

Recognizing when things are headed south

Recognizing When Things are

HEADING SOUTH

What's going on?

Lisa Marasco MA, IBCLC, FILCA
Santa Barbara Co. PHD/Nutrition Services/ WIC © 2020

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Are things heading south?

Well, it's all about the clues

Gathering good clues

Start by listening to mom's story
⇒ Is there really a problem? No → Reassure, educate

Yes ↓

Take a detailed history
⇒ Risk factors for delays
⇒ Breastfeeding Management

Yes ↓

Further Observations
⇒ Infant assessment
⇒ Feeding assessment
⇒ Maternal Assessment

⇒ Differentiate delayed, primary and/or secondary causes

Baby behavior often drives the crisis

Before vs after Lact 2

Early weight loss >7%? >10%?

Context, Context, Context

Use day 2 weight as baseline for % loss - Noel-Weiss 2011

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Start Here → Is baby getting enough?

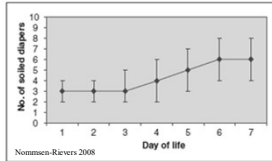


Figure 1. Median number of soiled diapers produced per 24 hours during the first week of life (d1 = 0-24 hours of life, d2 = 24-48, d3 = 48-72, d4 = 72-96, d5 = 96-120, d6 = 120-144, d7 = 144-168). Error bars represent the 25th to 75th percentile range.

Bekkali et al. (2008). Duration of meconium passage in preterm and term infants. *Arch Dis Child Fetal Neonatal Ed*
 Nommsen-Rivers et al. (2008). Newborn wet and soiled diaper counts and timing of onset of lactation as indicators of breastfeeding inadequacy. *J Hum Lact*

- ✓ ~80% pass meconium within 48 hrs (Bekkali 2008)
- ✓ **Risk factor:** Scant output in first 5 days or delayed change to yellow
- ✓ **Bottom line:** Lots of smaller stools OR Less often but blow-outs

And Here → Is baby getting enough?



Once secretory activation occurs, most babies start to gain 30-45g/day in the first 1-2 mo
 Again, how does baby look and act?

Riddle & Nommsen-Rivers. (2017). Low milk supply and the pediatrician. *Curr Opin Pediatr*, 29(2), 249-256.

First 14 days: Typical parameters for "enough"

Table 3. Description of Sample: Exclusively Breastfed Neonates During the First 14 days Post Birth (n=73)

Descriptor	Mean	Range	SD	Median
Birth weight in pounds/gm	7 lb 8oz/3402	5 lb 13oz/2608 – 11 lb 4oz/5103	0.98/444.5	7 lb 4 oz/3345
Feedings per 24 hours	8.5	6.23-11.38	0.042	8.38
Maximum weight loss	8.11%	2%-14%	0.31	8.27%
First day to gain weight	4.7 days	3-8 days	0.11	5.0
First occurrence of yellow stool	6.8 days	3-15 days	0.29	6.0
Day of regaining birth weight	9.43 days	4-15 days	0.40	9.0
BMs per 24 hours the 1 st 5 days	4.04	0.80-7.20	0.16	4.0
BMs per 24 hours during 1 st 14 days	4.8	1.62-8.46	0.18	4.7
Weight at 14 days in pounds/gm	7 lb 15oz/3595	5 lb 6 oz/2436 – 11 lb 8 oz/5216	1.16/526.2	7 lb 14oz/3528
Percent of birth weight at 14 days	106%	88.19%-120%	0.80	105%

Take home message:

It is uncommon for babies gaining appropriately to stool infrequently

Shrago, Reifsnider & Insel. (2006). The Neonatal Bowel Output Study: indicators of adequate breast milk intake in neonates. *Pediatr Nurs*

Age (n)	Centile	Girls (g/day)	Boys (g/day)
0-7 days	Median	14	21
	25th	0	0
	10th	-14	-21
	5th	-29	-36
	(n)	(384)	(383)
7-14 days	Median	29	36
	25th	14	19
	10th	0	0
	5th	-7	-7
	(n)	(382)	(381)
14-28 days	Median	39	47
	25th	32	38
	10th	25	32
	5th	21	25
	(n)	(441)	(417)
28-42 days	Median	35	40
	25th	27	32
	10th	21	25
	5th	18	21
	(n)	(441)	(417)
42-60 days	Median	29	34
	25th	22	28
	10th	18	22
	5th	15	18
	(n)	(440)	(416)

