Keep it Simple

What mothers and babies already know, how they think,

and what on earth this has to do with learning to breastfeed

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Declaration and Disclosure
I have an affiliation with one or more persons or entities that could be perceived as having a bearing on my presentation of this subject.

Affiliation
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Objectives

The participant will:

1. List the conditions necessary for an infant to begin searching for the breast, and describe the sequence of reflex behaviors that take the hungry infant from cozy on his mother's chest to suckling at her breast.
2. Explain how a mother's innate intuitive right-brained interactions with her infant help her baby organize for learning, handle emotional stress, and adapt to his changing environment.
3. Describe how a mother can calm and steady her infant so that he is able to follow his instincts to learn to breastfeed.
4. Explain how an understanding of right brained processes can help health care providers better communicate with post-partum mothers.

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This lecture's **structure**

- History of what we've learned about this.
- Brief romp through the neurobiology of mother and infant innate behaviors, and the interactions between them.
- Videos demonstrating an alternative approach.

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Observations in the literature

Finding the breast on the first day of life

Odent, M. (1977). The early expression of the rooting reflex. In: Proceedings of the 5th International Congress of Psychosomatic Obstetrics and Gynaecology, Rome & London: Academic Press: 1117–9.

Widström A-M, Ransiö-Arvidson AB, Christensson K, Matthiesen A-S, Winberg J, Uvnäs-Moberg K. Gastric suction in healthy newborn infants: effects on circulation and developing feeding behaviour. Acta Pædiatr Scand. 1987;76: 566–572.

Righard L, Alade M. Effect of delivery room routines on success of first breast-feed. Lancet. 1990;336:1105–1107

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Message at the time:

We can mess it up!

Message then

Babies can do this BUT

- ***Limited to first 24 hours***
- ***And very fragile***

Hospital routines disturb
Widström,1987
Righard & Alade, 1990
Video:
Righard & Frantz, 1995 & 2005

However… 10 hour old infant, born by caesarian section, is depicted in the 1995 Righard & Frantz video

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1990's terminology

Infant "self-attachment"

Video:
Righard & Frantz, 1995 & 2005

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Co-bathing

Heather Harris, 1994
Melbourne, Australia

1-month old infant with "breast refusal"

Co-bathing calmed infant—then able to take breast

Popularized as "rebirthing"
- Misnomer
- Harris never called it "rebirthing"

In our practice

1996 observations

5 week old infant with breast distress

Calmed with skin on skin, no co-bathing

Video, 1998 Preemie twin

32 weeks

48 hrs old

Bwt 1580 gm

In our practice

My own language has evolved as I try to understand better what the babies are doing…

1996: Self-attachment

1998: Baby-led latch

2008: Baby-led breastfeeding

2011: Baby takes the breast

Baby-led feeding or baby-led learning

Observations in our clinical practice
- Infants with "breast distress"
- Infants with tight grasp, mothers with sore nipples
- Breast & bottle fed infants with learned associations with artificial nipples ("nipple confusion preference")
- Premature infants
- Adoption, relactation
- Prenatal teaching, babies with no problems

Kangaroo care for full-terms

1999

Meyer & Anderson

Case Western

Newborns in first 3 days in hospital having trouble learning to feed

MCN Am J Matern Child Nurs.

Laid-back approach

2008
Mother semi-reclined
Baby in full body contact, semi-prone
Gravity holds baby on, frees both
Baby's instinctive behaviors
bring out
mother's instinctive behavior
Instructions get in the way
of mother's natural instincts
Colson SD, Meek JH, Hawdon JM. *Early Hum Dev* 2008, 84(7):441-9

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What's going on?

Learning to breastfeed:
How does this work?

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Maternal infant interaction

Breastfeeding and lactation
involve
the interaction of ***mother and baby***
A single biological system
requiring
Two people, interacting
Communication between them
Feedback between them
Physical proximity & contact

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Maternal infant interaction

The "motherbaby"
A single psychoneurobiological system
Requires more
than neurohumoral interactions
Requires ***biobehavioral*** interaction

But how does this interaction work?
What is the neurophysiology?

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Marshall Klaus

Neonatologist, UCSF
Maternal infant bonding
Infant competence
Doula research: emotional support during labor
Klaus & Fanaroff,
Care of the High-Risk Neonate
Chapter on neurology
Primitive reflexes?
Rooting, suckling, stepping, others?

