Odd Couple: The Marriage of Breastfeeding & Safe Sleep

Erin Hamilton Spence, MD
Neonatologist
UNT Grand Rounds
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Objectives

- Identify the overlapping physiology of breastfeeding & sleep for mother & infant
- Describe the conflicting messages between advocates for breastfeeding & safe sleep
- Recommend at least 3 behaviors that enhance both breastfeeding & safe sleep

Definitions

- Bed-sharing: sharing same (adult) sleep surface
- Co-sleeping: sleeping in close proximity on any surface including couches & chairs
- SIDS: Sudden Infant Death Syndrome
- SUID: Sudden Unexpected Infant Death
Parenting - Illustrated with Crappy Pictures

The Right Vibe
Overlapping Physiology of Breastfeeding & Sleep

Physiology of Lactation
- Prolactin
- Oxytocin
- Feedback Inhibitor of Lactation (FIL)
Oxytocin- Thinks globally- Acts locally

Association of salivary-assessed oxytocin and cortisol levels with time of night and sleep stage

Oxytocin is higher in Breast vs. Formula-feeding Mothers

Higher Urinary Oxytocin correlates with Mothers’ Lower DBP after Infant Feeding
Prolactin & sleep: immune system interaction


Sleep Stages

Lactating mothers have:
1) More Slow-wave sleep
2) Less Non-REM sleep,
3) Same Total Sleep Time.

Infants have:
1) Faster onset REM
2) Greater portion of REM.

Blyton et al. Lactation is associated with increase in slow-wave sleep in women. J. Sleep Res. (2002) 11, 297–303

Unifying Hormones

- Oxytocin & prolactin have important roles in lactation & sleep
- Sleeping while breastfeeding seems to be a distinct & dynamic hormonal state for mother & infant
- Baseline circadian rhythm in prolactin includes night-time synthesis during sleep
- Suckling = oxytocin release = milk ejection = diminished consciousness
The Conflict

Messages from breastfeeding & safe sleep advocates

Breastfeeding Recommendations

- Exclusive Breastfeeding for first 6 months
- Continued with complementary feeds for > 12 months

"Given the documented short- and long-term medical & neurodevelopment advantages of breastfeeding, infant nutrition should be considered a public health issue and not only a lifestyle choice."

http://pediatrics.aappublications.org/content/early/2012/02/22/peds.2011-3552
Infant/Childhood Costs of NOT Breastfeeding

If 90% of US newborns were exclusively breastfed for the first 6 months, we would save $12 billion/year.

Bartick M, Reinhold A. Pediatrics, Apr 5, 2010

Maternal Costs of NOT Breastfeeding

Cost Analysis of Maternal Disease Associated with Suboptimal Breastfeeding

If 90% of US mothers breastfed for 12 months, we would save $17.4 billion/year.

Bartick M, Stuebe A. OB GYN July, 2013

Figure 1. National Trends in Breastfeeding Rates

**Did you breastfeed for as long as you wanted? Answer: No**

Source: 2013 Texas WIC Infant Feeding Practices Survey, DSHS.

WIC-IPS 2013

**BFHI**

- Baby Friendly Hospital Initiative
  - Worldwide highest hospital designation for maternity & infant feeding support launched by WHO/UNICEF in 1999
  - 20,000+ facilities in 150 countries have been designated
  - 269 hospitals and birthing centers in 46 states
  - 13.14% of births currently are in a BF facility
  - Healthy People 2020 Goal was/is 8.1%
  - Designation requires complying with the Ten Steps and the International Code of Marketing of Breast Milk Substitutes

The Ten Steps to Successful Breastfeeding:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement the policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within an hour of birth.
5. Give newborns no food or drink other than breast milk except for supplementary feeding of an infant who is ill.
6. Allow breastfeeding infants free access to the mother at all times.
7. Practice “breastfeeding in demand.”
8. Encourage breastfeeding on demand.
9. Observe茧 grow and allow weight loss to continue until the baby is growing well.
10. Help mothers maintain breastfeeding in the event of separation from the infant.
Among breastfeeding women whose infants were given formula in the hospital, “How did you get the formula for your baby the first time your baby was given formula in the hospital or birthing center?”