WHO Velocity Growth Charts

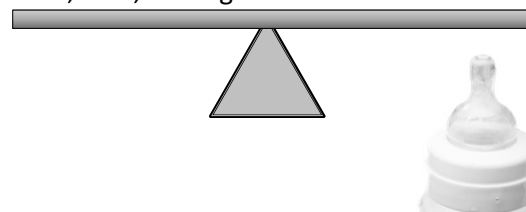
From: Riddle & Nommsen-Rivers (2017). Low milk supply and the pediatrician. *Curr Opin Pediatr*.

For full WHO velocity charts by birthweight: who.int/childgrowth/standards/w_velocity/en/


	APPROXIMATE weight gain for babies in the 25 th to 75 th percentiles
Week 1	Initially, loses up to 7-10% of birth weight (Note: weight at 24 hours may be more accurate true birth weight)
Week 2	Regains to birth weight, or has started to gain 1oz (30g) per day
Weeks 3 & 4	Gains 8-9 oz (240-270g) per week
Month 2	Gains 7-10 oz (210-300g) per week
Month 3	Gains 5-7oz (150-210g) per week
Month 4	Gains 4-6 oz (120-180g) per week
Month 5	Gains 3-5 oz (90-150g) per week or 12-22 oz (360-660 g) per month
Month 6	Gains 2-4 oz (60-120g) per week or 9-18oz (270-540g) per month
Months 7 & 8	Gains 7-16 oz (210-480g) per month
Months 9-12	Gains 4-13oz (120-390g) per month

Factor in supplementation

Weight gain/rate Fast, slow, on target?
 Milk at breast? Oz expressed milk? Oz Formula?



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If something is wrong

*Is it Mom
or
is it Baby?*

Is baby not getting enough because mom isn't making enough?

Or is there enough milk but baby can't get enough out?


Or was there enough milk but now there isn't because baby killed off the supply?





If things really are heading south...

#1: Feed the Baby

#2: Protect/Work on Supply


#3: Find the problem 



You must **find** the problem *before* you can **fix** the problem

First fork in the road

Did milk production struggle to get going? Or did milk production start off well, and then start to die later on?



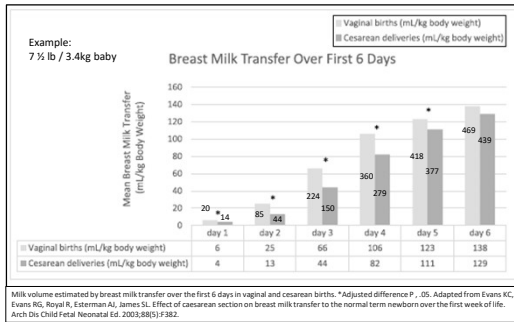
The first week

DELAYED ONSET: Milk in >72hrs (noticeable fullness)
Happens to over 1/3 of mothers in U.S. studies!
→ 40% of those babies lose >10% BW by day 4

Nommsen-Rivers 2010: *"Delayed onset of lactation is epidemic; risk factors are multidimensional"*

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Milk intake first week: Realistic expectations



✓ Feldman-Winter et al. (2020). Evidence-Based Updates on the First Week of Exclusive Breastfeeding Among Infants ≥35 Weeks. *Pediatrics*

Risk Factors for Delayed lactogenesis

- Stress, stress in labor (Caparros-Gonzalez 2019; Dimitraki 2015; Grajeda, 2002; Dewey 2001)
- Long labor or Prolonged stage 2 labor (Dewey 2003, 2001; Chen 1998)
- Labor pain medications (Lind 2014)
- C-sections, esp unscheduled (Isik 2016; Hurst 2007; Dewey 2003, 2001; Evans 2003)
- Ineffective or infrequent breast emptying (Galipeau 2012; Hurst 2007; Chen 1998; Nommsen-Rivers 2010)
- Severe bleeding (Livingstone, 1996; Willis 1995)

DOL Risk Factors

- Maternal Age (usually 35+)

