Never Enough: Supporting Mothers’ Informed Decisions about Formula Supplementation
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WIC Research
- 2003-2006: Focus groups show moms quit BF early - “not enough milk”
- 2006-2009 - Baby Behavior study
- 2010-2011 – CA Baby Behavior Campaign

Overview
- Baby Behavior Beginnings: Research Background
- Baby Behavior Highlights
- Teaching Baby Behavior

Disclosures
• I have no relevant relationships to disclose.

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• USDA WIC Special Projects Grant 2006-2009

Maternal Request for Supplementation of Healthy Breastfed Newborns
• 14 focus groups in English- and Spanish-speaking WIC participants (N=97)
• Study of maternal request for hospital formula for healthy breastfed infants
• Recordings transcribed and coded independently by 3 researchers
• Broader “themes” were identified and illustrated by participant quotes

Maternal Request for Supplementation of Healthy Breastfed Newborns
• 3 Major Themes
  o Unrealistic expectations about newborns and parenting
  o Lack of preparation for breastfeeding
  o Formula seen as the “solution”
Parents’ Unrealistic Expectations

- “The imagined baby”
  - Parents’ prenatal construct of the baby
  - Will be in conflict with the real baby
- Parents and other caregivers have idealized the “quiet, full, sleeping” baby

Day 1: The “Good” Baby

- Heightened alert state in the first 2 hours, followed by longer periods of sleep (over next 24 hours)
- Parents will think:
  - What a “good” quiet, sleeping baby!
- And then...

Unrealistic Expectations about Newborns

- Newborns expected to be quiet
  - “Every time that I tried to breastfeed, he would have a tantrum, become really angry. So then I thought ‘Why? Why should I make him suffer?’”
  - “We started the formula on the 2nd day...since he never stopped crying.”

Days 2 & 3: Everything Changes

- Baby is expected to be quiet and sleeping, but now...SOMETHING IS WRONG!

Unrealistic Expectations about Newborns

- Newborns expected to sleep
  - “He wasn’t sleeping and was constantly crying and when I would get him to latch, there was nothing.”
  - “I guess she wasn’t getting enough from me...they brought me the milk and after she ate, she slept.”

Lack of Preparation for Breastfeeding

- Onset of Milk Production
- The Perfect Latch
- Frequency of Feeds
Lack of Preparation for Breastfeeding: Onset of Milk Production

- Many mothers thought their milk would come in as their babies were born
  - “She had a bottle because the milk wasn’t coming in right away.”
  - “They would also help show how to position him so that I could breastfeed him but no milk would come out so then I had to give him formula.”
  - “My milk didn’t come in for about 3 days...”

What is Improvement?

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Improved</th>
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<tbody>
<tr>
<td>Latch</td>
<td>No sustained hold and/or limited suck</td>
</tr>
<tr>
<td>“Audible” swallow</td>
<td>No/few “visible” swallows</td>
</tr>
<tr>
<td>Type of nipple</td>
<td>Same</td>
</tr>
<tr>
<td>Comfort</td>
<td>Highly varied</td>
</tr>
<tr>
<td>Hold (mom)</td>
<td>Staff dominates</td>
</tr>
</tbody>
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Lack of Preparation for Breastfeeding: The Perfect Latch

- Mothers expected their infants to latch perfectly the first time they attempted to feed
  - “He didn’t suck well, he rejected it right away.”
  - “I gave her formula, I would put her close but she would barely latch on. It was if she wanted everything to be easy and for everything to be fast. And I would say I can’t do it either.”

Lack of Preparation for Breastfeeding: Frequency of Feeds

- Mothers had no idea how frequently newborns would need to be fed
  - “She was a big baby. She would wake up every 3 hours like clockwork wanting to be fed.”
  - “He was constantly eating like every 45 minutes to 1 hour, I just couldn’t sit there and feed him so I moved him to a bottle.”

The Facts: Percentage of Infants with Initial Poor Suck

<table>
<thead>
<tr>
<th>Day</th>
<th>% of Infants</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>49</td>
</tr>
<tr>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
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Formula as the Solution

- Formula perceived as a “solution” to breastfeeding problems or challenging infant behavior
  - “He wouldn’t stop crying so the nurse gave him a bottle. He latches fine to a bottle so I said ‘okay.’”
  - “I just wanted to give him formula because he was crying and always awake.”

Feeding in Response to Baby Behavior

• If crying and waking perceived as hunger, parents will:
  o Add more formula, and more formula
  o Start solid foods (cereal in the bottle)
  o Greater frequency of feedings
  o Add other foods and fluids
  o Use medications

• Pattern not likely to end in infancy....

USDA WIC Special Projects Grant

• 3-year quasi-randomized educational intervention (8 sites in CA)
  o 1 year intervention period
• Concept: Create a clinic environment supporting positive caregiver-infant interactions
  o Training, social marketing, handouts, classes, activities
  o Effort to create messaging that can be delivered quickly, effectively, and inoffensively

Coping with Stress

• If people believe there is a solution – Problem Management
  • Seek information
  • Identify solutions
  • Attempt and evaluate solutions

• If people don’t believe there is a solution – Emotional Regulation
  • Reinterpret goals
  • Disengage, detach
  • Denial of consequences
  • Anger, aggression


Infant Behavior Research

• Infant behavior has been explored and documented for more than 30 years
  o Brazelton, 1973
  o Infant-feeding outcomes have not been investigated
• Current education is excellent but complex and time consuming
• The UCD work is translational

Exclusive BF Food Package by Age

http://www.nal.usda.gov/wicworks/Sharing_Center/statedev_FIT.html

Infants >95th percentile wt/age

• Baseline: N = 339
• Post: N = 411
• * P < .01

WHO growth standards
California Baby Behavior Campaign

Baby Fact #1
Infant behavior is organized into 6 “states.”

