# Patient education: Breastfeeding guide (Beyond the Basics)

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## INTRODUCTION

Human milk is widely recognized as the optimal source of nutrition for all infants. Breast milk promotes development of the infant's immune system and meets the nutritional needs of a full term infant until approximately six months of age, when complementary foods and fluids are usually added to the diet. (See "Patient education: Starting solid foods during infancy (Beyond the Basics)".)

Most national and international groups recommend **exclusive** breastfeeding without the use of infant formula or other foods or liquids for the first six months, and partial breastfeeding for at least 12 months. Despite the overwhelming evidence in favor of breastfeeding, in the United States about 83 percent of women breastfeed immediately after birth and only about 58 percent of women are still breastfeeding at six months [1]. The United States has set a goal for further increases in breastfeeding rates by 2020, such that at least 82 percent of mothers initiate breastfeeding, and at least 61 percent are still breastfeeding at six months [2]. There are many reasons that women choose not to breastfeed, including embarrassment, lack of knowledge about the benefits of breast milk, belief that formula is equal to breast milk, and myths about the "ease" of formula feeding compared with breastfeeding.

This topic discusses how to breastfeed, including positioning, latch on, frequency and length of feeding, pacifiers, and the need for supplements and vitamins. Additional breastfeeding topics are available separately:

- (See "Patient education: Deciding to breastfeed (Beyond the Basics)".)
- (See "Patient education: Maternal health and nutrition during breastfeeding (Beyond the Basics)".)
- (See "Patient education: Common breastfeeding problems (Beyond the Basics)".)
- (See "Patient education: Pumping breast milk (Beyond the Basics)".)
- (See "Patient education: Weaning from breastfeeding (Beyond the Basics)".)

## WHEN TO START BREASTFEEDING

Breastfeeding should begin within the first few hours of delivery, by allowing the baby to rest or nurse, skin-to-skin, on the mother's chest. During this time, most infants are alert and interested in nursing. However, there is no evidence that it will be more difficult or impossible to breastfeed if the infant cannot nurse within this time period.

In some situations, the infant or mother must be separated for several hours or even days after delivery. Pumping the breasts and then storing the milk for use is recommended to stimulate production of breast milk; this can be started as soon as possible, optimally within the first six hours after delivery. A separate topic is available that discusses the use of breast pumps. (See "Patient education: Pumping breast milk (Beyond the Basics)".)

In the first few days after delivery, the woman produces a small amount of thick yellowish milk called colostrum. Colostrum is rich in nutrients and provides all the calories a baby needs for the first few days.

Many women worry that their infant is not getting enough milk immediately after delivery, when only small amounts of colostrum are normally produced. Infants are born with an excess of fluid and sugar stores that they are able to use as the woman's milk supply increases.

It is normal to produce small amounts of milk in the beginning. With continued frequent breastfeeding, a larger amount of milk will be produced within three to five days. Infants normally lose weight during the first few days of life and gradually regain this weight by two weeks after delivery.

## POSITIONING

A woman may use one of several positions to hold her infant while breastfeeding. There is no one "best" position for every infant and woman; the best position is one that is comfortable for the

woman and allows the infant to latch-on, suckle, and swallow easily. A woman may have several preferred positions depending upon the baby's size, the baby or mother's medical condition(s), and feeding location (eg, in bed versus in a chair).

In all positions, the baby should not have to turn his or her head to nurse; the baby's nose should be aligned with the mother's nipple (figure 1). Turning the head in any direction makes it more difficult to coordinate suckling and swallowing, and can potentially make it more difficult for the baby to latch correctly. (See 'Latch on' below.)

Pillows or nursing supports can help to ensure that both the woman and the infant are comfortable. When the mother is sitting in a chair, a foot stool or ottoman is helpful in supporting the infant's weight and preventing fatigue in the mother's arms, shoulders, and neck.

