

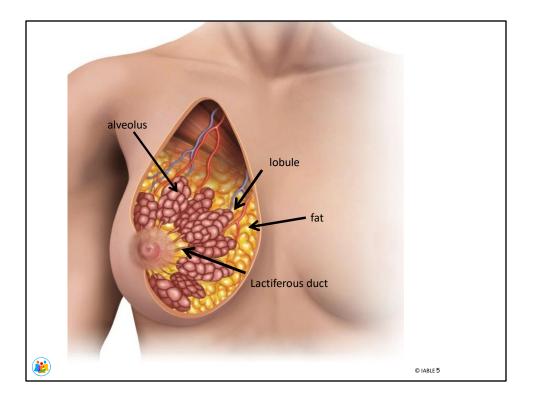


These are the topics that are covered in OBC Session 2:

Anatomy and Physiology Positioning for breastfeeding Infant Latch Defining a feeding Feeding Frequency and Duration Infant and parental signs of Adequate Milk Intake



Please read the objectives



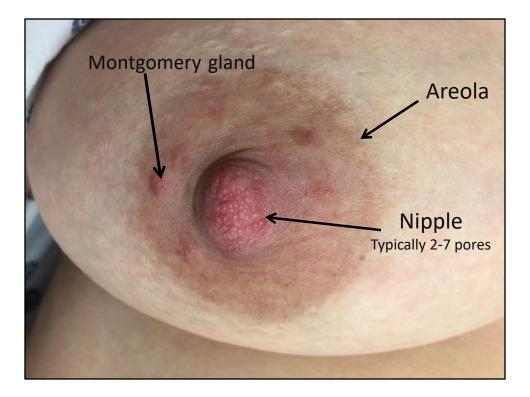
This is a picture of breast anatomy (note that the words come one by one with each click)

Alveolus- each individual grape-like structure is called an alveolus. They are clustered together like grapes on a vine, and share ducts. Each alveolus is lined with cells that make milk. The milk is expressed from each cell into the center of each alveolus, as we will see later.

Lobule- a lobule is a cluster of alveoli, which share common ducts.

Fat- Fat surrounds the glandular tissues that make milk

Lactiferous duct- Breastmilk travels from the alveoli down these ducts, eventually reaching the pores of the nipples.



This is a photo of the nipple and areola.

Montgomery glands-

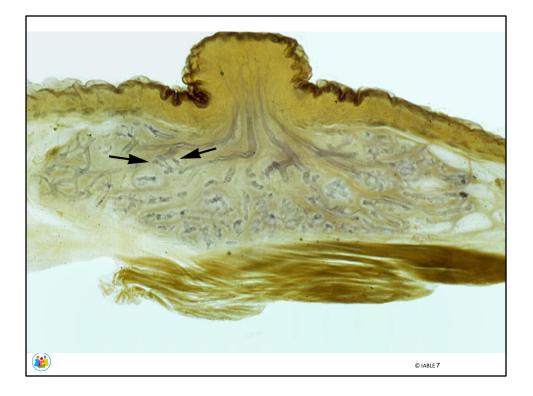
These appear as small bumps on the areola. These glands secrete anti-bacterial oils that keep the areola healthy, and supple. Therefore, there is no need for soap and water on the areola when nursing. Sometimes milk will come out of the Montgomery glands.

Areola

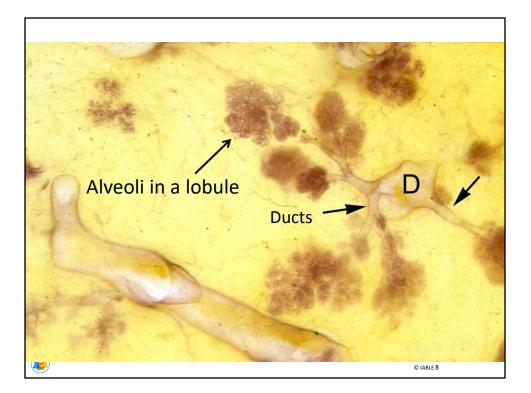
This area darkens with pregnancy. A large confluence of ducts is right behind the areola

Nipple

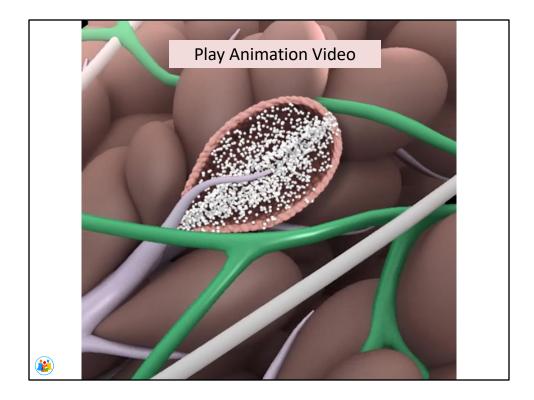
Nipples can be all shapes and sizes. We want the baby to latch to the areola and breast tissue, not the nipple only. There are 1-20 nipple pores Most women have between 2-7 pores carrying milk out of the nipple, but over 10% have more than 10!



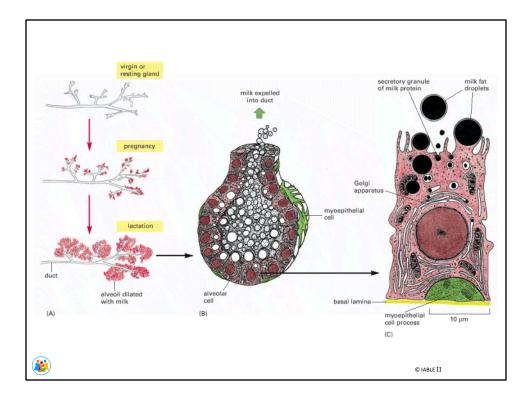
This slide shows the anatomy of a mouse breast before the mouse has become pregnant. The arrows show structures called terminal buds. Once the mouse becomes pregnant, the terminal buds will develop into alveoli. The tiny ducts seen on this slide will become much bigger once the mouse becomes pregnant.



