

# BABY-LED BREASTFEEDING

*The neurophysiologic basis for  
infant feeding*

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## Declaration and Disclosure

I have no affiliation with any persons or entities that could be perceived as having a bearing on my presentation of this subject.

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## Objectives

1. Describe the nine instinctive stages of newborn behavior that lead to breastfeeding when skin on skin on the mother right after birth.
2. After the first hours of life, list at least three conditions necessary for an infant to begin searching for the breast, and describe the sequence of sensory inputs and responsive neurobehavior that take the hungry infant from cozy on his mother's chest to suckling at her breast.
3. Describe how a mother can calm and steady her infant so that he is able to follow his instincts to learn to breastfeed.

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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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Learning  
to breastfeed:  
**The  
problem**

**Ready, Aim, RAM**  
Consequences

**Baby**  
Tight painful grasp  
"Suck dysfunction"  
Breast distress, shutdown

**Mom**  
Sense of incompetence  
Feelings of distress for infant  
Premature weaning  
Is there a more physiologic way?

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## Earlier perspectives

### Early midwives textbooks from centuries ago

- Language:  
Baby sucks; Mother gives suck
- No mention or methods for teaching breastfeeding
- No mention of infant problems learning, breast refusal, etc.

### 1958: The womanly art of breastfeeding, La Leche League International

"Whether you sit up or lie down while you nurse him is up to you. Whichever position you find most comfortable is best for you. Don't try to shove the nipple into his mouth. Rest his cheek against it and he'll turn his head towards it and latch on."

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## Our evolving views on learning to feed 1977 to 1995

**1977: Odent, M.** 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

**1987: Widström A-M,** Ransjö-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 Paediatr Scand.* 1987;76: 566–572.

Video: **Widström,** 1987 Breastfeeding is Baby's Choice

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

Video 1995: **Righard & Frantz,** Delivery Self-Attachment, Geddes Productions

**1994: Harris H.** Remedial co-bathing for breastfeeding difficulties. *Breastfeeding Rev.* 11:10 (Nov 1994) 465-468.

Video: **Harris, H.** Mandy and Matt: A solution for breastfeeding attachment through co-bathing. Video. Melbourne, Australia. 1994

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## Message at the time:

We can mess it up!  
(Videos)

### 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

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## Our evolving views on learning to feed 1999 to 2008

**1999: Meyer K,** Anderson GC. Using kangaroo care in a clinical setting with fullterm infants having breastfeeding difficulties. *MCN Am J Matern Child Nurs.* 1999 Jul-Aug;24(4):190-2.

**2007: Gangal, P.** UNICEF Maharashtra, India. *The breast crawl.* Video, text, and references.  
<http://www.breastcrawl.org/>

**2008: Colson SD,** Meek JH, Hawdon JM. Optimal position for the release of primitive neonatal reflexes stimulating breastfeeding. *Early Hum Dev* 2008; 84(7):441-44

2011 DVD: **Colson S.** Biological Nurturing™ Laid-back Breastfeeding for Mothers, Geddes Productions

**2008: Smillie CM.** How infants learn to feed: a neurobehavioral model. In CS Genna (ed.) *Supporting Suckling Skills in Breastfeeding Infants.* 2008: 77-95. Boston: Jones and Bartlett

2008: DVD: Smillie, CM. Baby-led breastfeeding: the mother-baby dance. Geddes Productions

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## Biologists' perspectives

### Mammalian neonates search for the teat

- Nowak, R. 2006. Suckling, milk, and the development of preferences toward maternal cues by neonates: From early learning to filial attachment? *Adv Study Behav* 36:1-68
- Eilam D, Smotherman WP. 1998. How the neonatal rat gets to the nipple: common motor modules and their involvement in the expression of early motor behavior. *Develop Psychobial* 32(1):57–66
- Birth of the Red Kangaroo. 1965. Produced by the CSIRO Film Unit and the Division of Wildlife Research, Australia. Uploaded to YouTube by CSIRO Publishing. [http://www.youtube.com/watch?v=MQ\\_eDvCo8U](http://www.youtube.com/watch?v=MQ_eDvCo8U)

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## 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.

