DEPARTMENT OF STATE HEALTH SERVICES
NUTRITION SERVICES SECTION • NUTRITION SERVICES / CLINIC SERVICES UNIT

Breastfeeding Promotion and Support Module

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WIC GROWING HEALTHY FAMILIES

TEXAS Department of State Health Services

Nutrition Services Section

Nutrition Education / Clinic Services Unit

Department of State Health Services

A companion publication, ***Breastfeeding Promotion and Support Module Answer Key,*** *stock number 13-27-3, is also available from DSHS.*

Breastfeeding Promotion and Support Module

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Instructions

Read the information in each chapter of this breastfeeding module and answer the questions that follow each chapter at your own pace. As you complete each chapter's section of questions and optional learning activities, have them checked by your local breastfeeding coordinator or your supervisor. *Answers to the self-test questions appear in a companion publication, DSHS stock no. 13-27-3.*

After you answer all of the questions correctly, you may begin working on the next module in the series. If you do not answer the questions correctly, you will be asked to reread the pertinent section(s) and find the correct answer(s) before beginning the next module.

Objectives

Upon completion, staff members will be able to:

1. List three reasons found by researchers to promote breastfeeding.
2. Explain why breastfeeding is a health choice, not a lifestyle choice.
3. Identify the parts of the breast involved in lactation.
4. Name the two hormones associated with breastfeeding and explain what they do.
5. Explain the difference between colostrum and mature milk.
6. Explain the difference between foremilk and hindmilk.
7. Identify the carbohydrate and type of fatty acid found in breastmilk that are important for infant brain growth.
8. Describe why human milk protein is easier to digest than the protein from cow's milk.
9. Name three common positions used for breastfeeding.
10. Describe how to properly latch a baby onto his mother's breast.
11. Describe signs of a good latch-on.

12. Identify early and late hunger cues and satiety cues in an infant.
13. List three ways to tell if a breastfed baby is getting enough to eat.
14. Identify ways to avoid hypoglycemia and jaundice in a breastfed infant.
15. Identify techniques a mother can use to wake her sleepy baby.
16. Identify signs of engorgement in a breastfeeding mother and describe techniques to help relieve engorgement.
17. Identify the two main causes of sore nipples and describe techniques to help relieve the soreness.
18. Identify symptoms of oversupply and overactive let-down reflex and techniques to help relieve the symptoms.
19. Give the percentage of women who are unable to produce enough milk for their baby.
20. Identify signs of a growth spurt.
21. Identify signs of plugged ducts and breast infections in a breastfeeding mother and thrush in a breastfeeding mother and baby.
22. Describe techniques to help relieve the symptoms of plugged ducts, breast infections, and thrush.
23. Identify times when a breastfeeding mother or breastfed baby should be referred to their doctor.
24. Describe what a mother should do to prepare for milk expression.
25. Identify appropriate uses for different types of breast pumps.
26. Identify breastmilk-storage guidelines for the refrigerator, freezer, and deep freezer.
27. Identify techniques a breastfeeding mother will need to use to establish her milk supply if her baby is unable to latch on to her breast due to prematurity or illness.
28. Identify techniques a breastfeeding mother can use to stimulate her milk supply.
29. Identify the LOVE counseling strategy to help overcome barriers to breastfeeding.

30. List situations in which breastfeeding may not be the best choice for the mother or baby.
31. Identify whether or not your attitude towards breastfeeding matters when promoting breastfeeding to others.

Why Breastfeed? *Part 1*

Reasons to Breastfeed

Fifty years ago, breastmilk was the only safe food available for babies. A mother kept her baby close to her so she could readily feed the baby while doing other tasks. This is still the case in many Third World countries today. Society looks at infant feeding and women differently today. Breastfeeding is not the only way an infant can be nourished in Western societies with safe water supplies and good medical care. There are many brands and types of infant formulas available. While mother's milk is best, it is not the only option for feeding a baby.

The role of women in society has also changed. A woman is not expected to stay home, feed the baby, and nurture her family as she was in earlier times. Often, she is the sole support of the family or must supplement the family income. Although U.S. law provides a 12-week leave of absence from work after a baby arrives, many moms return to work after four to six weeks. Sometimes, this is not enough time to fully establish breastfeeding or to adjust to the new lifestyle and responsibilities of parenthood.

On returning to work, many moms are separated from their babies because there is no day-care center at the worksite. The mother must either dash away to feed the baby on her work break or pump during the day to provide a supply of milk for the following day. Often, the only place for her to pump is the bathroom or a corner of the employees' break room. These circumstances do not encourage a woman to continue breastfeeding. Given these obstacles, why should we continue to promote breastfeeding?

An extensive review of the literature has shown that breastfeeding provides important protection against infant illness in both industrialized and Third World countries (Cunningham et al. 1991). Moreover, breastfeeding is associated with a reduced frequency of certain chronic diseases later in life.

Data analyzed by scientists at the National Institute of Environmental Health Sciences (Chen and Rogan 2004) suggest that breastfeeding can reduce the risk of death for infants in their first year of life. Looking at infants between 28 days and 1 year of age, researchers concluded that promoting breastfeeding can potentially prevent up to 720 post-neonatal deaths in the U.S. each year.

New research has shown that infants who are not exclusively breastfed in the first few months of life are more likely to develop asthma later on. In a large, carefully designed study, children who received formula in the first 2 months, and did not breastfeed or stopped by 2 months, had the highest rate of asthma. The lowest rate was seen in children who had only breastmilk for 3–4 months and continued breastfeeding for at least 6 months (Kull 2004).

Sudden infant-death syndrome has several causes, one of which is infant botulism. SIDS from infant botulism occurs *only* in infants fed formula. One of every 1,000 SIDS deaths is estimated to result from the failure to breastfeed.

In reviewing the literature, researchers found an interesting link between formula-feeding and immune-system disorders. Formula-feeding appears to speed up the development of **celiac disease*** and is a risk factor for Crohn's disease, ulcerative colitis, and diabetes. The risk for childhood-onset lymphomas (cancer) is greater in formula-fed individuals or individuals breastfed for less than 6 months. Food allergies appear to be less frequent in infants who are exclusively breastfed. Breastfeeding delays the development of atopic dermatitis, particularly in families prone to allergies. A 2004 meta-analysis found that infants who are not breastfed are 28 percent more likely to become seriously obese children (Arenz 2004).

Breastfeeding also appears to influence intelligence. Horwood (1998) found that increased duration of breastfeeding was associated with consistent and statistically significant increases in:

*Terms in **boldface** are defined in the Glossary in the back of this module.

- IQ assessed at ages 8 and 9;
- reading comprehension, mathematical ability, and scholastic ability assessed during the period from ages 10 to 13;
- teacher ratings of reading and mathematics assessed at ages 8 and 12; and
- levels of attainment in school-leaving exams.

A 2002 meta-analysis (Collaborative Group 2002) found that the risk of breast cancer decreased by 4.3 percent for every 12 cumulative months of breastfeeding. The longer women breastfeed, the more they are protected against breast cancer. Weiss (1997) found a decreased risk of breast cancer in women who were breastfed as babies. Blaauw et al. (1994) found that a woman with osteoporosis was four times more likely *not* to have breastfed her children than were control-group women without osteoporosis.

Breastfeeding Protects Infants from Disease

Newman (1995: 76) describes how breastmilk protects newborns. Not so long ago, the article states, doctors said that breastfed babies were sick less often because the doctors thought that breastmilk was free of bacteria. Formula is easily contaminated. But even infants who received sterilized formula had more meningitis and infections of the ear, gut, respiratory tract, and urinary tract than did their breastfed counterparts.

Scientists have come to realize that breastfed infants are healthier not only because breastmilk is relatively free of bacteria, but also because breastmilk actively protects human babies (just as cow's milk protects calves, dog's milk protects puppies, cat's milk protects kittens, and so on) and promotes the development of the infant's own immune system. One species' milk does not provide protection for another species. Scientists have not been able to reproduce the protective qualities of breastmilk in infant formula.

The protective factors in breastmilk are very important because a child's immune system does not reach full

strength until the child is approximately 5 years old. During pregnancy, the fetus receives protection from the mother through the placenta. After birth, these protective factors continue to circulate in the infant's blood for several weeks to months.

Breastfed babies get an added boost of protection from factors in breastmilk *every* time they breastfeed. Some protective factors in breastmilk bind to germs and keep them from crossing through the gastrointestinal lining. Other factors in breastmilk keep essential vitamins and minerals away from the harmful bacteria which need them to survive in the digestive tract. Certain immune cells in breastmilk attack germs directly. Another set produces chemicals that stimulate the infant's own immune response. (See also "Breastmilk Antibodies," page 2-7.)

Reduced Kidney Stress

At birth, the infant's kidneys are functioning at a limited capacity. The kidneys' capabilities increase rapidly during the first few months of life. The immature kidneys in very young infants have difficulty handling food wastes with a high **renal-solute load**.

__Solutes__ are waste products formed after food has been fully digested and metabolized. Examples of solutes in a baby's renal-solute load are nitrogen compounds from the breakdown of protein, as well as the three minerals sodium, potassium, and chloride, which had been consumed in excess of body needs.

"Renal-solute load" is the term used to describe the amount of waste, from a food or mixture of foods, that the kidney removes. The higher the renal-solute load of a food, the more water is required to properly remove the waste products.

Human milk has a much lower renal-solute load than commercial infant formulas or formulas based on diluted, evaporated whole milk. Incorrect mixing of formulas can increase their renal-solute load. Cow's milk and goat's milk have a much higher renal-solute load than do commercial formulas.

The infant's kidney system can fail when water intake is greatly reduced or when the renal-solute load is greatly increased. If not corrected, this can result in lethargy, convulsions, and even damage to the infant's central nervous system. The situation can quickly become critical when there are extra water losses due to high fever.

A Health Choice

These benefits are just a sample of the many positive effects of breastfeeding reported in recent scientific literature. Why promote breastfeeding? Because breastfeeding is a health choice, *not* a lifestyle choice!

Self-Test Questions

1. Researchers have found many reasons for women to breastfeed. List three reasons that would most strongly convince you that breastfeeding is the best infant-feeding choice.

   A. _____

   B. _____

   C. _____

2. Why is breastfeeding a health choice and not a lifestyle choice?

Milk Production and Components

Part 2

The Lactating Breast

The human breast (see **Figure 2.1**) is made up of muscle, fat, ducts, and **alveoli**. The alveoli are grape-like clusters that make breastmilk. They are situated along the ducts, which are "pipelines" that run through the breast and end as openings at the tip of the nipple. There are an average of 8–10 ducts in each breast.

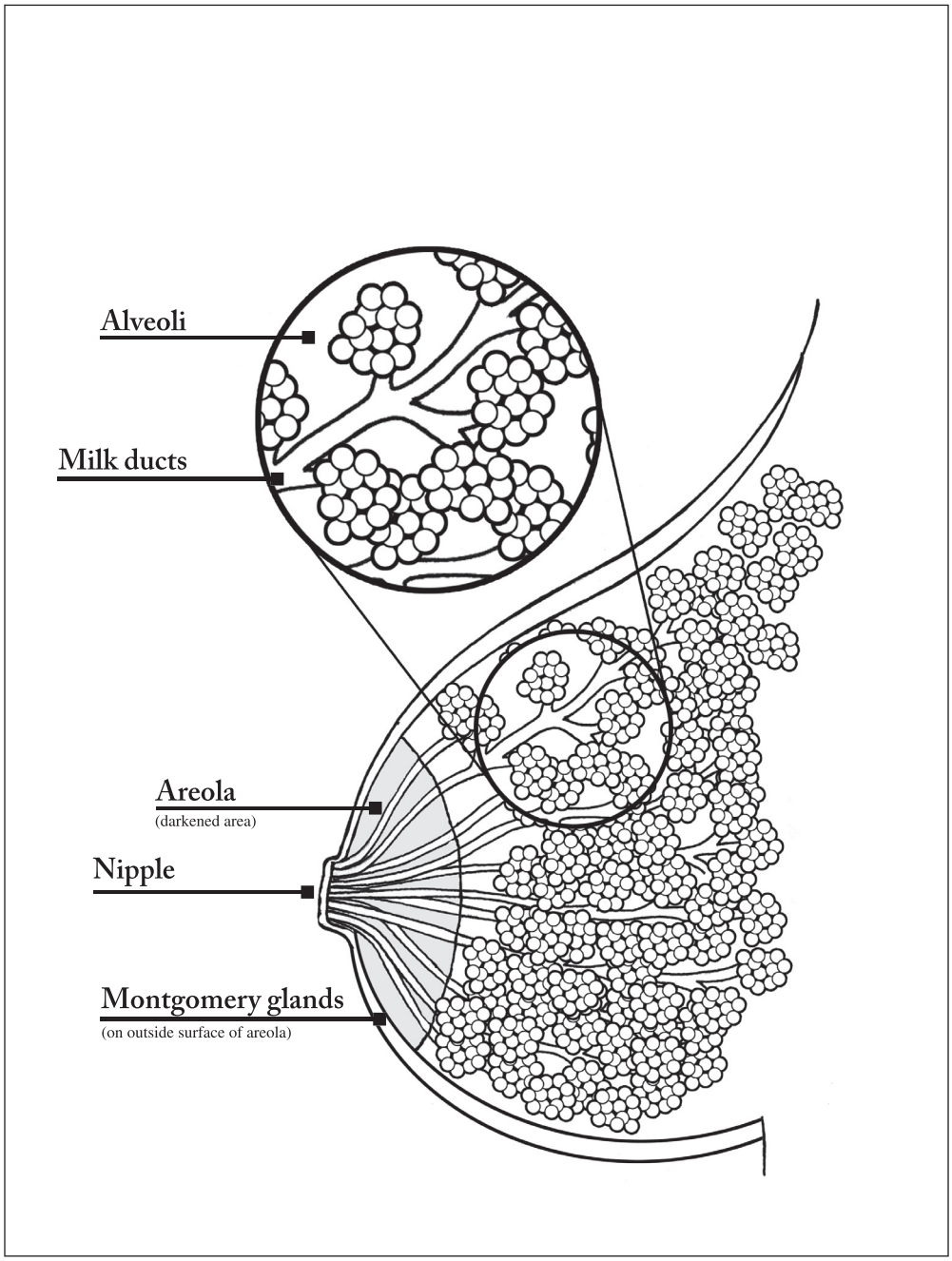
The **areola** is the circular dark area surrounding the nipple. It contains the **Montgomery glands**, which lubricate and protect the nipple during breastfeeding. The nipple is surrounded by muscular tissue and contains nerve endings that are stimulated when the infant sucks. This sucking stimulates the woman's brain to produce two hormones, **prolactin** and **oxytocin**.