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Liberated Motor Activity

Claudine Amiel-Tison & Albert Grenier
French physicians concerned with newborn neurological exam
Intrusive newborn reflexes interfere with good neuro exam
To facilitate infant competence
- Stabilize neck
- Touch and stroke infant
- Talk to infant, make eye contact

"Communicative state"
Infant appears "charmed"

Amiel-Tison C, Grenier A, *Neurologic Evaluation of the Newborn and the Infant.* New York NY: Masson Publishing USA, Inc.; 1983

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The key

Key to seeing infant competence

What any mother knows

Observe the baby in *interaction* with another

Calm infant, alert, communicative state

Donald Winnicott:

There is no such thing as a baby; there is a baby and someone.

Two important keys

Keys to competent infant behavior

Mother helps steady the baby—
keeps the baby calm and secure.

1. **Emotionally**
   She calms and steadies the baby with her voice, and her intuitive responses to her baby's behavior.
2. **Physically**
   She steadies the baby, keeping his body feeling snug and secure.

Infant state

State regulation
very immature at birth

Baby needs mother to help regulate state

To get to
"quiet alert" or "communicative" state…

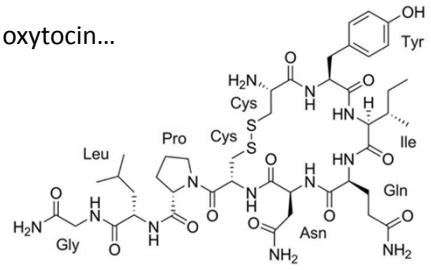
- Touch, stroking, etc helps infant regulate state
- Auditory, visual interaction with mother

Right-brain to right-brain connection

- Maternal feedback co-regulates infant state—(Allan Schore)

So how does this work?

A bit about oxytocin…



Many more pieces to the puzzle
The work from the Karolinska Institute



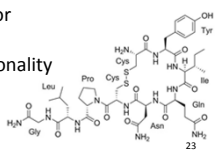
Kerstin Uvnäs-Moberg, MD, PhD,
Ann-Marie Widström , et al

Oxytocin and other hormones

Multiple effects on

- Mothers
- Babies
- Maternal-infant interactions
- Short-term, long-term consequences for mother and baby

From neurochemistry to behavior to personality



Oxytocin

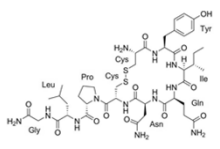
Very ancient mammalian nonapeptide

Differs from vasopressin by two amino acids

Acts as BOTH

- A neurotransmitter
- A peripheral hormone

Cysteine — Tyrosine — Isoleucine
s
s
Cysteine — Asparagine — Glutamine
Proline — Leucine — Glycine



Oxytocin
….not just
love, labor
and lactation!

ALSO
A wide variety of
physiologic and behavioral
responses
All promote lactation and infant survival



"UC-smile"
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Oxytocin

Mother has it
- Nipple stimulation, skin to skin, and other neurosensory cues

Baby does too
- Suckling, skin to skin, and other neurosensory cues

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Oxytocin

The "affective" hormone
Everyone has it, male or female
- Get it from warmth, touch, neurosensory cues
- Affiliation… and hence ***infant survival***

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Oxytocin

Promotes Infant Survival
- Uterine contractions
- Milk ejection
- Gastrointestinal effects
- Cardiovascular effects
- Affiliation, affection
- Anti-stress effects
- Maternal behaviors

Varied effects…

Released as
- Hormone to the circulation
- Neurotransmitter to the brain

Differing effects because
- At different sites
  Central or peripheral
- Different receptors respond to
  Basal levels, or
  Pulsatile release, or
  Peak levels, or?

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Oxytocin

Not just love, labor & lactation

Also causes
a wide variety of
physiologic and behavioral responses
in BOTH mother AND BABY

- *Anti-stress*—calms both
- *Gastrointestinal*
  Releases digestive hormones & mobilize nutrients
- *Cardiovascular*
  Increases blood circulation to breast
- *Maternal behaviors*
  Encourage interaction & bonding

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Oxytocin

It's all about affiliation,
and it's all about food (GI)

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2. "Le Livre de chasse de Gaston Phébus" 15th century. Bibliothèque National, Paris.
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Oxytocin

Effects on maternal behaviors

Under the influence of oxytocin, the mother:

- Seeks more time with infant
- More breastfeeding
- Increased stroking, calming
- Increased tolerance of monotony

These effects are aided by oxytocin's anti-stress and cardiovascular effects

And maternal instincts videos © C M Smillie

Oxytocin

The amazing skin of the chest

Affection
Anti-stress
Maternal behaviors
Temperature regulation
Immune function

Where do we hold a baby when we say "skin on skin"?

