Concerns About Low Milk Production

Nancy Mohrbacher, IBCLC, FILCA

Enough Milk?

Reason unnecessary supplements given in the hospital

Most common reason mothers give formula and wean early

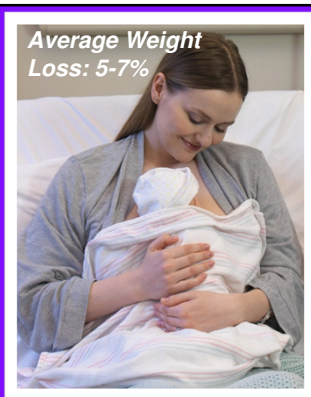
Odom, et al. *Pediatrics* 2013; 131(3): e726-e732

Staff Concerns After Birth

Weight Loss

What Other Than Milk Intake Affects Weight Loss?

- Birth weight
- Type of birth
- Gestational age
- Gender
- Country of birth
- Mom's fluid balance



Chantry, et al. *Pediatrics* 2011; 127(1): e171-79

Excess IV fluids ≤2 hr before birth ↑birth wt & act as diuretic

- ↑urination & ↑wt loss during 1st 24 hr
- # wet diapers in 1st 24 hr predict wt loss

For accuracy, calculate wt loss from 24-hr wt

Noel-Weiss, et al. *Int Breastfeed J* 2011; 6:9

"Weight loss in the range of 8-10% may be within normal limits.

If all else is going well & the physical exam is normal, it is an indication for careful assessment & possible breastfeeding assistance."

ABM, *Breastfeed Med* 2009; 4(3):175-82

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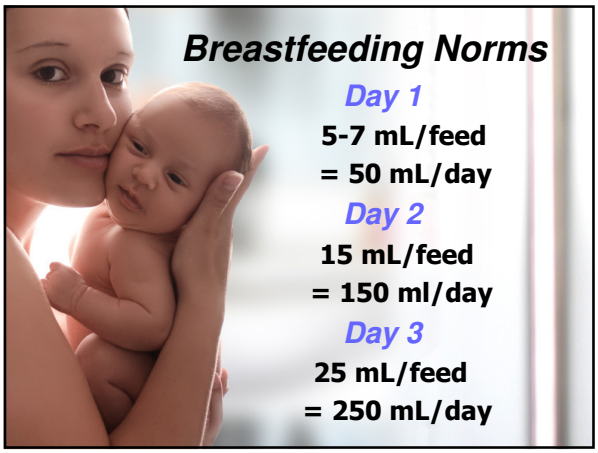

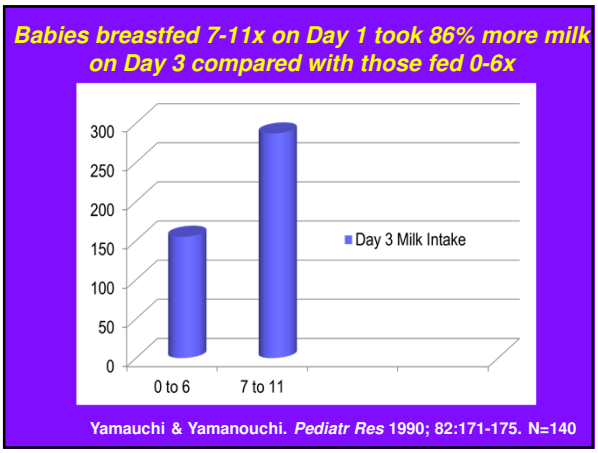

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Maternal Red Flags

- ✓ Hypoplastic breasts
- ✓ Hx endocrine problems
- ✓ Hx bilateral breast surgery
- ✓ Conditions that delay milk increase
  - -- Diabetes
  - -- Long, difficult labor
- ✓ Heavy blood loss
- ✓ Retained placenta
- ✓ Hx low milk production

Infant Red Flags

- ✓ Illness/infection
- ✓ Tongue tie
- ✓ Prematurity
- ✓ Cleft palate
- ✓ Cardiac problems
- ✓ Breathing problems
- ✓ Sensory processing disorders
- ✓ Neurological issues