Here is a photo of a mouse breast at the end of pregnancy. You can now see how elaborate the ducts are, and how nicely developed the alveoli are.



Mouse over the bottom of this picture, to show this animation. The animation will show up when you click again, because it is on the next slide First you will notice the extensive lymphatic tissue around the breast. The animation then focuses on a side view of an alveolus. You can see how the alveolus is lined with milk producing cells. The milk gathers in the center of the alveolus. The alveolus contracts and forces milk through the ducts and then out of the breast. ίαε 10



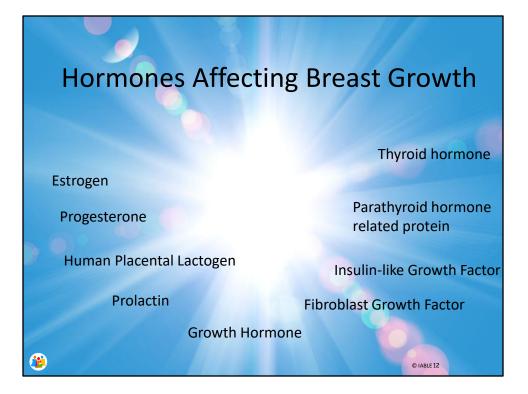
Here are more sketches of glandular tissue.

You can see on the left how the alveoli grow during pregnancy, and the breast becomes very lush and full by the time lactation begins after birth.

The center picture is a sketch of an alveolus. You can see there are milk producing cells along the sides.

On the outside of the alveolus is a green cell called a myoepithelial cell. This cell has long arms. There are many of them on the outside of the alveolus. The cells reach out and squeeze the alveolus when oxytocin surges, allowing the entire alveolus to contract and expel milk into the ducts.

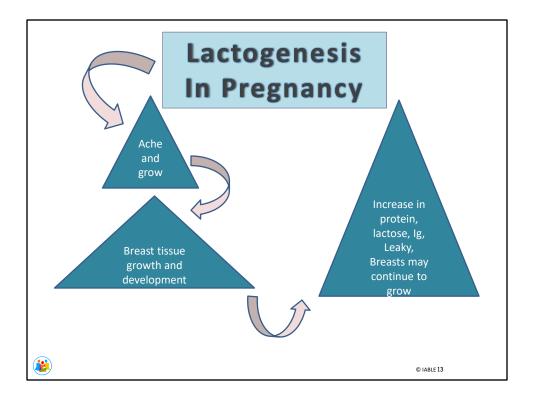
The sketch on the R is a lactocyte, or a milk producing cell. Milk is made inside the cell.



Hormones Affecting Breast Growth

Once a person becomes pregnant, a placenta grows in the uterus. The placenta excretes many hormones which all play a role in making sure that the breasts grow and develop in order to make milk.

You can see breast development during pregnancy is complicated, with many hormones involved.

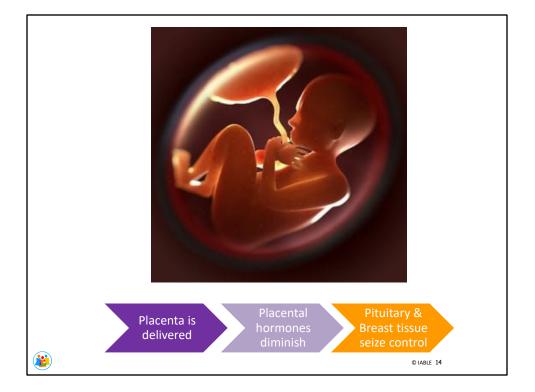


Lactogenesis means breast development. Here are 3 triangles, representing the 3 trimesters of pregnancy.

In the first trimester, women notice that their breasts feel achy, and the breasts appear larger.

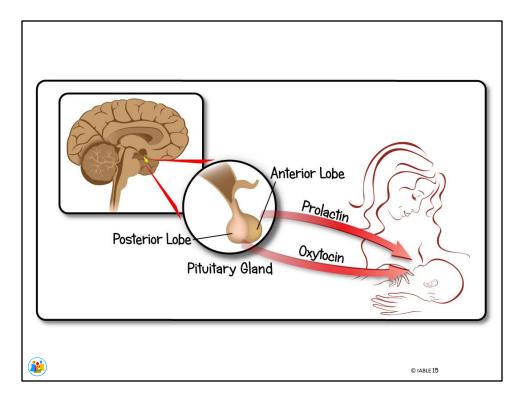
In the second trimester (next triangle), the breast tissue continues to grow and develop

In the third trimester (last, biggest triangle), the breast is already making colostrum, and women might notice some leaking. Women might notice continue growth during the third trimester.



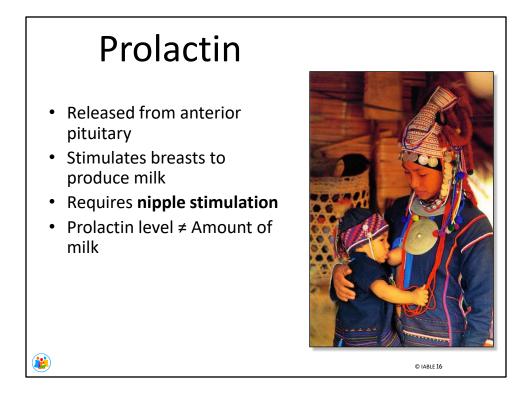
Once the placenta is delivered, the hormones from the placenta diminish, and control of the breast tissue switches to:

- 1. Prolactin & oxytocin in the pituitary gland
- 2. Local hormone and chemical signals in the breast



The pituitary glands dangles under the brain tissue, behind and between the eyes. It has an anterior lobe and a posterior lobe.

