

Module Two

Basics of Breastfeeding: Getting Started

Objectives

After completing this module, you will be able to:

1. Describe the process of milk production and removal.
2. Recognize correct attachment and effective suckling at the breast.
3. Identify components of anticipatory guidance for all women.
4. Recognize the impact of perinatal hospital practices on breastfeeding.

Introduction

Although the mother's body produces milk as a normal part of the reproductive cycle, the technique of breastfeeding is a learned skill enhanced by practice and support. While parents need helpful information prenatally to know what to expect, the opportunity postpartum to practice attaching the baby to the breast and assessing the baby's breastfeeding effectiveness can provide the family with confidence as they embark on this particular experience of parenthood.

The key to helping new breastfeeding families is an understanding of the basic anatomy of the breast and physiology of the milk production and removal process. This module will focus on the science of lactation and practical clinical skills to help mothers get started. The module is applicable to both the obstetric and pediatric sides of the equation, as the management of the peripartum course and newborn care can profoundly affect the early breastfeeding experience and later infant feeding outcomes. As far as breastfeeding is concerned, the mother and baby are a biologic unit; whatever influences one affects the other.

Case Exercise

As a result of the prenatal discussions of the benefits of breastfeeding, Veronica, our 26 year-old first-time mother, has chosen to breastfeed her baby. She experienced a normal spontaneous vaginal delivery (NSVD) about 24 hours ago, producing a healthy term infant male weighing 3.5 kg. She will be going home within the next 24 hours. You encounter her in the postpartum unit on your regular morning rounds. She has attempted to breastfeed three times. Her baby fell asleep each time she tried to nurse. She says she doesn't have any milk and she is afraid her baby isn't getting enough to eat. She is asking for formula to give her baby.

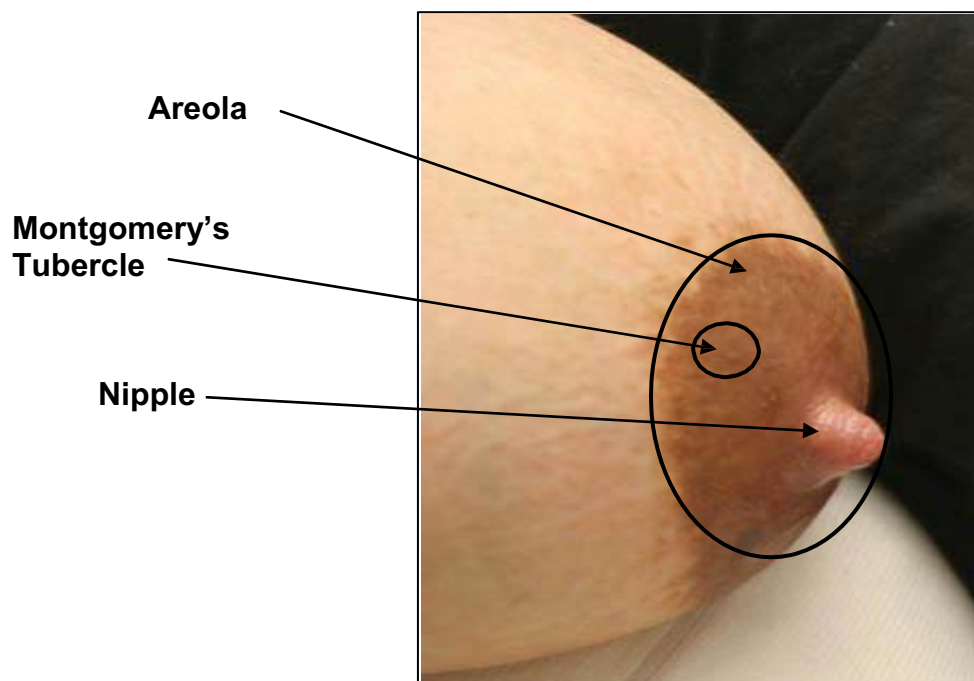
Basic knowledge needed to advise this mother

Anatomy

Major structures of the breast include the nipple and areola, subcutaneous tissue, alveoli (divided into lobules), ducts, myoepithelial cells, blood and lymphatic vessels, Cooper's ligaments and fat. Fat gives the breast size and shape as well as supplying the metabolic fuel for milk fat production. Recent studies indicate that infants of mothers with smaller breasts tend to feed more often than those with mothers who have larger breasts. The sensory innervation originating primarily from the 3rd, 4th, 5th and 6th intercostal nerves is also essential to the milk producing function of the breast.

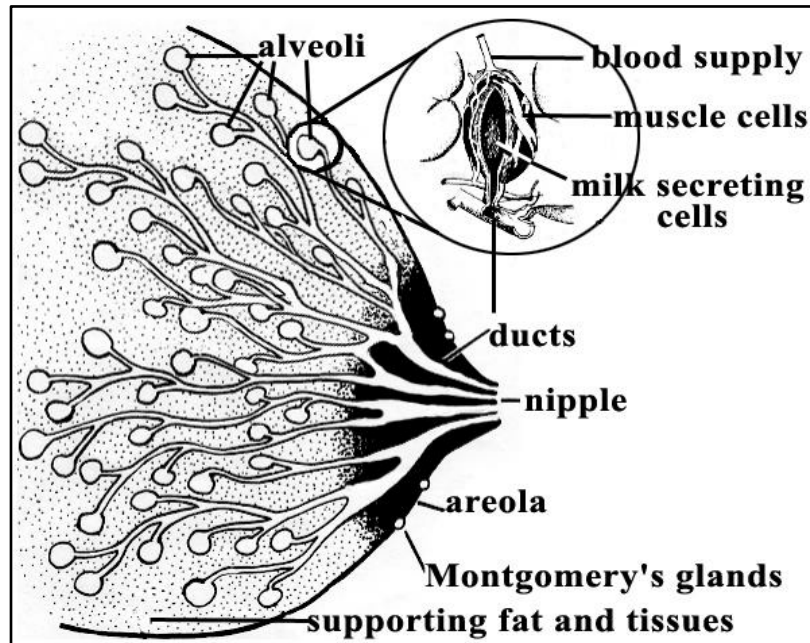
Early in pregnancy, the mother notes changes in her breasts, including fullness, tenderness, and a more prominent venous pattern. As the pregnancy progresses, she sees the areola enlarge and darken in color. Montgomery's tubercles, small nodules within the areola, become more prominent and prepare to secrete a lubricating substance that protects and conditions the nipple and areola (Figure 2.1). The nipple is located in the center of the areola and contains about 5-9 milk duct openings.