Photo: Kirsten Hedberg Nyqvist, RN, PhD

Breastfeeding Adequacy Week 1

Exam 3-5 days after d/c

Low wt on Day 3 or 4

Baby's stools:

- ✓ The earlier stools turn yellow, ↓ wt loss
  Shrago, et al. *Pediatr Nurs* 2006; 32(3):195-201
- ✓ Red flag: <4 BMs Day 4 & Mom feels milk not yet increased
  Nommsen-Rivers, et al. *J Hum Lact* 2008(1):27-33

Supplements
in order of priority

1. Expressed milk
2. Donor milk
3. Hypoallergenic formula
4. Standard formula

Photo: *The Breastfeeding Atlas*

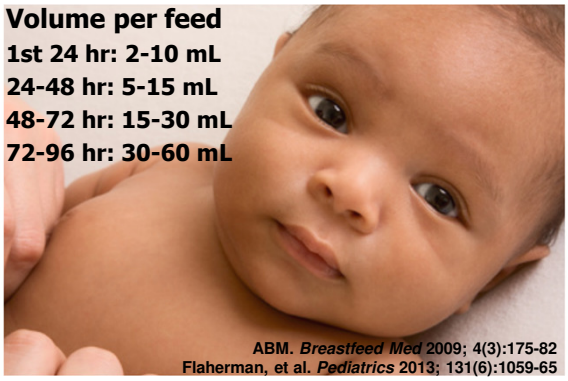
Greer, et al. *Pediatrics* 2008; 121:183-91

Day 1: 7 mL/feed
Day 2: 15 mL/feed
Day 3: 25 mL/feed

Photo: *The Breastfeeding Atlas*

Protocol to supplement healthy, term babies

Volume per feed
1st 24 hr: 2-10 mL
24-48 hr: 5-15 mL
48-72 hr: 15-30 mL
72-96 hr: 30-60 mL



ABM. *Breastfeed Med* 2009; 4(3):175-82
Flaherman, et al. *Pediatrics* 2013; 131(6):1059-65

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Sipping/Lapping Methods

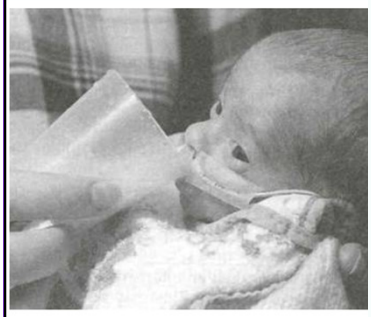


Photo: Kirsten Hedberg Nyqvist, RN, PhD

Muscles used more similar to breastfeeding than bottle-feeding

Gomes, et al. *Dev Med Child Neurol* 2009; 51(12): 936-42
Gomes, et al. *Jornal de Pediatria* 2006; 82(2):103-09

May lead to easier transition to the breast

Abouelfettoh, et al. *Int Breastfeed J* 2008; 2:27
Lang, et al. *Arch Disease Child* 1994; 71(4):365-69

Feeding-tube devices

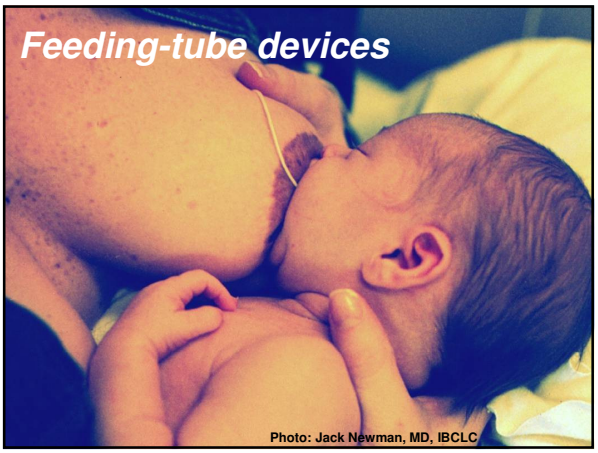


Photo: Jack Newman, MD, IBCLC

Make bottle-feeding more like breastfeeding

Kassing, *J Hum Lact* 2002; 8(1):56-60

The Exclusively Pumping Mother

Basics of Reaching & Maintaining Full Milk Production

Degree of Breast Fullness

Daly. *Exp Physiol* 1996; 81:861-875

- Drained breasts make milk faster
- Full breasts make milk slower (FIL + pressure)