Eren et al. (2020). Risk Factors for Early Weight Loss in Breastfed, Early Term and Term Newborns.
 Rocha (2020). Risk Factors for Delayed Onset of Lactogenesis II Among Primiparous Mothers from a Brazilian Baby-Friendly Hospital. *J Hum Lact*.
 Rocha et al. (2020). Risk Factors for Delayed Onset of Lactogenesis II Among Primiparous Mothers from a Brazilian Baby-Friendly Hospital. *JHL*.
 Nommsen-Rivers et al. (2010). Delayed onset of lactogenesis among first-time mothers is related to maternal obesity and factors associated with ineffective breastfeeding. *Am J Clin Nutr* Age >30



DOL Risk Factors



- Hypertension (Saluhadeen 2013; Hurst 2007; Hall 2002)

- Severe pp edema (Nommsen-Rivers, 2010; Chantry 2011)



DOL Risk Factors

- Obesity (Ballesta-Castillejos 2020; Preusting 2017; Rasmussen 2001, 04, 07; Nommsen-Rivers, 2010)
- Big Baby (birth wt >3600g) (Nommsen-Rivers, 2010)
- Diabetic Pregnancy (De Bortoli 2015)

"Suboptimal glucose tolerance may be a key factor in the relation between obesity and delayed onset of lactation"

✓ Nommsen-Rivers 2016



- Retained placental tissue

DOL Risk Factors



Classical: hemorrhage

Subtle: persistent red bleeding, cramping, passing clots


(Feldman 2020; Hurst 2007)

Placenta accreta, increta, percreta:
 ↑ risk w/previous c-section, age >35, multiple pregnancy, placenta previa

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DOL Risk Factors

➤ Rarer: Gestational ovarian theca-lutein cyst



uterus

High testosterone during pregnancy


Lact II commences when levels drop sufficiently

*Dahl (2008)
Betzhold, Hoover & Snyder (2004)
Hoover & Platia (2002)*

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DOL Risk Factor?

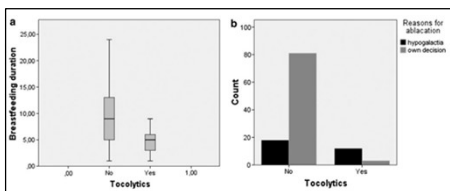
Hyperemesis gravidarum



*How was it treated?
Timing/duration?
Dosage?*

Everett, M. (1982). Pyridoxine to Suppress Lactation. *JR Coll Gen Pract*, 32(242), 577-578.
Gupta, T., & Sharma, R. (1990). An antilactogenic effect of pyridoxine. *J Indian Med Assoc*, 88(12), 336-337.

Another one to keep an eye on



Tocolytics

http://www.twin-pregnancy-and-beyond.com/preterm-labor-with-twins.html


Bjelakovic, et al. (2016). The Association of Prenatal Tocolysis and Breastfeeding Duration. *Breastfeeding Medicine*.

Mom's early reactions...

Failure of early removal of colostrum may inhibit lactogenesis II despite normal hormonal changes.

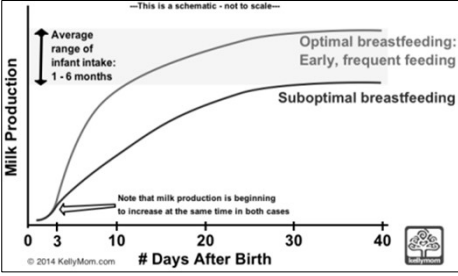
Neville M, Morton J. Physiology and Endocrine changes underlying human lactogenesis II. *Journal of Nutrition*. 2001;131(11):3305S-3008S.

Breastfeeding frequency impacts the start of lactogenesis II, which in turn influences how long a woman exclusively breastfeeds



Galipeau R, Goulet C, Chagnon M. Infant and maternal factors influencing breastmilk sodium among primiparous mothers. *Breastfeed Med*. Aug 2012;7:290-294.

Keeping in mind the Goal of Long-term maintenance of sufficient milk production




© 2014 KellyMom.com

The second fork in the road- A


Did milk production struggle to get going? Or did milk production start off well, and then start to die later on?



How well was breastfeeding managed?



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Rule out Maternal Mgt Problems: Accidental Inhibitors

Medications: Bupropion, Pseudophedrine, Hormonal BC 

Herbals: Peppermint products, Sage foods, Parsley foods  


Tobacco & Alcohol

Parenting Programs/Books

Placenta pills- another accidental inhibitor?