- 28.1% asked for the formula
- 23.2% formula was available in their room
- 28.0% hospital staff brought the formula
- 20.8% hospital staff fed the baby the formula

Before your baby was fed formula, did a nurse or doctor talk to you about the differences between breast milk and formula? Yes: 60.5%; No: 39.5%

TX EBF at Day 2, Healthy Term Singleton newborns, Adjusted Maternal & Infant Factors, in TTS and BFHI designated facilities compared to non-designated facilities

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<th>Race/Ethnicity</th>
<th>TTS</th>
<th>BFHI</th>
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<td>All races</td>
<td>20%</td>
<td>19%</td>
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<tr>
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<td>95%</td>
<td>40%</td>
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<tr>
<td>NH Black</td>
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<td>53%</td>
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Data Source: Texas DSHS Office of Program Decision Analysis; Texas Vital Statistics; Provisional Live Births, 2009; Newborn’s Screening, 2009

Safe Sleep Recommendations

SIDS and Other Sleep-Related Infant Deaths: Expansion of Recommendations for a Safe Infant Sleeping Environment
All Cause Infant Mortality

Infant Mortality Summary, Tarrant Co., 2012

All Cause Infant Mortality in Texas-2013

Supine Sleep

SIDS Rate and Sleep Position
U.S. Infants 1985 - 2008
Sudden Unexpected Infant Death rates

Rates of Sudden Infant Deaths and Other Sudden Unexplained Infant Deaths by Race/Ethnicity, Texas Residents, 2012

DSHS- Perinatal Periods of Risk

Feto-Infant Mortality in Tarrant County

*Overall, Black had the highest excess F-BIR (4.4); Perinatally 4.2% of Black infant and infant deaths were preventable*

*Blacks had the highest excess rate in the hospital mortality and infant health-risk periods, with a relative risk of 4.5 times that of the white rate in the infant health/perinatal period*

*Figure 1: PPROM Periods: Points of Intervention*
Prenatal Period

Figure 2: Excess Feto-infant Mortality Rates by Race/Ethnicity, Tarrant County

Recommendations:
1. Target Maternal Health/Prematurity and Infant Health-related interventions to Black and Hispanic
2. Further explore if Black and Hispanic infant mortality rates are related to teen pregnancy

Area with the Greatest Potential Impact:
Black Maternal Health/Prematurity

Maternal Health & Prematurity

Figure 3: VLBW vs. Birth Weight Specific Mortality, Tarrant County

Recommendations:
- Reduce the number of women gaining less than 15 lbs.
- Reduce rates of teen pregnancy
- Improve access to and use of prenatal care for all races
- Target interventions to reduce maternal smoking and alcohol use

Infant Health

Figure 4: Excess Infant-Related Death by Race/Ethnicity and Cause, Tarrant County

Recommendations:
- Target interventions that reduce prematurity and birth defects among Black and Hispanic
- Target interventions that reduce infant hospital readmissions
- Improve access to and use of prenatal care
- Target interventions that reduce teen pregnancy
- Target interventions that reduce parental smoking
Can Bed Sharing ever be safe?

- 8,207 infant deaths 2004-2012 from 12 states

How many families bedshare without fatality?

- Annual births: 400,000
- 75% ever bed-sharing = 300,000
- All-cause infant mortality 5.8% = 17,400
- Mortality due to SIDS/SUIDS 14% of all fatalities = 2,400 deaths/year
- ?safely bed-sharing?
  297,600 (99.02%)
Harmonizing with Intent

Practices that support both Safe Sleep & Breastfeeding

Accurate & precise coding

- Sudden unexpected infant death = “undetermined” R99
- Evidence of asphyxia = “asphyxia” or “suffocation” W75
- Evidence of other disease process (Prolonged QT, pulmonary hypertension, etc.)

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<th>Not Precise</th>
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Practices that Promote both Safe Sleep & Breastfeeding

- Early, consistent prenatal care
- Smoking cessation/avoidance of exposure
- Home visits

Modifiable Risk- Smoke exposure

Smoke Exposure - Sliding Scale of Risk

Bed sharing when parents do not smoke is there a risk of SIDS? An individual level analysis of five major case-control studies

Home visits

Long Term Follow up of a Population-based RCT


Interventions:

1- control- transportation to prenatal visits
2- control plus- transport + devo screening
3- treatment - transport + home visits before & after delivery
4- treatment plus- transport + devo screen + home visits for 2 years

Olds et al. Effect of Home Visiting by Nurses on Maternal & Child Mortality: Results of a 2-decade follow up of a randomized controlled trial
Summary

- Lactation, breastfeeding, and sleep have complementary physiology leading to a distinct hormonal dyad
- Breastfeeding is associated with reduced risk of SIDS/SUID
- Tarrant County has opportunities to target high-risk populations with evidence-based interventions to promote both safe sleep & breastfeeding

Thank you!

Happy families are all alike; every unhappy family is unhappy in its own way.
(Léo Tolstoï)

- mammamd@gmail.com