After feeding, the infant should be placed back in their own bed, which is the safest sleeping environment and minimizes the risk for sudden infant death syndrome (SIDS) [3]. (See "Patient education: Sudden infant death syndrome (SIDS) (Beyond the Basics)".)

**Cradle hold** — The cradle hold can be done while the mother sits in a chair. To feed from the left breast, the infant's head and body are supported by the mother's left forearm (figure 2). The mother's left hand usually supports the baby's buttocks or upper thighs. Some women use a pillow to support this arm. The baby's stomach should be flat against the mother's chest and the baby's head should be in line with the body (not turned). The mother's free hand (the right hand in this example) supports and guides the breast to the infant's wide-open mouth. The thumb on the free hand may be placed on top of the areola and the breast supported with the cupped fingers. Care should be taken to position the hand away from the nipple so that the thumb and fingers do not interfere with latching.

**Cross-cradle hold** — The cross-cradle hold can also be done while the mother sits in a chair. To feed from the left breast, the infant's head and body are supported by the mother's right hand and forearm. Some women use a pillow to support this arm (figure 3). The baby's stomach should be flat against the mother's chest and the baby's head should be in line with the body (not turned). The mother's free hand (the left hand in this example) supports and guides the breast to the infant's wide-open mouth. The thumb on the free hand may be placed on top of the areola and the breast supported with the cupped fingers. Care should be taken to position the hand away from the nipple so that the thumb and fingers do not interfere with latching.

**Football hold** — The football position allows a woman to easily see the baby at her breast. It is often preferred by women who have an abdominal incision, after a Cesarean section, or by women with large breasts or a small or premature baby. The baby is supported by a pillow as the mother sits, which should allow the baby's head to be at the level of the mother's breast.

To feed from the left breast, the baby's body and legs are under the left arm, with the head supported by the mother's left hand (figure 4). The mother's free hand (the right hand in this

example) supports and guides the breast to the infant's wide-open mouth.

**Side-lying hold** — The side-lying hold allows the mother to nurse while lying down. When using this position, there should be no excess bedding around the infant. The side-lying hold should not be used on a waterbed, a couch, or a recliner because this poses a suffocation hazard to the infant.

To nurse from the left breast, the woman lies on her left side. The baby's head and body lie parallel to the woman's body, with the baby's mouth close to and facing the woman's left breast (figure 5). The woman may prefer to have a pillow under her head, with her left hand between her head and the pillow. The mother's free hand (the right hand in this example) supports and guides the breast to the infant's wide-open mouth. The thumb on the free hand may be placed on top of the areola and the breast supported with the cupped fingers. Care should be taken to position the hand away from the nipple so that the thumb and fingers do not interfere with latching.

**Laid-back or "biological nursing"** — In the laid-back or "biological nursing" position, the mother is semi-reclined with her arms and torso well supported, and the baby is placed on her stomach between the mother's breasts (figure 6). Infants may be able to latch more easily, as the baby is securely positioned against the mother's body and the baby's reflexes assist in latching on. Mothers also may find that they do not have to work as hard supporting their infants and tire less.

## LATCH ON

Latching on refers to the infant's formation of a tight seal around the nipple and most of the areola with his or her mouth. A correct latch-on allows the infant to obtain an adequate amount of milk and helps to prevent nipple soreness and trauma.

Signs of a good latch-on include:

- The top and bottom lips should be open to at least 120° (figure 1)
- The lower lip (and, to a lesser extent, the upper lip) should be turned outward against the breast
- The chin should be touching the breast, while the nose should be close to the breast
- The cheeks should be full
- The tongue should extend over the lower lip during latch-on and remain below the areola during nursing (visible if the lower lip is pulled away)

When an infant is latched correctly, the woman may feel discomfort for the first 30 to 60 seconds, which should then decrease. Continued discomfort may be a sign of a poor latch-on. To prevent further pain or nipple trauma, the woman should insert her clean finger into the infant's mouth to break the seal. She can then reposition the infant and assist with latch-on again. Information about

painful or sore nipples is available separately. (See "Patient education: Common breastfeeding problems (Beyond the Basics)".)