Premie management issues




Gestation
Lack of touch
Frequency of milk removal
Efficiency of milk removal
Stress over infant condition

Pumping in lieu:
Do not take responses at face-value: Check and re-check answers

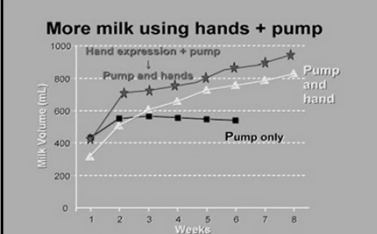
How often do you pump?
Day AND night?
How many times in 24hrs?



Pumps aren't perfect: Using hands makes a difference

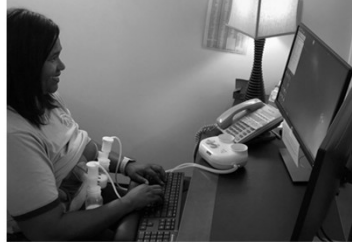



More milk using hands + pump



Morton <http://newborns.stanford.edu/Breastfeeding/MaxProduction.html>

Pumping for work



The Magic Number 
Pumping Equipment

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Second fork in the road- B

Or did milk production struggle to get going and never got there?

Did milk production start off well, and then start to die later on?
How well did baby do their job?



Mom may own the equipment, but...

The Baby Drives the Supply



Baby's early feeding experiences at the breast factor into long-term production

Infant & Feeding Assessment

- Infant birth and health history
- Physical assessment
- Suck assessment ⇌
- How does the parent *describe* baby's feeding behavior in relation to available milk supply?
- Observe a feed and/or test-weighing
- Consider that a problem may be multi-factorial*



Look and Listen



What do you see and hear when baby tries to latch & suck?

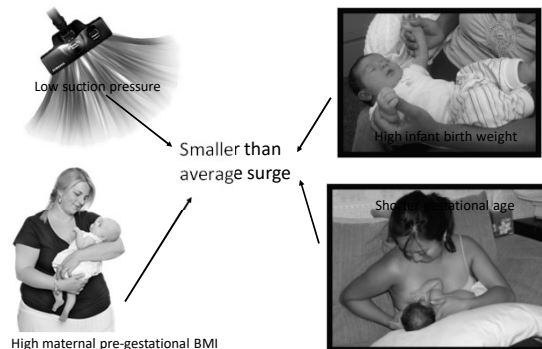
What do we know about baby?



Because it's all about suck

Infant suck affects prolactin surges

Zhang et al. (2016). *Are Prolactin Levels Linked to Suction Pressure?*



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Infant suck affects milk removal

- Poor milk removal →
- Residual milk →
- Lower persistency →
- Decreased milk production

“Cows with a higher percentage of residual milk usually have a lower persistency of lactation”
- Hurley 2010

 Red Flags

Difficult birth



Facial asymmetry & aberrations



Suck Problems: Jaw

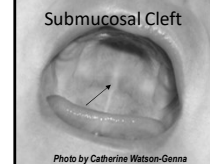
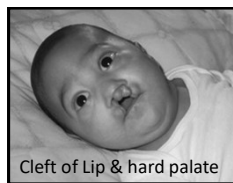


Receding chin (retrognathia)
Livingstone, 2000

Torticollis




Less Common Infant Issues



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Fatiguing



The Sleepy / Lethargic / Worn Out Baby

Typically symptomatic of poor milk flow
 May also indicate infant stress from



- ✓ poor muscle tone
- ✓ Heart problems
- ✓ inhibition of tongue mobility
- ✓ infection

} All can affect suck!