Figure 2.1



Each duct extends beneath the areola and into a mammary lobule where milk is produced in the alveoli. The nipple contains smooth muscle fiber and sensory nerve endings. The size and shape of nipples vary from woman to woman. The areola also varies in size from woman to woman.

Figure 2.2



Adapted from UNICEF/WHO: Promotion and Support in a Baby-Friendly Hospital, 20 hour Course 2006

The mammary lobules are composed of alveoli, the grape-like clusters where milk is produced in response to prolactin. The alveoli are surrounded by myoepithelial cells, string-like structures that respond to oxytocin by contracting and squeezing the milk out of the alveoli into the ducts toward the nipple (Figure 2.2).

The Physiology of Milk Secretion

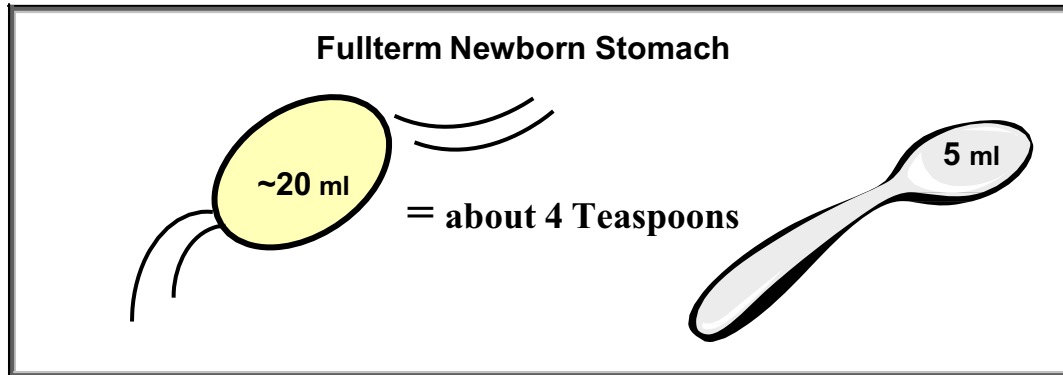
How does it work?

While many hormones are involved in pregnancy, estrogen, progesterone and prolactin are the three major hormones of this reproductive phase. The elevated levels of estrogen and progesterone during pregnancy prevent prolactin from stimulating milk secretion. With the removal of the placenta, estrogen and progesterone levels fall dramatically, while the prolactin level remains elevated. This is the signal to the breast to begin milk production. Prolactin receptors in the breast have an increased affinity for prolactin immediately after birth.

Immediately postpartum, colostrum, which has been present in the breast since about the twentieth week of pregnancy, (**lactogenesis, stage I**) is available to the newborn for the first few days of life until the milk “comes in” in greater quantity. Normal term infants are born with a number of reflexes and behaviors to help assure that the newborn survives the transition from intra to extra uterine life. These reflexes enable him to begin feeding immediately after birth.

The total amount of colostrum available the first day is small (40-50 ml). It is well matched to the newborn's small stomach capacity of about 20 ml (about 4 teaspoons) or 5 ml/kg (Figure 2.3).

Figure 2.3



Milk will begin to appear a few days postpartum (**lactogenesis stage II**) whether the woman breastfeeds or not, but the stimulus of the infant suckling at the breast builds and maintains milk production. Breast milk production is “**baby driven**”, that is, the normal full term baby indicates when he is hungry and when he has had enough. Breast milk is easily digested, so the infant signals his need to eat about every two to three hours (sometimes more often), or at least eight times every 24 hours, in the early weeks. Some normal babies cluster their feedings into one particular part of the 24 hours and feed less frequently during the remaining 24.

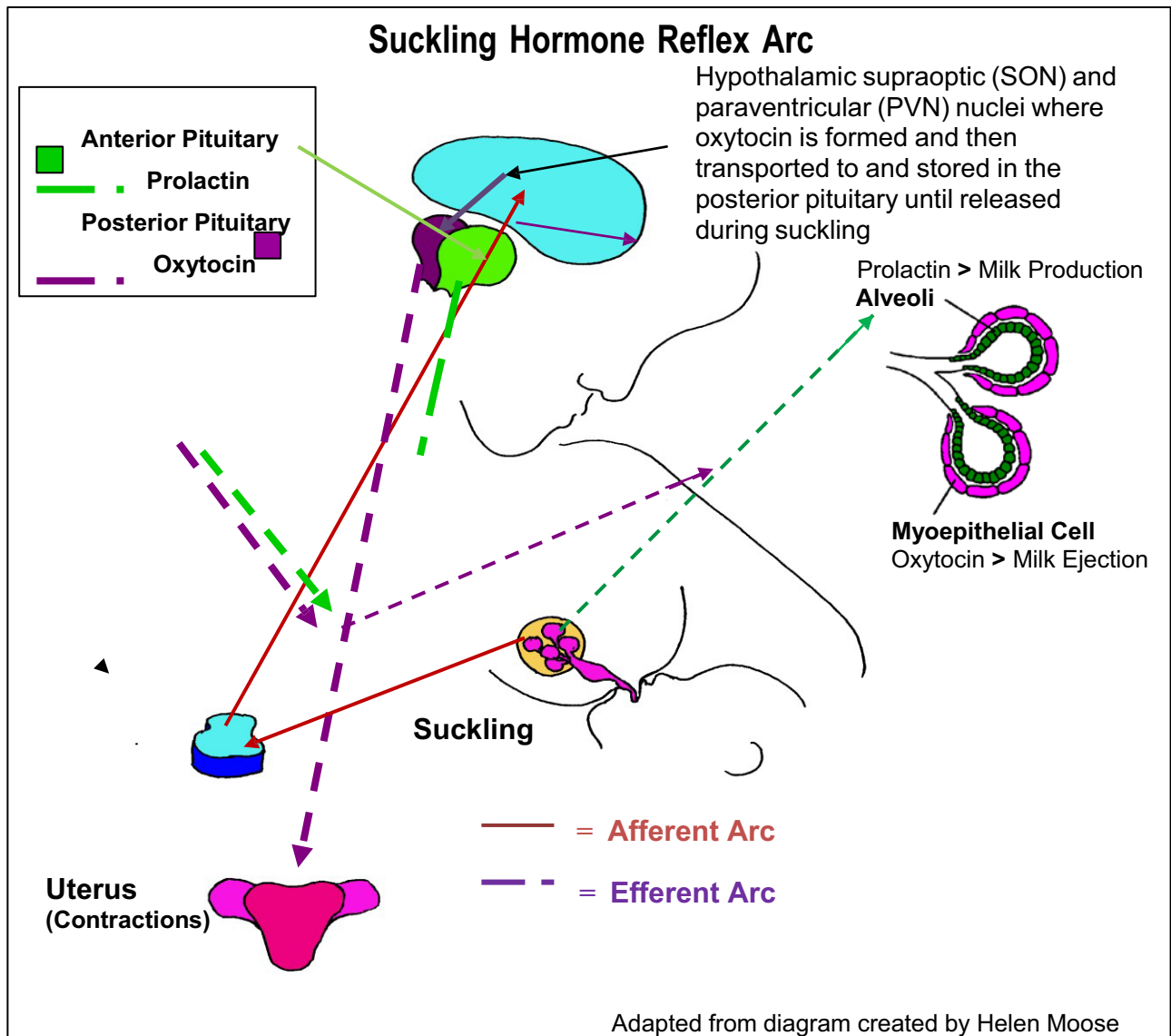
Breastfeeding involves a set of reflexes and hormones that also drive the milk supply. Milk production is influenced positively by early frequent and effective milk removal and negatively by late infrequent feeds or by the feeding the baby other liquids or foods before six months of age.