Signs of poor latch-on include:

- The upper and lower lip are touching at the corners of the mouth
- The cheeks are sunken
- Clicking sounds are heard, corresponding to breaking suction
- The tongue is not visible below the nipple (if the lower lip is pulled down)
- The nipple is creased after nursing

A video that describes how to latch a baby correctly is available here.

**Suckling and swallowing** — An infant must be able to suckle and swallow correctly to consume an adequate amount of milk. It should be possible to hear the infant swallow. These early swallows may sound like the letter "C" in cat, and are heard infrequently in the first day or two of nursing. The infant's jaw should move quickly to start the flow of milk, with a swallow heard after every one to three jaw movements [4] once the milk supply has increased significantly after the first few days.

## FREQUENCY AND LENGTH OF FEEDING

Women are encouraged to attempt breastfeeding as soon as the infant begins to show signs of hunger. Early signs of hunger include awakening, searching for the breast (called rooting), or sucking on the hands, lips, or tongue. Most infants do not cry until they are very hungry; waiting to breastfeed until an infant cries is not recommended.

In the first one to two weeks, most infants will breastfeed 8 to 12 times per day. Some infants will want to nurse frequently, as often as every 30 to 60 minutes, while others will have to be awakened and encouraged to nurse. A baby may be awakened by changing the diaper or tickling the feet. During the first week of life, most clinicians encourage parents to wake a sleeping infant to nurse if four hours have passed since the beginning of the previous feeding. Some babies will cluster feed, meaning that they feed very frequently for a number of feedings and then sleep for a longer period.

Caring for an infant can be an exhausting experience. However, it may be comforting to know that breastfeeding is no more time consuming than formula feeding, which often requires additional time to purchase and prepare the formula and wash bottles and nipples.

The length of time an infant needs to finish breastfeeding varies, especially in the first few weeks after delivery; some infants require as little as 5 minutes while others need 20 minutes or more. Most experts recommend that the infant be allowed to actively breastfeed for as long as desired;

timing the feeding (ie, watching the clock) is not recommended. "Active" breastfeeding means that the infant is regularly suckling and swallowing.

It is not necessary to switch sides in the middle of a nursing session. Thorough emptying of one breast allows the baby to consume milk from deeper in the breast, which has a higher fat content than milk available at the start of a nursing session.

Most infants signal that they are finished nursing by releasing the nipple and relaxing the facial muscles and hands. Infants younger than two to three months often fall asleep during nursing, even before they are finished. In this case, it is reasonable to try and awaken the child and encourage him/her to finish nursing. After finishing one breast, offer the other side with the understanding that the infant (especially an older infant) may not be interested.

**Growth spurts** — It is common for an infant to occasionally nurse more frequently or for longer periods during the first year. However, every infant is different, and increases in appetite may occur at different times. Parents are encouraged to allow their infant to nurse more frequently when the infant shows interest.

**How much is enough?** — Many parents are concerned that their infant is not getting enough milk because it is not possible to see how much milk the baby consumes. There are a few clues that parents can use to estimate whether the baby is getting enough breast milk.

**Monitor diapers** — Keep a written record of the number of wet and dirty diapers per day. Many parents keep a written record of wet and dirty diapers for the first week or two.

Normally, by the fourth to fifth day after birth, an infant should have at least six wet diapers per day with clear or pale yellow urine. Fewer than six wet diapers, or dark yellow or orange urine in the diaper are signs of inadequate intake and should be reported to the child's clinician.

Meconium is the sticky dark-colored stool that infants normally produce for the first few days after birth. An infant's stool should become mustard yellow to light brown, often with visible milk curds, by the fourth to fifth day. Most infants have four or more stools per day by day four.