Two important keys

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## Steadies the baby BOTH emotionally and physically

Huge literature on kangaroo mother care

Preterm AND fullterm infants

- Infant regulation
- Heart rate, respiratory rate, temperature
- Breastfeeding outcomes
- Maternal competence
- Neurodevelopmental outcomes
- Brain wiring

Skin-on-skin  
Heart to heart

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**Nine instinctive stages of newborn behavior**

1. Birth cry
2. Relaxation
3. Awakening
4. Activity
5. Resting
6. Crawling
7. Familiarization
8. Suckling
9. Sleeping

Widström, A-M., Gunilla Lijja, P. Aaltomaa-Michalias, A. Dahlöf, M. Lintula, and Eva Nissen. "Newborn behaviour to locate the breast when skin-to-skin: a possible method for enabling early self-regulation." *Acta paediatrica* 100, no. 1 (2011): 79-85

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**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—(A. Schore)

**Infant state**

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After the first hours, newborn instincts persist

**Necessary conditions**

...for the initiation of feeding

1. **Physical stability:** NEEDS MOTHER  
Secure hips and shoulders (Glover)
2. **State control—emotional stability:** NEEDS MOTHER  
Right brained interaction with mother (Shore)
3. **Internal cues**  
Hunger and thirst (vs satiated)
4. **External cues**  
In mother's arms  
Olfactory cues  
Tactile cues:  
Skin on skin vs. swaddling  
Visual cues?

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After the first hours, newborn instincts persist

**Sensory cues for instinctive feeding behaviors**

**Internal feeding cues**

**Hunger and thirst**

- Blood sugar drop (Widström)
- Rise in serum osmolality (Marchini)

**Behaviors of satiety**  
mediated by CCK

- Lipid at end of meal, free fatty acids → Cholecystokin, satiety
- Suckling alone—oxytocin, via the vagus → yields CCK too.
- But without lipid meal, short lived!

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After the first hours, newborn instincts persist

**Sensory cues for instinctive feeding behaviors**

**External feeding cues focus feeding behavior**

**In mother's arms** (Christensson)

**Olfactory cues** (Varendi, Winberg)

- Set direction of search

**Tactile cues**

- Chest, cheek, chin, oral mucosa, palate
- Promote the cascade of behaviors:
- Search, step, root, grasp, suckle

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After the first hours, newborn instincts persist

**Newborn instincts**

**"Instincts" = Neuroendocrine programs for behavior**

Infant behavior varies with "habitat"—

**With mother—**

- CNS oxytocin release, vagal response
- Relaxed tone, feeding reflexes and behaviors

**With separation—**

- Sympathetic response, elevated cortisol
- Increased tone, stress, "separation distress cry"

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**Mothers have instincts too:  
Oxytocin's effect  
on maternal behavior**

**Mother's instincts**

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After the first hours, newborn instincts persist

**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

**Bringing out baby's competence**

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**Skin on skin vs. swaddling**

<p><b>Skin on Skin</b></p> <ol style="list-style-type: none"> <li>1. Stabilizes baby</li> <li>2. Permits mobility</li> <li>3. Radiant heat from mother</li> <li>4. Perfect temperature regulation</li> <li>5. Mother's interactions calm baby</li> <li>6. Stimulates sensations and responses to mild hunger and thirst</li> <li>7. Allows baby to touch &amp; feel, explore</li> <li>8. Undisrupted infant reflex responses</li> <li>9. Easy motherbaby interactions</li> <li>10. Allows baby free movement to feed</li> </ol>	<p><b>Swaddling</b></p> <ol style="list-style-type: none"> <li>1. Stabilizes baby</li> <li>2. Interferes with mobility</li> <li>3. Insulates; doesn't warm</li> <li>4. No temperature regulation</li> <li>5. Baby is shut off from interaction</li> <li>6. Blunts sensations and responses to mild hunger or thirst</li> <li>7. Can't use hands to touch, feel, explore</li> <li>8. Interferes with infant reflex responses</li> <li>9. Blocks motherbaby interactions</li> <li>10. Interferes with feeding, weight gain</li> </ol>
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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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After the first hours, newborn instincts persist

**The neurobehavioral cascade**

<p><u>Tactile stimulus</u></p> <p>Chest, abdomen Cheek Chin Oral mucosa Palate</p>	<p><u>Behavior</u></p> <p>Search, step, crawl Root Open, reach, grasp Suckle Sustain suckling</p>
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**The mammalian feeding sequence**

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After the first hours, newborn instincts persist

**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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**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

**How babies can learn to feed**

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**First, a calm baby**

**Baby begins to "search"**

**Mother follows baby's lead**

**Videos**

Baby time: Mom talks to infant, makes eye contact. They're communicating, enjoying each other

Skin on skin, chest on chest  
*Wait* for baby to begin the search for breast

Baby, not mother, initiates the feed  
Lots of ways to get there

Chin to breast, nose to nipple

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**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

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**Getting comfortable**

**Discomfort or pain is a GUIDE**  
to find comfort & a more effective feed

- 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.

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

**Readjust something.**  
**Shift around. Perhaps...**

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

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**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

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**THREE Take-home messages**

1. Babies are hardwired to search for, find the breast, and attempt to suckle.  
This is an innate capability, not limited to the first 24 hours of life, that persists for many months and probably years.
2. The ability to breastfeed is innate in both babies and mothers and dependent on uninterrupted mother-baby interactions.
3. Our left-brained instructions and rules can impede the mother's innate abilities to interact with and learn from her infant.

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