Borderline early & premature

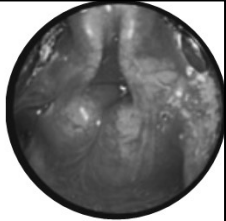


Central Nervous System problems

Low muscle tone

Airway:
Laryngomalacia




Inspiratory stridor due to prolapse of walls in larynx during inhalation

May worsen over the first few months, but usually resolves by 2 yrs

- Stress triggers: crying, feeding
- Worse when lying on back (supine)
- Usually does best with head hyper-extended

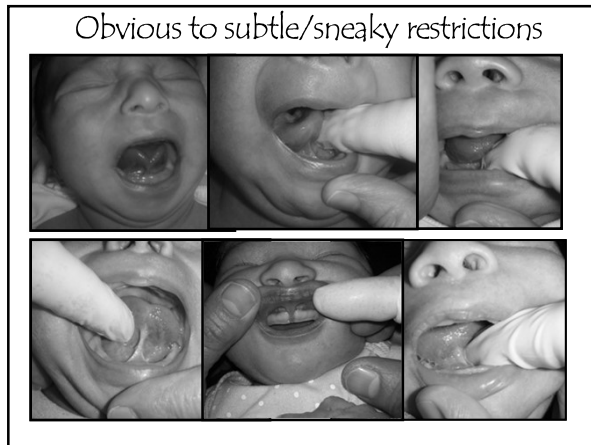
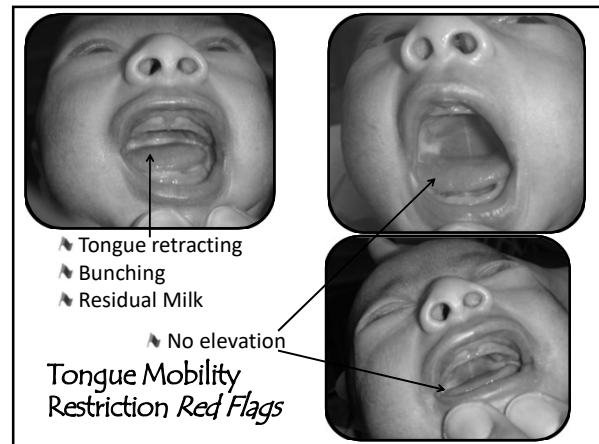
Red Flag: Clicking



 Red Flags: The kuk-kuk baby



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Timing may be critical

Many practitioners want to “wait and watch”
BUT accumulated experience now suggests that
success rate drops over time beyond 2 months

Donati-Bourne et al; 2015. Tongue-tie assessment and division: a time-critical intervention to optimise breastfeeding.
Todd, D. A., & Hogan, M. J. (2015). Tongue-tie in the newborn: early diagnosis and division prevents poor breastfeeding outcomes. *Breastfeed Rev*, 23(1), 11-16.

The third fork in the road

Or did milk production struggle despite good management and baby??

How well did mom manage breastfeeding?
How well did baby do their job?


If you've ruled out baby...

Take the
Maternal
Assessment
Deeper

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Detailed Maternal Assessment

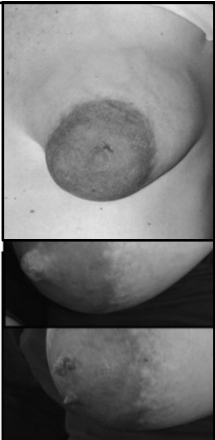
- ⇒ Previous breastfeeding history
- ⇒ Mother's Reproductive history ⇨
- ⇒ Mother's Health & Event history ⇨
- ⇒ This pregnancy history ⇨
- ⇒ Breast assessment ⇨
- ⇒ Hormonal Issues ⇨



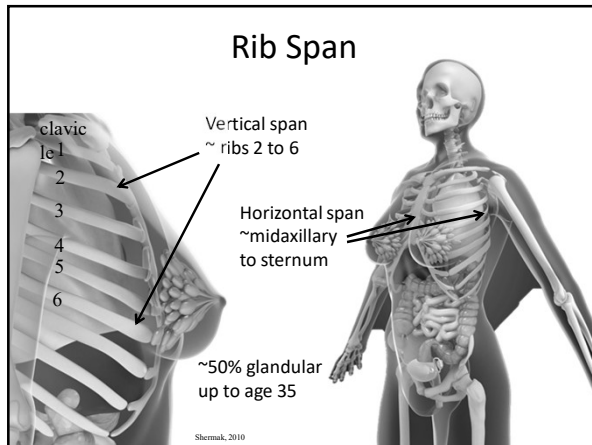
Breast Assessment

Note:

- Overall symmetry
- Overall shape
- Spacing between breasts
- Significant veining
- Fullness of each quadrant
- Proportion of glandular to fatty/connective tissue
- Nipple-areolar complex:
 - Pregnancy changes? Bulbous?
 - Overall density? Unusual nipple configuration? Pore patency?