Breast Storage Capacity

Daly, et al. *Exp Physiol* 1993; 78: 209-20

Large capacity
Takes more milk & time to fill

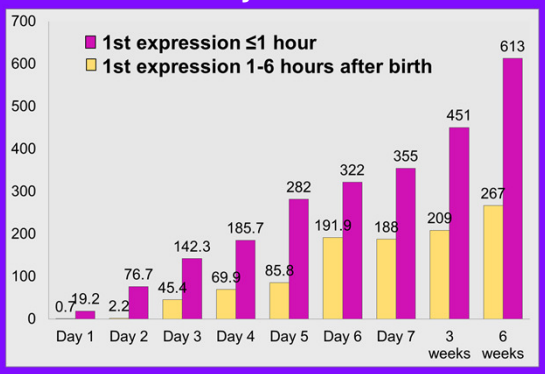
Small capacity
Takes less milk & time to fill

Affects # of milk removals needed per day to establish & maintain milk production

Pumping started ≤1 hr of birth associated with earlier milk increase & more milk at 7 days & 3 wk

Parker, et al. *J Perinatol* 2012; 32:205-09; N=20 VLBW

Milk Volumes Day 1 to 6 Weeks



Parker, et al. *J Perinatol* 2012; 32:205-09; N=20 VLBW

Stage 1: Birth to Milk Increase

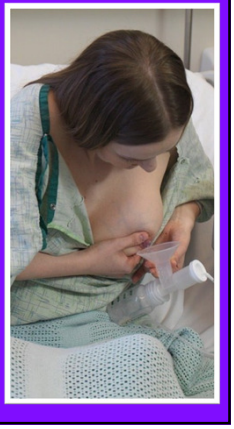
Breast massage before pump
Jones, et al. *Arch Dis Child Fetal Neonatal Ed* 2001; 85:F91-95

Pump 8-10x/24 hr
- –Focus on daily total
- –"Putting in your order"
- –Expect small amounts

Longest stretch: ≤ 6 hr

Double pump till flow stops

After, hand express >5x/day
Morton, et al. *J Perinatol* 2009; 29:757-64



Stage 2: Milk Increase to Full Production

Longest stretch: ≤ 6 hr

Use hands-on pumping so "drained breasts make milk faster"

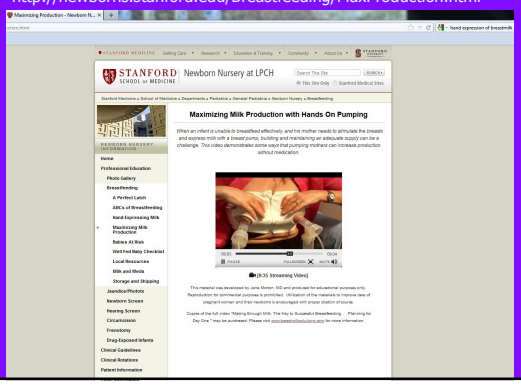
Full Milk Production Defined	
Ideal	≥ 750 mL (25 oz.)
Borderline	350-500 mL (12–17 oz.)
Low	≤ 350 mL (12 oz.)

Goal: ≥ 750 mL/day/baby by Day 7-10

Hurst & Meier. *Breastfeeding and Human Lactation*, 2010, p. 434

Hands-On Pumping (HOP)

http://newborns.stanford.edu/Breastfeeding/MaxProduction.html

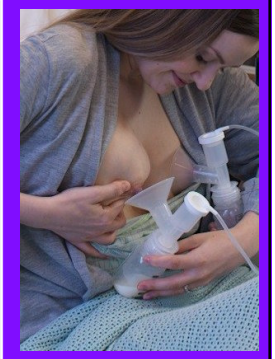


Video: *Making Enough Milk, The Key to Successful Breastfeeding…Planning for Day One*, version 2.0 (2008) by Jane Morton, MD; Available from www.breastmilksolutions.com

Steps for
Hands-On Pumping

Hands-On Pumping

1. Massage both breasts
2. Double pump
3. Stop pumping & repeat massage
4. Single pump or hand express
5. Alternate right to left to right, etc. until milk flow slows