Prolactin comes from the anterior lobe of the pituitary gland Oxytocin comes from the posterior lobe of the pituitary gland



Prolactin:

Prolactin is released from the anterior pituitary gland.

Prolactin is the hormone that tells the breast to make milk, much like how the boss of a factory tells the assembly line to keep moving.

The prolactin level rises in response to nipple stimulation. Also, mom has to be able to feel the stimulation for the prolactin level to rise. This is very important. If the nipples are not stimulated enough, the prolactin level will go down. So if the baby is not nursing enough, or if the nipples are numb, or if a nipple shield is put over the nipple and prevents nipple sensation, the prolactin level won't rise.

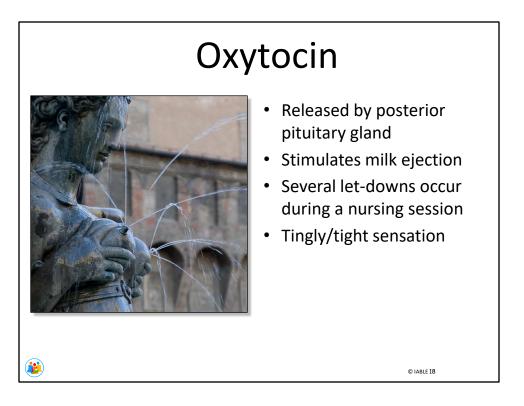
The level of prolactin in the blood does not predict how much milk the mother is making. This means that if we run a prolactin level, we cannot tell by that level how much milk the mother will make.



What do you think raises the prolactin level higher- breastfeeding or pumping?

Breastfeeding will, because the infant has direct contact with the nipple. The pump does not touch the nipple in the same way. Also, when a baby breastfeeds, the mother experiences love and warm emotions, which is not typically true when pumping.

Many mothers who have infants in the NICU will say that if their baby nuzzles and licks the nipple first before pumping, they can express more milk.



Oxytocin-

Oxytocin is released by posterior pituitary.

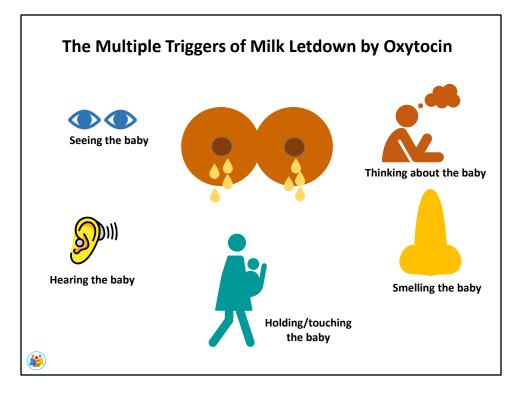
Each milk ejection is also termed a 'let-down'. Mom will notice a series of swallows by the baby with each let-down. If she is pumping, she will see several sprays of milk for a duration of time, and then the sprays will lessen, until the next 'let down'

Several let-downs occur during a nursing or pumping session. The first letdown has the greatest amount of milk.

The let-down feels like a tight, tingly sensation in the breast- Don't mention that not every feels this- this is a question for the next slide



What behaviors or stimuli trigger the milk ejection (letdown)? Seeing, hearing, feeling, smelling, thinking, smelling the baby will all trigger letdown- see the next slide to review this.

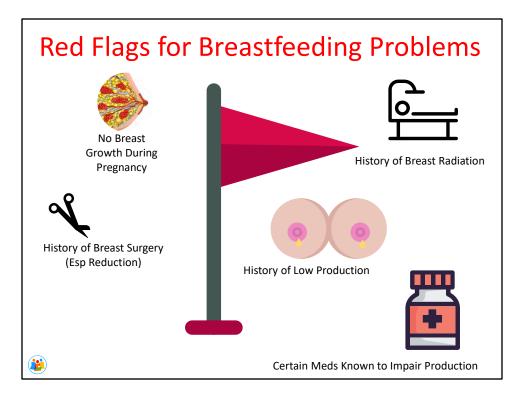


These are the different ways that oxytocin is released- from many different sensory inputs-

- Seeing the baby
- Thinking about the baby
- Hearing the baby
- Holding/touching the baby

Smelling the baby

Thinking about the baby



Red Flags for Breastfeeding Problems:

Little or no breast growth in pregnancy-

You won't be able to estimate how much milk mom will make, but if you know that mom has little breast growth and little or no aching during pregnancy, the mother and baby should be watched closely postpartum to make sure the baby is not losing too much weight.

History of breast surgery, esp. reduction-

Most women with breast reduction will not make enough milk, so it is safe to tell mothers that they should expect to supplement their babies with either donor milk or formula. Only a minority of these mothers will make enough milk. Breast augmentation is usually not a problem, unless implants are very large. Sometimes women have issues with engorgement or plugged ducts, but most do fine. History of breast irradiation

A breast that has been irradiated for cancer will not make milk!

History of low milk production in past

Although most moms have low milk supply due to trouble nursing early on, as we will discuss later, it is important to watch these mothers carefully with their next babies.

Medications that inhibit letdown or decrease milk supply. We will talk more about these medications in our last session



The picture on the L is an inverted nipple. If the areolar tissue is pinched on either side, a normal inverted nipple should protrude. A tacked-down nipple is rare, and will not protrude.

The upper right picture shows a woman with classic hypoplastic, tubular breast deformity. Her breasts may grow slightly and ache during pregnancy, but she will have very little glandular tissue, and she will have a low milk production. The other term for this is insufficient glandular tissue. We will talk more about this in session 5.

The lower right picture is a woman with asymmetric breasts. The R smaller breast often won't make as much milk as the larger one.

Positioning at the Breast is KEY for:

- Deep Latch
- Maternal Comfort
- Effective Milk Transfer



In the next set of slides, we will talk about **Positioning** the baby.