Prolactin and oxytocin are involved in the production and release of breastmilk. Prolactin stimulates milk production in the alveoli. Oxytocin causes the muscle layer around the alveoli to contract and move the milk down the ducts and out of the nipple. This is called **"let-down**,**"** or the **milk-ejection reflex**.

During the milk-ejection reflex, some moms may experience a tingling feeling, a "pins and needles" sensation, a tightening, or a slight pain for a few seconds. However, some women may not feel the milk-ejection reflex at all. While the baby nurses, spurts of oxytocin are released, causing an average of two to three milk-ejection reflexes during each feeding.

The baby's suckling stimulates a sharp rise in the mother's prolactin levels, greatly increasing the amount of milk produced. Frequent breastfeeding increases a mother's milk supply. The way to make more milk is to breastfeed more often.

Figure 2.1 Breast Structure

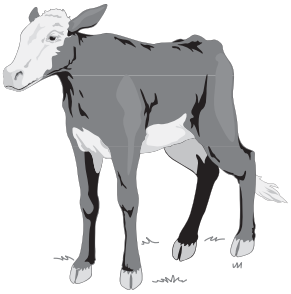


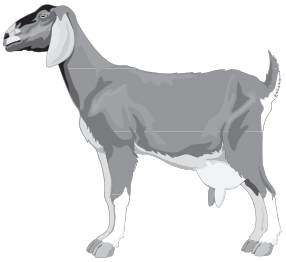
What's in Breastmilk?

Colostrum vs. Mature Milk

Colostrum is the milk produced in the first stage of lactation. It is a thick, clear to yellowish fluid that begins forming during pregnancy. It gradually changes into transitional milk by about a week after the baby's birth. It is high in protein, fat, and fat-soluble vitamins. It provides all of the nutrients and antibodies the baby needs until the **mature milk** comes in.

Mature milk gradually replaces colostrum after the first few days. It is more diluted than colostrum. **Foremilk** (the first milk released in the breast during a feeding) is thin and bluish-white in color. **Hindmilk** (the milk released after the foremilk during a feeding) is thicker, creamier, and higher in calories.





The nutritional needs of human babies are not fully met by cow's milk or goat's milk.

Human Milk vs. Alternatives

Table 2.1 shows some of the major nutrients in mature human milk, formula, cow's milk, and goat's milk. As you can see, the milks are quite different in their nutrient composition. If you think about it, it makes a lot of sense that the milks would be different — humans are very different from cows and goats! Each species has different needs, and each species' milk is, by nature, exactly right for that particular animal.

You will also notice that formula is not the same as human milk. Infant formula is made from cow's milk or soy milk with added vitamins, minerals, sugars, and fats. Extra amounts of some nutrients must be added to the formula because these nutrients are not well absorbed by the baby.

Also, notice that human milk is high in cholesterol. Infants need cholesterol for nerve development and brain development. There is no cholesterol in infant formula. Scientists are not sure how this lack of cholesterol affects infants.

As advances are made in technology and more of the nutrients in breastmilk are discovered, scientists try to duplicate these nutrients and add them to infant formula. In a review article,

Minchin states that biotin, cysteine, taurine, and carnitine have been found to be essential nutrients for infants (Minchin 1987: 260). At one time, these nutrients were not included in commercial infant formulas.

Breastmilk is the perfect food for human babies because it provides the necessary nutrients in a form that is readily absorbed. A human infant doubles its birthweight in 4 to 6 months. This is quite different from other species whose birthweight is doubled much more quickly.

The human infant's brain is growing rapidly during the first year. This means that the human infant needs a diet high in carbohydrate (milk sugar). Referring again to Table 2.1, note that human milk has almost twice as much carbohydrate as cow's milk or goat's milk. Human milk contains about 87.5 percent water, which is important in keeping the infant hydrated (Riordan and Auerbach 1998: 134).

Table 2.1 Concentration of Selected Nutrients in Human Milk, Formula, Cow's Milk, and Goat's Milk

Nutrient	Human Colostrum	Human Mature Milk	Formula	Cow's Milk (Whole)	Goat's Milk
Calories/ounce	—	20	20	19	21
Protein g/100 g	3–1.3	1.3	1.5	3.3	3.6
Carbohydrates g/100 g	6.5	7.3	6.9	4.8	4.5
Fat g/100g	2.9	3.5	3.8	3.4	4.2
Cholesterol mg/100 g	29	14	0	14	0.82
Calcium mg/100 g	39–26	26–18	52	130	134
Phosphorus mg/100 g	12	16–14	35	120	111
Sodium mg/100 g	41	13–11	18	49	50
Magnesium mg/100 g	3.6	3.3–2.8	7	13	14
Potassium mg/100 g	71	54–44	72	138	204
Iron mg/100 g	0.07	0.03–0.06	0.16–1.8	0.07	0.07
Zinc mg/100 g	0.8–7.5	0.2–0.04	0.78	0.38	0.30

Table compiled from:
Jensen (1995); Tsang and Nichols (1988); Salmenpera 1994; *Bowes & Church's Food Values* (1998: 151); *Pediatric Nutrition Reference Guide* (1995); P. B. Lawrence (1994).

The energy (calorie) intake of breastfed infants differs significantly from that of formula-fed infants. The amount of energy the infant uses each day, metabolic rates during sleep, rectal temperature, and heart rates are all lower in breastfed infants. There are also differences in growth rates between breastfed and formula-fed infants. Formula-fed infants usually gain weight at a steady rate, as indicated by the smooth height-and-weight curve on their growth charts. Breastfed infants, however, are different. They usually gain weight more quickly during the first three months of life and more slowly during the next three months. Even though weight gain differs in the two groups, head growth is the same.

Fat

The fat in breastmilk provides about half of its calories. Breastmilk fat is ideally suited for infants (Riordan and Auerbach 1999: 127–28). Fat levels change as the breast empties (Hartmann, Sherriff, and Mitoulas 1998). Levels also change within a feeding — lowest at the beginning of the feeding (foremilk) and highest at the end (hindmilk).

The foremilk is thought to quench the infant's thirst. The hindmilk is thought to satisfy the infant's hunger. In some moms, the hindmilk has four to five times as much fat as the foremilk. Infants can self-regulate their intake of calories if they are allowed to nurse on one breast until they are satisfied (until they "fall off"), and then burped and offered the other breast. Infants who are switched from one breast to the other after a specified period of time may not nurse long enough on the first side to get the fat-rich hindmilk. They may then fill up on the lower-fat foremilk in the other breast. These infants will be hungry more frequently and may not gain weight as quickly as infants allowed to nurse on each breast until satisfied.

An infant should be allowed to nurse on one breast until he "falls off" the breast, then he should be burped and offered the other breast.

Long-chain fatty acids are essential for brain and retinal development during gestation, and research suggests that they may also be essential in early infancy. Premature infants who do not receive human milk have been shown to have delayed visual development compared to premature infants

who are breastfed. While long-chain fatty acids are abundant in breastmilk, they were only recently included in some infant formulas. Scientists are not sure if there are other essential nutrients in breastmilk that have not yet been discovered and what impact the lack of these nutrients will have on the health of human babies receiving formula.

Carbohydrate

Lactose (milk sugar) accounts for most of the carbohydrate in breastmilk. Lactose breaks down into glucose and galactose, which supply energy to the rapidly growing brain of the infant.

Lactose is only found in milk. Of all mammalian milks, human milk has the highest concentration of lactose. Lactose appears to be a nutrient specific to infancy because lactase, the enzyme that breaks down lactose, is only found in infant mammals. As children mature, some become lactose intolerant — they lose the ability to break down lactose.

Only formulas made from a mammalian milk have lactose. Formulas made from soy milk do not contain lactose. Scientists are not sure what effect a lactose-free diet will have on an infant — now and in adulthood.

In addition to providing energy, lactose also helps with the absorption of calcium and iron, and it promotes the growth of ***Lactobacillus bifidus*** (good gut bacteria). These bacteria inhibit the growth of harmful bacteria, fungi, and parasites in the baby's gut. Infants fed cow's milk or formula have different gut bacteria, which provide no protection.

Protein

Mature human milk is about 1 percent protein. About 60 percent of the protein is **whey** and 40 percent is **casein**. The whey protein in breastmilk is acidified in the stomach, forming smaller, softer curds. These easy-to-digest curds provide a continual flow of nutrients to the baby.

On the other hand, cow's milk contains mostly casein protein. This casein protein forms a tough, harder-to-digest curd. This is why it takes the baby longer to digest formula than breastmilk, and why formula-fed babies tend to have larger stools.

Vitamins

The amounts of vitamins in breastmilk vary from person to person because of diet and genetic differences. In general, breastmilk provides all of the vitamins a baby needs. Fat-soluble vitamins (A, D, E, and K) are not greatly influenced by what the mother has eaten recently. These vitamins can be drawn from the mother's body stores.

Water-soluble vitamins (C and Bs) are partially influenced by what the mother eats. Correcting the diet or giving vitamin supplements can be beneficial for a mother whose diet is seriously deficient in water-soluble vitamins.

Minerals

The mineral content of breastmilk is fairly stable regardless of the mother's diet. Although breastmilk has only a small amount of iron, breastfed babies are rarely iron-deficient. Substances in breastmilk assist iron absorption so that breastfed infants maintain their iron status at the same level as infants fed iron-fortified formula.

Breastmilk Antibodies

There are five basic immunoglobulins — IgA, IgD, IgE, IgG, and IgM. All are found in breastmilk. An **immunoglobulin** is a protein that functions as an antibody. The most abundant one in breastmilk is IgA. It targets germs in the child's immediate environment. When the mother comes into contact with a germ, her body makes **antibodies** against that germ. These antibodies are passed to her baby through her breastmilk.

Antibodies delivered to the infant through breastmilk fight only harmful germs and ignore the useful bacteria normally found in the gut. The normal gut bacteria crowd out the growth of harmful germs — providing more protection. In addition, the antibodies in breastmilk ward off disease without causing harm in the infant's sensitive system.

Other Protective Factors

Oligosaccharides are simple chains of sugar that bind with bacteria, forming harmless units that the baby excretes. **Mucins** are large molecules that adhere to bacteria and viruses and remove them from the baby's body. B_{12}-binding protein deprives germs of vitamin B_{12}.

Lactoferrin is a protein that binds with iron. Many harmful bacteria thrive on iron. Lactoferrin halts their spread by making iron unavailable. Lactoferrin also disrupts the process by which bacteria digest carbohydrates, further limiting the growth of the harmful bacteria. **Bifidus factor** promotes the growth of *Lactobacillus bifidus*, the good gut bacteria.

Free fatty acids in breastmilk damage the membranes of viruses such as chicken pox. **Interferon**, which the colostrum has much of, also protects the baby against viruses. **Fibronectin** helps the protective factors in milk ingest germs and minimizes inflammation. It also aids in repairing tissues damaged by inflammation.

Immune Cells

There are living cells in breastmilk that help protect the baby. **Leukocytes**, white blood cells, fight infection and activate other defense mechanisms. **Macrophages**, a type of leukocyte, manufacture **lysozyme** — an enzyme that destroys bacteria by disrupting their cell walls. Macrophages activate **lymphocytes**, some of which make antibodies. Other lymphocytes kill infected cells directly or send out chemical messages that mobilize other components in the immune system. Milk

lymphocytes manufacture several chemicals that strengthen the infant's immune response.

Additional Factors

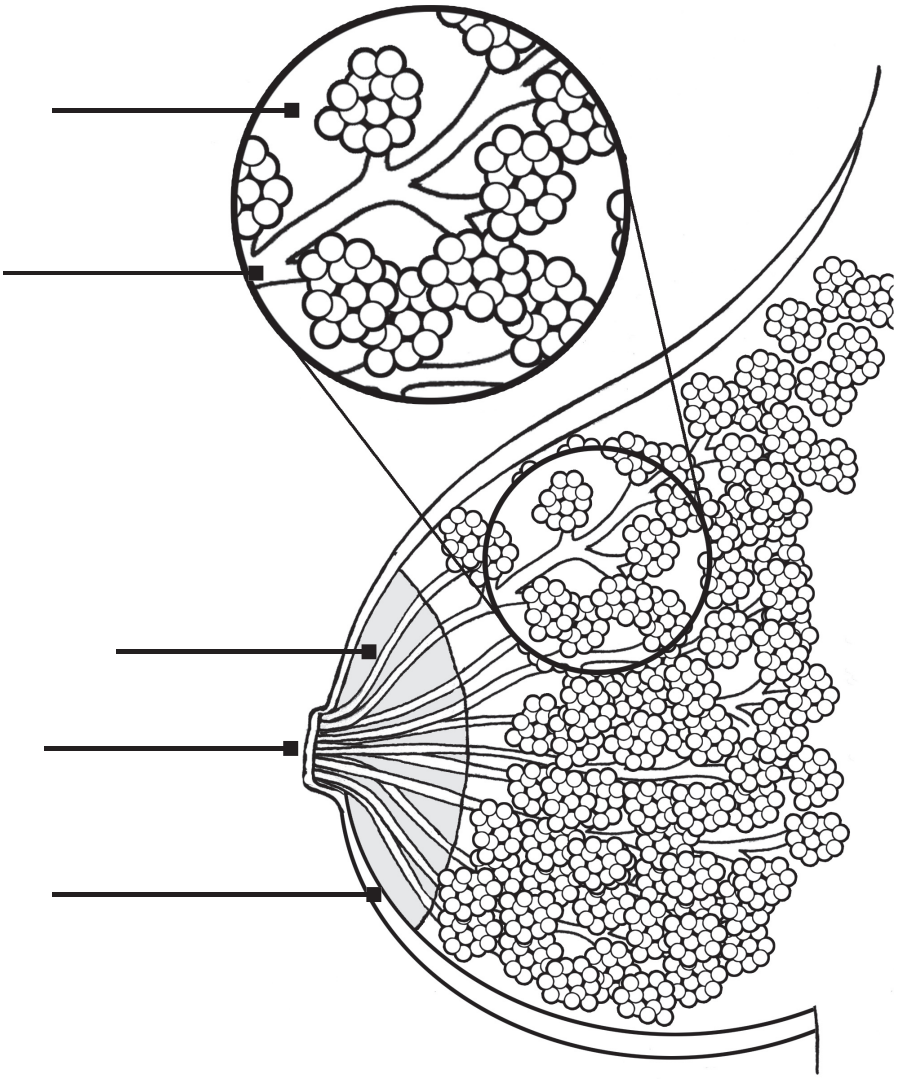
Some factors in breastmilk cause the infant's immune system to mature more quickly. Breastfed babies produce higher levels of antibodies in response to immunizations. Certain hormones in breastmilk act to close up the **mucosal lining** of the newborn's gut so germs and other harmful agents cannot penetrate it.