As illustrated in Figure 2.4 each time the baby suckles at the breast he stimulates the release of prolactin (milk production hormone) from the anterior pituitary and oxytocin (milk ejection hormone) from the posterior pituitary. It is the oxytocin that stimulates the myoepithelial cells to contract around the alveoli, making the milk flow, sending the milk down through the ducts. The milk ejection reflex, or let-down reflex, may be noticeable to the mother as a physical sensation such as “pins and needles” or a flush of heat. Some women do not describe feeling anything, but they may see the milk dripping from the nipples. When milk starts to flow the baby changes the way he moves his mouth,

going into a pattern of wide excursions of his jaw and downward motion of the posterior tongue resulting in a lowering of pressure in the infant's oral cavity and increase in milk flow. The flow of milk causes the baby to swallow in a slower rhythmic, audible manner that sounds like a quiet "cuh". Swallowing is a good indication the milk is being effectively removed by the baby.

The baby may stimulate several ejection reflexes during the feeding. Each time the milk is ejected it contains a little more fat. As noted in module 1, the milk that is present in the breast at the beginning of the feed ("foremilk") contains about 1.5 to 2% fat while the milk present at the end of the feed contains about 5-6% fat. Allowing the baby to feed without time limits enables him to get more of the higher fat "hindmilk", providing fat-soluble vitamins, calories to gain weight, and the ability to wait 2-3 hours from the start of one feeding to the start of the next.

Figure 2.4



The frequency of feeding regulates milk supply. The more often a baby removes the milk the greater the milk supply. Conversely, a baby who sleeps many hours at a time in the early weeks or feeds less than an average of eight times in 24 hours does not have the opportunity to stimulate the breast, causing the milk supply to drop. This is referred to as the “law of demand and supply”. Because each breast responds to the amount of milk demanded by the infant, it is possible to exclusively breastfeed more than one baby at a time or to use only one breast. Initially, if the milk is not removed the breast becomes full and eventually engorged. At that point, a local factor known as the feedback inhibitor of lactation (FIL) begins to decrease milk secretion. The exact mechanism of FIL is still under study. There some evidence that FILS is Serotonin.

The Importance of Skin to Skin Contact

Evidence has been accumulating indicating that mother-baby pairs who have an opportunity for the unclothed newborn infant to be placed on the skin of the mother beginning immediately after birth, skin to skin (“S2S”), experience fewer breastfeeding problems (Figure 2.5). Milk production is enhanced and infants are more contented. Unmedicated newborns exhibit crawling behavior that helps them reach their mother’s breast and some, though not all will feed within the first hour. Studies also suggest that extending S2S beyond the immediate newborn period continues to support successful breastfeeding. Even babies born by cesarean section can be allowed S2S experience on the chest area as soon as the mother is alert. Babies who are placed S2S after delivery also have less difficulty with subsequent attachment.

Figure 2.5



Continuing S2S contact in hospital and after discharge improves milk output. Hospitals can help encourage S2S by supporting continuous rooming-in. Prenatal and discharge

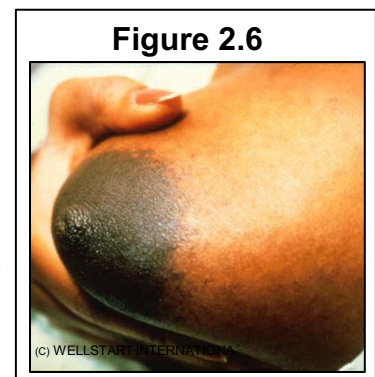
counseling should include this topic. Fathers and other adult family members can also participate in holding the infant S2S, allowing the mother time to sleep, bathe or take care of other needs.

Getting Together: Position and Attachment

Positioning

Over the past few years a number of reports have appeared in the breastfeeding literature describing new approaches to help a mother-infant dyad achieve comfortable and effective breastfeeding. These have been called “baby led” breastfeeding and biological positioning. The way a mother holds her baby to breastfeed may also be influenced by cultural or family traditions. Whatever position the mother and her baby choose should be comfortable for the mother and safe for the infant as well as effective for both. The following guidelines describe several approaches to helping the dyad become comfortable and effective.

- ◇ Infant should be in light sleep or in a quiet alert state but not crying. A crying baby will need calmed before encouraging the baby to begin breastfeeding. A sleepy baby may not respond with a rooting reflex and may not take the breast. Unwrapping and undressing a baby may help awaken a sleepy baby. A gentle massage of the infant’s back or the soles of the feet may also help.
- ◇ Mother should sit or lie down comfortably, with her back well supported, and bring baby in close to her. She offers her breast to the baby in a way that promotes good attachment of the baby’s mouth to the breast. She may support her breast with all four fingers below and thumb resting lightly atop the breast. This is often called a “C hold”. The baby should approach the breast with his/her nose towards the nipple, so that he has to tip his head back and reach up to the nipple with his chin going close into the breast and well under the areola.
- ◇ Her thumb and fingers should be away from the areola so that baby can grasp the nipple and areola area without interference. Often we see mothers offering the breast to the baby using a “scissors” hold, with the nipple between the forefinger and middle finger. If her fingers block the areola, the baby cannot attach properly. (Figure 2.6)
- ◇ With the mother seated in this position, the infant should be held on the same level as mother's breast, turned so the baby’s abdomen faces the mother’s abdomen (“tummy to tummy”), held close and well supported with pillows.
- ◇ For “baby led” or biological positioning mothers are encouraged to lie back rather than be in a more sitting position. The baby is placed on the mother’s chest and allowed to use infant reflexes and natural behaviors to find either breast and self-attach.



Common Positions for Breastfeeding Mother-Infant Dyads

Figure 2.7

Cradle (cross-chest):

The baby lies across mother's lap; baby's head lies on her forearm or in her hand on the side from which she is feeding. His head should not be in the crook of her arm because that takes him too far out to the side and he has to bend his head forward and cannot get his chin and tongue underneath the nipple.