**Monitor weight** — It is normal for infants to lose weight after delivery, with the average infant losing four to five ounces within the first few days of life. Normally, infants stop losing weight by five days of age and typically regain their birth weight by two weeks of age.

Infants who lose more than this amount may be at risk for becoming dehydrated and/or developing jaundice. If this occurs, the healthcare provider will try to determine the cause of the infant's weight loss and whether supplementation with banked human milk, pumped milk, or infant formula is needed. (See "Patient education: Jaundice in newborn infants (Beyond the Basics)".)

The American Academy of Pediatrics recommends that all healthy breastfeeding newborns are weighed and examined by a healthcare provider three to five days after birth and again two to

three weeks after birth; this allows the provider to monitor for signs of jaundice, dehydration, weight loss, or other complications, and to answer parents' questions.

**Maintaining milk supply** — Milk continues to be produced in the breast based upon how frequently and thoroughly milk is removed. Regularly nursing an infant triggers the release of two hormones, prolactin and oxytocin. Milk production is reduced if milk is not removed regularly or if the breast is incompletely emptied. In addition, the breasts are more likely to become uncomfortably full and leak milk if a feeding is delayed or skipped.

For this reason, breastfeeding women are encouraged to nurse their baby as often as the baby shows signs of hunger. Most experts recommend allowing the baby to nurse until finished with one side, then switching to the other side. (See 'Frequency and length of feeding' above.)

## PACIFIERS

Parents often use a pacifier to soothe their infant, although pacifiers should not be used to delay feedings. If an infant appears hungry he or she should be offered the breast. If parents desire to use a pacifier, pacifiers should not be introduced until breastfeeding is well established, usually around two weeks of age.

## IS BREAST MILK ALL MY BABY NEEDS?

It is not necessary to give formula, bottled water, or glucose water supplements to a full term infant who gains weight appropriately and who has an adequate number of wet and dirty diapers. Providing formula can potentially reduce a woman's supply of breast milk, especially if formula is given in place of breastfeeding (eg, before bedtime or during the night).

Even in hot climates, parents do not need to give water or fruit juice to a breastfed infant until he or she is approximately six months old.

**Nutritional supplements** — A vitamin or mineral supplement may be recommended for some full term breastfeeding infants. Nutritional supplements are usually given as a liquid with a medicine dropper or mixed into pumped breast milk.

**Vitamin B12** — The body requires a source of vitamin B12 to maintain blood cells. Low levels of vitamin B12 can lead to anemia, developmental delay, and other problems. A multivitamin supplement that includes B12 is recommended for breastfeeding infants of strict vegetarian (vegan) mothers. Adequate B12 is available in most nonprescription infant vitamin drops.

**Vitamin D** — The body requires vitamin D to absorb calcium and phosphorus, which are essential in the formation of bones. Inadequate levels of vitamin D in children can lead to a condition known as rickets, which causes bones to be fragile and to break easily.

Breast milk contains vitamin D, although usually not in adequate amounts to meet an infant's needs. The only other source of vitamin D for exclusively breastfed infants is sunlight. However, the potential risk of sunburn is greater than the potential benefit of sun exposure, especially considering that a safe source of vitamin D is available.

All breastfed infants should be given a supplement containing 400 int. units of vitamin D per day, starting within days of birth.

**Iron** — Iron is an essential nutrient that the body requires to produce and maintain red blood cells. Infants with a low iron level are at risk for a number of problems, including a low blood count (anemia). Iron deficiency has also been associated with mild impairment of the immune system and developmental delays. Breast milk contains iron that is easily absorbed. Exclusively breastfed infants who are preterm or low birth weight are usually given a multivitamin supplement that contains iron. Specific recommendations about an infant's iron needs should be discussed with the child's healthcare provider.

## WHERE TO GET MORE INFORMATION

Your healthcare provider is the best source of information for questions and concerns related to your medical problem.