Unknown Factors

There are unknown factors in breastmilk that stimulate the baby's own production of IgA, lactoferrin, and lysozyme. All three are found in larger amounts in the urine of breastfed babies than in formula-fed babies. Breastfed babies cannot absorb these molecules from breastmilk. Instead, it appears that these molecules are produced in the mucosa of the infant's urinary tract. Recent studies indicate that breastfed infants have a lower risk of urinary-tract infections. Some evidence suggests that unknown factors in breastmilk may cause breastfed infants to produce more fibronectin than do formula-fed babies.

Self-Test Questions

1. Label the parts of the breast:



Areola
Alveoli
Milk ducts
Montgomery glands
Nipple

2. What two hormones are associated with breastfeeding? *(Check one.)*

____ estrogen and progesterone

____ oxytocin and prolactin

____ insulin and glucagon

3. *Fill in the blank:*

_____ is the hormone that stimulates milk production in the alveoli.

4. *Fill in the blank:*

_____ is the hormone that causes the milk-ejection reflex (let-down).

5. *Check* each statement that accurately describes colostrum.

____ Colostrum is the first milk produced by the breasts.

____ Colostrum is not good for the baby.

____ Colostrum is high in protein, fat, and fat-soluble vitamins.

____ Colostrum is thin and bluish-white in color.

____ Colostrum is thick and yellowish in color.

6. *Fill in the blanks:*

_____ is the first milk a baby gets at each feeding and is thin and
(Foremilk, Hindmilk)

bluish-white in color. _____ is the milk released later during a
(Foremilk, Hindmilk)

feeding and is thicker, creamier, and higher in calories.

7. *Fill in the blanks:*

   A mother should let her baby "_____ _____" one breast before burping him and offering the other breast.

8. Which type of fatty acids in human milk is important for infant brain growth? *(Check one.)*

   ____ long-chain fatty acids

   ____ short-chain fatty acids

9. What carbohydrate, abundant in breastmilk, is important for infant brain growth? *(Check one.)*

   ____ sucrose

   ____ dextrose

   ____ lactose

   ____ maltodextrose

10. Mark the following statements about human milk protein **TRUE** or **FALSE**.

    _____ The protein in mature human milk is about 60 percent whey (easier to digest) and 40 percent casein (harder to digest).

    _____ Human milk protein forms a tough, harder-to-digest curd, which is why it takes a baby longer to digest breastmilk than formula.

Getting Started *Part 3*

Importance of a Good Start

Getting off to a good start is very important. With breastfeeding, this begins before the baby is born. Many new mothers spend fewer than 24 hours in the hospital after the baby's birth. There is little time to get help from the nurses or breastfeeding counselors. To breastfeed successfully, pregnant women need to learn as much as they can about breastfeeding before their babies arrive. The best preparation is encouragement and support from health-care providers, family, and friends. Knowledge about breastfeeding from classes, books, and support groups is also a great help.

Breastfeeding should begin as soon as possible after delivery. Ideally, this is on the delivery table or in the recovery room within the first hour after birth. Colostrum, a highly concentrated milk produced in the first few days after delivery, is just right for the needs of the newborn.

A newborn's stomach is about the size of his fist and breastmilk is quickly digested. Encourage new mothers to feed their babies often, about every 1½ hours or whenever the baby is showing early hunger cues (see page 3-6).

Putting the Baby to the Breast

Breastfeeding may be easy for some moms and babies and more difficult for others. Remind moms that they usually feel clumsy the first time they do anything. Remember the first time you rode a bike, or skated, or roller-bladed? You did not stop just because you felt clumsy. Instead, you practiced until you had perfected your skills. The same is true with breastfeeding. Mothers and babies sometimes have to practice until they perfect their skills.

Preparing for the Feeding — Positioning

A quiet, dimly lit surrounding is helpful for the first few weeks. Sometimes, this is difficult with family and friends visiting in the hospital and at home. Limiting visiting times helps the mom, dad, and new baby get off to a good start.

Good positioning means getting the mom and baby into comfortable, effective body positions. The mom's body needs to be in a position where she can hold the baby tucked in close and the breast does not pull away from the baby's mouth as he feeds. If the mom is sitting, she needs to be upright, not leaning back. If her knees are lower than her hips when her feet are flat on the floor, her feet should be slightly elevated with a stool or a box.

Cradle hold

There are many positions a mom can use to breastfeed. The three most common are the cradle hold, the football hold, and the side-lying hold.

Football hold

In the cradle hold, the mom is sitting comfortably. She may need a pillow under her arm that supports the baby, as well as a footstool under her feet. The baby lies across the mom's front — the mom and baby are tummy to tummy. The baby's mouth is in line with the mom's nipple. The mom can support her baby with one arm and her breast with the other hand. The baby's ear, shoulder, and hip should be in line with one another.

In the football hold, the mom is also sitting in a comfortable position. The baby should be at the mom's side, under her arm as if she were holding a football, the baby's tummy against her side. The baby's ear, shoulder, and hip are in line

with one another, and the baby's mouth is in line with the mom's nipple. The mom may need a pillow behind her back so the baby's feet do not push against the back of the chair or bed.

If the bottoms of the baby's feet are against a chair or bed, the baby will "push off." Many moms misinterpret this natural reflex to mean that the baby does not like her or does not want to breastfeed. She should tuck the baby's feet up — either under her arm or up the back of the chair or bed. This will keep the bottoms of the baby's feet from touching the chair or bed.

In the side-lying position, the mom is comfortably positioned, lying on her side. Pillows placed under her head, behind her back (so she can lean slightly back), and between her knees can help her be comfortable and maintain this position if she falls asleep. The baby is lying on his side with a small pillow or rolled-up blanket or towel behind his back for support. The baby is facing his mom, with his mouth in line with her nipple.

Side-lying hold

Remember, there is no single correct position for breastfeeding. A mom can use whatever position works as long as her baby is gaining adequate weight and she is not experiencing pain or sore nipples.

Breast Support

Breast support helps in the early days of breastfeeding. Breast support may only be needed while the mom is putting her baby to the breast. Once the baby is on and suckling, some women no longer require this support. Either hand can be used to support the breast, with the other hand and arm used to support the baby. When supporting the breast, make sure not to cover any of the areola and not to hold the breast too tightly.

The purpose of supporting the breast is to make it a bit firmer as the baby latches on and to lift it slightly so that the baby is not supporting its weight with his chin. Larger-breasted women may need to support the breast throughout the

feeding. Smaller-breasted women may not need to support their breasts at all.

Latch-On

Good **latch-on** is the placement of a baby's mouth on the nipple and areola so that the baby effectively "milks" the breast and the mom does not get sore nipples. Bad latch-on is a common cause of sore nipples. To achieve a good latch-on, tell the mom to:

To latch on correctly, the baby should open his mouth wide.

- Turn her baby's body toward her own body. Position the baby's head so that his mouth is in line with her nipple.
- Support her breast and touch the baby's upper lip with her nipple so the baby's mouth opens wide, like a yawn.
- Aim the nipple for the roof of the baby's mouth.
- Make certain that the baby takes *all* of the nipple and as much as possible of the areola deeply into his mouth, with slightly more of the bottom of the areola in the baby's mouth than the top. If there is a problem with a mismatch between the size of the mom's nipple and areola and the baby's mouth, refer to a breastfeeding counselor or lactation consultant. The baby's tongue should lie over his bottom gum.

Successful latch-on means successful breastfeeding.

- Support the baby's body from head to bottom.
- Other than a brief tenderness during the first few sucks on the first few days, breastfeeding should not hurt. If it hurts, positioning or latch-on is usually not right. The mom

should stop and start over. She can break the baby's suction on her breast by pressing down on her breast near the baby's mouth or by inserting a clean finger into the side of the baby's mouth. Encourage the mom to always break suction before taking her baby off the breast. Failure to break suction can cause sore nipples.

The baby's suction can be broken by inserting a clean finger into his mouth.

Signs of Good Latch-on

There are several indicators to tell if a baby is well latched on to his mother's breast. A mother needs to be taught these indicators.

Baby indicators of good latch-on include:

- The lips are both curled out, not tucked in.
- The chin indents the breast and the nose tips away or touches lightly.

This baby is exhibiting signs of good latch-on.

- The tongue is visible when the bottom lip is pulled down.
- There are audible sounds of swallowing (sounds like *ah* or *kah*).

- There is rhythmic sucking — a series of rapid sucks, followed by slower sucks (about one per second) with sounds of swallowing.
- The baby spontaneously releases the breast and relaxes his body at the end of the feeding.

Mother indicators of good latch-on include:

- milk leaking from the opposite breast;
- feeling the milk let-down (a tingly, "pins and needles," or rushing-of-milk sensation, or achy feeling in the breast, the back, or both);
- the breast feels fuller before the feeding and softer afterward; and
- the tip of the mother's nipple is rounded and pink when the baby releases the breast and not pinched (like a new tube of lipstick) and blanched with white spots.

Signs of Bad Latch-on

Besides the absence (or opposite) of signs of good latch-on, the following are signs of bad latch-on:

- the baby's cheeks are dimpled in,
- slurping or smacking noises,
- the breast slides in and out of the baby's mouth, and
- inadequate urine and stool output by the baby.

Hunger Cues

Babies usually start indicating hunger about 30 minutes before they resort to crying as a cue. The progression of hunger cues starts with rapid eye movements under the eyelids and sucking

This baby is showing signs of hunger by sucking on his fist.

on the lip, tongue, finger, or fist. It progresses to rooting, fidgeting, fussing, and, finally, crying.

Teach the mom to recognize early hunger cues and to feed her baby before the baby reaches the crying stage. It is much easier to get a calm baby attached to the breast than a hysterical, hungry baby.

Satiety Cues

A baby should be allowed to end the feeding and will signal when he is full by *falling off* the breast and spontaneously releasing the nipple, by relaxing his body and opening his fists, or by falling asleep. If a baby falls asleep at the breast, the mother should massage her breast toward her baby's mouth to stimulate milk flow. If he is not full, he will continue to suck. If he is full, either he will not respond or he will spontaneously release the nipple. If he does not respond and continues to sleep at the breast, the mother should slide her finger into the corner of her baby's mouth to release the suction and remove him from her breast. She should burp him, then offer the other breast. He may feed from the other breast right away or he may wait a few minutes, or a few hours.

How to Tell if a Baby is Getting Enough to Eat

A baby should be gaining weight. Newborns often lose weight in the first few days of life but most return to their birthweight by 2 weeks of age. After a baby returns to his birthweight he should gain about 4 to 8 ounces a week.

A baby should be nursing often. Newborns should nurse at least 8 times a day or every one to three hours during the day and have no more than one four-hour sleep period in 24 hours. Many babies will *cluster feed,* or nurse almost constantly, at one time of the day. Most babies do this in the evening.

A baby should have plenty of wet and dirty diapers. **Table 3.1** shows appropriate diaper output for a newborn baby.

Table 3.1 Appropriate Diaper Output — Newborns

	Wet Diapers	Dirty Diapers
Day 1	1 or more	1 or more (black, tarry)
Day 2	2 or more	2 or more (brownish-black, tarry)
Day 3	3 or more	3 or more (greenish)
Day 4	4 or more	3 or more (greenish to yellowish)
Day 5	5 or more	3 or more (yellow)
Day 6–Day 45	6 or more	3 or more (yellow)

A newborn's urine should be clear. A newborn's stools will be black or brownish-black in the first day or two, then greenish for a day or two, then yellowish and seedy by day four or so. An occasional green stool after this period is also normal. By day 6, many breastfed babies will dirty almost every diaper. This is normal because breastmilk is very gentle and easily passed through the baby's system.

Twins can be breastfed together.

Multiples

Breastfeeding more than one infant is entirely possible. Many mothers breastfeed twins, triplets, and even quadruplets successfully. The mom's milk supply will increase to meet the demand. She may breastfeed one at a time or two at a time. Pillows are helpful for support when nursing more than one baby. A mother nursing multiples needs to eat more than a mother nursing one baby. She will also need ongoing assistance with other children and with household chores.

Self-Test Questions

1. *Fill in the blanks:*

   Three common positions used when breastfeeding are the _____ hold, the _____ hold, and the _____ hold.

2. Mark the following statements about latch-on **TRUE** or **FALSE**.

   _____ To begin latch-on, the mother should support her breast and touch the baby's upper lip with her nipple so that the baby's mouth opens wide.

   _____ The baby should take all of the nipple and about an inch of the areola deeply into his mouth.

   _____ Breastfeeding should hurt if the baby is positioned and latched on correctly.

   _____ If the mother needs to start over, she can break the baby's suction on her breast by pressing down on her breast near the baby's mouth or by inserting a clean finger into the side of the baby's mouth.

3. *Check* the ways a mother can tell if her baby is getting milk while nursing.

   ____ hearing the baby swallow

   ____ seeing milk drip from the baby's mouth or leak from the other breast

   ____ seeing the baby wiggle his toes

   ____ watching for a rhythmic suck

4. *Fill in the blanks:*

   A baby should be fed when he is showing _____ hunger cues, such as rapid
   (early, late)

   eye movements under the eyelids and sucking on lip, tongue, finger, or fist. It is

harder to breastfeed a baby who is showing _____ hunger cues, such as
(early, late)

fussiness and crying.

5. *Draw lines* to match and complete the appropriate phrases.

   Good signs that a baby is getting enough to eat include:

steady	stools per day for the first 2 months.
six to eight	weight gain.
at least three	very wet diapers a day.

Situations Affecting Breastfeeding in the Hospital

Part 4

Cesarean Birth

The type of labor and the birth medication influence how soon the mother and baby can begin breastfeeding after a cesarean birth. In many cases, mothers who have had an epidural rather than a general anesthetic are able to breastfeed their babies sooner. The football position is a good position for a mom who has had a cesarean birth because the baby is not resting on the mom's tummy (Riordan and Auerbach 1999: 292).

Hypoglycemia

Hypoglycemia, or low blood sugar, can occur in the newborn. Prevention and treatment include early, frequent feedings with careful attention to positioning, latch-on, and milk transfer (ibid.: 288–91).

Jaundice

There are two types of jaundice — **early-onset jaundice** (occuring in the first two to five days of life) and **late-onset jaundice**, or breastmilk jaundice (occurring between day five and day 10). **Bilirubin**, a normal breakdown product of red blood cells, plays a role in jaundice. It is eliminated from the baby's body by stooling (R. Lawrence 1999: 480–87).