E.Helsing

Figure 2.8

Modified cradle:

The baby lies across the mother's lap; mother's opposite arm and neck. This position is very useful for newborns and very small babies, giving the mother better control of the baby's head and neck than the cradle hold.



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Figure 2.9



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Side-sitting (“football”):

In the Side-sitting position: baby and mother sitting up; baby sits facing mother with his legs under mother’s arm; mother’s hand supports baby’s back and neck. This position is comfortable after a cesarean delivery because the baby’s weight is away from the incision. Sleepy babies may stay awake and feed better in this more upright position.

Figure 2.10



v.valdes

Side-Lying:

The mother and baby lie side by side with mother’s lower arm extended as shown in the picture.

Attachment

The way the baby grasps the nipple/areola area and pulls it into his mouth for feeding is referred to as "attachment" or "latch". **Attachment is considered to be the MOST important factor for preventing early problems that lead to premature weaning.**

As noted earlier, normal term infants are born with a number of reflexes and behaviors. These reflexes include a “rooting reflex” that prompts him to open his mouth and turn toward the breast when hungry. A light touch to the middle of the infant’s upper lip will help elicit this reflex. The mother should aim the nipple towards the roof of the baby’s mouth. The infant opens his mouth wide and brings his tongue down and forward over the lower gum to pull the nipple into his mouth. A crying baby will need to be calmed, since the tongue is usually elevated during crying and the baby’s tongue needs to be down in order to breastfeed. When properly attached the baby’s lips are flanged

outward over the areola as illustrated in Figure 2.11 below.

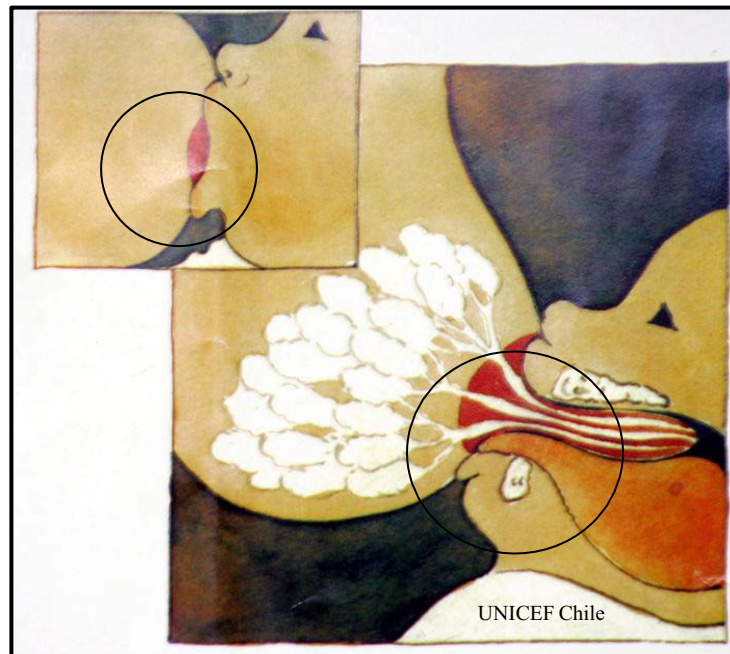


Figure 2.11

With effective positioning, the infant's tongue presses the nipple/areola against the hard palate and then lowers the posterior area of the tongue and soft palate, creating a vacuum. This lower intra oral pressure results in milk flowing into the baby's mouth from the areola stimulating swallowing and further suckling actions in a rhythmical pattern.

Assisting a mother to learn how to help her baby attach or latch-on effectively is very important to preventing problems and achieving breastfeeding success. (Note: Always observe breastfeeding before intervening. Mothers and babies may be doing fine and need only encouragement.)

Step 1: Elicit the rooting reflex by touching the baby's upper lip with mother's nipple.



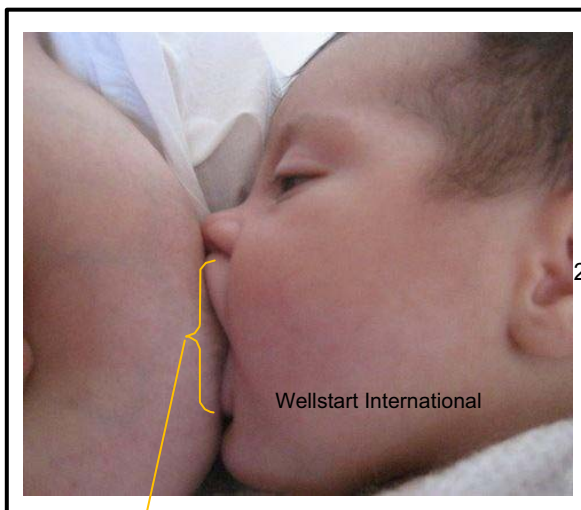
Step 2: Bring baby into the breast so that baby gets a large mouthful of nipple and areola.



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Once the baby is attached correctly, the infant's

- ◇ *lips* are flanged out,
- ◇ *the mouth is wide open*,
- ◇ *chin* is against the breast.
- ◇ If the mother has a large areola, more of the areola is visible above the upper lip than below the lower lip. This is known as an “asymmetrical latch”.



Good Attachment
(Lips widely flanged out,
nose touching breast)



Poor Attachment
(Lower lip curled in, nose
not touching breast)

Summary of Poor Attachment and Ineffective Suckling



Adapted from WHO/UNICEF 20 hour BFHI Course

Poor attachment reflected by:

- ◇ tight pursed lips
- ◇ space between chin and breast
- ◇ space between breast and nose
- ◇ infant's lower lip pulled in
- ◇ mother may feel pain
- ◇ nipple may be flattened after a feeding
- ◇ nipple abrasions and/or cracking

Ineffective suckling technique reflected by:

- ◇ no sounds of swallowing
- ◇ short, quick (flutter)sucking movements only
- ◇ mother may feel pain