This article will be updated as needed on our Web site (www.uptodate.com/patients). Related topics for patients, as well as selected articles written for healthcare professionals, are also available. Some of the most relevant are listed below.

**Patient level information** — UpToDate offers two types of patient education materials.

**The Basics** — The Basics patient education pieces answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials.

Patient education: Breastfeeding (The Basics)
Patient education: Deciding to breastfeed (The Basics)
Patient education: Jaundice in babies (The Basics)
Patient education: Health and nutrition for women who breastfeed (The Basics)
Patient education: Pumping breast milk (The Basics)
Patient education: Weaning from breastfeeding (The Basics)
Patient education: Having twins (The Basics)

**Beyond the Basics** — Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are best for patients who want in-depth information and are comfortable with some medical jargon.

Patient education: Starting solid foods during infancy (Beyond the Basics)
Patient education: Deciding to breastfeed (Beyond the Basics)
Patient education: Maternal health and nutrition during breastfeeding (Beyond the Basics)
Patient education: Common breastfeeding problems (Beyond the Basics)
Patient education: Pumping breast milk (Beyond the Basics)
Patient education: Jaundice in newborn infants (Beyond the Basics)

**Professional level information** — Professional level articles are designed to keep doctors and other health professionals up-to-date on the latest medical findings. These articles are thorough, long, and complex, and they contain multiple references to the research on which they are based. Professional level articles are best for people who are comfortable with a lot of medical terminology and who want to read the same materials their doctors are reading.

Breastfeeding: Parental education and support
Common problems of breastfeeding and weaning
Infant benefits of breastfeeding
Maternal nutrition during lactation
The impact of breastfeeding on the development of allergic disease
Safety of infant exposure to antidepressants and benzodiazepines through breastfeeding

The following organizations also provide reliable health information.

- National Library of Medicine (www.nlm.nih.gov/medlineplus/healthtopics.html)
- The Center for Disease Control and Prevention (www.cdc.gov/breastfeeding)
- American Academy of Pediatrics (www.healthychildren.org/english/ages-stages/baby/breastfeeding)
- Massachusetts Breastfeeding Coalition (www.massbreastfeeding.org)
- Breastfeeding Online (www.breastfeedingonline.com)

**Finding a lactation consultant** — International Board Certified Lactation Consultants, or IBCLCs, are available at most hospitals as well as privately, and can be an invaluable resource for instructions about breastfeeding, pumping, milk storage, and bottle feeding breast milk. The

websites listed below have information about finding a lactation consultant or breastfeeding counselor.

- La Leche League

  (www.lalecheleague.org)

- International Board of Lactation Consultant Examiners

  (www.iblce.org)

phone: 703-560-7330

- International Lactation Consultant Association

  (www.ilca.org)

phone: 919-861-5577

[1,4-7].