If the **meconium** — the dark, sticky, first stool — is not eliminated, the bilirubin in the stool is taken back up by the body. It accumulates in the baby's tissues, particularly the skin. This causes the skin to turn yellow. Early-onset jaundice occurs after 24 hours have passed since the baby's birth. It peaks on the third or fourth day of life and declines steadily through the baby's first week. It may be more obvious in infants whose feedings are limited in frequency or duration (ibid.).

Breastmilk is a natural laxative. The earlier and more frequently an infant is nursed, the quicker the bilirubin is

removed from the baby's system. This will help prevent early-onset jaundice.

If an infant becomes jaundiced in the first two to five days, the mother should pay close attention to positioning, latch-on, milk transfer, and the frequency of feedings to make sure her baby is getting plenty of breastmilk. The more breastmilk the infant consumes, the more he will stool, and the faster the early-onset jaundice may resolve.

If the infant becomes jaundiced after day five, he may be at risk for late-onset jaundice and needs to be examined by a physician to rule out all possible medical problems. A very small percentage of infants experience late-onset jaundice. Most infants with late-onset jaundice can continue to breastfeed while being closely monitored by a physician.

Very Sleepy Newborn

Some newborns are more difficult to wake than others. If not resolved, this can result in poor weight gain, dehydration, and early weaning. A very sleepy newborn who does not exhibit hunger cues should be awakened to feed at least every two to three hours. The following techniques can be used to rouse a sleepy baby:

- Unswaddle or undress the baby or change the diaper.
- Place the baby, dressed only in a diaper, on the mother's bare chest.
- Hold the baby in a standing position.
- Gently rub the baby's back, hands, arms, and feet.

Self-Test Questions

1. *Fill in the blank:*

   A good breastfeeding position for a mom who has had a C-section is the _____ hold.

2. Mark the following statement **TRUE** or **FALSE**.

   _____ Prevention and treatment of hypoglycemia include early, frequent feedings with careful attention to positioning, latch-on, and milk transfer.

3. *Draw lines* to match the appropriate phrases.

Early-onset jaundice	occurs between day five and day 10.
Late-onset jaundice	is the dark, sticky first stool.
Bilirubin	occurs in the first two to five days of life.
Breastmilk	is a normal breakdown product of red blood cells.
Meconium	is a natural laxative.

4. *Check* the techniques a mother can use to rouse a sleepy baby.

   ____ Undress the baby or change the baby's diaper.
   ____ Shake the baby.
   ____ Gently rub the baby's back, hands, arms, and feet.
   ____ Yell at the baby.
   ____ Place the baby, dressed only in a diaper, on her bare chest.
   ____ Hold the baby in a standing position.

Concerns About Breastfeeding

Part 5

In the Early Weeks

Engorgement

Engorgement (fullness of the breasts) usually occurs on the third day to fifth day after birth. The breasts become tender, larger, and heavier as the mature milk comes in and the breasts begin producing milk in greater quantities. The fullness is due to the increased volume of milk and the extra blood and lymph fluids traveling to the breasts to prepare them to produce milk.

In cases of *severe* engorgement, tissue of the breast, areola, or both becomes painfully tight, hard, and possibly lumpy. The affected area may extend up into the armpit. The mother may have a single lump in one breast or both breasts may become hard and lumpy all over. The mother may complain that her breasts are warm and throbbing. Her nipples can become flat and rigid, making it very difficult or impossible for her baby to latch on.

A case of severe engorgement should be a warning that breastfeeding may not be going well. The mother and baby should be assessed. Some women, however, become painfully engorged no matter how well and how frequently their baby is nursing. Although not as common, engorgement can also occur after breastfeeding is well established, such as when a feeding is missed or when weaning is attempted too abruptly.

Over full breasts or uncomfortable engorgement can be prevented by making sure that the baby is well positioned and latched on, that milk transfer occurs, and that the baby is fed frequently (see Part 3). Engorgement, whether it be normal fullness or uncomfortable fullness, usually subsides in seven to 10 days. Losing the fullness does not mean that the mom is losing her milk — just that her milk supply is adjusting to her baby's needs.

A mother with engorgement should be encouraged to:

- Nurse more frequently, at least 8–12 times in 24 hours.

- Use moist heat before feedings. Take a warm shower or place warm, wet washcloths on breasts and nipples for a few minutes before each feeding.
- Hand-express or gently pump breasts before feeds.
- Gently massage breasts toward nipples before and during feeds. If using the C-hold (four fingers supporting the breast with the thumb on top), she can use her thumb to massage.
- Try ice packs, green cabbage leaves, or both between feeds to keep the swelling down and help relieve pain. Clean cabbage leaves can be worn inside the bra with, or in place of, ice packs. Cabbage leaves should be replaced when wilted or every two hours. The mother should discontinue cabbage leaves after four uses, when breasts begin to soften or feel tingly, or when milk begins to drip from nipples. Overuse of cabbage leaves can lead to a decrease in milk supply.

Cabbage therapy has been used to treat pathological conditions of the human body, including lactation problems, for many years. While it is not known how it works, this therapy seems to be effective for many moms (Mohrbacher and Stock 1997: 416).

Sore Nipples

Sore nipples can have a variety of causes but are usually due to poor positioning, poor latch-on, or a suckling problem. Other things that can cause sore nipples include:

- dermatitis;
- prolonged feeding intervals;
- surface wetness on the nipple caused by leaking milk or not air-drying nipples after a feeding;
- yeast infection of nipple and areola;
- the baby's tongue being improperly positioned;
- taking the baby off the breast without breaking suction first; and
- washing off the breasts or nipples before and after each feeding.

If a mom complains of sore nipples, check positioning, latch-on, and removal of her baby from the breast. Most of the time, sore nipples are caused by poor positioning or too shallow a latch-on.

If positioning and latch-on do not appear to be a problem, check the baby's suck. The baby's tongue should be cupped below the mother's areola. The tongue should be visible when the baby's bottom lip is pulled down. As he sucks, a wiggle should be seen at his temple and ear. After let-down, you should be able to hear the baby swallow after every one or two sucks. This pattern should continue for at least five to 10 minutes at each breast.

The mom should avoid the use of soap, creams, and ointments on her breasts and nipples because they interfere with the natural secretions produced by the Montgomery glands. Letting shower water run over the breasts is sufficient to keep the breasts and nipples clean. Rubbing a little breastmilk onto the areola and nipples after feedings and letting the nipples air dry can be very soothing for sore nipples.

The mom should also wear a cotton bra that allows good air circulation. If the mom is leaking between feedings, she can

wear cotton nursing pads. Nursing pads with rubber backing should be avoided and all cotton nursing pads should be changed whenever they become moist.

A mother who is exhibiting intense, prolonged nipple soreness should be referred to a breastfeeding counselor or doctor. The counselor or doctor may recommend lanolin. Purified, hypoallergenic lanolin (also called "**USP** modified lanolin") can promote healing by retaining a moisture barrier. A mother should apply and reapply the lanolin often enough to maintain the normal moisture present in the skin. Purified lanolin does not need to be washed off before nursings. While this type of lanolin can be purchased over the counter, the mother should not use it until it has been recommended by a breastfeeding counselor or physician.

A mother with a cracked or bleeding nipple will need to see her doctor, who may prescribe an antibacterial ointment, such as Bactroban. Bactroban also does not need to be washed off before nursings.

Too Much Milk

Some breastfeeding moms simply make more milk than their babies need. This is called **oversupply.** Because the symptoms are similar, oversupply is often misdiagnosed as lactose intolerance, allergy to mother's milk, or colic.

Oversupply can occur when a baby is receiving too much of the watery, lactose-rich foremilk and not enough of the fatty hindmilk. The baby often has watery, green stools and severe gas. These green stools can be very irritating and usually cause diaper rash which can often be severe. A baby who is receiving too much foremilk and not enough of the fatty hindmilk may not consume enough calories to gain weight adequately. An untreated case of oversupply in mom can lead to failure to thrive in her baby.

A mother with oversupply may have recurring cases of breast infections and plugged ducts because her breasts rarely soften or because they refill too quickly. She may also have sore

nipples because the baby is clenching in an attempt to slow the milk flow.

Mothers with oversupply often have an **overactive let-down reflex** as well. An overactive let-down reflex causes the milk to come out forcefully, which can cause brief but intense pain in the mother's breasts and can be overwhelming for the baby. The baby may choke on the mother's milk, come off the mother's breast, thrash while nursing, or simply refuse the breast. The baby may also have large amounts of milk leaking out of the corners of his mouth or excessive spitting up.

A mom with oversupply or overactive let-down reflex should be encouraged to offer only one breast at each feeding. This will slow milk production to match the baby's needs. If the baby stops nursing and wants to return to the breast in less than an hour, encourage the mother to offer the same breast used at the previous feeding. If the second breast becomes uncomfortably full, the mother should express just enough milk to soften the breast.

The mother can express milk before feedings until her forceful flow subsides or she can break the baby's suction at the time of let down and allow the milk to flow into a cloth until her flow subsides. Some moms have found that nursing "uphill" helps — the mom lying on her back with her baby lying across her chest. It also helps to burp the baby frequently, particularly if the mom hears continuing loud gulping throughout the feeding.

Within a week, the mother's milk supply will generally diminish sufficiently so that the mother and baby can breastfeed more comfortably.

Not Enough Milk

For most mothers and babies, not having enough milk is due to poor positioning and latch-on, poor milk transfer, not feeding frequently enough, not feeding long enough, or supplementing with infant formula. The way to make more milk is to nurse more frequently.

Only about 1 percent of women are medically not able to produce enough milk for their babies. This can be due to insufficient glandular tissue (when the mom's breasts are gently pressed, there seems to be little substance between the breast and the chest wall), severe trauma to the breast, or surgery that interferes with the milk-producing structures. Do not prejudge a mom's ability to breastfeed her baby.

Women who have had **breast-augmentation** (enlargement) **surgery** are often able to breastfeed. In a review article by Widdice, there are reports of women successfully breastfeeding their babies after having had **breast-reduction surgery** (Widdice 1993: 161–67). There is some evidence of the ducts' ability to regenerate and cross-connect after surgery. Estimates of the number of women who can lactate after reduction surgery range from none to 70 percent, depending on the type of surgery done and the amount of tissue removed. Moms who have had breast surgery should be closely followed by their doctors to make sure their babies have steady weight gain.

Growth Spurts

Growth spurts are times when babies want to nurse more frequently. Nursing more frequently is the way that a baby increases his mom's milk supply to meet his increasing needs. Growth spurts usually occur when the infant is about 2 to 3 weeks old, 6 weeks old, and 3 months old. Growth spurts usually last only a few days.

Many moms fear that they are losing their milk when the first growth spurt occurs. It happens at about the same time that engorgement goes away and the breasts no longer feel full. Tell moms that this is going to happen. Remind them that the way to make more milk is to nurse more frequently. Discourage supplementing with formula. Formula will replace a nursing session, causing a longer spacing between breastfeedings. Supplementing will result in a decrease in a mom's milk supply.

Nursing the Older Infant

Nursing Strikes

Nursing strikes usually occur in babies who are 3 to 8 months old. A nursing strike is a sudden refusal to nurse. It may last from two to four days and be misinterpreted as a sign that the baby is ready to wean. Nursing strikes may be caused by an ear infection, nasal congestion, urinary-tract infection, teething, thrush, a food or drug sensitivity, developmental changes, reaction to a perfume or soap, stress in the family, or a change in the taste of the breastmilk (due to the return of the mom's monthly menstrual period or because of something the mom eats).

Treatment includes trying to find the cause for the strike, expressing breastmilk and feeding the baby from a cup, nursing when the baby is drowsy, trying different nursing positions, and lots of skin-to-skin contact with baby.

Teething

Many moms are worried that their babies will bite them when the baby teeth appear. Ways to help the mom avoid being bitten include giving the baby lots of other things to teethe on so that he does not use his mom's breast as a teether, telling the mom to keep a finger handy to break suction if her baby gets a playful look, and watching the baby for signs of his getting ready to bite. If a baby does bite, encourage his mom to stop the feeding and to tell the baby, "No." A baby will learn that it is not all right to bite.

Nursing During a Pregnancy

Many moms who become pregnant while nursing continue to nurse during the pregnancy. There are no reported cases of this harming any fetus. Breastfeeding during pregnancy will not deprive the fetus of needed nutrients if the mom is eating a good diet.

The mom will probably experience nipple soreness due to the pregnancy. She may notice that, as her pregnancy progresses,

her milk supply decreases. Her milk will change in taste toward the end of the pregnancy, which may cause the nursing infant to wean.

If the mom has uterine pain or bleeding, a history of premature labor, or continued weight loss during the pregnancy, she may want to discuss continuation of breastfeeding during pregnancy with her doctor.

Tandem Nursing

After the new baby arrives, some moms decide to continue nursing an older child in addition to the newborn. This is called **tandem nursing**. Breastmilk reverts to colostrum when the new baby arrives, so the mom needs to make sure that the newborn receives first access to the breast and that he receives an adequate amount. The older child may be especially helpful in reducing engorgement and ensuring an abundant supply for the newborn. Continuing to nurse the older child may also help her adjust to the new baby.

Medications and Breastfeeding

Concerns About Medications

Sometimes, you may be asked by a mom if a particular medication is safe to take when breastfeeding. There are many factors that influence the absorption of a medication into breastmilk and then into the baby's system. It is very important to know the mother's and baby's medical histories before giving any advice about a particular medication.

The best advice you can give a mom is to tell her to make sure that her physician is aware that she is breastfeeding and has taken this into consideration when prescribing the medication. Moms should always check with their physicians (and double-check with their pharmacists) when taking over-the-counter medications and vitamin-mineral preparations. Street drugs should be avoided.

There are various resources available to physicians to help them determine the effects of a particular medication on a breastfeeding mother and infant, such as Hale (2004). Written

by a pharmacology professor, this book reviews medications and their known relationships to breastfeeding.

The amount of medication passing into the infant through breastmilk depends on a number of factors:

1. the fat solubility of the medication,
2. the molecular size of the medication,
3. the level of medication in the mother's blood,
4. the amount of medication that binds to proteins,
5. the amount of medication entering the baby, and
6. the length of time it takes the mother and baby to clear the medication from their systems.

A medication entering breastmilk follows a complex pathway. First, it must be absorbed by the mother into her bloodstream, where most medications are tightly bound to proteins and do not pass into the breast. If the medication does pass into the breast and crosses into its milk-making alveolar cells, it becomes a component of the milk. If that happens, the medication must then survive an acid environment in the infant's stomach. If enough of the medication makes it out of the infant's stomach and into his bloodstream, it might then affect the baby. This seldom occurs. Although there are many exceptions, on most occasions less than 1 percent of the dose of a medication will find its way into the infant's bloodstream.