Feel for firmness & watch sprays to guide where & how long to apply pressure

Increase in Milk Yield of >48%

Morton, et al. *J Perinatol* 2009; 29(11), 757-64

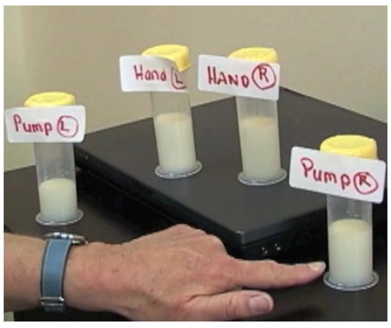


Image: Jane Morton DVD, *Making Enough Milk* Available from www.breastmilksolutions.com

Milk-fat content nearly double the average
Morton, et al. *J Perinatol* 2012; Jan 5; 1-6

Research Findings

- **Preterm mothers ~3x greater risk of inadequate milk at Week 6 (<500mL/day)**
  Hill, et al. *J Hum Lact* 2005; 21(1):22-30; 95 preterm, 98 term
- **Day 4 output predicted Week 6 output**
  Hill & Aldag. *J Perinat Neonatal Nurs* 2005; 19(3):273-82

Early Breast Stimulation

Preterm: **6 pumps/day**
Term: **8-9 breast/day**

Early breast stimulation predicted 49% of variation in Week 6 milk output

Gestation in weeks predicted 11%

Hill, et al. *J Hum Lact* 2005; 21(2):138-50

Adding Hands to Pump

Hill, et al. *J Hum Lact* 2005; 21(2):138-50
Morton, et al. *J Perinatol* 2009; 29(11):757-64

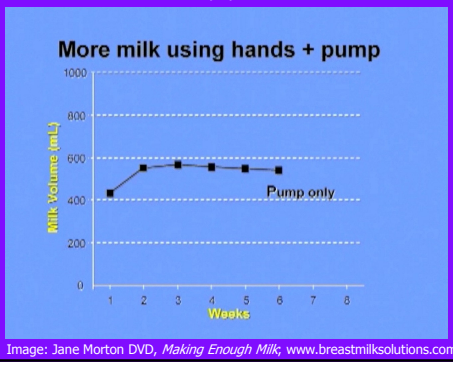


Image: Jane Morton DVD, *Making Enough Milk*; www.breastmilksolutions.com

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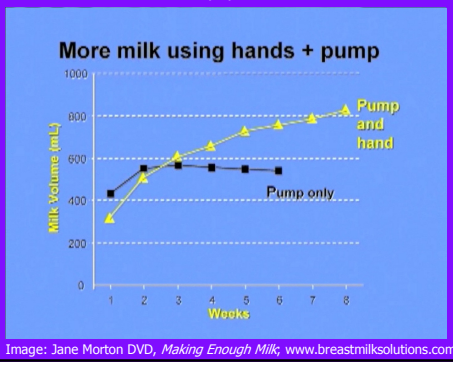

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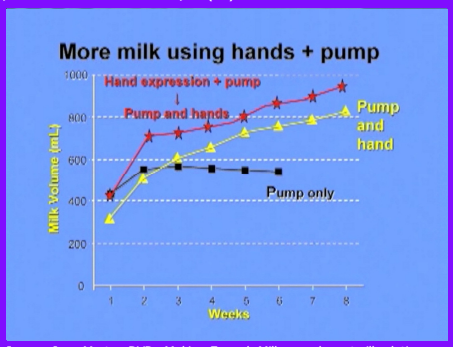