Proper positioning is important for a few reasons.

- 1. Deep latch- The baby must be positioned properly to latch deeply onto the breast, which we will talk about in a moment
- 2. Maternal comfort- if the baby is latched on deeply, mom's nipples will be much more comfortable.
- 3. Effective milk transfer- the baby has to have a deep latch in order to transfer milk effectively.

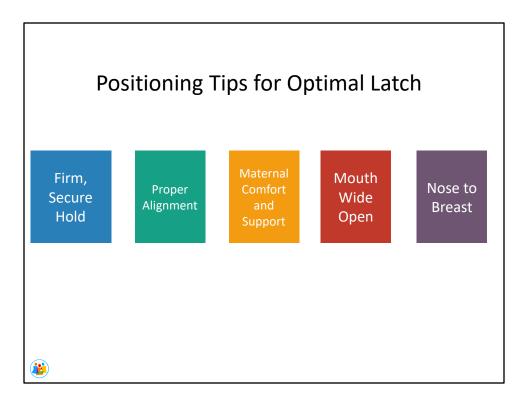


This is a sketch of a baby latched onto the breast

You can see that the tip of the nipple is in the back of the baby's mouth, at the level of the soft palate. This is the region where you have the uvula hanging down in the back of your throat. By having the nipple way back in the mouth, the nipple won't get trapped between the tongue and the hard palate. When that happens the nipple feels pain and becomes cracked and sore.

You can see in this picture how the baby's tongue sticks out past the lower lip. The tongue helps to keep the nipple deep into the mouth, and also helps to sweeps milk into the mouth.

The baby's nose is right up against the breast, because the baby is kept close to the breast.



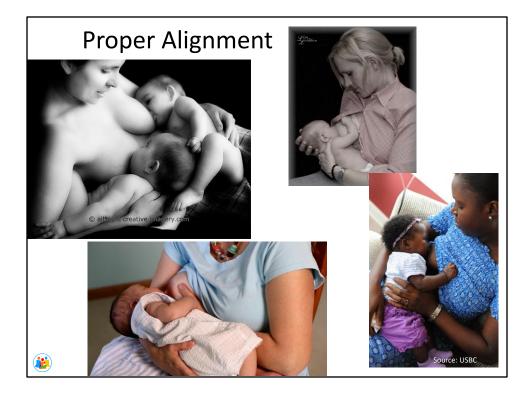
These are tips on achieving the ideal latch. This is a summary slide. We are going to talk about each of these in the upcoming slides.



Babies may have difficulty with a deep latch if they don't feel insecure in the way they are held. The baby will likely tighten his/her mouth around the breast and clench if they don't feel securely held

Notice how the parent's firm support to the infant's upper back, and buttock region are needed

Speakers- Please be specific with each hold to describe how these holds are achieved



Note how ear, shoulder and hip are in one line, even for the twins. Proper alignment allows the infant to open their mouth wide



The parent is using a pillow around her, mom uses a pillow to help support the baby, one parent has a pillow behind her back, no picture of a foot stool. Without proper support, latch may not be as deep, and moms can develop a sore neck, back or other chronic pain.



We want to encourage the baby to open wide by touching the nipple to the upper lip or nose allowing the breast to touch the infant's chin.

The arrow shows that when the mouth is wide open, the lower lip lines up pretty closely with the lower edge of the areola. That provides a beautiful asymmetric latch.



When a baby is very close to the breast, the nose and often the chin are touching the breast. This allows the touch to reach deeply into the breast and compress the breast tissue



This slide is a prompt to show the positioning video clip. It will show up with another click



Sitting in Mom's Lap, Facing Mom

This is a position that we did not show on the positioning video clip. Here, mom has the baby straddling her thigh and facing her to nurse. This is a common position recommended when mom has a high milk supply with a heavy letdown. Having the baby sit up to nurse helps to prevent the infant from choking during the heavy letdown.

Mom is using what is called a C hold. Her hand is in the shape of a C in order to hold the breast for the baby.



Semi-Reclined Position

This is helpful for moms who have a high supply, when babies are younger and cannot sit upright while nursing due to lack of neck strength

She should not lie flat on her back to do this.

Please demonstrate how to do a semi-reclining position with one infant, using the whole arm to support the infant along the back and buttock, and one thigh



Let's Practice Positioning

Please have the attendees practice with their dolls the following positions: Cradle Cross cradle Football Laid-back Side-lying Sitting upright



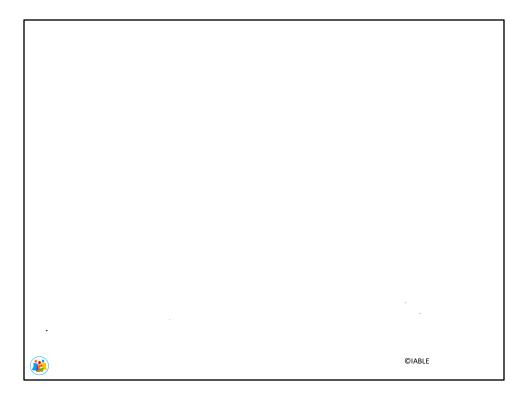
This slide is a prompt to show the latch video clip, it will appear with the next click



Asymmetric Latch

Latching a baby in a "bulls-eye" fashion is not automatically "wrong". However, when mom and baby are having trouble attaining an effective, pain-free latch, an asymmetric approach often helps. It allows the baby to latch on deeply right away, so that the nipple is not traumatized.

The asymmetric latch video will appear after clicking again





What is a Feeding?