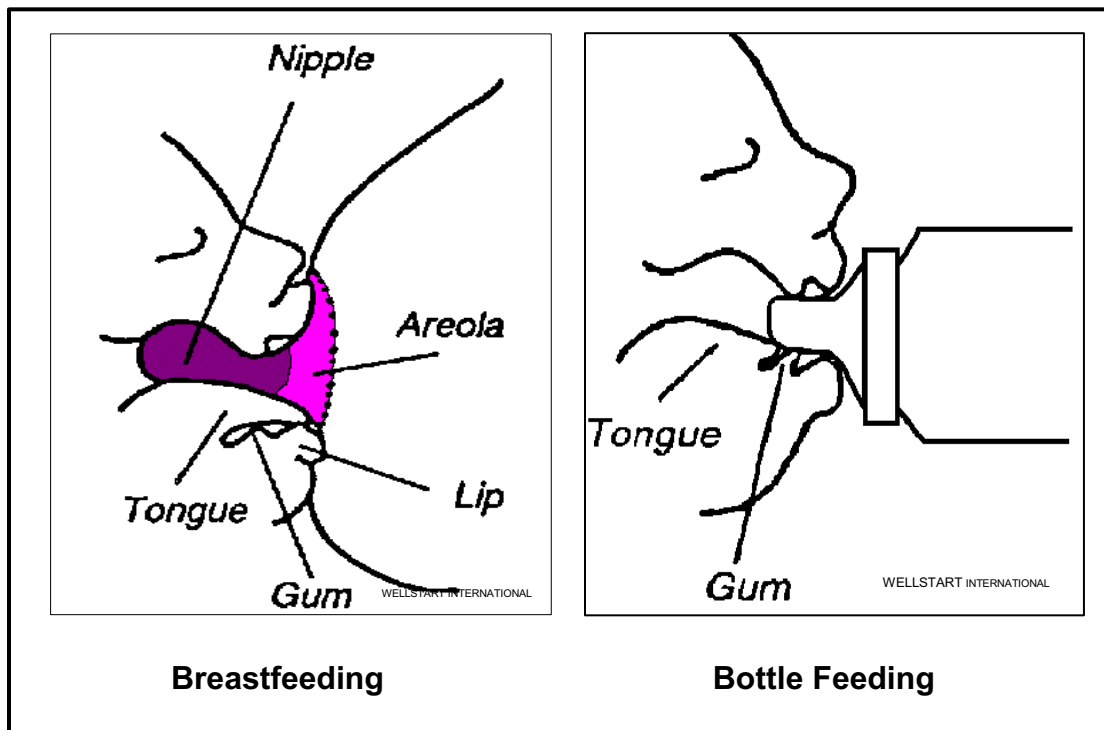
If someone is assisting the mother with getting the baby attached, the helper's hand should support the head, neck and shoulders below the infant's occiput. Forward pressure to the back of the head causes the baby to arch making it difficult for the baby to attach effectively.

What's the difference between breastfeeding and bottle-feeding?

There are significant differences between what is necessary for a baby to remove milk from a bottle with an artificial nipple in contrast to effectively breastfeed (Figure 2.8). Breastfeeding requires the coordination of suckle, swallow, breathe and tongue action. The artificial nipple feels and functions differently and milk flows from a bottle by simple suction, compression and gravity. Until the baby is an effective breast feeder and mother's milk supply is established it is better to avoid artificial nipples, including pacifiers, so the oral stimulus is consistent. Once a newborn has mastered breastfeeding (usually by three to four weeks of age) many babies will very likely be able to transition between both methods without difficulty.

If breastfeeding is temporarily not possible, or there is an acceptable medical reason to supplement, a baby can be fed by cup if necessary. This helps to avoid the problem of becoming adapted to bottle feeding technique and refusing to return to breastfeeding.

Figure 2.12



Evaluation of a Breastfeed

...How do we know if the baby is suckling effectively ...?

Mothers breastfeed successfully without knowing all of the following details, but these details may be helpful if the mother is experiencing problems or if the baby is not

gaining or feeding very frequently. A common explanation is ineffective suckling which can often be easily modified. The following are signs of suckling effectiveness.

Signs of effective suckling include:

- ◆ a few rapid sucks at the beginning of a feed with no active swallows of milk stimulating the oxytocin reflex and milk flow (“call-up” suckling),
- ◆ nutritive suckling: deeper, slower sucks (1:1 suck per swallow) with a brief pause when the milk starts flowing
- ◆ audible swallowing (a quiet “cuh” sound) shows that milk is being transferred
- ◆ 3 or 4 good sized bowel movements/ 24 hours.
- ◆ 25 – 30 grams weight gain per day after the milk “comes in”.

Be sure to observe breastfeeding before suggesting interventions. Interventions should be suggested only if a problem exists.

Length (Duration) and Frequency of Feeding

... How long should a breastfeed last? ...

- ◆ Breastfeeding is “baby led”. The baby asks to feed when hungry and stops when it is satisfied. Feeding “on demand” allows the infant to indicate when he or she is hungry. Crying is a late sign of hunger. Breastfeeding should be initiated in response to early hunger cues rather than waiting until the baby is crying. Early cues include:
 - ◆ waking up
 - ◆ bringing hands to his or her mouth
 - ◆ rooting
 - ◆ mouthing movements

Breastfeeding should also reflect the needs of the mother and she may try to get the baby to feed if her breasts are becoming uncomfortably full.

- ◆ Feeding patterns vary greatly among babies; some feed quickly, others slowly. The important thing is to feed long enough to obtain the hindmilk. Milk has slightly more fat with each let-down ejection.
- ◆ Infants usually “signal” by spontaneously releasing the breast, falling asleep with the nipple in its mouth, or discontinuing suck/swallow patterns when they are either finished or ready to change sides. If necessary burp baby to see if displacing air makes baby interested in taking more, then offer the second side. Sometimes one breast is sufficient. Switch starting sides at each feeding.
- ◆ Mothers have variable amounts of milk fat and total milk volume throughout the day,

so the baby may feed for different lengths of time from one feeding to the next.

- ◆ Every mother/infant pair is different. The baby's style of feeding and the flow of the mother's milk vary from pair to pair. Very long or very short feeds may indicate a problem and should be evaluated. The best way to evaluate the baby's effectiveness is to observe a feeding. Look at how the baby is attached, listen for swallows, and assess whether the mother is comfortable throughout and baby is content after the feed.
- ◆ If a mother needs to release her baby from the breast during a feeding, she can break the suction created by feeding using a finger to press on her breast at the junction of the baby's lips or by putting a clean finger into the corner of the baby's mouth. This gentle manner of helping the baby off the breast can help prevent sore nipples. The nipples should appear as they did before the feeding; i.e., round, not reshaped or flattened.

What is a typical breastfeeding pattern for a newborn?