General Rules

1. Encourage the mother to work with her doctor in choosing a medication compatible with breastfeeding.
2. Share information about the medication from Hale (2004) with the mom and her doctor.
3. Encourage the choice of shorter-lasting medications for breastfeeding moms, since these generally enter milk at lower levels. Such medications, also, do not tend to build up continually in the infant's blood over time.

4. Be cautious of medications that infants have trouble removing from their systems, as the amount will build up in the infant over time.
5. Encourage medications that have higher protein binding. They are more often retained in the maternal bloodstream and do not transfer as readily into the milk and the infant. The most important determinant of whether a medication gets into breastmilk is protein binding.
6. Discourage the use of medications that affect the brain. These medications frequently get into breastmilk in higher levels simply due to their chemistry. If the medication in question produces sedation, depression, etc., in the mother, it is likely to get into the milk and produce similar, although reduced, effects in the infant.
7. Reduce the infant's exposure to the shorter-lasting medications by having the mom wait to breastfeed for two to three hours after dosing.
8. With radioactive compounds, and for any dangerous medication, follow the doctor's or pharmacist's recommendations for the length of time that the mom should wait before resuming breastfeeding. While the mom is waiting for the medication to clear itself from her system, encourage her to maintain her milk supply by pumping her milk and then dumping it.
9. Remember, anything applied to the nipple (such as vitamin E oil) is likely to be absorbed by the infant. Be very cautious. Do not assume that vitamins are harmless. Numerous reports suggest otherwise.

Hale (2004) makes no recommendations concerning the safety of medications during lactation, but only reviews what is currently known in the scientific literature. Individual use of medications must be left to the judgment of the physician and the mother.

Medications and Mother's Milk (Hale 2004) may be purchased from Pharmasoft Medical Publishing at (800) 376-9900 or online at <www.ibreastfeeding.com/html/pharmasoft.html>.

Other resources for information on medications and breastfeeding include:

- The Ruth Lawrence Lactation Hotline at (585) 275-0088.
- Briggs et al. (2002).

Family Planning and Breastfeeding

Moms may ask you about using birth control while breastfeeding. There are many safe birth-control options a woman can choose while breastfeeding. Women should make plans for birth control during pregnancy, since they may ovulate as early as four to six weeks after delivery.

If a woman is breastfeeding, she has several birth-control options, including:

- Barrier methods such as condoms, cervical caps, and diaphragms.
- Progestin-only methods such as the "minipill" and Depo-Provera. Women should wait at least six weeks before starting any of these methods. Some breastfeeding women will have a decrease in milk supply with progestin-only methods of birth control. If a mother notices a decrease in her milk supply, she should discontinue the birth control immediately and talk to her doctor about an alternative method. Combination oral contraceptives, which contain both estrogen and progestin, are not recommended for breastfeeding mothers due to the effect that estrogen can have on breastmilk quantity.
- IUDs such as the Copper T 380A or the Progestasert.
- The Lactational Amenorrhea Method (LAM), which is only temporarily effective.

- Natural Family Planning (NFP) or the Fertility Awareness Method (FAM).

(Hatcher et al. 1998: 589–614)

With the Lactational Amenorrhea Method (LAM), a woman uses breastfeeding as birth control. This works better for some women than for others. It is important to remember that women can ovulate and get pregnant while breastfeeding. This is more likely if the baby is supplemented in any way. The following four questions must be answered with a "yes" for LAM to be an effective birth-control method:

1. Is the baby less than 6 months old?
2. Since the baby was born, has the mother not yet started her monthly period?
3. Is the baby exclusively breastfeeding — not receiving *anything* but breastmilk (no other food, formula, water, juice, tea, or other drinks)?
4. Does the baby receive breastmilk from the breast at least every four hours around the clock, with the exception of one six-hour sleep period at night?

If the answer is "no" to any one of these questions, LAM should not be used by that mother for birth control (ibid.).

Nutritional Needs of the Breastfeeding Mom

Good nutrition is important throughout our lives, including during lactation. However, good nutrition is often over-emphasized to breastfeeding moms. Fear of not eating well enough to produce good quality milk is a common barrier to breastfeeding. In reality, what the mom consumes does not have a large impact on her milk composition or supply. Even mothers living in developing countries who are mildly malnourished produce an adequate amount of good quality milk for their babies (Perez-Escamilla 1995; Prentice 1994).

It is often recommended that breastfeeding mothers consume an extra 500 calories per day. However, research has shown that these recommendations may be too high for

many mothers (Goldberg 1991; Illingworth 1986). While the Subcommittee on Nutrition During Lactation (1991) recommends that breastfeeding mothers consume about 500 extra calories a day, studies have found that nursing mothers actually consume less than that and experience a safe, gradual weight loss (Butte 1984; English and Hitchcock 1968). Breastfeeding mothers, who do not restrict their diets of any major food groups, should simply be told to eat to hunger and drink to thirst.

Mothers who are on a vegan or macrobiotic diet (no animal products, including cow's milk and eggs) should be encouraged to discuss their diet with their health-care provider as they will most likely need to take a vitamin B_{12} supplement. Breastfeeding mothers should not restrict their calorie intake to less than 1,800 calories per day.

As a general guideline, breastfeeding mothers should be encouraged to follow the same eating recommendations as during pregnancy because the calorie and nutrient requirements are similar. While the milk she produces for her baby won't be greatly affected by her diet, her health and energy levels will be. She should be encouraged to keep meals simple, such as a sandwich, soup, and fruit. Rather than trying to eat three meals a days, encourage her to have a drink and a small snack handy every time she nurses.

Are there any foods that need to be avoided?

Although there are exceptions, breastfeeding mothers can usually eat any of the foods they would normally eat without any effect on their babies. Some babies do develop a sensitivity to a food in their mother's diet but, it is far more likely that a baby will be sensitive to artificial food he has been given directly such as infant formula, solids, or juice. If the mother suspects her baby is reacting to a food in her diet, refer the mother to a lactation consultant.

Foods to limit but not avoid:

Seafood

Fish is a healthy source of high-quality protein, beneficial fatty acids, and other essential nutrients. However, because high

levels of methylmercury — an industrial pollutant — have built up in our water sources, the Food and Drug Administration and the Environmental Protection Agency recently released a joint consumer advisory of fish consumption for women who might become pregnant, women who are pregnant, nursing mothers, and young children. The purpose of the advisory is to inform women and the parents of young children on how to get the positive health benefits from eating fish and shellfish, while minimizing their mercury exposure.

The revised advisory contains three recommendations for women who might become pregnant, women who are pregnant, nursing mothers, and young children:

1. Do not eat shark, swordfish, king mackerel, or tilefish because they contain high levels of mercury.
2. Eat up to 12 ounces a week of a variety of fish and shellfish that are lower in mercury, such as shrimp, canned light tuna, salmon, pollock, and catfish. Because albacore ("white") tuna has more mercury than canned light tuna, limit to six ounces per week.
3. Check local advisories about the safety of fish caught by family and friends in your local lakes, rivers, and coastal areas. If no advisories exist, eat up to six ounces per week of fish you catch from local waters, but don't consume any other fish during that week.

The amount and type of canned tuna fish WIC makes available to exclusively breastfeeding women is within the recommendations of the FDA-EPA Advisory. WIC participants should be informed about the amount of fish that can safely be consumed. Participants should continue to be advised that fish and seafood, including canned tuna, can be an important part of a healthy and balanced diet.

More information about the FDA-EPA advisory, including answers to frequently asked questions, a more comprehensive list of fish that are safe to eat, and a printable brochure — available in English and Spanish — that you can use in the WIC clinic, can be found at <http://www.cfsan.fda.gov/~dms/admehg3.html>.

Caffeine and Alcohol

The amount of caffeine in five or fewer five-ounce cups of coffee (less than 750 ml) will not cause a problem for most mothers and babies. A baby who is being overstimulated by caffeine is usually wide-eyed, active, and alert. He may be fussy and may not sleep for long periods at a time. If the mother notices these symptoms, suggest she cut down on caffeine very gradually to avoid discomforts associated with caffeine withdrawal such as headaches.

An occasional drink or regular light drinking of one or fewer drinks per day has not been found to be harmful to the nursing baby. However, mothers who consume two or more alcoholic drinks per day can cause slow weight gain, failure to thrive, or other side effects in her breastfed baby. Therefore, mothers who regularly consume two or more alcoholic drinks per day should be told to cut back on alcohol or discontinue breastfeeding.

Dieting, Weight Loss, and Exercise

Most breastfeeding women who eat to hunger will lose weight gradually. Gradual weight loss of 1–2 pounds per week has not been found to affect a mother's milk (Dewey and McCrory 1994). Breastfeeding moms wanting to lose weight should be told to avoid strict dieting and choose healthy foods such as lean meat and dairy, whole fruits, and plenty of vegetables and whole grains.

When the mother feels ready and her doctor says it's OK, regular physical activity should be encouraged as it can help with weight loss and reduce the risk or symptoms of postpartum depression. Encourage the mother to put the baby in a stroller, sling, or front-pack and walk around her neighborhood or at a shopping mall. She can exercise in her home with an exercise videotape, DVD, or television program; by dancing to music on the radio; or by doing leg lifts and abdominal crunches on her carpeted floor or an exercise mat. Even bending or stretching can help in weight loss and mood stabilization.

Bending and stretching can help in weight loss.

Self-Test Questions

1. Mark the following statements about engorgement **TRUE** or **FALSE**.

   _____ Engorgement usually occurs on the third to fifth day and subsides in seven to 10 days.

   _____ With severe engorgement, breast tissue, areolar tissue, or both become painfully tight, hard, and possibly lumpy.

   _____ Engorgement is not normal.

   _____ Engorgement can cause a mother's nipple to become flat and rigid, making it difficult or impossible for her baby to latch on.

   _____ Engorgement can sometimes occur after breastfeeding is well established, such as when a feeding is missed or when weaning is attempted too abruptly.

   _____ Women with engorgement shouldn't breastfeed.

2. *Fill in the blanks* using the following words:

massage	before
ice	shower
frequently	cabbage
washcloths	

   A mother with engorgement should nurse more _____ and use moist heat before feedings by taking a warm _____ or placing warm, wet _____ on her breasts and nipples. She should hand-express or gently pump her breasts _____ feedings and _____ her breasts during feedings. She can also try _____ packs, green _____ leaves, or both between feedings to keep the swelling down and help relieve the pain.

3. Mark the following statement **TRUE** or **FALSE**.

_____ Sore nipples are usually due to poor positioning, poor latch-on, or a suckling problem.

4. What things can a mother do to prevent or relieve sore nipples? *(Check all that apply.)*

____ Avoid the use of soaps, creams, and ointments on her breasts and nipples.

____ Rub a dry washcloth over her nipples to toughen them up.

____ Wear a cotton bra that allows good air circulation.

____ Change her nursing pads whenever they become moist.

____ Rub breastmilk into her areolas and nipples after feeds and let her nipples air-dry.

5. *Fill in the blanks:*

A mother who is exhibiting intense, prolonged nipple soreness should be referred to a _____ counselor or her _____. A mother with a cracked or bleeding nipple will need to see her _____.

6. Which of the following are symptoms of oversupply and overactive let-down reflex? *(Check all that apply.)*

In baby	***In mother***
____ watery, green stools	____ fever
____ sleepiness	____ forceful let-down with possible pain
____ possibly severe diaper rash	____ itchy nipples
____ baby coming off the breast	____ sore nipples
____ red spots on tummy	____ possible recurring cases of breast infections and plugged ducts
____ baby choking at let-down	

7. Mark the following statements about oversupply and overactive let-down reflex **TRUE** or **FALSE**.

   _____ A mother with oversupply or overactive let-down reflex should only offer one breast at each feeding.

   _____ A mother with overactive let-down reflex should not breastfeed.

   _____ A mother with overactive let-down reflex may want to express a little milk before feedings until her forceful milk flow subsides.

   _____ A mother with oversupply will always have too much milk.

8. *Fill in the blank:*

   Only about _____ percent of women are not medically able to produce enough milk for their babies.

9. Mark the following statements about growth spurts **TRUE** or **FALSE**.

   _____ Growth spurts are times when babies want to nurse more often.

   _____ A breastfed baby will need formula when he is going through a growth spurt.

   _____ Growth spurts usually occur when the infant is 2–3 weeks old, 6 weeks old, and 3 months old.

   _____ Nursing more frequently is the way that a baby increases his mom's milk supply.

10. *Fill in the blank:*

    Although there are exceptions, on most occasions less than _____ percent of the dose of a medication will find its way into the infant's bloodstream.

Breastfeeding Concerns That May Need Medical Attention *Part 6*

Plugged Ducts

A **plugged duct** is a tender spot, a red area, or a sore lump in the breast that is caused by improper drainage, and subsequent inflammation, of a milk duct. Pressure builds up behind the plug, causing inflammation to the surrounding tissues. The mom experiences mild, localized pain but, overall, she generally feels fine.

Recommendations for a Plugged Duct

The first course of action should be to check the mom and baby for proper positioning and latch-on to improve drainage of all the milk ducts. A mother with a plugged duct should also be encouraged to:

- Nurse more frequently, especially on the affected breast, at least 8–12 times in 24 hours.
- Feed from the affected breast first, when the baby is sucking vigorously.
- Start nursing with the baby's chin pointing toward the plug, then vary positions during feeding to help empty all milk ducts.
- Gently but firmly massage the lump toward the nipple during and after feeds. If available, hold an electric vibrating massager, turned on low, to the affected area. This may help loosen the plug.
- Use dry or moist heat on affected area as much as possible. Between feedings, combine warm compresses or showers with massage to the affected area.
- Try using warm cabbage. Cut cabbage to cover only the affected area. Briefly warm it in the microwave (8–10 seconds) or boiling water and place over the plug. Replace with a new piece of cabbage every two hours. Discontinue when the plug loosens.

(Roberts et al. 1995: 191–94)

This part contains information based on Mohrbacher and Stock (2003: 480–84, 496–500); Riordan and Auerbach (1999: 484–92); R. Lawrence (1999: 273–82, 610–11); and Newman and Pitman (2000: 113–18, 121–25).

To avoid future plugged ducts, the mother should check to see if her bra, other clothing, diaper-bag strap, or purse strap may be impeding her milk flow. She should also avoid missed feedings or changes in her baby's feeding pattern.

Breast Infections

A breast infection can be caused by a bacterial infection or an unresolved case of engorgement or plugged ducts. A mother with a breast infection will have a hard, red, swollen, hot, and painful area on her breast. She may also have a temperature at or above 101˚F and flu-like symptoms (i.e., general body aches, tiredness, and possible nausea or vomiting).