Videos used with permission: Makelin Media & Geddesproduction.com

Infant's Oxytocin

Stimulated by suckling, palate, oral mucosa

Touch, skin to skin, warmth

Promotes

- Digestion
- Choecystokinin ("CCK")—satiation
- Suckling—Calming
- Bonding

Oxytocin's simultaneous effects

On both mother and infant

- Promotes affiliation, bonding
- Synchrony of state and mood
- Maternal calm helps baby calm

Video used with permission: Makelin Media & Geddesproduction.com

Before we go any further…

A little bit about
left brains & right brains

Right brains and left brains

The right brain and the left—basic definitions and examples

Examples of right and left brained thinking:

- Mothers
- Infants
- Health care providers

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Left Brain	Right Brain
Logical	Intuitive
Sequential	Holistic
Rational	Emotional
Analytical	Synthesizes
Objective	*Subjective*
Looks at parts	Looks at wholes
Verbal language	Body language

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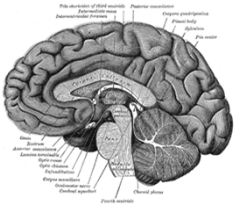
Communication & Decision-Making

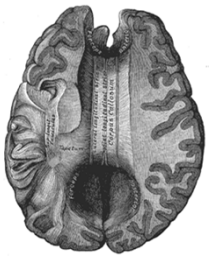
Left brain	***Right brain***
Uses verbal language	Attends to body language
Gives specific instructions	*Shows, demonstrates*
Follows directions	*Learns by feeling, doing*
Decides on logic, analysis	Decides on "gut" feelings
Past & Future	Lives in the moment; "zen"
Concerned with tomorrow	Now feels like forever….

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The corpus callosum

Left and right communicate
Don't really work alone





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Corpus Callosum

In adults

- Left and right brains always work together
- One might be more dominant
  - At different times
  - In different circumstances

- Simultaneously use verbal and nonverbal language
- Understand both words and nuance
- Can be both creative and analytical

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The Anatomy Lesson of Dr. Nicolaes Tulp. 1632
Rembrandt (1606–1669)
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A Mother's Embrace.
Adolphe Jourdan 1825 -1889
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Differences

Physicians & health care providers
–Scientific, evidence based
–Art of medicine more intuitive

Mothers
–Foggy, confused, post partum
–"Cognitive deficit"

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Differences





Physicians & health care providers
- Scientific, evidence based
- "Art" of medicine more intuitive

Mothers
- Foggy, confused, post partum
  Eidelman AI, Hoffmann NW, Kaitz M. Cognitive deficits in women after childbirth. *Obstet Gynecol.* 1993 May;81(5 (Pt 1)):764-7.
- "Cognitive deficit" = Left brain deficit
- Oxytocin: Right brain strong:
  Kaitz, M., Lapidot, P., Bronner, M., & Eidelman, A. I. (1992) Parturient women can recognize their infants by touch. Developmental Psychology, 28(1), 35–39.
- Insecurity—sometimes wish for left brain "rules"
  Books, authorities provide those rules

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LEFT BRAIN



Health care providers	Mothers?
Left Brain *strong*	*Left brain back seat*
Wants information, facts.	Has trouble with memory for facts and numbers
When and how often did baby feed?	Might try to compensate:
How many wet diapers yesterday?	– Watch the clock
How many stools yesterday?	– Keep a (confusing) log
How long does the baby sleep?	– Write down what you say
Explains with details.	***Confused by long explanations.***
Gives specific instructions	Confused by instructions
Plans for next week, month	***Next week seems far away***

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RIGHT BRAIN



Health care providers?	Mothers
Right brain back seat	Right brain *ACTIVE*
Own motions suppressed/ignored.	*Emotional*
Listens to words but may miss emotional content	***Remembers words associated with strong emotion***
May not notice own tone of voice, body language	***Attends to body language***
Can misinterpret her responses.	Focused on emotional meaning of your words.