- ◆ The healthy newborn should be given the opportunity to breastfeed immediately after birth – a time when normal non-medicated term babies are most alert. Skin-to-skin has been shown to be very important to breastfeeding success. The initial alert period is usually followed by a period of sleep. Though many newborns initiate breastfeeding within the first 60 minutes of birth, not every normal baby does this. Some simply nuzzle and do not attach until a bit later. As noted earlier, studies suggest that the opportunity for S2S contact is important to breastfeeding success.
- ◆ A newborn usually signals the need to feed every 1-3 hours (timed from the start of one feeding to the start of the next). Newborns often feed most frequently during first 2-7 days, when the onset of a more abundant milk supply (lactogenesis II) begins. A daily frequency of 8 to 12 feeds is ideal, especially in the early weeks of life. Many normal babies seem to breastfeed more at night especially during the first week or ten days.
- ◆ During the first 2-7 days, many health care providers believe that intervals of greater than 3 hours are not appropriate. The mother should gently awaken the infant and offer the breast if he sleeps longer than 3 hours, or if mother feels too full. If the baby does not want to feed, he should not be forced or given a supplement.
- ◆ Once lactation is established, a pattern of at least 8 feedings/24 hours (day and night) is common. Sleeping longer stretches at night may be a pattern seen after about six weeks of age. A baby who sleeps all night in the beginning is probably not getting enough calories. Since prolactin levels are highest at night, night feeds are important to ensure adequate stimulation for milk production and for suppression of

ovulation.

◇ Some babies will “cluster feed” that is feed very frequently at times and extend the time between other feedings. If the baby is gaining well this is a normal variation.

... How do we know if the baby is getting enough? ...

A trained observer (health care provider/lactation specialist or consultant) should watch a feeding to evaluate the baby’s position and attachment and the newborn’s effectiveness of suckling. The main concern of most parents is whether the baby is getting enough milk. If the mother is taught to watch for signs of adequate intake, she can feel more relaxed when the baby shows the following signs; conversely, if the infant does not show these signs, he may need an evaluation:

- ◇ Frequent, soft bowel movements (3-4 or more/24 hours by day three, yellow stools by day four) during the early weeks. After 5 or 6 weeks some normal breastfed babies do not stool for several days.
- ◇ Wet diapers: 6 or more/24 hours by day three. Diaper count may not be accurate if newer absorbent diapers are used but a normal infant will urinate at least 6 times in 24 hours.
- ◇ Sounds of swallowing during a feed
- ◇ Contented between feeds
- ◇ Average weight gain of 20 – 30 gm. ($\frac{3}{4}$ - 1 ounce) per day or 100 – 200 gm (5-7 oz) .per week. Recent studies indicate that velocity of weight gain varies with birth weight, smaller babies gaining more slowly than larger babies. Full term infants should start to gain weight by the third to fifth day of life; most infants regain birth weight by about seven to ten days after birth. Infants who lose 7-8% or more of their birth weight need careful evaluation and follow-up to be sure there isn’t really a problem. Babies who breastfeed early regain their birth weight earlier,

Additional signs for the mother:

- ◇ Mother’s breasts feel full before a feed and softer afterward
- ◇ Ejection (Let-down) sensation in mother's breasts (not all mothers experience this sensation)
- ◇ Uterine cramping may be felt for the first few days with every breastfeeding. This is a sign of oxytocin release and let-down.

It is helpful to talk to mothers about their knowledge of breastfeeding and about their individual situation in order to know best how to provide information and support. Open ended questions allow a mother to express her concerns and worries.

- ◆ **What information about breastfeeding do you already have?** It is helpful to know her baseline breastfeeding knowledge and if she is aware of the risks of not breastfeeding. A prenatal breastfeeding class provides the foundation for the mother and baby getting off to a successful breastfeeding experience. Then the short time from delivery to discharge can be utilized for skilled staff to help with breastfeeding and with newborn care. Also a mother may have watched breastfeeding videos, read books, and talked to family and friends. Some women do not avail themselves of prenatal breastfeeding information because they think “it’s a natural process” so what is there to learn? Health care providers can be instrumental in this situation.

- ◆ **Are family members and friends supportive of your interest in breastfeeding?** Unsupportive family members and friends easily undermine a new mother’s confidence.

- ◆ **Will someone be at home to help you in the early weeks?** All new mothers can use help at home in the early days. She will need time to eat, sleep and feed the baby frequently. It is most helpful if someone else can help with housework and/or errands. With no help, a new mother is at high risk for early weaning since the first couple of weeks can be overwhelming.

- ◆ **Do you have any special medical problems that require medications?** Though there are a few drugs that are contraindicated during breastfeeding (see module I) most medications are compatible with breastfeeding. The mother’s regular medications should be reviewed and alternative selections made if necessary.

- ◆ **What is your breastfeeding plan?** Some mothers have preconceived ideas about the length of time breast milk should be provided, and these ideas may be based on a misunderstanding of the current recommendations. A family can be encouraged to breastfeed for as long as possible. Potential barriers and ways to overcome them can be discussed, such as the return to work or school. Current recommendations by many agencies and organizations suggest 6 months of exclusive breastfeeding. Solid foods should be introduced at 6 months along with continued breastfeeding for two years of life and beyond for as long as mutually

desired by mother and child.

- ◆ **Are you planning to return to work/school?** Mothers may believe breastfeeding and work/school are not compatible. They can be advised that breastfeeding can continue, perhaps in a modified form, and that this can be discussed in more detail at a later time. If a mother decides to express her milk and leave it for the caregiver to feed the baby, she needs to have the information prior to returning to work/school so she can learn to hand express her milk or obtain a pump and store some milk ahead of time. (Ideally this discussion is started prenatally.)
- ◆ **Have you had any breast problems or surgery in the past (to increase or decrease breast size, biopsies etc)** Previous surgery does not necessarily indicate that there will be any difficulties with breastfeeding but more careful follow-up may be warranted.

In addition to the questions listed above, a multipara who has some breastfeeding experience should be asked the following:

- ◆ **How long did you breastfeed before? Why did you stop at that time?**

A mother may have begun breastfeeding a previous infant but stopped because she experienced problems. This is a good time to let her know that most problems are preventable and there are resources in the hospital and community to help. She should be praised for choosing to breastfeed this new baby. This mother should be given extra attention to make sure things are going well in the hospital and beyond. A consult with a lactation specialist may be indicated.

Of course, as a part of thorough prenatal care, a careful examination of breasts should be done. In addition to the usual evaluation for possible masses, observations should include variations in breast or nipple shape and breast changes consistent with pregnancy. The examination offers a good opportunity to discuss any concerns that the Mother may have about her ability to successfully breastfeed her baby and provide reassurance.

Early Hospital Routines

Hospital policies and practices influence breastfeeding outcomes by encouraging or discouraging optimal breastfeeding behaviors. Mothers who choose to breastfeed their newborns should be helped to assure a good start.