Recommendations for a Breast Infection

Breast infections often arise if the baby is breastfeeding ineffectively. Observing and assessing a mother and baby for proper positioning, latch-on, signs of milk transfer, and satiety cues is essential. The mom may need reassurance that the infection is in her breast, not her milk. Her milk is still perfect for her baby.

A mother who has been diagnosed by a medical doctor with a breast infection should be encouraged to:

- Take her full course of antibiotics (until all medicine is gone) if prescribed by her doctor.
- Rest as much as possible. Encourage the mother to take the baby to bed with her and accept the help of family and friends with household tasks and errands.
- Nurse frequently, especially on the affected breast, because an empty breast will heal faster.
- Apply warmth and gently massage the affected area before and during feedings.
- Take frequent warm showers between feedings.
- Try ice packs, cabbage (warm or cold), or both between feeds to keep the swelling down and help relieve pain. Cut the cabbage so that it covers only the affected area and

follow the guidelines for using cold or warm cabbage in the sections on treating engorgement (page 5-1) or treating a plugged duct (page 6-1).

Sodium levels rise in breastmilk during a breast infection and can make breastmilk taste salty. The baby may be fussy or refuse the affected breast. In this case, the mother should hand express or pump as often as the baby would nurse in order to remain comfortable and to heal. A mother with a breast infection may temporarily need a hospital-grade (or multi-user) electric breast pump to help her through this challenging period.

Candidiasis (Thrush)

Candida is a fungal organism that is normally present in the mouth, vagina, and intestines. The use of antibiotics increases the likelihood that *Candida* will overgrow. When *Candida* overgrows, it can turn into an infection called **candidiasis,** also known as **thrush** or yeast. Because antibiotics are being used more often during or after childbirth, more mothers and babies are leaving the hospital with thrush.

Thrush requires treatment for both mom and baby. It thrives in the warm, dark, moist areas of the mother's nipples (inside a bra) and vagina and the baby's mouth, bottom, and skin folds. Symptoms of thrush in the mom include some or all of the following:

- intense nipple soreness or breast pain that occurs from birth and does not improve with better positioning and latch-on;
- sudden nipple soreness after weeks of comfortable nursing;
- burning, itching, or flaking of a nipple;
- deep shooting pain in the breast during or after feeds;
- red or bright pink nipples, sometimes with tiny blisters;
- a cracked nipple that will not heal;
- nipple pain while using a pump; and
- unexplained vaginal discharge or itching.

Symptoms of thrush in the baby can include:

- white patches inside the mouth on the cheeks, gums, or tongue;
- increased fussiness;
- diaper rash; and
- repeatedly pulling off the breast, making a clicking sound during feedings, or refusing the breast (due to a sore mouth).

Recommendations for Thrush

Thrush can be easily passed from one person to another, so it is extremely important that both mom and baby be treated, even if only one has visible symptoms. Typically, the mother will need to make appointments with both her and her baby's doctor to get treatment and medications.

It is important that the mother understand that thrush flourishes in warm, moist, and dark places because a vital part of the treatment focuses on avoiding this environment. The mother and family should also pay close attention to cleanliness to avoid spreading the fungal infection.

In addition to using the prescribed medications, the mother should:

- wash her hands thoroughly with hot, soapy water before breastfeeding, pumping her breasts, or touching or handling her breasts;
- wash her hands after using the bathroom or changing a diaper. This rule applies to all family members;
- rinse her nipples with clear water after each nursing and allow her nipples to air dry;
- *not* rub breastmilk into her nipples because the fungus thrives on the milk;
- *not* freeze her breastmilk for later use until the thrush has cleared up;
- use disposable nursing pads and change them as soon as they become wet. If she uses washable nursing pads, she should change them as soon as they become damp and not reuse them until she washes them in hot water;

- expose her bras and washable nursing pads to sunlight; and
- leave her bra flaps down, as much as possible, to expose her nipples to light.

Recommendations for helping the baby with thrush include:

- boiling, for 20 minutes, anything that comes in contact with the baby's mouth or the breastmilk (i.e. pacifiers, bottle nipples, medicine eyedropper without the rubber top, toys, breast-pump parts);
- avoiding pacifiers, as their use helps spread the thrush;
- if pacifiers or bottle nipples are used, throwing them away after one week and replacing them with new ones;
- rinsing the baby's diaper area with clear water, then letting the baby's bottom air dry several times a day, if possible; and
- ensuring that the baby's skin folds are cleaned at bath time.

Knowing When to Refer

When Should a Mother See Her Doctor?

In helping a mother deal with breastfeeding concerns such as a plugged duct or a breast infection, it may be difficult to know when to refer her to her doctor. In any of these situations, a breastfeeding mother should contact her doctor or health-care provider for treatment if she has:

- a temperature of 101˚F or higher;
- a cracked nipple with obvious signs of infection (i.e. nipple is hot to the touch, thick, yellow pus, extreme redness);
- pus or blood in her milk;
- red streaks from the site of infection back into her breast;
- sudden and severe symptoms with no identifiable cause; or
- a plugged duct that does not become unplugged within two days.

If a mother is prescribed antibiotics for an infection, she and her baby are at increased risk for developing thrush. A mother who is on antibiotics should consult her and her

baby's health-care provider if she notices any symptoms of thrush listed earlier in this part.

If a mom calls more than twice with the same problem, she needs to see either a doctor or a lactation consultant. Moms know their babies, and they know when something is not quite right. Do not treat these situations lightly; refer.

When Should a Baby See His or Her Doctor?

Knowing when to refer a breastfeeding baby to someone with more expertise is very important. A baby's condition can worsen very quickly; this is especially true for newborns. The following are some signals that a baby may be in trouble and needs to be referred to a doctor or a lactation consultant:

- **Urine —** A baby has fewer than six wet diapers in 24 hours, urine is dark yellow, or the diaper contains dried urine crystals.
- **Stools —** A newborn has fewer than three stools in a 24-hour period.
- **Suck —** A baby is unable to latch on and suck.
- **Nursing —** A baby falls asleep or stops nursing immediately after latch-on.
- **Temperature —** A baby has a temperature higher than 100.5˚F or lower than 96˚F.
- **Poor weight gain, or weight loss —** A baby is plotted correctly on a growth chart and is losing weight. Weights are most accurate when the baby is weighed naked and the scale is zero-balanced.
- **Signs of infection —** A baby has a fever (see above). The baby has a change in feeding habits and is feeding poorly. The baby sleeps a lot more than usual and is difficult to wake. The baby is irritable all of the time, even when held by his mother.
- **Signs of respiratory problems —** A baby is breathing faster than 40 times per minute. The baby's chest retracts with each breath — the soft tissue of the chest visibly sinks in around the ribs and sternum.

- **Signs of gastrointestinal problems or dehydration —** A baby has vomiting, diarrhea, a dry mouth, decreased urine output, or sunken **fontanels**.

Do not delay. Refer these babies immediately for help. In fact, help the mom make the appointment. Some of these situations could be life-threatening. A few hours' delay could result in the hospitalization, or even death, of the infant.

Self-Test Questions

1. *Write* the letter belonging to each breastfeeding concern on the line next to the appropriate set of symptoms:

   B = breast infection
   P = plugged duct
   T = thrush

   ____ intense nipple soreness; deep shooting pain in the breast during or after feeds; burning, itching, or flaking of nipple; red or bright pink nipples; white patches inside baby's mouth

   ____ a tender spot, a red area, or a sore lump in the breast; mild pain in area of lump; mom generally feels fine

   ____ a hard, red, swollen, hot, and painful area of the breast; mom has fever of 101˚F or above; mom feels like she has the flu

2. *Write* the letter belonging to the breastfeeding concern next to the appropriate recommendations:

   P = plugged duct
   I = breast infection
   B = both plugged duct and breast infection

   ____ Nurse frequently, especially on the affected breast.

   ____ Feed from the affected breast first.

   ____ Start nursing with the baby's chin pointed toward the affected area.

   ____ Apply warmth before feedings.

   ____ Gently massage the affected area during feedings.

   ____ Encourage the mother to take the baby to bed with her.

3. *Check* each correct response:

   A mother who has been diagnosed by a medical doctor as having thrush should:

   ____ wash her hands frequently.

   ____ not rub breastmilk into her nipples, because the fungus thrives on milk.

____ pump and discard her milk.

____ not freeze her breastmilk for later use.

____ quit breastfeeding.

____ change nursing packs as soon as they become wet.

____ rinse her nipples with clear water after feeds and allow them to air-dry.

Recommendations for helping the baby with thrush include:

____ avoiding pacifiers

____ sending the baby to grandma's house

____ rinsing the baby's diaper area with clear water and allowing to air-dry several times a day

____ boiling anything that comes in contact with the baby's mouth or the breastmilk

____ giving the baby a bottle of juice a few times a day

4. Which of the following are reasons a baby would need to be referred to his doctor? *(Check all that apply.)*

____ falls asleep or stops nursing immediately after latch-on

____ four stools in 24 hours

____ four diapers with dark yellow urine in 24 hours

____ a temperature of 100°F

____ weight loss

____ sunken fontanels

5. Which of the following are reasons a mother would need to be referred to her doctor? *(Check all that apply.)*

____ pus or blood in her milk

____ mildly sore nipples

____ red streaks from a site of infection back into her breast

____ a cracked nipple with thick, yellow pus

____ a temperature of 100.5°F

Breastfeeding When Mom and Baby Must Be Separated *Part 7*

Expressing Milk

There are many reasons a woman may need to express her milk, such as:

- to manage short-term breastfeeding concerns, such as engorgement, flat or inverted nipples, or oversupply;
- to continue breastfeeding her baby after returning to work or school; or
- to feed a premature or sick baby who is unable to attach to the breast.

Preparing to Express Breastmilk

Milk can be removed from the breast by hand expression or mechanically, with a breast pump. Regardless of method, there are four things a mother should do to prepare for milk expression:

- clean the milk-collection container;
- thoroughly wash her hands;
- apply warmth to her breasts; and
- massage her breasts.

After the mother washes the collection container and her hands, she should place a warm, moist towel over her breasts or lean forward into a sink of warm water for several seconds. Then she should massage her breast, using the flat of her fingers and circular motions, from the base of the breast toward her nipple. She should rotate around the entire breast to cover all areas. Warmth and massage will aid in milk flow and promote a faster milk-ejection reflex.

Hand Expression

The best collection container to use for hand expression is a container with a large opening, such as a clean margarine tub.

To hand express, the mother needs to be taught three steps:

Step One: Position

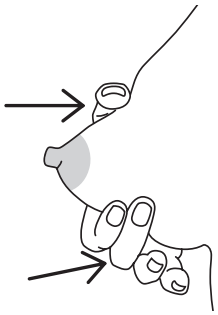
Step Two: Push

Step Three: Roll

Step One: Position

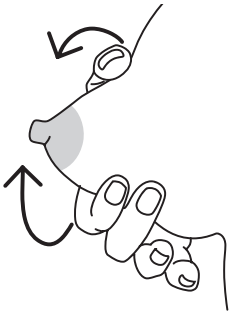
The mother should position her thumb and first two forefingers on opposite sides of her nipple (ten o'clock and four o'clock positions) about 1 to 1½ inches away from the nipple.

Step Two: Push



The mother should then push straight into her chest wall. (A mother with large breasts will first need to lift her breast with her other hand and then push.)

Step Three: Roll



At the end of the push, the mother should roll her thumb towards her forefingers as if she is making a thumbprint. At the same time, she should change her finger pressure from her second to her first forefinger, creating a rolling effect of her forefingers.

The mother should repeat Steps One, Two, and Three, rotating the position of her thumb and forefingers around the nipple until all milk ducts are emptied. The mother may need to try moving her thumb and forefingers closer to or farther from her nipple to find the location that best empties the breast.

Breast Pumps

A mother who is not successful at hand expression, or who needs to express her milk regularly, may need a breast pump.

Manual breast pumps are appropriate for mothers who need to pump infrequently or to help resolve short-term

breastfeeding concerns, such as engorgement, flat or inverted nipples, or oversupply. The pump is operated by hand either by squeezing and releasing a trigger or by pulling and pushing (or releasing) an inner cylinder through an outer cylinder.

Battery-operated breast pumps are also appropriate for occasional pumping. These pumps can be operated using batteries or with a power adapter that plugs into the wall. Battery-operated pumps are generally not strong enough to maintain a woman's milk supply if she must be separated from her baby for 30 or more hours a week. Battery-operated pumps may also be noisy and the batteries must be replaced often.

Electric breast pumps are the most effective at removing milk from the breast. Electric pumps adapt so that a mother can pump one breast or both at the same time, which usually yields more milk (Zinaman et al. 1992; Hill, Aldag, and Chatterton 1996). Most electric pumps have adjustable suction and suck-and-release cycle speed so a mom can imitate her baby at the breast.

Multi-user electric breast pumps are the most powerful and effective of all breast pumps and can be used by more than one mother. Each mother who uses a multi-user pump also uses her own milk-collection kit to eliminate cross-contamination of milk between mothers. A multi-user electric breast pump is the only pump strong enough to establish a mother's milk supply when her baby is unable to latch on to her breast, such as in premature or sick newborns, or those with special needs.

Multi-user electric pumps are also useful when a mother must regularly be separated from her baby before her milk supply is well established, such as following an early return to work or school. In addition, these are the most gentle of pumps, so they are helpful in cases of extreme engorgement or intense nipple soreness.

Single-user electric breast pumps are designed to help a mother maintain an already well established milk supply when she must be separated from her baby on a regular basis, such as following a return to work or school. To avoid cross-contamination of milk, single-user pumps should not be shared between mothers.

Single-user electric pumps should not be used until the mother's milk supply is well established, which takes approximately 3–8 weeks of exclusive breastfeeding.

Large and Extra Large Breast Flanges

A woman's nipples will usually double in length and diameter during a pumping session. About 50 percent of breastfeeding mothers will need a breast flange larger than the standard flange that comes with the pump. If the mother's nipples swell to the point of rubbing on the sides of the nipple tunnel of the breast flange, she needs a larger breast flange in order to effectively empty her breasts. If a mother says she is experiencing pain while pumping, or has cracks or blisters in a circular pattern around her nipples, she should try a larger breast flange.

Storing Milk

Breastmilk can be stored in clean plastic or glass containers, freezer bags, or sealable plastic nurser bags designed specifically for freezing milk.

The containers should be labeled with the date the milk was expressed; the oldest milk should be used first.