Rib Span



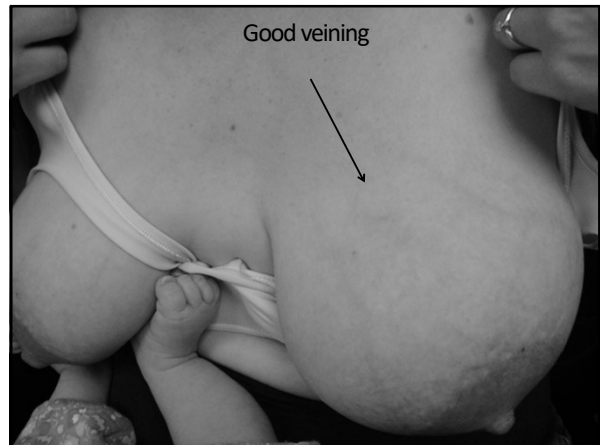
clavicle 1
2
3
4
5
6

Vertical span
~ ribs 2 to 6

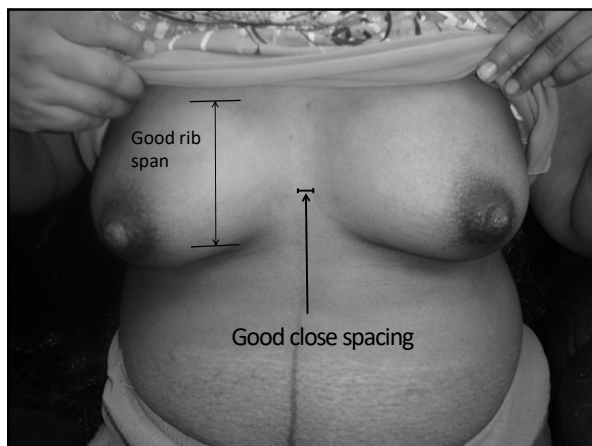
Horizontal span
~midaxillary to sternum

~50% glandular up to age 35

Shermak, 2010



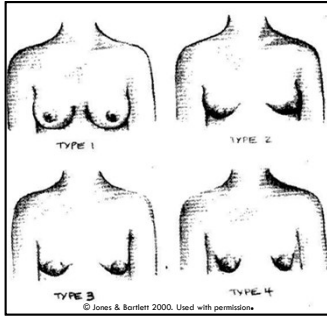
Good veining



Good rib span

Good close spacing

Markers of Lactation Insufficiency

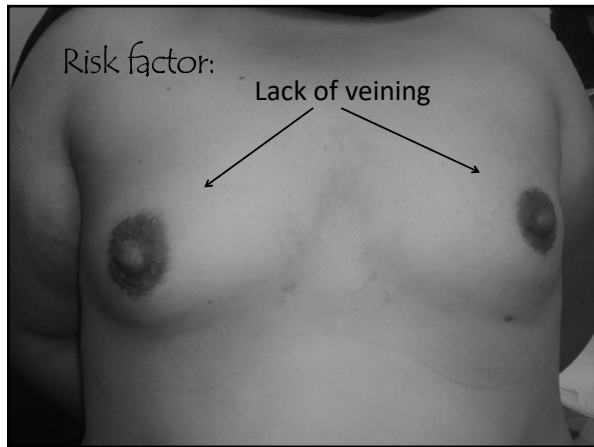
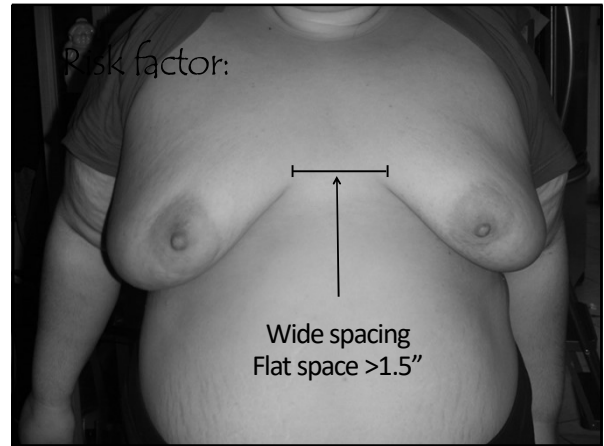
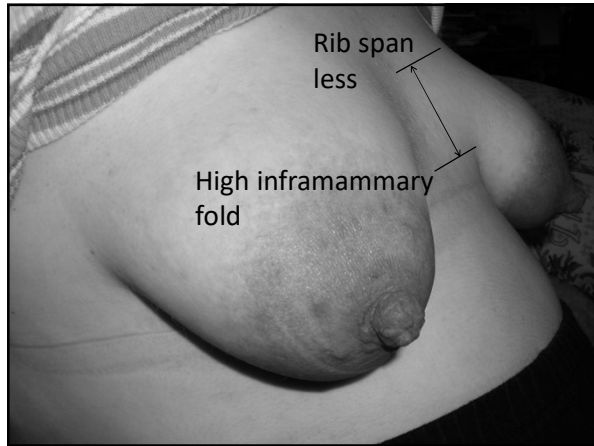