The baby latches on and nurses-

In a real feeding, the baby transfers milk

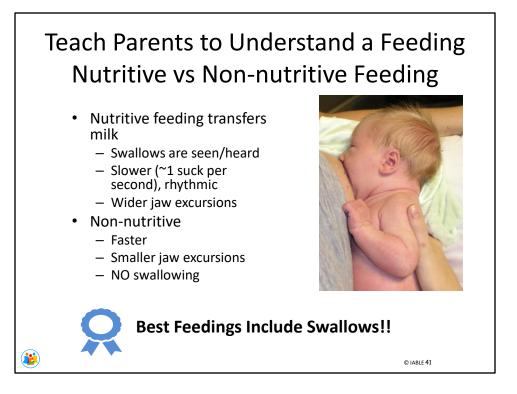
Sometimes the baby nurses to suckle and fall asleep, without transferring milk. Many people don't realize that a baby can latch and suck and not transfer milk.

Parents need experience over time to determine whether the baby is truly taking milk.

Occasionally babies are found at 4-6 months to have a profound weight loss or lack of weight gain, because it was not obvious that the baby was not transferring milk

Even lactation consultants can have a hard time determining how much milk is being transferred during a nursing.

For this reason, babies need to be weighed regularly to make sure they are gaining weight.



Teaching Families to Understand a Feeding

First, teach parents the difference between nutritive and nonnutritive sucking

Nutritive sucking involves milk transfer. Swallows can be seen and usually heard while watching sucking. Because of the swallowing, the sucking is slower than nonnutritive sucking, when no milk is transferred. The suck also looks wider when swallows occur. Nonnutritive sucking is just sucking without swallows, so they are shallow, faster, irregular movements. Few or no swallows are seen or heard.

We are going to watch some videos of nutritive and non-nutritive sucking in the upcoming video clips

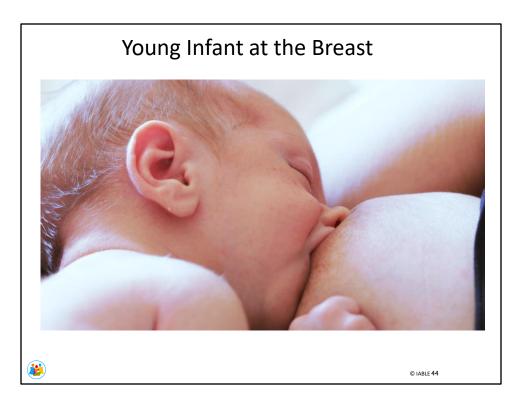


This is a short video clip showing the baby nursing appropriately, with intermittent swallows. Point out the swallows

Sleepy Infant at the Breast



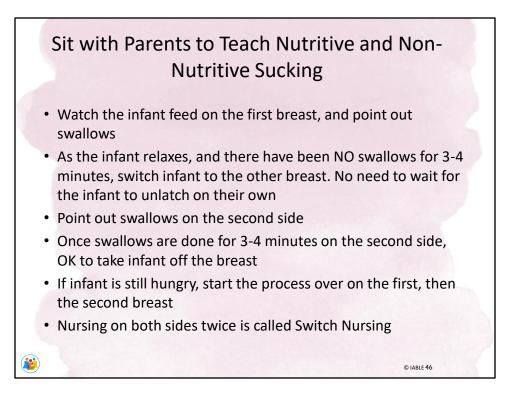
This baby is sleepy, but has swallows. Watching this infant over the course of 15 min helps parents understand what to look for, and when to take the infant off the breast



Again, point out the swallows, and when infant is done nursing, meaning that the baby is remaining in a nonnutritive sucking pattern



This baby is still showing feeding cues. We want to catch feeding cues before they are crying, as they are less organized when they try to feed while screaming. Latch is often harder

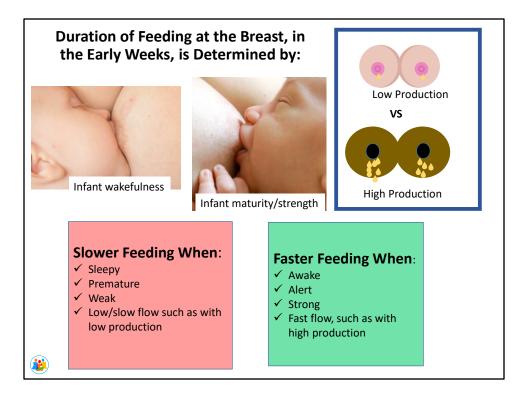


Parents need to learn how to tell the difference between nutritive and nonnutritive sucking.

Review the steps in the slide



What do you think determines how long the infant will feed at the breast? Ask this question to the attendees, and let them respond



There is no one 'right' amount of time that a feeding at the breast will take. The main factors that determine duration of feeding in the early weeks, include: infant wakefulness, infant maturity, and strength, as well as the rate of milk flow. Infants feed more slowly at the breast if they are sleepy, premature, weak, or if there is low or slow milk flow

Infants feed faster at the breast when they are well rested/awake, alert, strong/mature, and when there is a fast milk production/flow



Infant Feeding Frequency

Newborns need to feed at least every 2.5-3 hours until back to birth weight

Often newborns need to be woken up to feed

The baby can switch to ad lib feeds if:

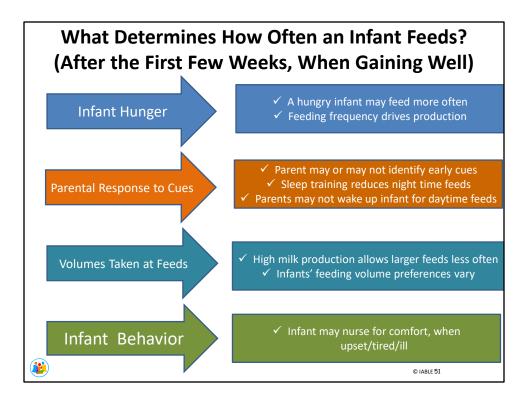
The baby is back to birth weight before 2 weeks

If she wakes up on her own to feed

If she continues to gain well, maintaining her weight growth curve (typically ~ 1 ounce a day)



What do you think determines how often an infant feeds (once feeding is well established)? Let everyone answer. Then lets discuss on the next slides