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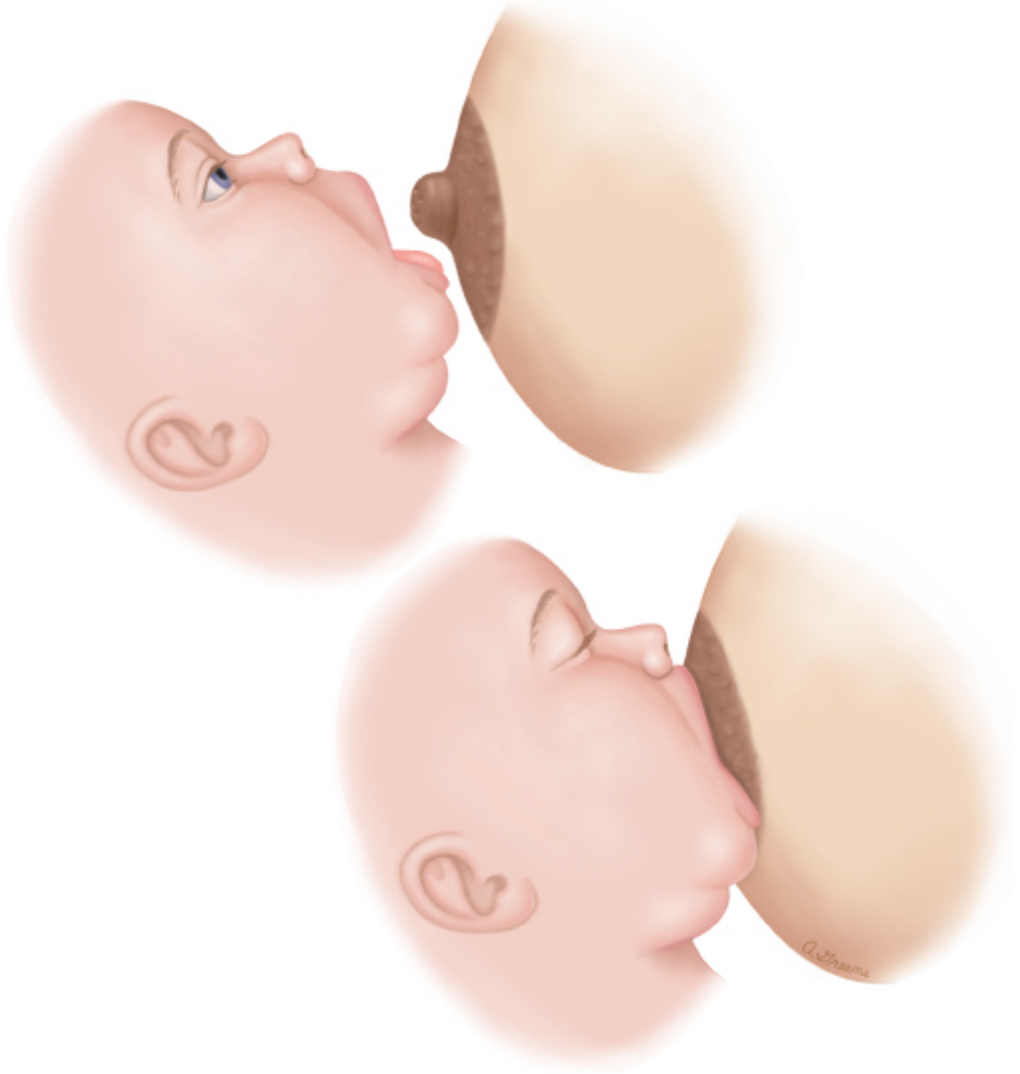
Topic 1196 Version 28.0

