nerves control suck-swallow-breathe
  - Complex muscle patterns control SSB
- Direct breastfeeding is **normal**
- If a baby can't breastfeed, *something is* ***wrong***
  - **And it's usually a baby problem**

# Evidence-based care

- Cochrane database www.cochrane.org
- *A Guide to Effective Care in Pregnancy and Childbirth* – Oxford University Press
- Mother-Friendly Childbirth Initiative www.motherfriendly.org/MFCI/steps.html
- Baby-Friendly Hospital Initiative www.babyfriendlyusa.org

# Thank you

- To the mothers and babies who have taught me to look, listen and learn, and those who have taught me that there is a lot we don't know about normal infant sucking
- To Mary Kroeger, CNM, MPH for her work compiling research on this topic and her global work supporting birth & breastfeeding
- **To YOU ALL for thinking about this issue from now on.**

**La Leche League International Conference**
**Friday, July 4, 2003 3:00 – 4:30 PM (1500-1630)**
**It Takes Two to Tango: How the Management of Birth affects the Breastfeeding Dyad**
**Linda J. Smith, BSE, FACCE, IBCLC**

| OBJECTIVES | CONTENT | Time | Faculty | Methods |
|---|---|---|---|---|
| Discuss the effect of birth medications on the mother and baby's ability to breastfeed | 1. Drugs for pain relief<br>2. Drugs to modify labor patterns<br>3. Other drugs; cascading effect on dyad<br>4. Non-pharmaceutical pain relief and effect on dyad | 35 min. | Linda Smith | Lecture<br>Overheads / slides<br>Discussion |
| Discuss possible effects of birth practices on mother and baby's ability to breastfeed | 1. Ambulating (or lack thereof): effect on mother<br>2. Oral/airway procedures<br>3. Temperature stabilization, bathing, skin flora, smells<br>4. Postpartum care and follow-up<br>5. Separating for non life-threatening conditions | 35 min. | Linda Smith | Lecture<br>Overheads<br>Slides<br>Videotape |
| Discuss policies and practices that support optimal birth and breastfeeding outcomes | 1. Attachment and caretaking – modeling<br>2. Doula research<br>3. Resolution of birth experiences for both<br>4. CIMS – Mother- friendly Childbirth Initiative<br>5. Baby-Friendly Hospital Initiative | 20 min. | Linda Smith | Lecture<br>Overheads<br>Discussion<br>Optional: videotape |

# It Takes Two to Tango – Selected Bibliography
Linda J. Smith, BSE, FACCE, IBCLC

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