What Determines How Often an Infant Feeds?- this slide pertains to when infants are gaining well, after the first few weeks The answers animate in, one by one

Hunger- A hungry infant will feed more often, and feeding frequency drives milk production. So, if an infant needs more volume, the infant will feed more often

Parent response to cues- some infants are not fed very often, as they are not woken during the day for feedings. Parents might miss early feeding cues, and/or misinterpret fussiness for hunger

Volumes taken at feedings also will determine frequency of feeding. If the infant takes high volumes at a feeding, the infant will nurse less often. When milk production is low, high volumes are not possible, so the infant will need to nurse more often

Infant behavior- infants also nurse for comfort when tired, upset, ill



Cluster feeding happens for many reasons

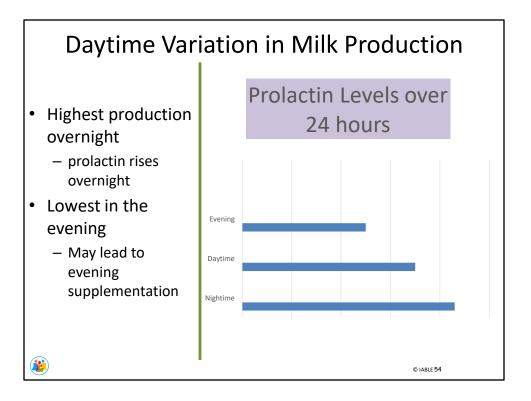
- 1. It is normal behavior in the first 3-4 months. It is most common in the evening when production is the lowest, but also infants will cluster when they are the most awake and alert. Obvious clustering often fades away after 3-4 months of age.
- 2. Infant illness when infants are ill, they sometimes take less at one time, so feed more often. They also may be seeking comfort
- **3.** Low milk production- cluster feeding is a way to increase milk production when production has dropped

Typical Feeding Frequency and Duration				
	Age (mo)	Frequency (~)	Duration	
	1-3 mo	1.5-3 hours	20-30+ minutes	
	4-6 months	2-5 hours	5-15+ minutes	
	6-9 months	3-5 hours	5-15+ minutes	
	9-12 months	4+ times a day	5-10+ minutes	
	Toddlers	Anyone's guess	Less than 10+ min	
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Feeding Frequency and Duration

This chart gives a rough guideline on how often and how long babies tend to nurse, based on age.

These times are from the start of one feeding to the start of the next feeding. So, you can see that a 1-3 month old eats on average every 2 hours. If the baby starts nursing at 1 pm, and nurses for 15 minutes each side, the baby will be done at 1:30 pm. The baby will be ready to eat again at 3 pm (2 hours after 1 pm) As babies become older, the duration of time that they nurse tends to shorten.



Daytime Variation in Milk Production

Mom's milk production is lowest in the evening, when prolactin levels are low. Milk production rises over night after going to sleep

Moms typically wake up in the am feeling quite full.

The lower production in the evening will lead to frequent nursing.

This is a common reason why parents start feeding formula.

One strategy to help parents is to have mom pump after 1 or 2 morning feedings in order to have extra breast milk to supplement the evening feedings.



Growth Spurts

These are events which occur at 3,6,12 weeks, and random other times. They are characterized by:

The baby has become very demanding for attention and food, so will feed more often than usual

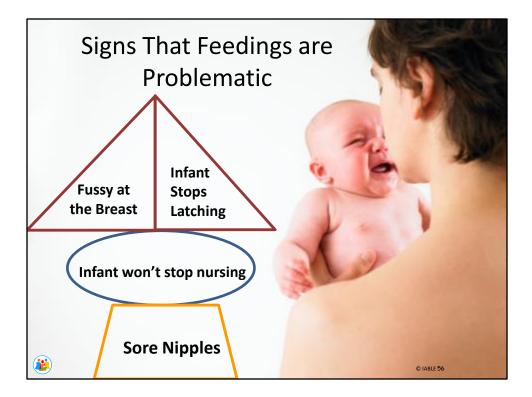
The baby does not sleep as well

The baby has not been pooping quite as often as usual

The event will only last for 2 days

These symptoms can also be suggestive of a low milk supply:

The only way to tell if this is a growth spurt vs low milk supply is to weigh the baby, to make sure the baby is gaining properly



Signs that feedings are problematic:



Have Group 1 take out their script for constipation. Find a group 2 trainee who will be the breastfeeding champion

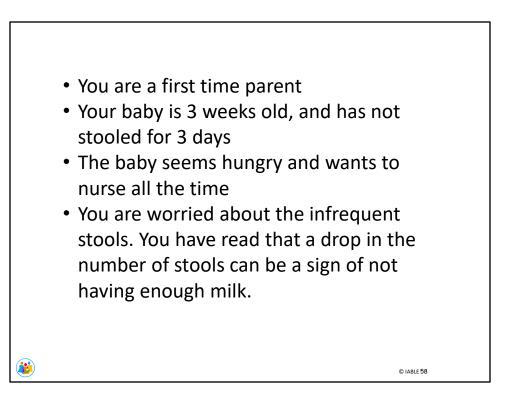
Trainees in group 1 are the parents:

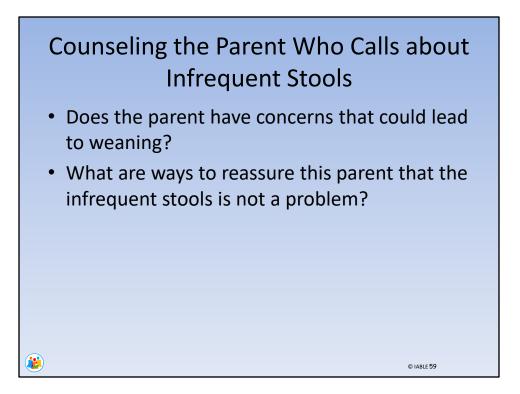
You are a first time mother

Your baby is 3 weeks old, and has not stooled for 3 days

The baby seems hungry and wants to nurse all the time

You are worried about the constipation. You have read that constipation can be a sign of not having enough milk.





