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The Impact of Breast Milk Expression on Maternal Experience

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Conflict of interest

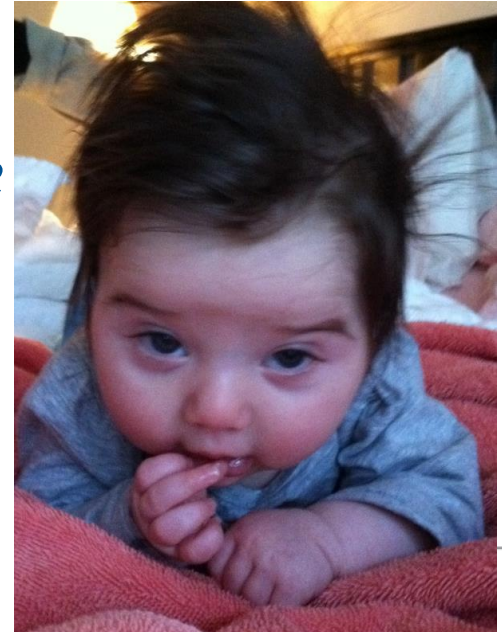
- Dr. Flaherman has declared no conflicts of interest related to this presentation.

Breastfeeding

- Breastfeeding has many health benefits for mothers and babies
- Reduces risk of infectious and other diseases in infancy and reduces risk of maternal breast and ovarian cancer
- Substantial benefits begin to accrue with about 3 months of breastfeeding
 - *12 months recommended by AAP*
 - *2 years by WHO*

Breastfeeding Rates

- In many developed countries, rates of initiation may be relatively high but...
- Overall duration may be relatively short
 - *40% at 6 months and 20% at 12 months in U.S.*
 - *Similar trends in Europe*



Milk expression

- Breast milk expression, using a breast pump or by hand, is very common among mothers*
- Especially common in the first months after birth (in the U.S., more than half in the first month)
- Many in the first week

*Labiner-Wolfe et al., Pediatrics 2008

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Milk expression may contribute to breastfeeding success or cessation

- Mothers report that problems with milk-pumping can lead them to stop breastfeeding¹
- Pumping is associated with a shorter breastfeeding duration²
- Milk expression may impact outcomes

¹ Odom et al., Pediatrics 2013

² Keim et al., Breast Med 2017

Outline

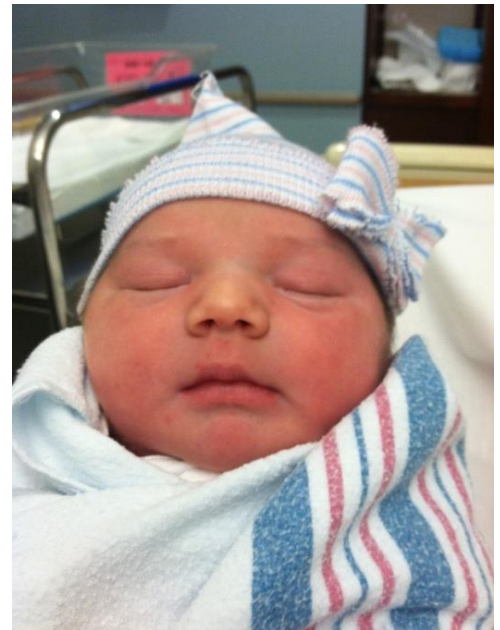
- Indications for milk expression
- Maternal experiences associated with expression
- Breast Milk Expression Experience Measure
- Associating Maternal Experience of Milk Expression with Outcomes

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Milk expression in first week

- Maternal-infant separation
- Ineffective latch or suck
- BFHI or other routine instruction
- Delay in onset of copious milk production (lactogenesis II)
 - *Real*
 - *Perceived*
 - *Anticipated*



Milk expression in first month

- Maternal pain with direct breastfeeding
 - *Substitute for direct breastfeeding when direct breastfeeding is painful*
 - *Soften areola prior to latch*
- Insufficient milk supply
 - *Real or perceived*
- Feeding by someone other than mother
- Store milk for future needs
 - *Return to work/school*

Milk expression in subsequent months

- Maternal-infant separation for work, school or recreation
- Feeding by someone other than mother
- Store milk for future needs