Breastmilk can be stored in small amounts of 1–4 ounces per container. Containers can be thawed one or two at a time depending on the baby's hunger. A mother who wants to add fresh or freshly expressed breastmilk to an already frozen container of milk should first cool the milk in the refrigerator before combining it with the previously frozen milk, to avoid partially defrosting the frozen milk.

Breastmilk can be stored using the following guidelines:

Refrigerator	**Freezer**	**Deep Freezer**
5 days	3 months	6 months
(40˚F or below)	(20˚F or below)	(constant 0˚F)

Breastmilk can also be packed on ice and carried in a cooler until it can be refrigerated or frozen.

Frozen breastmilk can be thawed by holding the container under cool or warm (not hot) running water immediately before a feeding. Frozen milk can be thawed more slowly by placing the container in the refrigerator. A mother should never refreeze her breastmilk once it is thawed, and should

throw away thawed breastmilk if not used in 24 hours. She should throw out any unused breastmilk left in a bottle after a feeding.

Breastmilk is not homogenized, unlike milk from the grocery store. The fatty breastmilk will separate from the watery part of the milk and rise to the top of the container when stored. Breastmilk can also vary in color depending on what the mother eats. To remix breastmilk, the mother should gently shake the milk container before feeding the milk to the baby.

Breastmilk should *never* be heated in a microwave oven or boiled. Heating breastmilk in a microwave oven can create hot spots that can burn the infant. Heating breastmilk to boiling or in a microwave oven can destroy some of its beneficial components.

Pumping for the Premature and Sick Newborn

A mother who has a premature or sick newborn may need to establish her milk supply with a multi-user electric breast pump if her baby is unable to latch on to her breast. To establish her milk supply, a mother should begin pumping her breasts within six hours of delivery. For the first two weeks, she will need to pump both breasts simultaneously for 10–15 minutes every two to three hours or eight to 10 times during the day to adequately stimulate the milk-making hormone. This is about as often and as long as a healthy full-term newborn would nurse. After two weeks, she will not need to wake to pump at night unless she can't sleep or wakes up and her breasts feel full. The following chart outlines a pumping schedule for a mother with a premature or sick baby unable to latch on to the breast.

	Frequency	Duration	Amount Expected at Each Pumping
Colostrum	Every 2–3 hours (8–10 times/day)	10–15 minutes	A few drops to ½ ounce
Mature milk	Every 2–3 hours (8–10 times/day)	Until milk flow has stopped for 1–2 minutes	½–2 ounces

Most mothers can only pump a few drops of breastmilk at each pumping in the first few days. After about five to seven days of pumping 8–10 times a day, the mother's milk supply should increase to half an ounce or more at each pumping. At this point, the mother should pump for one to two minutes after her milk flow stops. This will ensure all the high-fat hindmilk has been collected and her breasts have been adequately emptied. The mother who does not completely empty her breasts will signal her body to make less milk.

A mother should set a goal to be pumping a total of 25 ounces a day by the time her baby is 14 days old. That will help ensure plenty of milk for her baby.

A mother who is pumping for a premature or sick newborn will need to follow the breastmilk handling and storage guidelines issued by the hospital or neonatal intensive-care unit. She should be reminded that any amount of breastmilk she can pump for her baby is better than none at all.

A mother of a premature or sick newborn may be able to express more milk by pumping at the hospital where she can see, touch, or have skin-to-skin contact with her baby. Skin-to-skin contact, where the baby is placed against his mother's bare skin with a blanket or hospital gown draped over them, is commonly used in neonatal intensive care units to help increase a mother's milk supply. A mother of a premature or sick newborn will most likely need extra breastfeeding management support when her baby is strong enough to latch on to her breast.

Lots of skin-to-skin contact can help increase milk supply for a mother whose newborn is premature or sick.

Breastfeeding After Returning to Work or School

The decision on whether or not a mother continues to breastfeed her baby when separated because of work or school is not always an easy one to make. She may need help in her decision.

If the mother is going to be separated from her baby for more than four hours at a time or during times the baby regularly nurses, she will need to express her milk. In order to express

her milk at work or school, she will need a supportive work or school environment. To determine if the mother has good breastfeeding support at work or school, the following questions can be asked.

- Where do you work (go to school)?
- Have you talked to your employer (school) about pumping at work (school)?
- Is your employer (school) supportive?
- Do you have a place to pump and store your milk while at work (school)?

  (If she works for a private business or corporation, she may be able to pump in her own office or drape a sheet across the opening in a modular unit. If she works at a restaurant, she may need to use the manager's office or the restroom to pump. If she is returning to school, she may need to use the nurse's office.)
- Will your employer (teacher) allow you to modify your work (school) schedule (use part of your lunch hour, come in early, or leave late) in order to pump?
- Is your child-care provider supportive of breastfeeding?
- Can you go to your child-care facility to nurse your baby during lunch?

If the mother seems to have the support to continue breastfeeding, it must then be determined if her milk supply is well-established and what type of method she will need to use for milk expression. It takes about three to eight weeks of exclusive breastfeeding for a mother's milk supply to be well established. Any formula use or prolonged difficulty with breastfeeding in the first eight weeks can delay establishment of an ample milk supply. The following questions can be useful to determine if a mother's milk supply is well established or will be by the time she returns to work or school.

For an exclusively breastfeeding mom:

- How long have you been exclusively breastfeeding?
- Has your baby ever had any formula? If yes, when and for how long?

- How many wet and dirty diapers is your baby having a day?

For a breastfeeding mom who is supplementing with formula:

- How long have you been supplementing with formula?
- How many ounces of formula does your baby currently get in 24 hours?

For any breastfeeding mom:

- Have you had any prolonged difficulty with breastfeeding?
- When do you plan to return to work (school)?
- How many hours a week will you be separated from your baby because of work or school? (Make sure she includes her travel time.)
- How many months do you want to breastfeed your baby?

A breastfeeding mother will need to begin expressing her milk about two weeks before her return to work or school. If it is determined that the mother's milk supply is most likely well established and she is going back to work within a couple of weeks, a single-user electric breast pump is the most appropriate pump for her. If it is determined that her milk supply is not well established, a multi-user pump can be loaned to the mom for one month to help her establish her milk supply.

To make returning to work easier, offer suggestions to the mother such as:

- returning to work on a Thursday instead of a Monday so her first week will be short.
- returning to work part-time for the first few days or first couple of weeks.
- using vacation two or three days at a time, every six weeks or so, to stay home with and nurse her baby to boost her milk supply.
- nursing her baby at her child-care center during lunch, if possible. This will help her maintain a good milk supply.
- nursing frequently on her days off.

- sharing a bed with her baby at night to replace the hours away from each other during the day and to stimulate her milk supply. If the mother is not comfortable sharing a bed with her baby, she can keep the baby in a bassinet or crib next to the bed.

Self-Test Questions

1. *Fill in the blanks*:

   To prepare for milk expression a mother should clean the _____ _____ container, throughly wash her _____, apply _____ to her breasts, and then _____ her breasts.

2. *Draw a line* to the breast pump that fits each description:

The most powerful and effective of all breast pumps. Important for mothers with premature babies.	Battery-operated pump
May be noisy. Batteries must be replaced often.	Multi-user electric pump
Designed to help a mother maintain an already well-established milk supply. Good for working mothers.	Manual pump
Operated by hand. Appropriate for mothers who need to pump infrequently or to help resolve short-term breastfeeding concerns.	Single-user electric pump

3. *Fill in the blanks*:

   Breastmilk can be stored in the refrigerator for up to _____ days, in the freezer for up to _____ months and in the deep freezer for up to _____ months.

4. *Check* all that apply:

   A mother with a premature baby who is unable to latch on to her breast:

   ____ will need to pump both breasts simultaneously for 10–15 minutes every two to three hours or eight to 10 times during the day.

____ will probably only get a few drops of breastmilk in the first few days.

____ will have to be on a special diet.

____ may be able to express more milk if she uses skin-to-skin contact with her baby.

____ will always have to supplement with formula.

5. Mark each statement **TRUE** or **FALSE**.

_____ It takes about three to eight weeks of exclusive breastfeeding for a mother's milk supply to be well established.

_____ A breastfeeding mother will need to begin expressing her milk about two months before her return to work or school.

_____ It is a good idea for a mother to use her vacation two or three days at a time, every six weeks or so, to stay at home and nurse her baby to boost her milk supply.

_____ Sharing a bed with her baby at night will help stimulate a mother's milk supply.

Why Don't More Women Breastfeed?

Part 8

Barriers to Breastfeeding

Since we know that breastfeeding is so wonderful for both mother and baby, why doesn't every woman breastfeed her baby?

- **Lack of familiarity —** Some women have never seen a baby being breastfed, and the idea seems strange and unfamiliar. Formula-feeding is widely seen and promoted.
- **Lack of confidence —** In a society where intake is measured in ounces and feeding times are set by formula-fed babies, women who breastfeed often worry about the amount of milk that the baby is getting and wonder if they are breastfeeding often enough.
- **Lack of support —** It is harder for a mother to succeed at breastfeeding when friends and family question the amount and quality of her breastmilk or are skeptical about her decision to breastfeed.
- **Lack of correct information —** Women hold many beliefs that prevent them from trying, or succeeding at, breastfeeding.
- **Embarrassment —** Modern Western society uses breasts to sell everything from cigarettes to batteries. Breasts are seen as a source of pleasure rather than a source of mothering and nurturing. Women feel embarrassed to do what is "natural." Women and men mistakenly believe that a woman must display her breasts when breastfeeding.
- **Work or school —** Women are not aware that breastfeeding and work or school can often be managed together, and that they can feed their babies breastmilk even when they are separated from their babies. Also, some employers simply do not allow, or interfere with, their employees' attempts to express their milk at work.
- **Fear of being tied down —** Young women sometimes think that, if they breastfeed, they will not be able to go out with friends and do "fun" things.

- **Belief that formula-feeding is "the American way"** — Some women believe that breastfeeding is for women who live in poor and developing countries. They think that formula-feeding is "modern."
- **Hospital practices that don't support breastfeeding** — Some hospitals may provide the first bottle to the baby, sometimes without the mother's knowledge, and then supply the mother with formula and bottles in the hospital's discharge packet.
- **Free formula supplied by WIC** — Some people believe this reduces the economic incentive to breastfeed and may communicate to mothers that WIC staff believe that formula-feeding is the best way to feed infants. Because of this, it is very important that WIC staff work hard *not* to communicate this message.
- **Lack of early assistance for breastfeeding difficulties** — Some women may decide to breastfeed, but encounter problems and switch to formula-feeding because of a lack of information and assistance.

Commonly Believed Myths and Frequently Asked Questions

Even though women have breastfed their infants since time began, misconceptions and myths about breastfeeding are very common. Misinformation needs to be corrected in a tactful way. The knowledge that women receive from their health-care providers empowers them to breastfeed in spite of the negative comments and suggestions of friends and family. **Table 8.1** summarizes common myths and the facts.

How Do We Identify Concerns and Give Moms Correct Information?

When we are talking with moms, we usually do not have a lot of time. We need to quickly identify a woman's concerns about breastfeeding and build the trust and rapport needed

Table 8.1 Commonly Believed Myths About Breastfeeding and the Facts

Myth	Fact
"I tried breastfeeding, but I didn't have enough milk."	Milk supply can be increased. The supply of milk is determined by how often the baby is put to the breast, how long the baby suckles the breast, and how effectively the baby removes milk from the breast.
"I can't stand pain. Every time I breastfeed, it hurts so much that I cry."	Good positioning and latch-on, along with frequent feeding, will eliminate most pain. If the pain continues, refer the mom to a breastfeeding counselor or lactation consultant.
"I have to stop breastfeeding or the baby will get the awful flu that I have."	Continued breastfeeding protects the baby. Breastmilk contains antibodies which protect the baby from the mother's illness. If a breastfed baby gets sick, the illness will be less severe than if the baby had not been breastfed.
"My boyfriend doesn't want his friends to see my breasts, so I guess I can't breastfeed."	Loose blouses and a baby blanket help a mother breastfeed without showing her breasts. Or, a mom can breastfeed in the privacy of her room or in her car. Or she can choose to pump her milk and feed her baby the expressed breastmilk if friends are around.
"My breasts are too small. I can't make enough milk."	Milk supply is determined by the frequency of breastfeeding. Breast size only indicates the amount of fat in the breasts, not the ability to produce milk.

(continued)

Table 8.1 *continued*

Myth	Fact
"I eat spicy chili and Tabasco sauce every day. Those foods will go through my milk and make the baby sick."	Most women can eat their regular diets. Women from Mexico and India eat very spicy food, and they successfully breastfeed.
"I can't stop smoking, so I can't breastfeed."	Nicotine does go into the breastmilk. However, the advantages of breastfeeding outweigh the risks of nicotine in the breastmilk if the mother is smoking fewer than 20 cigarettes a day. The risks increase with more than 20 cigarettes a day so the mother should be encouraged to cut down as much as possible.
"Breastfeeding ties you down. I need my freedom."	It is easy to pump and store breastmilk. A mom can leave her baby for an evening or even return to school or work. Breastmilk is always available. There is no running to the store for formula.
"If I get upset or angry, my milk will spoil and the baby will get sick. My mother said it happened to her."	Emotions may temporarily suppress the let-down process a little, but many moms have nursed successfully through wars and other stressful events.
"I never eat breakfast. I don't eat good enough to make breastmilk."	The quality of breastmilk remains good even if the diet is not perfect. Women in other countries often have very poor diets yet they breastfeed successfully for two or three years.
"I'm having a C-section, so I won't be able to breastfeed."	Women who have had cesarean births can breastfeed their babies. There are ways of positioning the mother and baby so both are comfortable during the feeding.
"Twins! I can't possibly feed both babies."	Women can successfully breastfeed twins and even triplets. There is information about positioning and scheduling that is helpful, and many cities have support groups for parents of multiples.

Myth	Fact
"Formula is just as good as breastmilk."	Breastmilk is made for human babies. It protects babies from infections and allergies. Formula is made from cow's milk or soy milk. It contains no immunological properties. It contains only the nutrients that scientists have been able to identify in breastmilk and replicate. A container of formula never changes, but breastmilk changes constantly to meet the baby's needs.

for effective communication and breastfeeding education. An easy and quick way to do this is with the LOVE method:

L — Listen. Ask open-ended questions to find out how the mom feels about breastfeeding and what her knowledge and concerns are. Listen to her responses.

O — Observe. Watch the mom's body language. What is she telling you? Is she enthusiastic, does she withdraw, is she curious?

V — Validate. Sympathize with the mom's concerns about breastfeeding. A lot of women have the same feelings and concerns. Assure the mom that these feelings and concerns are normal and that there is a solution for her concerns. Validating her concerns builds rapport and trust.