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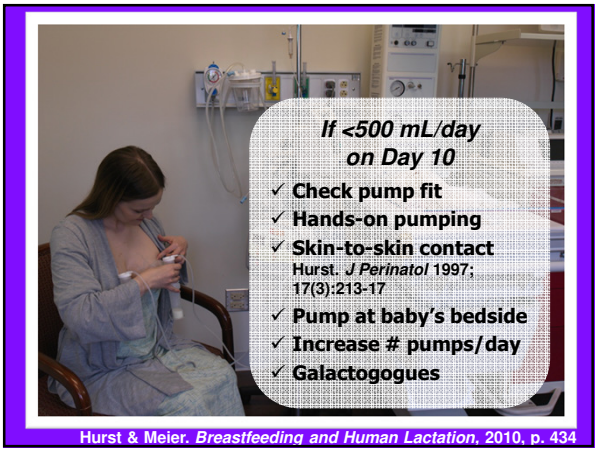
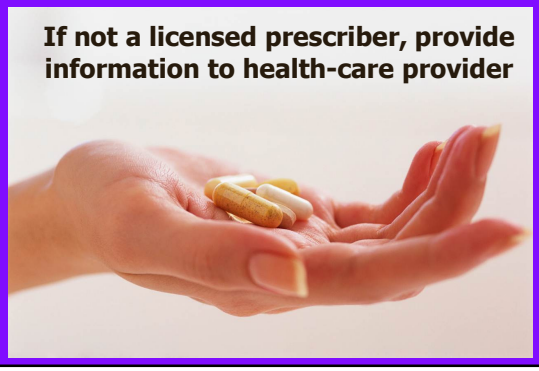


Hurst & Meier. *Breastfeeding and Human Lactation*, 2010, p. 434

Galactagogues

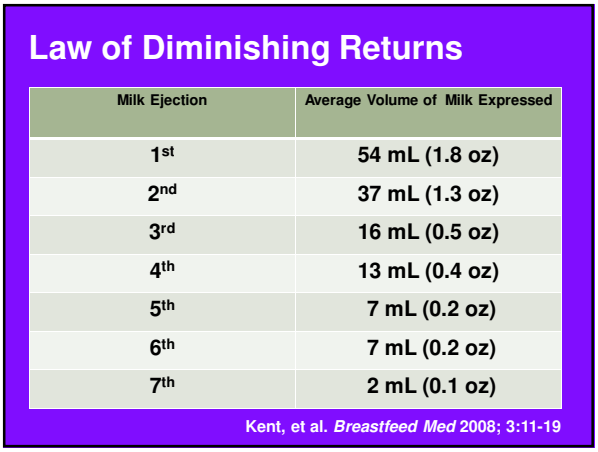
If not a licensed prescriber, provide information to health-care provider

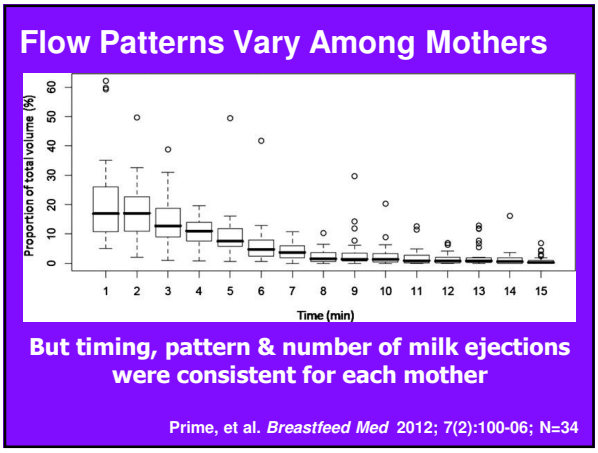


Good practices usually eliminate need for galactogogues
Starting to pump within 1st hour may ↑ milk production enough to avoid the need
Galactogogues should be used only after all modifiable factors that affect milk production have been addressed
Anderson. J Hum Lact 2013; 29(1):7-10

Maintaining Milk Production
Impact of Individual Differences

Stage 3:
Full Production
Decrease to 15-20 min
Most maintain milk production with 6-7 pumps/day
Sleep through the night
Record 24-hr yield 1x/wk


Law of Diminishing Returns
Milk Ejection
Average Volume of Milk Expressed
1st 54 mL (1.8 oz)
2nd 37 mL (1.3 oz)
3rd 16 mL (0.5 oz)
4th 13 mL (0.4 oz)
5th 7 mL (0.2 oz)
6th 7 mL (0.2 oz)
7th 2 mL (0.1 oz)
Kent, et al. Breastfeed Med 2008; 3:11-19


Flow Patterns Vary Among Mothers
Proportion of total volume (%)
Time (min)
But timing, pattern & number of milk ejections were consistent for each mother
Prime, et al. Breastfeed Med 2012; 7(2):100-06; N=34