Risk factor:
Higher breast type #

© Jones & Bartlett 2000. Used with permission.

Huggins, K., Petok, E., & Mireles, O. (2000). Markers of Lactation Insufficiency: A Study of 34 Mothers. *Current*

Recognizing when things are headed south



PLASTIC SURGERY BREAST TYPES: VON HEIMBURG CLASS

Class 1: hypoplasia lower medial quadrant

Class 2: hypoplasia of both lower quadrants with adequate areolar skin

Class 3: hypoplasia both lower quads with limited areolar skin

Class 4: hypoplasia of all quads

Type I: hypoplasia of the lower medial quadrant

Type II: hypoplasia of the lower medial and lateral quadrant, sufficient skin in the subareolar region

Type III: hypoplasia of the lower medial and lateral quadrant

Type IV: severe breast constriction

Fig. 3. From: Hypoplastic Breast Anomalies in the Female Adolescent Breast. Classification of tuberos breast deformity (von Heimburg et al.) (Reprinted with permission from von Heimburg D, Turner K, Kruff S, Lemperle G. The tuberos breast deformity: classification and treatment. *Brit J Plast Surg* 1996;49(6):339-345). Sebastian Winocour, et al. *Semin Plast Surg*. 2013 Feb;27(1):42-48.

Deficiency in overall breast "footprint"

Type I

Fig. 5. From: Hypoplastic Breast Anomalies in the Female Adolescent Breast. Tuberos breast deformity classification (Grolleau et al.) (Reprinted with permission from Grolleau JL, Lanfey E, Lavigne B, Chavoïn JP, Costagliola M. Breast base anomalies: treatment strategy for tuberos breasts, minor deformities, and asymmetry. *Plast Reconstr Surg* 1999;104(7):2040-2048). Sebastian Winocour, et al. *Semin Plast Surg*. 2013 Feb;27(1):42-48.

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Risky Breast Shapes

More difficult to classify

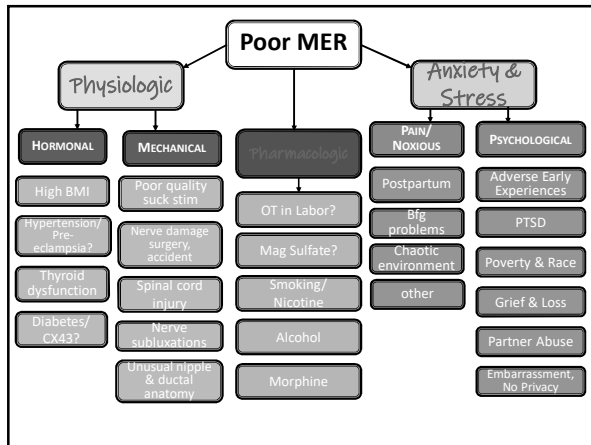
Marked asymmetry considered "classic," but often presents without dramatic asymmetry

© Taina Litwak 2008

Could it be a letdown problem?

Be suspicious when...

- The milk "came in" but didn't come out
- Parent exhibits depression, high anxiety or obsessive behavior
- Recent traumatic experience, or difficult/painful birth
- Lack of confidence
- Unsupportive partner, family, friends
- Weak infant suck



Screening for hormonal problems: The Next Step?