



CME-Spotlight Series 2013

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Common Breastfeeding Problem, Part 2 of 3: Milk Supply

Human breast milk is a complicated mixture of essential nutrients delivered in a systematic time release fashion to maximize absorption while minimizing gastrointestinal discomfort in the child. During the first few days of milk let down colostrum is the predominant mixture – high in protein, immunoglobulins, and low in carbohydrate and fat. Once milk production is established and regular by day 3-4 the average calorie content is 22kcal/oz and contains a balance of all the necessary nutrients. Breast milk is more readily digested than formula, thus breast fed babies often feed every 1.5-2 hours whereas formula fed babies may feed every 2-3 hours.

As breast milk is produced by the glandular alveoli, less dense lactose rich milk rapidly reaches the end ductal area first – this constituent of milk is referred to as foremilk. Denser fat molecules more slowly progress down the ducts towards the nipples – the more satiating hindmilk. The beginning of a nursing session starts with letdown of the foremilk followed by hindmilk letdown. In an ideal feed where the breast is completely emptied, this timed release of different ingredients leads to a homogenous feed of heterogeneous ingredients to help minimize gastrointestinal upset.

Engorgement

Common in the first 2-5 days of breast milk production it presents with painful, swollen, hard and warm breasts. Usually self resolves with breast emptying in 12-24 hours but occasionally intervention is warranted to treat pain and prevent mastitis/plugged ducts and includes:

- Nursing often, every 2 hours including at night.
- Emptying both breasts during feedings.
- Position change and ensure an adequate latch.
- May hand express or pump for 20-30 seconds prior to feedings (low setting on electric or 'Juice Jar Pump' [1]).
- Apply warm compress 5 minutes before feeding to aid milk letdown.
- Apply cold compress for 20 minutes between feedings to reduce swelling (consider 'cabbage leaf compress' [1]).
- Ibuprofen as needed for pain.

Over Supply (Foremilk-Hindmilk Imbalance)

If milk production exceeds consumption (over supply) hindmilk may not be fully expelled. Instead, the child often receives milk that is lactose rich and fat deficient. This foremilk-hindmilk imbalance leads to lactose rich milk which may cause an osmotic diarrhea. This is most commonly seen in the first three months of breastfeeding and symptoms include:

- Gassy and fussy child.

- Gulping or choking during feeds and spit up.
- Biting down or clamping during feeds to slow flow.
- Milk spraying out when baby unlatches.
- Short, often 5-10 minute feeds.
- Green, watery, foul smelling often explosive stools.
- Increased frequency of feeding due to mostly foremilk being eaten (less satiating).
- Maternal engorgement, plugged ducts, and mastitis.
- Maternal cracked or painful nipples from a shallow latch used to slow the rate of flow.

First ensure a proper latch and try position change such as baby on top (reclined breastfeeding) or side laying. Expressing a half or full ounce of milk before each feeding will help slow flow. Next, we recommend feeding the baby only one breast per feeding, allowing the breast to completely empty and refill a balanced milk. Empty the other breast for a few seconds if needed for pain relief. With time a full breast produces serotonin which is one of many Feedback Inhibitors of Lactation (FIL) [2]. FIL concentrates the longer a breast goes unemptied causing down regulation of milk production and thus lowering supply. An initial trial of 7 days of this strategy of single breast per feed emptying is usually effective but occasionally will have to be extended longer or the same breast may be used for two consecutive feedings. By spacing out the feedings between each breast the mother is allowing the emptied breast enough time to slowly fill rather than partially emptying both breasts in one feeding and perpetuating the foremilk-hindmilk imbalance.

If supply still needs to be reduced we will recommend expressing both breasts 45-60 minutes before a feeding followed by feeding on one breast per feeding. The next time feed off the opposite breast. Depending on the fullness a repeat expressing session may be needed to re-empty the breasts later in the day. This is done for 5-7 days.

When the above fails, we write for a 7 day course of a combined oral contraceptive to reduce supply. Other remedies that have been tried but have limited data regarding their efficacy include pseudoephedrine, sage tea, peppermint tea, cabbage leaf compress, and thyme.