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Infants

- Almost no left brained activity first 3 years
- Right brain dominant

Mothers

- Foggy postpartum
- LEFT BRAINED "cognitive deficit"
- Right brain dominance helps!
- Mother-baby right-brain to right- brain communication



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Eidelman AI, Hoffmann NW, Kaitz M. Cognitive deficits in women after childbirth. Obstet Gynecol. 1993 May;81(5 (Pt 1)):764-7.

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Multidisciplinary model

- Neurosciences
- Behavioral pediatrics
- Psychology, psychiatry
- Attachment theory

Right brain to right brain communication

- How a mother helps regulate her infant's emotional state
- How a mother helps her baby learn to handle stress

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Allan Schore

Concept of "affective synchrony"

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Maternal infant interactions

(Innate intuitive behaviors)

- Eye to eye contact
- Vocalization
- Responsive interactions



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Concept of "affective synchrony"

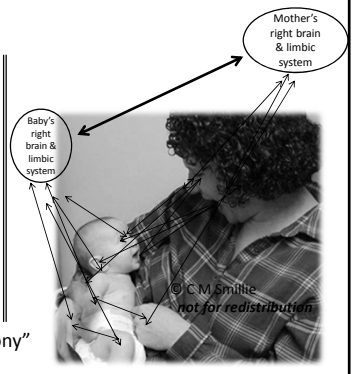
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Neural **right brain to right brain** interactions via

- Hypothalamus (coordinates nerves & hormonal communication)
- Amygdala (emotions and memory)

That synchrony links activity

- in their limbic systems
- helps infant regulate emotions and behavior



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Concept of "affective synchrony"

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Allan Schore

Concept of "affective synchrony"

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Allan Schore

Concept of "affective synchrony"

Just by her intuitive interaction with her baby, the mother **co-regulates** her baby's nervous system.

- Mother's nervous system is mature and well developed
- Baby's is immature and still developing

So mother's intuitive responses…

- Help baby organize for new learning
- Help the baby cope with stress
- Lay down brain pathways



A mother doesn't have to know any of this stuff about the right brain– she does this all intuitively, because she loves her baby.

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Let's watch this baby

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Was it surprising to see this baby stop crying so suddenly?

Let's watch again, this time with sound

Video © CMSmillie; not for redistribution

Yes, you already knew this…

Your ***right*** brain already knew it…

Now, we've explained it to your **left!**

Allan Schore

Concept of "affective synchrony"

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Allan Schore

Affective synchrony not perfect

- Separation, breaks in synchrony
  - Helps infant learn distress can be resolved
- *Lays down neural pathways for infants own coping capacities*
  - First mother helps infant learn to cope with stress
  - Then the older infant learns to self soothe from these encounters
  - Allows infant to adapt to changing environment

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Putting it all together

Schore's model of maternal co-regulation of infant state

- Fits with Amiel-Tison and Grenier's liberated neck
- Fits with role of oxytocin + vagal actions
- Basics of attachment

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Putting it all together

The mother-baby dance: Maternal infant interction

Single biological system—

Two people, interacting

Direct right-brain to right-brain connection

State regulation very immature at birth

- Baby needs mother to help regulate state

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Putting it all together

The maternal right brain
- – Dominant so she can communicate with baby
- – Emotions and learning
- – Emotions and memory

Basics of right-brained communication
- – Between mothers and babies
- – Between mothers and health care providers

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which brings us back to how mothers help their babies learn to feed

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Bringing out baby's competence

Feeding behaviors seen
- Best if in the right place (on mother) at the right time (mild hunger or thirst)
- Easy mother-baby interactions
- **Baby's body snug and secure**
- **Baby calm and comfortable**
- Sensations
  - the feeling and smell of being on mother's chest,
  - the sound of her voice
- The infant's instinctive responses then direct the baby toward the breast

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Skin on skin vs. swaddling

Skin on Skin	Swaddling
1. Stabilizes baby	1. Stabilizes baby
2. Permits mobility	2. Interferes with mobility
3. Radiant heat from mother	3. Insulates; doesn't warm
4. Perfect temperature regulation	4. No temperature regulation
5. Mother's interactions calm baby	5. Baby is shut off from interaction
6. Stimulates sensations and responses to mild hunger and thirst	6. Blunts sensations and responses to mild hunger or thirst
7. Allows baby to touch & feel, explore	7. Can't use hands to touch, feel, explore
8. Undisrupted infant reflex responses	8. Interferes with infant reflex responses
9. Easy motherbaby interactions	9. Blocks motherbaby interactions
10. Allows baby free movement to feed	10. Interferes with feeding, weight gain