In 1989, a document titled **“Protecting, Promoting and Supporting Breastfeeding: The Special Role of Maternity Services”** was issued as a joint statement by the World Health Organization (WHO) and United Nations Children’s Fund (UNICEF) to provide guidelines for hospitals and maternity centers. This document described *Ten Steps to Successful Breastfeeding*. The evidence-based **“Ten Steps”** now comprise

the basis for the international Baby-Friendly Hospital Initiative (BFHI), a UNICEF/WHO sponsored hospital centered voluntary program of training and policy development to support the breastfeeding mother and newborn. At the time of the preparation of the 3rd Edition of the Self-Study Modules, nearly 20,000 hospitals around the world had been designated as Baby Friendly. In addition, many hospitals, though not as yet designated, are now working on policies that include the “**Ten Steps**”.

The first two of the “**Ten Steps**” provide the foundation by requiring a hospital policy that supports breastfeeding and trained staff who can assist the mother. Specific clinical practices are then delineated:

Step 1: Have a written breastfeeding policy that is routinely communicated to all health care staff.

The Academy of Breastfeeding Medicine offers a model hospital policy (Protocol #7) which can be downloaded without charge and adapted as needed by hospitals and maternity services. (See Annex G, Web Sites of Interest)

Step 2: Train all health care staff in skills necessary to implement this policy.

A course to provide basic training for health care staff has been designed by WHO and is available for downloading without charge from the WHO website (see Annex G: Web Sites of Interest)

Step 3: Inform all pregnant women about the benefits and management of breastfeeding.

- ◇ Women need to know early in pregnancy the importance of breastfeeding in order to make an informed choice about infant feeding.
- ◇ The mother’s previous experience with breastfeeding should be elicited in order to correct misconceptions or to prevent problems she experienced before.
- ◇ All pregnant women should know what to expect in the first few days postpartum and the basics of continued breastfeeding.

Step 4: Help mothers initiate breastfeeding within an hour of birth.

- ◇ The baby should be given skin-to-skin contact immediately after birth so that he can find his way to the breast and start to breastfeed immediately after a normal delivery. The suckling reflexes are present at birth, and colostrum in the mother’s breasts is full of immunoglobulin and vitamin A. Colostrum is considered by many to be the baby’s “first immunization”. As noted earlier this first breastfeed should be “skin to skin”.
- ◇ A mother who has had a cesarean birth should start to breastfeed within one

hour of being able to respond to her newborn.

Step 5: Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.

- ◇ The mother should be shown how to position and attach her baby and a breastfeed should be observed and evaluated by a knowledgeable observer.
- ◇ Every mother should be shown how to hand express her milk. If she is separated from her baby she can maintain her milk supply and in many cases the milk can be saved and given to the baby.

Step 6: Give newborn infants no food or drink other than breast milk, unless *medically* indicated.

- ◇ Supplementation with breast milk substitutes should be given only if medically indicated*. If supplements are necessary, human milk is best either from the baby's own mother or donor milk.
- ◇ If substitutes for human milk are introduced, there is a risk of allergies. Soy-based formula is probably no better than cow's milk -based formula. If a non-human milk supplement is required, hydrolyzed cow's milk is best to decrease the risk of allergy.
- ◇ Even in hot, dry climates, human milk contains sufficient water for a young infant's needs. Additional water, sweet drinks, or teas are not needed.
- ◇ If the baby is supplemented, there is a missed opportunity to practice breastfeeding skills and baby ingests less breast milk.
- ◇ With less human milk intake there is less immunological protective effect.

*Note: In early 2009 WHO and UNICEF completed an updated statement of *Acceptable Medical Reasons for Use of Breast- milk Substitutes*. A copy is included in the annexes of this Self-Study tool as annex B". It may also be obtained from WHO, the Departments of Child and Adolescent Health and Nutrition for Health and Development. www.who.int/child_adolescent_health and www.who.int/nutrition.

Step 7: Practice rooming-in and allow mothers and infants to remain together 24 hours a day.

- ◇ Minimizes separation.
- ◇ Provides practice for the mother in the skill of breastfeeding.
- ◇ Mother can respond to her baby's needs right away and start to build her milk supply
- ◇ It is a prerequisite for a baby-driven feeding pattern.

Step 8: Encourage breastfeeding on demand.

- ◇ Frequent suckling is the stimulus to produce enough breast milk for the baby's

needs.

- ◆ Frequent effective feedings stimulate passage of meconium and help minimize physiologic jaundice.

Step 9: Give no artificial nipples or pacifiers to breastfeeding infants.*

- ◆ Use of these devices introduces the possibility of reinforcing poor suckling technique and may be the source of infection.
- ◆ The breast both pacifies and nourishes the infant.

*Note : The Section on Perinatal Pediatrics of the American Academy of Pediatrics believes that there are evidenced-based medical indications for pacifier use including pain reduction and calming effect in a drug exposed infant.

Step 10: Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

- ◆ Support groups provide information and socialization.
- ◆ Help mother identify the supportive people in her environment (e.g., family, friends and community support groups).
- ◆ Encourage mothers to get help from family and friends during the early postpartum period. Rest and relaxation are helpful both to recover from birth and for successful lactation and breastfeeding.

Further information regarding BFHI can be obtained from UNICEF or WHO via their web sites provided in Annex G.

International Code of Marketing of Breastmilk Substitutes

During the 1960s intense marketing of substitutes for human milk and breastfeeding began to be observed in parts of Africa and other regions in the early stages of economic development. Health care providers working in these areas noted that the use of these substitutes was associated with increases in infant malnutrition, diarrhea and mortality in the target regions. Much concern was expressed by international agencies, governments and the general public. In 1981, after a number of international meetings and legal actions, the member countries of the World Health Assembly (WHA) with the exception of the United States, approved a resolution known as *The International Code of Marketing of Breastmilk Substitutes*. This document, updated every two years through resolutions of the WHA, provides guidelines for the companies that make and market substitutes and bottles and nipples (teats), the health professionals who may advise the use of substitutes for their patients and governments who are responsible for the health of their citizens.

In 1992 UNICEF and WHO developed an international voluntary program to assess and designate hospitals that put the “**Ten Steps**” into place as the core of the Baby Friendly Hospital Initiative. Evidence of being “Code Compliant” was incorporated into the assessment criteria. As a result the *International Code of Marketing of Breastmilk Substitutes* is considered by many to be an Eleventh Step. Among criteria of being “Code Compliant” is that the hospital can no longer receive free supplies of formula but must purchase formula for use in the hospital. In addition, the marketing method of giving free formula company “gift” packs to new mothers as they are being discharged from the hospital is not allowed.

A summary of ten major provisions of the Code of Marketing can be found in Annex D. A more detailed guide regarding specific responsibilities of health professionals under the Code has recently been revised and published by the International Code Documentation Center (ICDC). Copies of this document may be ordered from the IBFAN Office in Penang, Malaysia.