Infrequent stool Triage Tool- Session 2

Trainees in group 1 are the mothers:

You are a first time mother

Your baby is 3 weeks old, and has not stooled for 3 days

The baby seems hungry and wants to nurse all the time

You are worried about the infrequent stools. You have read that infrequent stools can be a sign of not having enough milk.

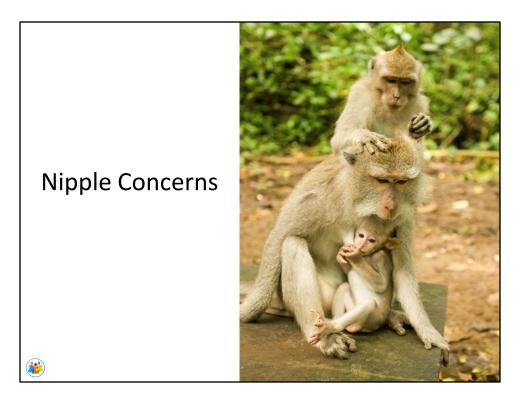
Counseling the Mother Who Calls about infrequent stools

Does the mother have concerns that could lead to weaning? –Yes, she might be concerned about:

A bowel obstruction Her milk supply is insufficient Something in her diet is causing infant infrequent stools

What are ways to reassure this mother that the infrequent stools is not a problem? Explain that her baby is eating well and has plenty of wet diapers Explain that growth spurts commonly happen at this age Come in to have the baby weighed Give parameters about when the baby should see the medical

provider, ie vomiting, no stool for a week



We are going to talk about some nipple concerns next



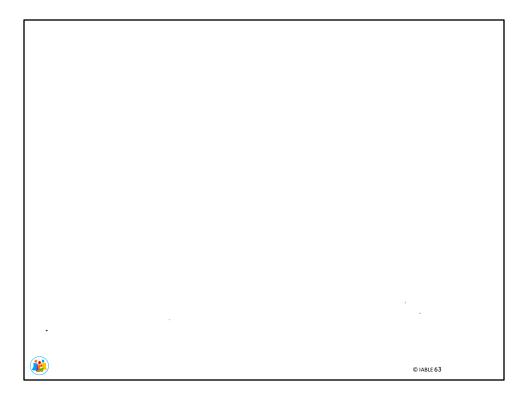
These are some nipple variations that you might run into. Inverted nipples need no prenatal preparation. The infant latches to the breast, not the nipple.

Nipples that have been pierced sometimes will have milk come out of the piercing during letdown, but they usually don't leak.

Skin tags that are large might need to be removed before delivery, during pregnancy.



This is a picture of a flat nipple. Click for the video on rolling out the nipple

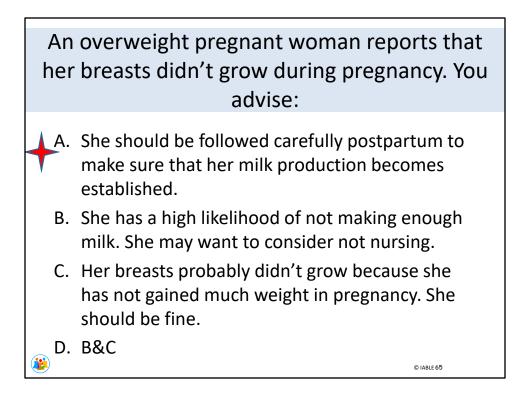




These are the topics that are covered in OBC Session 2:

Anatomy and Physiology Positioning for breastfeeding Infant Latch Defining a feeding Feeding Frequency and Duration

Infant and Maternal signs of Adequate Milk Intake

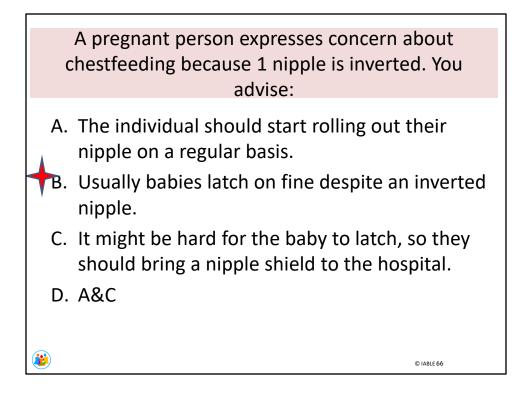


The correct answer is A

We know that many women who don't make enough milk will sometimes report insufficient breast growth during pregnancy.

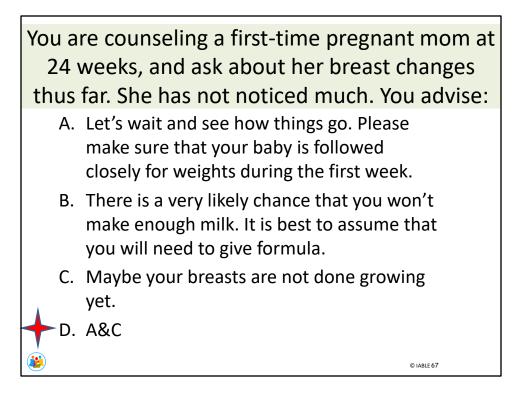
B. This is incorrect because we cannot predict, based on breast growth during pregnancy, who will make sufficient milk and who won't.