Reasons for expression vary from mother to mother

- Variation in reason for expressing may have an effect on the impact of expression on breastfeeding success or cessation
- Each mother may have an individual experience of milk expression that may impact future breastfeeding practices

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CALMS

Concerns About Low Milk Supply

Flaherman VJ et al., Clin Pediatr (Phila.) 2012

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CALMS—Methods

- **Qualitative study using focus groups**
- **Mothers of infants 2-6 months old who had initiated breastfeeding**
- **Maternal milk supply concern within the first month**
- **Ten total focus groups of 5-8 mothers each**

CALMS—Results

- **Theme 1: Pumping provides control**
- **Theme 2: Pumping can cause pain**
- **Theme 3: Volume of expressed milk can influence milk supply concern**
- **Theme 4: Pumping can interfere with other nurturing activities**
- **Theme 5: Inconsistent clinical advice can be frustrating to mothers**

Theme 1: Pumping provides control

◇“So like after every single feed during daylight hours I would pump immediately after in order to increase my supply and give him that because he wasn’t sucking it out.”

◇“There’s times that I pumped for thirty-five minutes straight and have been squeezing every last bit out just to get it all out just so I could store it, and freeze it and have it for daycare or whatnot.”



Theme 2: Pumping can cause pain

◇“The first time I pumped, my boobs hurt so bad . . . I couldn’t for like a week and a half I didn’t want anything to do with it, I didn’t want to touch them but I had to.”

◇“It was so painful I was scared”

◇ “I shouldn’t have given up on the pump that quickly. I mean, I should have stood it out a little bit longer but like you said, it hurt.”



Theme 3: Expressed milk volume can affect milk supply concern

- ◇ “I worry every time. I pump last thing before I go to bed and I look at how much comes out and I think, ‘Is this it?’”
- ◇ “I only got one and half ounces. I was like, where is all my milk?”



Theme 3 (continued)

◇ “After I went to the pump and there was hardly anything coming out that’s when I started to worry so that’s when I made the decision to switch to (formula), otherwise I was afraid he would starve.”

◇ “I think I panicked. I was just using a manual pump and I was only pumping a little bit out of this one breast and I was like oh my god.”



Theme 4: Pumping interferes with other ways of nurturing

◇ “I felt bad sometimes you know after I’d feed him I’d pump right away. I’d put him in his bouncy seat and I can’t go and hold him and interact with him.”

◇ “So on some days I actually wouldn’t pump after every feed because I thought if it takes a little bit longer on the formula I’m okay with it because I’ll never get those times back when he’s that little, you know those memories.”



Theme 4 (continued)

◇ “You can’t get it back . . . Yeah you can’t enjoy being a parent. You sacrifice however many weeks or months that you put yourself through this (pumping) and thereafter too and you didn’t get to enjoy it, you didn’t get to learn about your baby.”



Theme 5: Frustration with inconsistent advice

◇ “One (nurse) told me to start pumping right away to stimulate my breast and another (nurse) told me you’re not supposed to start pumping until your milk supply is established.”



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Methods and alternatives for breast milk expression (MABE)

- Suboptimal breastfeeding behavior at 24 hours such as poor latch or poor suck is associated with shorter breastfeeding duration
- Providers may recommend either breast pumping or hand expression

MABE—Background continued

- Chapman¹ et al: RCT comparing breast pumping to not breast pumping for mothers post-Caesarian
 - *Found decreased milk transfer in breast pump group*
 - *Trend towards increased postpartum pain*
 - *Trend towards decreased breastfeeding duration*
- Other studies comparing methods of expression have found conflicting evidence on which expression method produces more milk
- No studies comparing methods for eventual breastfeeding duration

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¹Chapman DJ, Young S, Ferris AM, et al. *Pediatrics*. 2001;107(6)

MABE—Methods

- 68 healthy term infants 12-36 hours old who were not latching well or not sucking well when latched
- Enrolled in California (UCSF, Kaiser South Sacramento and Stanford University)
- Supported breastfeeding followed by randomization to either 15 min of breast pumping or 15 min hand expression

MABE—Methods: Outcomes

- **Immediate**
 - Volume of expressed milk
 - Breastfeeding Self-Efficacy Scale
 - Maternal pain
- **2-month**
 - Breastfeeding
 - Formula use
 - Milk expression practices