Additional detailed information regarding the Code of Marketing can be obtained from the following websites:

International Baby Food Action Network: www.ibfan.org

World Alliance for Breastfeeding Action (WABA): www.waba.org.my

Baby Friendly Communities

Because of the success of the “Ten Steps” and the Baby Friendly Hospital Initiative in supporting mothers and families who wish to be able to achieve optimal feeding for their infants and children, there has been an increasing interest in expanding these concepts beyond hospitals. Communities that have begun to explore this idea are adapting the “Ten Steps” to other non-hospital health care facilities. They are also working on legislation and regulations that accommodate working breastfeeding mothers such as bringing babies to work, day care facilities that are prepared to support their breastfeeding mother-baby pairs and time and an appropriate place to express or pump milk while at work.

Discharge Planning

- ◆ Observe a breastfeed for effectiveness before discharge. Make any suggestions that seem to be needed.
- ◆ Arrange follow-up for mother and infant at three to five days of age (and within 48-72 hours of hospital discharge); check infant’s weight, voiding and stooling patterns, perform a physical exam and observe a feeding. At this and future routine visits, ask about breastfeeding to reinforce successful feeding or to identify problems early.

- ◆ If a problem develops before the follow-up visit, mothers should be instructed whom to contact and urged to do so.

.....**Veronica is still waiting for you on the postpartum unit.**

She delivered 24 hours ago. She is worried about her sleepy baby and what she believes to be lack of milk. The nurse tells you she has asked for formula to give the baby. As you enter her room, you see the baby, wrapped snugly in his blanket, beginning to stir. What are three things you will do to help this mother and baby?

1. _____

2. _____

3. _____

You may have answered in following ways:

1. Find out how breastfeeding has gone so far by talking to the mother, to the staff, and reviewing the medical records (check urine and stool output, weight).
2. Examine the baby. The baby should be beyond the normal postpartum sleepy period now. The fact that he is stirring may indicate a readiness to feed. Your exam will also stimulate him.
3. When the infant is awake, request that the mother feed her baby. Observe a feeding, noting position, attachment, and whether the baby is effectively feeding (listen for swallows). Make adjustments to improve position/attachment as needed.
4. Review with the mother the landmarks for good attachment and point out the quiet sounds of swallowing.
5. Review with the mother the signs of adequate milk intake (contented baby, weight gain, stooling and urination).
6. Review with the mother the basics of building and maintaining a milk supply (frequent breastfeeding, milk removal stimulates milk production, leave baby on

first side until he signals he is full then offer second side). Without a clear medical indication, formula use can interfere with building a milk supply.

7. Referral to a lactation specialist/consultant or to a hospital staff member with formal lactation training if mom and baby are having breastfeeding problems. Mother and baby should not be discharged until feeding is going well.
8. Discharge instructions should include the following:
 - ⊕ If discharged early, less than 48 hours of age, baby must be seen within 48 hours of discharge
 - ⊕ If discharged after 48 hours, the baby should be seen 2-3 days after discharge
 - ⊕ A 24 hour helpline phone number
 - ⊕ Information for mothers on when to call for help from primary care provider or lactation specialist/consultant
 - ⊕ A breastfeeding daily diary form for recording the number of breastfeeds, and changes of wet or soiled diapers (“nappys”).
 - ⊕ Printed information on breastfeeding support groups in the community and encouragement to attend such a group.

Conclusion

An understanding of the anatomy and physiology involved in the natural process of breastfeeding is essential in order to provide care that supports optimal breastfeeding practices. The basic breastfeeding routines are based on evidence-based physiologic principles, and adhering to them prevents problems from developing. Helping a mother and infant off to a good start is one of the best investments in time and effort.

References

1. American Academy of Pediatrics and the American College of Obstetricians and Gynecologists (2006) *Breastfeeding Handbook for Physicians*. AAP, Elk Grove Village, IL and ACOG, WDC.
2. American Academy of Pediatrics. (2012). Breastfeeding and the use of human milk. *Pediatrics* 129 (3) e827-841
3. Balkam, JAJ, Cadwell, K, Fein, SB. (2011) The effect of components of the J lactation program on breastfeeding duration among employees of a public-sector employer. *Matern Child Health J* (15):677-683.
4. Colson, SD, Meek, JH, Hawdon, JM. (2008). Optimal positions for the release of primitive neonatal reflexes stimulating breastfeeding. *Early Hum Dev* (2008),

doi:10.1016/j.earlhumdev.2007.12.003

5. Declercq, E et al (2009). Hospital practices and women's likelihood of fulfilling their intention to exclusively breastfeed. *AJPH* 99 (5) 929-935.
6. Geddes, DT, Kent, JC, Mitoulas, LR, Hartmann, PE. Tongue movement and intra-oral vacuum in breastfeeding infants. (2008) *Early Hum Dev.* 2008;84: 471-477.
7. Hale, TW. Hartman, PE. (2007) *Textbook of Human Lactation, First Edition*, Amarillo, TX. Hale Publishing, L.P.
8. Kean, YJ, Allian, A. (2009) *Code Essentials 3: Responsibilities of Health Workers under the International Code of Marketing of Breastmilk Substitutes and subsequent WHA resolutions*. ICDC Penang, Malaysia.
9. Lawrence RA and Lawrence RM (2011), *Breastfeeding—A Guide for the Medical Profession, Seventh Edition*, St. Louis, MO: Mosby, Inc
10. Naylor, AJ. (2001) Baby-Friendly Hospital Initiative: Protecting, Promoting, and Supporting Breastfeeding in the Twenty-First Century. *Pediatric Clinics of North America* 48(2) 475-483.
11. Ramsay DT, Kent JC, Hartmann RA, Hartmann PE. Anatomy of the lactating human breast redefined with ultrasound imaging. (2005) *J.Anat* 206, pp525-534,
12. Riordan J and Wambach K (2010) *Breastfeeding and Human Lactation, Fourth Edition*: Jones and Bartlett Publishers, Inc. Boston
13. Walker, M.(2014) *Breastfeeding Management for the Clinician: Using the Evidence Third Edition* Jones and Bartlett Publishers, Inc. Boston
14. WHO (2009). *Infant and Young Child Feeding: Model Chapter for Textbooks for Medical Students and Allied Health Professionals*. WHO Geneva.
www.who.int/nutrition/publications/infantfeeding/9789241597494/en/index.html
15. WHO/UNICEF (2006) *Promotion and Support in a Baby-Friendly Hospital*, 20 hour Course WHO Geneva
16. WHO/UNICEF (1989), *Protecting, Promoting and Supporting Breastfeeding: The Special Role of Maternity Services. A Joint Statement*. WHO Geneva.