C. This is not a good explanation for lack of breast growth



The Correct Answer is B

A is incorrect because there is no need to prepare nipples during pregnancy C is incorrect because a nipple shield is not necessary for inverted nipples, and can lead to reduced milk production and trouble latching without it

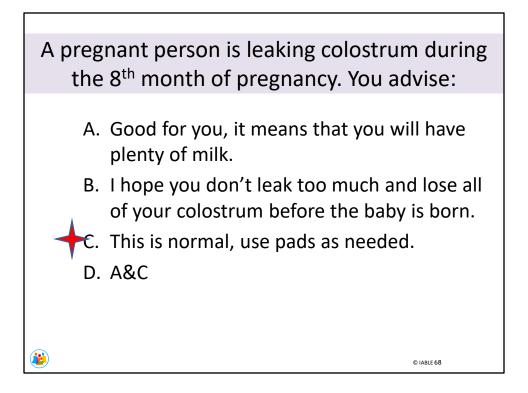


The Correct Answer is D

A. Is correct. We don't know at that point how much milk she will make.

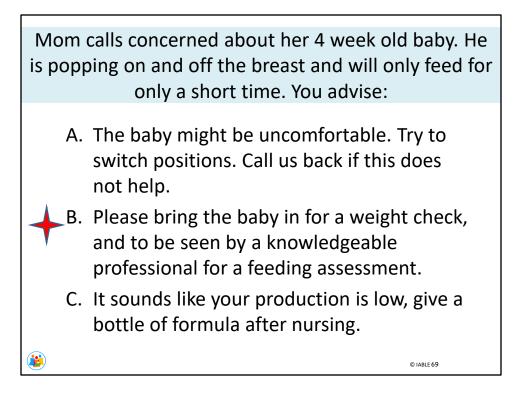
C. Is also correct, mom might continue to have more breast growth during the rest of pregnancy

B is not correct. We cannot predict how much milk she is going to make



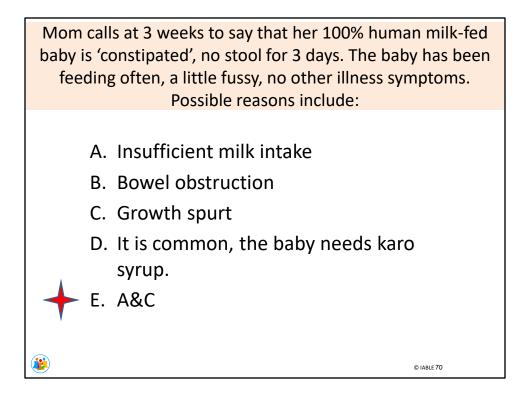
The Correct Answer is C

A is incorrect. Leakage of colostrum does not indicate volume of milk later on B is incorrect, she does not need to worry about losing too much colostrum



The Correct Answer is B

- A. This is incorrect. In theory it is reasonable to suggest a change in positioning, but this suggestion should be coupled with asking mom and baby to be seen. Don't make them call back.
- C. A judgment of low supply cannot be made over the phone

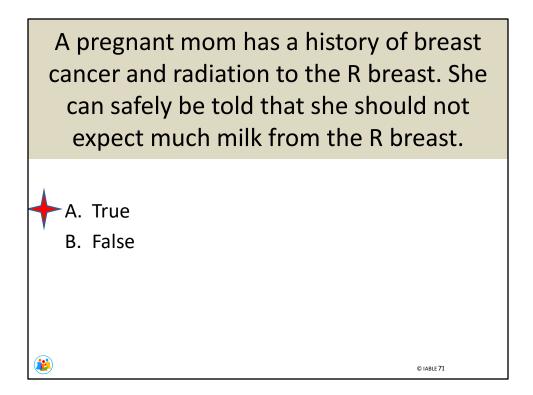


The Correct Answer is E

A&C are correct answers

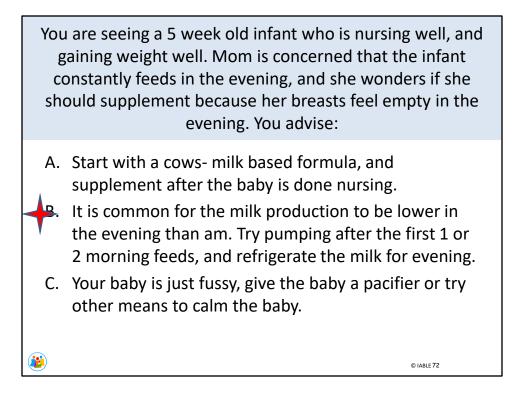
B is not correct. Bowel obstruction is quite serious and manifested by lack of feeding, vomiting and weakness/fussiness

D is not correct. Karo syrup should never be recommended for a breastfed baby



The Correct Answer is A.

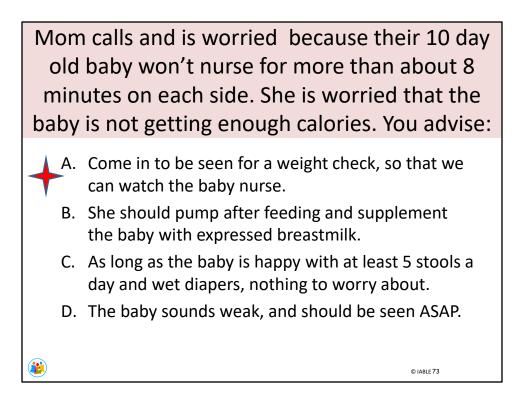
A breast that has undergone radiation for cancer will be too scarred to make milk



The Correct Answer is B

A is incorrect. Supplementation should not be suggested over the phone. The baby needs to be seen, and the weight needs to be checked, before mom is advised to supplement with formula

C is incorrect- If the baby is willing to take food, then giving a pacifier should not be a substitute for feeding



The Correct Answer is A

B is incorrect. You don't know if the baby really needs to be supplemented with expressed breast milk

C is incorrect- The only way you know that the baby is gaining well is by the infant's weight. Mom is clearly concerned, so the baby needs a weight check D is incorrect- Nursing for 8 minutes on a side does not mean that the baby is weak. As a nurse champion, you should ask if the baby seems happy between feedings, and satiated after feeding.