E — Educate. Provide the mom with information targeted to her concern.

Here is an example of how the LOVE method can be used by a counselor, who may say: "Milk production is not related to breast size. Breast size is determined by the amount of fatty tissue in the breast. Milk is made in milk glands in the breast that develop during pregnancy. If your body can produce a beautiful, perfect baby, it can produce lots of perfect breastmilk."

Creating Positive Breastfeeding Messages

Breastfeeding promotion and support is most effective when it begins during pregnancy. Many pregnant women have not decided how they are going to feed their babies. The information and support you give them can help them to choose breastfeeding.

The *number* of times that breastfeeding is discussed has been found to be just as important as the *amount* of time spent discussing breastfeeding. In fact, it may have the most influence on the woman's decision to breastfeed. Therefore, it is very important to give frequent messages that promote and support breastfeeding.

While women generally follow the recommendations of their doctors, they put high value on information given to them by nurses, nutritionists, and other health-care providers.

They also put high value on the opinion of significant persons in their lives. That is why it is important to include husbands, boyfriends, parents, grandparents, friends, and other relatives in your efforts to promote breastfeeding.

When Breastfeeding May Not Be the Best Choice

Despite all of the benefits of breastfeeding, there are a few situations in which breastfeeding may not be the best choice for mom or baby.

Infants who have **galactosemia**, a condition in which they do not have the enzymes to digest the galactose in human milk, *must* not breastfeed. This condition is *very* rare.

Women in the United States who have AIDS or who are HIV-positive are advised not to breastfeed. A mother with tuberculosis *may* breastfeed if she is allowed contact with her baby. A mother with hepatitis B *may* breastfeed if her baby has received immunoglobulin and the vaccine.

While a mother is receiving chemotherapy, breastfeeding is not recommended. In most cases, a mother may continue breastfeeding if she is ill and receiving medication. She

should tell her doctor she is breastfeeding and ask for a medication compatible with breastfeeding.

Alcohol-dependent and drug-dependent women are advised not to breastfeed because of the negative effect of the drug's reaching the baby through the breastmilk.

Self-Test Questions

1. In the LOVE method for counseling breastfeeding mothers, the "L" stands for _____, the "O" stands for _____, the "V" stands for _____, and the "E" stands for _____.

2. In influencing a woman's decision to breastfeed, the _____ of times that breastfeeding is discussed has been found to be just as important as the _____ of time spent discussing breastfeeding.

3. Which of the following are reasons a mother should not breastfeed? *(Check all that apply.)*

   ____ The mother is diabetic.

   ____ The infant has galactosemia.

   ____ The mother is on antibiotics.

   ____ The mother has AIDS or is HIV-positive.

   ____ The mother has tuberculosis but is allowed to be with her baby.

   ____ The mother is on chemotherapy.

Promoting and Supporting Breastfeeding *Part 9*

How Do You Feel About Breastfeeding?

In order to be supportive of breastfeeding, it is helpful to look at your own infant-feeding experience. If you have not had children or if you are a man, consider the experiences of close friends and relatives.

This exercise may bring forth painful memories. Dealing with the memories may clear the way for you to help others. Ideally, everyone would have a positive breastfeeding experience, but breastfeeding is not always easy. Someone who has had a bad experience or who has never breastfed can still become a breastfeeding advocate and help others. What is needed is to determine what the problems were, evaluate why things went wrong, and decide what would have been helpful in overcoming the problems.

If you made infant-feeding decisions in the past that you would not make now, please forgive yourself. All parents want the best for their child and do the best they can with the information and resources they have at the time. Generally, children grow up well despite the choices we make. Do not unfairly judge others or yourself.

Answer the following questions. If you like, you can discuss these with a friend.

- How were my own (my wife's, my friend's) breastfeeding experiences?
- Did I do something I wish I had not done?
- How do I feel now about what I chose to do then? Proud? Happy? Guilty? Sad? Angry? Afraid of being criticized?
- What influenced me (my wife, my friend) to choose as I (my wife, my friend) did?
- What could have helped me (my wife, my friend) more with the choice?
- What would I do differently next time? What would I do the same way?

- What would I like to see changed, so that women will have an easier time with infant feeding?
- What can I do to help these changes occur?

(Armstrong 1990)

Please *complete* the following self-assessment of your feelings about breastfeeding.

1. When you see a mother breastfeeding in public with her breast showing, how do you feel?

   A. Embarrassed or uncomfortable.

   B. Happy for the baby and mom.

2. When you see a mother breastfeeding in public with her baby and breast covered with a blanket, how do you feel?

   A. Embarrassed or uncomfortable.

   B. Happy for the baby and mom.

3. When you see a 2-year-old child lifting his mom's blouse to nurse or asking for the breast, how do you feel?

   A. Embarrassed or uncomfortable.

   B. Happy for the mother and child.

4. Do you feel that a woman who has breastfed can do a better counseling job than a person who has never breastfed?

   A. Yes.

   B. No.

5. Do you feel that breastfeeding increases a woman's self-esteem?

   A. No.

   B. Yes.

6. If you were to have a child, how would the baby be fed?

   A. Formula.

   B. Breastmilk.

If you answered mainly "B" to all of the questions, congratulations — you are already a breastfeeding advocate.

If you answered mainly "A" to all the questions, you have negative feelings about breastfeeding. Think about this and try to discover why you feel so negative. You can learn more about breastfeeding by going to breastfeeding training, reading about breastfeeding, watching breastfeeding videos, and discussing your feelings with a sympathetic friend or co-worker who is a breastfeeding advocate. Doing these things may help you overcome your negative feelings.

If your answers are mixed, look at the questions in which you answered "A" and try to determine why. Think about why you feel somewhat negative about breastfeeding.

Your Attitude Matters

Does your attitude about breastfeeding really matter? Yes! The encouragement of health-care providers affects many women's decisions on infant feeding. Locklin (1993) found that many women were influenced to breastfeed by breastfeeding peer counselors. The moms interviewed by Locklin frequently stated that the peer counselor "was there for me," "wanted me to keep it up," and "wouldn't let me stop." Locklin felt that peer counselors provided ego strength for the low-income moms she interviewed and gave those women a sense of purpose.

In populations less likely to breastfeed, encouragement by providers increased breastfeeding initiation by more than threefold among low-income, young, and less educated women; by nearly fivefold among African-American women; and by nearly 11-fold among single women (Lu 2001: 293). McNatt and Freston (1992) found that women who were satisfied with their breastfeeding experience reported having twice as many supportive health-care providers as women who felt that they had unsuccessful breastfeeding experiences.

What you say and do has an effect on the moms you see. Your enthusiasm about breastfeeding may make the difference in whether the moms you see choose to breastfeed or formula-feed. As a health-care provider, don't you want moms to

choose the healthiest feeding method for their children and themselves? Healthier moms and children mean lower health-care costs. This could result in insurance savings and tax savings for you and everyone else in this country.

Every person in the clinic can help promote and support breastfeeding. Each staff person has a role to play in making successful efforts in breastfeeding promotion and support. This includes telephone receptionists, clerks, assistants, nutritionists, nurses, doctors, and program managers.

Can you be an effective supporter and promoter if you have never breastfed? Of course you can. Everyone — male or female, young or old, single or married, experienced breastfeeder or not — can enthusiastically promote and encourage breastfeeding.

What if breastfeeding really turns you off? You have read as much as you can about breastfeeding, gone to breastfeeding training, and discussed your feelings with others, and you are still turned off. If you cannot *enthusiastically* promote breastfeeding, be cautious about expressing your negativism through your attitude toward breastfeeding mothers. With a smile, a nod, and a simple "That's great," you can be supportive of a breastfeeding woman without turning cartwheels.

People are greatly affected by what they see, hear, and feel. The message they get from the health-care setting — the posters, the pamphlets, and the attitude of staff — can give a client an encouraging or a discouraging feeling about breastfeeding.

Does Your Work Setting Promote Breastfeeding?

If you want to promote and support breastfeeding, every inch of your work setting should generate positive breastfeeding messages. Positive breastfeeding pictures and posters, handouts that promote and support breastfeeding, and the absence of any cans of formula tell the world that "Breast Is Best." Comfortable chairs and quiet feeding areas help breastfeeding moms feel special. The space around you can

certainly encourage all women to give their babies the best start possible.

The Breastfeeding Team

Breastfeeding is the best way to feed a baby. Breastfeeding benefits everyone. Your enthusiasm in promoting and supporting breastfeeding can make the difference between whether a woman chooses to breastfeed or to formula-feed.

We need *you* on the Breastfeeding Team! We need *you* to give positive breastfeeding messages to all pregnant women and their families and to make sure your work setting is breastfeeding-friendly. Pregnant and breastfeeding women need *your* support and knowledge when they have questions and problems. We need *your* help in sharing the benefits of breastfeeding with your family, friends, other health-care providers, and the entire community.

Only with *your* help can we meet our **Year 2010 goal —** 75 percent of mothers breastfeeding at hospital discharge and 50 percent still breastfeeding at 6 months postpartum (U.S. Department of Health and Human Services 2000: 16-46).

Breastfeeding is a health issue. Breastfeeding is a health care–reform issue. Breastfeeding is a tax-savings issue. Breastfeeding is an insurance-savings issue. Increasing breastfeeding rates benefits *you*!

Welcome to the Breastfeeding Promotion and Support Team!

Self-Test Questions

1. Circle **YES** or **NO**.

   When promoting breastfeeding to others, does your attitude about breastfeeding really matter?

   YES **NO**

2. Your enthusiasm about breastfeeding may make the _____ in whether a mom chooses to _____ or formula-feed.

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Glossary

alveoli: grapelike clusters, situated along the ducts in the breast, which make milk.

antibodies: immunoglobulins that recognize and act on a particular foreign substance, helping the body to resist infection.

areola: dark area surrounding the nipple.

bifidus factor: substance in breastmilk that promotes the growth of *Lactobacillus bifidus.*

bilirubin: a normal breakdown product of red blood cells; it is eliminated from the baby's body through stooling.

breast-augmentation surgery: surgical enlargement of the breast.

breast-reduction surgery: surgical reduction in size of the breast.

candidiasis: yeast infection in a mom or baby; thrush.

casein: one of the principal proteins in milk. The whey-to-casein ratio in human milk is 60:40. The whey-to-casein ratio in cow's milk is 20:80. Casein from cow's milk forms firm, hard-to-digest curds in the infant's stomach.

celiac disease: a disorder characterized by intolerance of gluten (a protein present in grains such as wheat, rye, oats, and barley).

colostrum: nutrient-rich and immunoglobulin-rich human milk, thick and yellowish, produced during pregnancy and in the early postpartum period.

early-onset jaundice: accumulation of bilirubin in the infant's system during the first two to five days of life. It is usually caused by infrequent nursing or ineffective milk transfer.

engorgement: uncomfortable fullness in the breasts.

fibronectin: a protein that engulfs and destroys bacteria cells.

fontanels: the soft spaces between the hard cranial bones of an infant where cartilage has not yet turned to bone.

foremilk: milk collected in the breast's collecting sinuses between feedings and released at the beginning of a feeding. It is thin and bluish-white, and has a high water content. It keeps the infant hydrated and supplies water-soluble vitamins and protein.

free fatty acids: a fatty acid that has broken off a triglyceride molecule.

galactosemia: a metabolic disorder in which there is an inability to metabolize galactose because of an enzyme deficiency.

growth spurts: times when the baby wants to nurse more frequently. This is the baby's way to increase his milk supply. Growth spurts typically occur at the age of 2–3 weeks, 6 weeks, and 3 months.

hindmilk: milk released near the end of a feeding. It is thicker, creamier, and higher in calories than foremilk.

hypoglycemia: condition marked by a lower-than-normal level of sugar in the blood.

immunoglobulin: protein molecule functioning as a specific antibody.

interferon: substance in breastmilk that protects against viruses.

***Lactobacillus bifidus*:** good gut flora.

lactoferrin: protein in breastmilk that binds with iron.

lactose: principal carbohydrate (milk sugar) in breastmilk.

latch-on: placement of infant's mouth on nipple and areola.

late-onset jaundice: accumulation of bilirubin in the infant's system after day 5. Diagnosis is made after ruling out all other possible causes. It is thought to be due to a factor in breastmilk; thus, is also called "breastmilk jaundice." Continued breastfeeding will not harm the infant.

let-down: see *milk-ejection reflex.*

leukocyte: white blood cell that combats infection.

long-chain fatty acids: fatty acids that contain 12 or more carbons.

lymphocyte: type of leukocyte that recognizes and destroys bacteria.

lysozyme: enzyme that protects the infant against *E. coli* and *Salmonella.*

macrophage: type of leukocyte that engulfs and absorbs foreign infectious agents.

mature milk: milk that replaces colostrum. It is higher in lactose, fat, and water-soluble vitamins. Its composition varies to meet the needs of the infant.

meconium: dark-green intestinal contents formed before birth and present in a newborn.

milk-ejection reflex: release of milk from the alveoli and collecting sinuses. Also called "let-down."

Montgomery glands: pimple-like structures on the areola that secrete substances that lubricate and protect the areola and nipple.

mucins: substances secreted by mucous membranes.

mucosal lining: a lining of tubular structures made up of mucus, which moistens and protects.

nursing strike: period when a baby suddenly refuses to nurse. Usually occurs when the baby is between 3 and 8 months old.

oligosaccharides: simple chains of sugar.

overactive let-down reflex: a condition in which a mother's milk will let down forcefully, which can cause brief but intense pain in the mother's breasts and can be overwhelming for the baby; often accompanies oversupply.

oversupply: a condition in which a mother makes more milk than her baby needs; often accompanies overactive let-down reflex.

oxytocin: hormone released during nipple stimulation that causes milk to be released and uterine contractions.

plugged duct: a tender spot, a red area, or sore lump in the breast caused by improper drainage, and subsequent inflammation, of a milk duct.

prolactin: hormone that stimulates and controls milk production.

renal-solute load: the amount of waste, from a food or mixture of foods, that the kidney removes.

tandem nursing: nursing an older child after the new baby arrives.

thrush: yeast infection in a mom or baby; candidiasis.

USP: *United States Pharmacopoeia*, a book setting official standards and descriptions of drugs, chemicals, and medical preparations; it sets the minimum standards of purity for the lanolin used by breastfeeding mothers.

whey: the liquid left after curds are separated from milk. Human-milk whey forms soft, easily digestible curds in the infant's stomach.

Year 2010 goal: to increase to 75 percent the number of moms nursing at hospital discharge and to 50 percent those still nursing at 6 months postpartum.