Swaddling studies by Bystrova K et al:
Skin temperature and "the stress of being born" *Acta Paediatr 2003* 92:320-326
Neonatal weight loss *Early Hum Dev* 2007 Jan;83(1):29-39

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The mammalian feeding sequence

The neurobehavioral cascade

Tactile stimulus	Behavior
Chest, abdomen	Search, step, crawl
Cheek	Root
Chin	Open, reach, grasp
Oral mucosa	Suckle
Palate	Sustain suckling

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Newborn reflexes and behavior

Infant reflex responses, a cascade of behaviors—

Stepping or crawling
takes infant to breast
The "searching response"

Rooting
appears far more complex than just turning face to nipple

Suckling
promoted by stimulus on oral mucosa, palate

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How babies can learn to feed

ONE alternative approach
First, a *calm* baby
- We don't *make* a baby learn to feed
- We *allow* the baby to follow his own instincts to learn

Baby, not mother, initiates feeding
- Mother follows baby's lead

Seeking comfort guides the mother
- NO PAIN

Instincts start the process of learning
- Successful milk transfer teaches baby

Move from an instinctive process to a learned process

First, a *calm* baby

"Baby time," no agenda:
- time to socialize

Mom talks to infant
- Makes eye contact, communicating, enjoying each other

Skin on skin, chest on chest

Wait for baby to begin the search for breast

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Baby begins to "search"

Patience!
Baby leads
We're on baby time

Baby, not mother, initiates the feed

Lots of ways to get there

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Mother follows baby's lead

Baby uses cheeks and chin to search

Chin to breast, nose to nipple
- Support neck and shoulders
- Face touching mom's chest
- Nose to nipple
- Head free to move

All of these can be intuitive and instinctive if mother and baby are left alone

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How babies can learn to feed

Mother *follows* baby's lead
Helps infant
- Stabilizes baby's body
- Keeps baby calm, talks, strokes, eye contact
- Doesn't interfere with baby's instinct to put chin to breast, head tilted slightly back

YOU: Listen to mothers' instincts!

Getting comfortable

Key to good latch/attachment/grasp/feed
- Maternal and infant comfort
- Effective feeding

Look *not just* at mouth & nipple, and nipple comfort

Look at full body comfort
- MOTHER'S TOTAL BODY COMFORT
- BABY'S TOTAL BODY COMFORT
- THEIR COMFORTABLE RELATIONSHIP

Getting comfortable

Discomfort or pain is a GUIDE

to a more comfortable, more effective position.

- Pain—poor milk flow.
- Comfort—good milk flow.
- It doesn't matter if position and mouth "look okay."
- Pain is a homeostatic signal: Readjust something.

Getting comfortable

Pain is a GUIDE

You don't have to teach her to be a lactation consultant just to get comfortable

Readjust something.

Squirm around.

Perhaps…

- Snug baby's rump in closer.
- Rotate baby out a bit.
- Lean back a bit.
- When mother relaxes herself, this relaxes baby, too.
- Touch chin lightly.

Our role

To facilitate feeding

- Encourage mother to the enjoy process of learning, recognize that it may take time
- Interpret baby's behavior, show her how competent her baby is
- Facilitate easy mother baby connection
  - Encourage mom to talk to infant
  - Avoid left-brained instructions, unless mother needs this
  - Model patience and calm

Our role

Attend to mother's state, and to baby's state

- Watch emotional content
- Model positive interactions
- Model responsive interactions
- Support mother as model for her response to infant

Our role

Take care with left-brained instructions

- Some mothers may need them
- Reinforce with touch, tone of voice, modeling

Beware of that "cognitive deficit"

- Explain in "intuitive" ways
- Careful written instructions to reinforce any verbal instructions
- Beware of how you may be misunderstood

Allow room for intuitive adjustment to plan

THREE **Take-home messages**

1. Babies are hardwired to search for, find the breast, and attempt to suckle.
2. A mother's **instinctive maternal interactions with her infant** help her infant adapt to his environment, with both short-term and long-term consequences.
3. **Oxytocin and other factors affect the way the postpartum mother processes information.** This has important implications for how the health care provider communicates with mothers.