Low Milk Supply

Many mothers are concerned they may have low milk supply, especially in the first few weeks of breast feeding. If the baby is gaining weight appropriately reassure mother that supply is adequate. To increase supply, first try to increase the frequency of feedings and utilize both breasts. Empty one breast then offer as much of the second breast that the baby will take. At the next feeding resume with the latter breast first. If manual stimulation does not work, consider galactagogues.

Galactagogues are compounds that boost milk supply. They have been used for thousands of years in various modalities and evidence is mounting to support their use. Galactagogues are often used after treatments from Table 1 have failed. It is common for fenugreek tea alone to be enough to provide adequate supply and is my first line. These can be continued for as little as 1 week or longer if needed.

Cause	Treatment
Supplementing with formula, water, or providing too much solid food	Provide breast only or decrease solids in older child
Child sleeping through feeds	Keep child awake during feeding and feed at routine intervals of every 1.5-2 hours during the day and 2-3 hours at night
Maternal fatigue, inadequate nutrition or fluid intake	<ol style="list-style-type: none"> 1) 500 calories above individual's daily recommend caloric intake pre-pregnancy 2) Drink when thirsty 3) Rest
Maternal hypothyroidism, retained placenta, post-partum hemorrhage, breast implants or surgery, PCOS, hormonal contraceptives, smoking, anemia, caffeine or pseudoephedrine intake, stress	Treat underlying cause
Inadequate emptying	Compress breast during feedings to fully empty breast
Nipple confusion	Avoid bottle, pacifier, nipple shield
Latch problem	Assess latch
Intrinsic low supply	<ol style="list-style-type: none"> 1) Pump between feedings 2) Pump for 5 minutes after feeding 3) Galactagogue

Table 1. Common causes/treatment of low milk supply.

Galactagogue	Dose	
Fenugreek - Do not use in diabetics as hypoglycemia has been reported or if allergic to chickpeas or peanuts [3] [4] [5] - Do not use in pregnancy, especially in the later weeks as uterine contractions have been reported [6]	Tea	One cup TID
	Tincture	1-2 mL TID
	Natural (seeds/powder)	1 teaspoon TID
	Capsules	1500-2000 mg TID
Blessed Thistle - Works best in combination with fenugreek	Tea	1-2 teaspoons dissolved in one cup TID
	Capsule	800-1000 mg TID
Alfalfa	Tea	1-2 teaspoons dissolved in one cup TID
	Capsules	2000 mg TID
Goat's Rue	Tea	1 teaspoon dissolved in one cup TID
	Capsules	400 mg TID
Anise	Tea: 1-2 teaspoons dissolved in one cup TID	
Spirulina, Caraway, Cumin, Raspberry Leaf, Echinacea, Fennel, Stinging Nettle	Insufficient Data	
Oatmeal	One bowl per day	
Other foods: spinach, carrots, hummus, papaya, asparagus, brown rice, apricots	Varies	

Table 2. Common Galactagogues and their reported dosages.

References:

- [1] B. I. Kelly Bonyata, "Engorgement," [Online]. Available: <http://kellymom.com/bf/concerns/mother/engorgement/>. [Accessed 23 November 2013].
- [2] "Pai VP, Marshall AM. Intraluminal volume homeostasis: A common serotonergic mechanism among diverse epithelia. *Communicative & Integrative Biology* 2011; 4:532 - 537;".
- [3] "Patil SP, Niphadkar PV, Bapat MM. Allergy to fenugreek (*Trigonella foenum graecum*). *Ann Allergy Asthma Immunol* 1997 Mar;78(3):297-300."
- [4] "Ohnuma N, Yamaguchi E, Kawakami Y. Anaphylaxis to curry powder. *Allergy* 1998 Apr;53(4):452-4."
- [5] "Lawrence RA. *Breastfeeding: A Guide for the Medical Profession*, 5th ed. St. Louis: Mosby, 1999, p. 376."
- [6] "Hale T. *Medications and Mothers' Milk*, 10th Edition. Pharmasoft Medical Publishing, 2002, p.277-279."