MABE—Results

Characteristic	Pump (N = 33)	Hand expression (N = 35)	p-value
Infant age (hours) (mean \pm sd)	20.8 \pm 7.8	20.9 \pm 6.7	0.95
Infant gender (% male)	23 (69.7%)	17 (48.6%)	0.08
Birth weight (kg) (mean \pm sd)	3.31 \pm 0.5	3.50 \pm 0.5	0.23
Gestational age (wk)	39.1 \pm 1.3	39.4 \pm 1.1	0.27
Vaginal delivery	27 (77%)	24 (72.7%)	0.67
Maternal age (y)	30.2 \pm 6.6	30.2 \pm 6.3	0.98

MABE—Results

- Median volume of expressed milk (25th, 75th percentile) was 0.5 (0, 1) mL for hand expressing mothers and 1 (0, 3) mL for pumping mothers (p=0.07)
- Breastfeeding Self-Efficacy Scale scores did not differ by group
- Maternal pain after intervention did not differ by group

MABE—Results (continued)

- Final outcome assessment: Among mothers randomized to the hand expression intervention, 97.1% were breastfeeding at 2 months, compared to 72.7% of mothers randomized to the breast pump ($p=0.02$)

MABE—Discussion

- Mothers assigned to hand expression were more likely to be breastfeeding at 2 months than mothers assigned to pump
- Providers should consider teaching hand expression instead of pumping to mothers of healthy term newborns feeding poorly after birth

Development of the Breast Milk Expression Experience Measure (BMEE)

- Objective: To develop a measure to evaluate women's experiences of expressing milk

BMEE: Methods

- Cohort assembled for the RCT
- Population: California (University of California San Francisco, Stanford University and Kaiser South Sacramento)
 - 68 healthy, breastfeeding mothers of healthy term infants 12-36 hours old
 - Difficulty with latch or suck

BMEE: Methods (continued)

- Item development
 - *17 items from content areas including social experience, learning experience and personal experience*
- Likert scale 1-5
- Assessed predictive validity for breast milk expression at 1 month
 - *Mean scale score ≥ 3 as a dichotomous predictor*

BMEE—Results

- Cohort from MABE
- Cronbach's alpha 0.703 for 11-item scale



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BMEE Items

- Social support: (1) Family members support (pumping/hand expression); (2) My partner supports (pumping/hand expression).
- Personal experience: (3) I feel peaceful when (pumping/hand expressing); (4) I look forward to (pumping/hand expressing); (5) I enjoy (pumping/hand expressing); (6) (Pumping/hand expressing) is something I could do easily while doing other things; (7) (Pumping/hand expression) feels awkward.
- Learning experience: (8) (Pumping/hand expressing) is easy to (use/do); (9) I had no problems figuring out how to (use the pump/hand express colostrum/milk); (10) I could easily teach (the pump to someone/someone how to hand express colostrum/milk); (11) I could easily show someone how to (use the pump/hand express).

Scale	# of items	Cronbach's alpha	Observed range	Mean (SD)
Social Support	2	0.7357	1-5	3.95 (0.93)
Personal Experience	5	0.7192	1-3.6	2.67 (0.66)
Learning Experience	4	0.7633	1.5-5	3.80 (0.74)
Summary Score	11	0.7032	1.55-4.45	3.41 (0.52)

Results—BMEE Validity

- Validated against the outcome of maternal milk expression practice at 1 month
- MABE found no difference in milk expression practices by treatment group
- However, there was a big difference in milk expression practices by BMEE score:
 - *33% of mothers with BMEE 11-item scale score <3 were expressing at 1 month of age*
 - *80% of mothers with a mean scale score ≥ 3 ($p=0.01$)*

BMEE—Discussion

- Reliable measure
- Good predictive validity



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Importance of intention

- Maternal intention may be elective (producing milk to mix with solids) or non-elective (poor infant latch)
- Mothers with a non-elective intention were more likely to stop breastfeeding early, or to stop feeding directly at breast*



*Felice et al., Am J Clinical Nutr 2016



Ameliorating experience related to milk expression may reduce cessation

- It may be possible to tailor milk expression techniques for:
 - *Comfort*
 - *Convenience*
 - *Privacy*
 - *Speed*
- This may allow more mothers to meet their own goals



Consider diversity in maternal expression experience

- Little research has examined how mother's needs and experiences vary by culture, race, ethnicity and geography



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Thank you!

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