Breastfeeding Rates CA WIC Infants 0-2 mos.

Crying

- Not always hunger
- Can take time to calm infants

Baby Behavior: Focused on Healthy Families

- Simplified normal newborn behavior
- Baby Behavior reduces barriers to BF but does not address clinical issues

Irritable

- Driven to maintain interaction
- Distracted by external and internal stimuli
Quiet Alert

- Great for caregivers trying for babies
- Can end abruptly

Quiet Sleep

- Sharp contrast to active sleep
- Caregivers may actively promote deeper sleep

Drowsy

- Some babies hate drowsy
- Great time to encourage sleep

Active Sleep

- Caregivers can be shown signs
- Easy to wake

Key Messages for Parents

- Variety to waken
- Repetition to soothe

Baby Fact #2

Babies are driven to learn and socialize. They use cues to signal readiness.
Types of Infant Cues

- Young infants try to tell caregivers when they want to interact (engagement cues).
- Young infants try to tell caregivers when they need something to be different (disengagement cues).

Kelly et al. Promoting First Relationships, NCAST Pub 2003

Key Messages for Parents

- Cues are simplistic and NOT specific.
  - Parents may need to “play detective.”
- For most healthy term babies, feeding cues are obvious.

Engagement Cues

- **Obvious**
  - Looking intently at faces
  - Rooting
  - Feeding sounds
  - Smiling
  - Smooth body movements

- **Subtle**
  - Eyes open
  - Face relaxed
  - Feeding posture
  - Raising head
  - Following voices and faces

Kelly et al. Promoting First Relationships, NCAST Pub 2003

Disengagement Cues

- **Obvious**
  - Turns away
  - Pushes, arches away
  - Crying
  - Choking, coughing
  - Extending fingers, stiff hand
  - Falling asleep

- **Subtle**
  - Looks away
  - Faster breathing
  - Yawning
  - Hand to ear
  - Grimace
  - Glazed look

Kelly et al. Promoting First Relationships, NCAST Pub 2003

Baby Fact #3

Crying is a vital “talent” used by infants to indicate distress.

Kelly et al. Promoting First Relationships, NCAST Pub 2003

Crying: Babies’ “Super Power”

- Crying results in a sound that affects the nervous system in most adults.
  - Drives adult activity!
- Must be loud to rouse sleeping caregivers.

Parents Need to Know

- Crying = distress
  - Many reasons for crying
  - Hungry babies use hunger cues
- Crying lessens when cues addressed
- Newborns can be too quiet
- Repetition to soothe

Infant Sleep Cycles

- Infant sleep cycles are 60 minutes long (adult cycles are 90 minutes long)
- Infants sleep 13-14 hours per day from 2-12 months - but not all at once!

Infant Sleep States

- Active sleep (REM) is light sleep important for brain development
  - Babies dream and blood flow increases to the brain bringing nutrients to active brain cells
  - Images stimulate brain development
  - Easy to wake
- Quiet sleep is deep sleep
  - No dreaming
  - Little or no movement
  - Important for the brain to rest and recover
  - Growth hormones
  - Difficult to wake

Parents’ Perceptions of Sleep

- “Good” babies sleep through the night
- Sleeping more = better parenting skills
- Goal becomes to “fix” the infant’s sleep “problem”
- Messages needed prenatally if possible

Newborn Sleep/Wake Cycle

- Newborns start sleep in Active Sleep (AS) (dreaming for 20-30 min) and move to Quiet Sleep (QS)
- Infants in active sleep may wake up easily when put down, because active sleep is a light sleep
Sleep Patterns Change

2-Month-Old Cycle
- Shorter AS, 1 longer stretch

3-Month-Old Cycle
- Starts QS, 1-2 longer stretches

Key Messages for Parents of Newborns

- On day 2, baby will wake and demand feeds
- Latching takes practice – expect quick improvement
- Moms feel changes in breasts after discharge
- Babies use cues – get better with response

Key Messages for Parents

- Dreaming/light sleep are important for baby’s development and safety
- Newborns may wake when laid down while dreaming
- As they get older, babies sleep longer and more at night
- Good babies wake up!

The Cornerstones of Baby Behavior

1. Engage the caregiver using your knowledge of baby “secrets”
2. Stay with the basics that related to caregiver action
   - Cues
   - Crying
   - Sleep
3. Value and validate the baby’s skills - use baby’s name and pronouns

The First 72 Hours

- Common Trigger behaviors
  - Sleepy baby becomes frantic feeder
  - Needs practice to latch and feed
  - Easily overstimulated
  - Limited stamina
  - Difficult to wake

Simplify

- Parents get overwhelmed if you make baby behavior too complicated
- Identify cues/signs that the baby is already exhibiting
- Promote and support interaction rather than focus on quieting babies
- Work with others to build consistent messaging
Baby Behavior Team

**UC Davis**

- Jennifer Bañuelos
- Jennifer Goldbronn
- Luz Vera Becera
- Karolina Gonzalez
- Taryn Barrette
- Keri Moore
- And many students

**California WIC**

- Jackie Kampp
- Judy Sheldon
- Karen Tabor
- Valerie Haack
- Erika Trainer
- Holt Reeves
- And state and local agency staff (workgroup)

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Thank you!!