How Many Minutes Should She Pump?
Individualize pumping recommendations
For best pumping length, ask her to pump a few times & watch milk flow
Prime, et al. Breastfeed Med 2012; 7(2):100-06; N=34

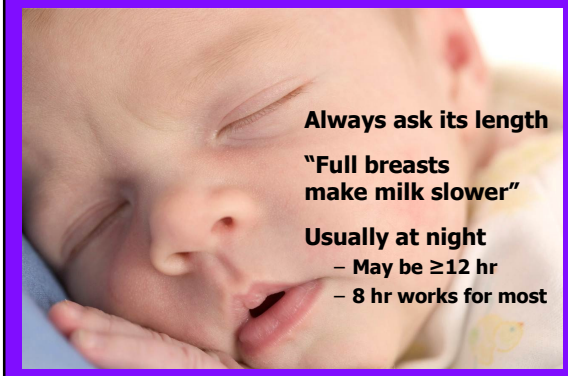
In Stage 3 Does Better Breast Drainage Trump Pumping Frequency?

Pumping >7/day key to milk volumes in 1st 2 wk but not at 8 wk

With HOP, pumped fewer times/day but milk volumes kept increasing

Morton, et al. *J Perinatol* 2009; 29(11):757-64

Impact of the Longest Stretch



Always ask its length

"Full breasts make milk slower"

Usually at night
- May be ≥12 hr
- 8 hr works for most

Key Milk Production Facts

A breastfed baby's milk intake:

↑Increases from Birth to Week 5
Hill, et al. *J Hum Lact* 2005; 21(1):22-30

↔ Plateaus til 6 mo

↓Decreases when other foods started

Peak milk intake averages ~ 25-35 oz/day

Baby's growth rate slows

Between 1 & 6 mo, breastfed baby needs ~ same volume of milk/day

Nielsen, et al. 2011. *Pediatrics*, 128(4):e907-14

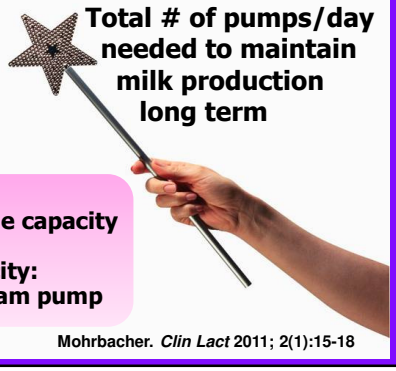
On average, formula-fed babies consume much more milk per day:

- 15% @3 mo
- 23% @6 mo
- 20% @9 mo
- 18% @12 mo

Heinig, et al. *Am J Clin Nutr* 1993; 58:152-61

The Magic Number

Total # of pumps/day needed to maintain milk production long term



Major factor:
Breast storage capacity

Clue to capacity:
Yield at first am pump

Mohrbacher. *Clin Lact* 2011; 2(1):15-18

Breast Storage Capacity

If pumps/day drops below mom's Magic Number, milk production slows

Spectrum of Normal

	Largest Capacity	Large Capacity	Average Capacity	Small Capacity	Smallest Capacity
# Pumps/day to increase milk	4-5	6-8	8-10	10-11	≥12
# Pumps/day to maintain milk	3-4	5	6	7	8
# Pumps/day to decrease milk	2	3	4-5	6	7

Spectrum of Normal

	Largest Capacity	Large Capacity	Average Capacity	Small Capacity	Smallest Capacity
Maximum longest stretch	10-12 hr	8-10 hr	8 hr	6-7 hr	4-5 hr
Yield at first am pump	15 oz	10-14 oz	8-9 oz	6-7 oz	4-5 oz
Type of pump	?	?	?	?	?
Other factors	?	?	?	?	?

Ask Pumping Mothers

- Pump used (best varies)
- # pumps/day
  (NOT "how often"—count)
- Length of pumps
- Daily yield—full production?
- Longest stretch
- Yield at first am pump, other pumps
  (Clue to storage capacity)
- Long-term goals

- Pump choice (quality/fit)
- Pumping strategies
  - Early and often
  - #/length pumps/day to establish/maintain
  - Hands-on techniques
  - Longest stretch
  - Role of milk ejection
- Individual differences
- How to adjust supply
- How to transition to breast or safely wean

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