## GRAPHICS

### Latch-on

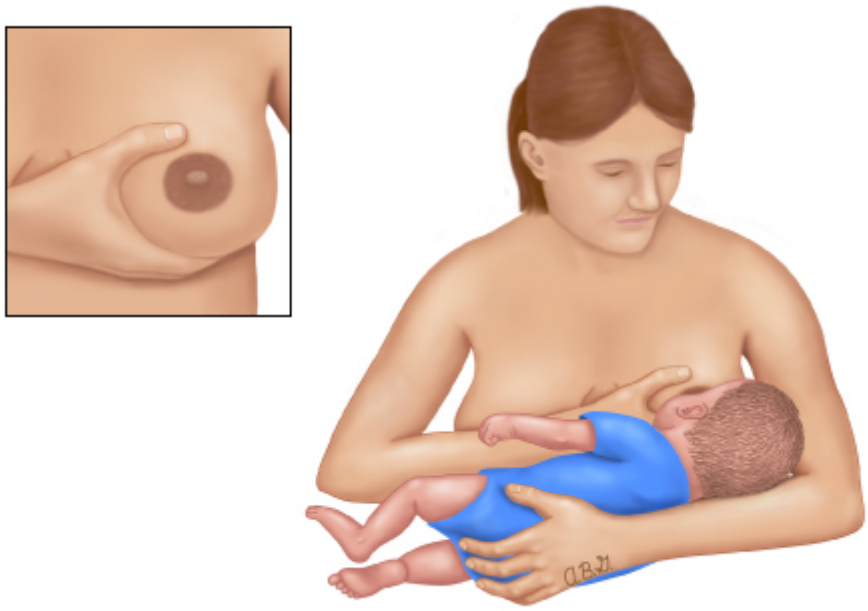


During latch-on, a baby's mouth forms a tight seal around the nipple and most of the areola (the dark skin around the nipple). Signs that your baby has a good latch-on include:

- The top and bottom lips are wide open.
- The lower lip is turned outward against the breast.
- The chin is touching the breast, and the nose is close to the breast.
- The cheeks are full.
- The tongue comes out over the lower lip during latch-on and stays below the areola during nursing.

Graphic 69241 Version 8.0

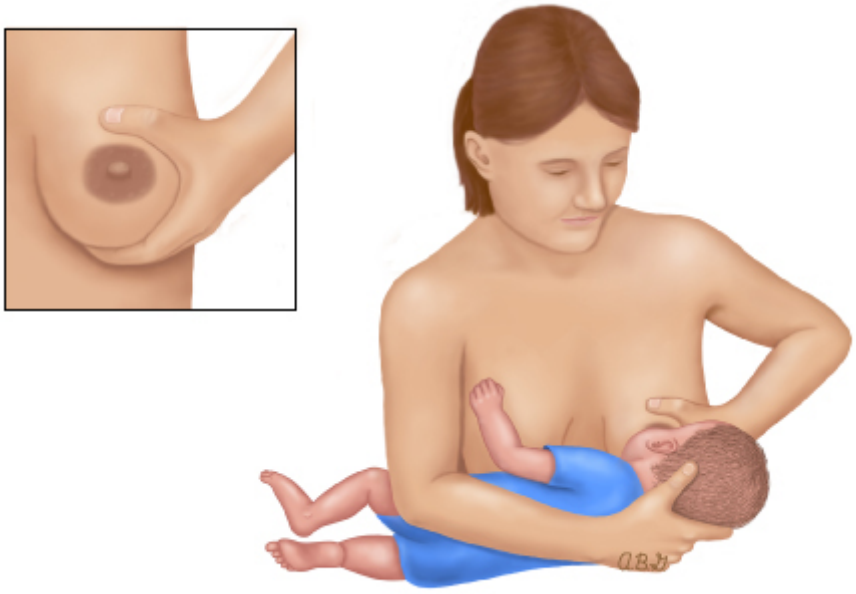
## Cradle position for breastfeeding



The cradle hold can be done while the mother sits in a chair. To feed from the left breast, the infant's head and body are supported by the mother's left forearm. The mother's left hand usually supports the baby's buttocks or upper thighs. Some women use a pillow to support this arm. The baby's stomach should be flat against the mother's chest, and the baby's head should be in line with the body (not turned). The mother's free hand (the right hand in this example) supports and guides the breast to the infant's wide open mouth. The thumb on the free hand may be placed on top of the areola and the breast supported with the cupped fingers. Care should be taken to position the hand away from the nipple so that the thumb and fingers do not interfere with latching.

Graphic 69936 Version 6.0

## Cross-cradle position for breastfeeding



The cross-cradle hold can also be done while the mother sits in a chair. To feed from the left breast, the infant's head and body are supported by the mother's right hand and forearm. Some women use a pillow to support this arm. The baby's stomach should be flat against the mother's chest, and the baby's head should be in line with the body (not turned). The mother's free hand (the left hand in this example) supports and guides the breast to the infant's wide open mouth. The thumb on the free hand may be placed on top of the areola and the breast supported with the cupped fingers. Care should be taken to position the hand away from the nipple so that the thumb and fingers do not interfere with latching.

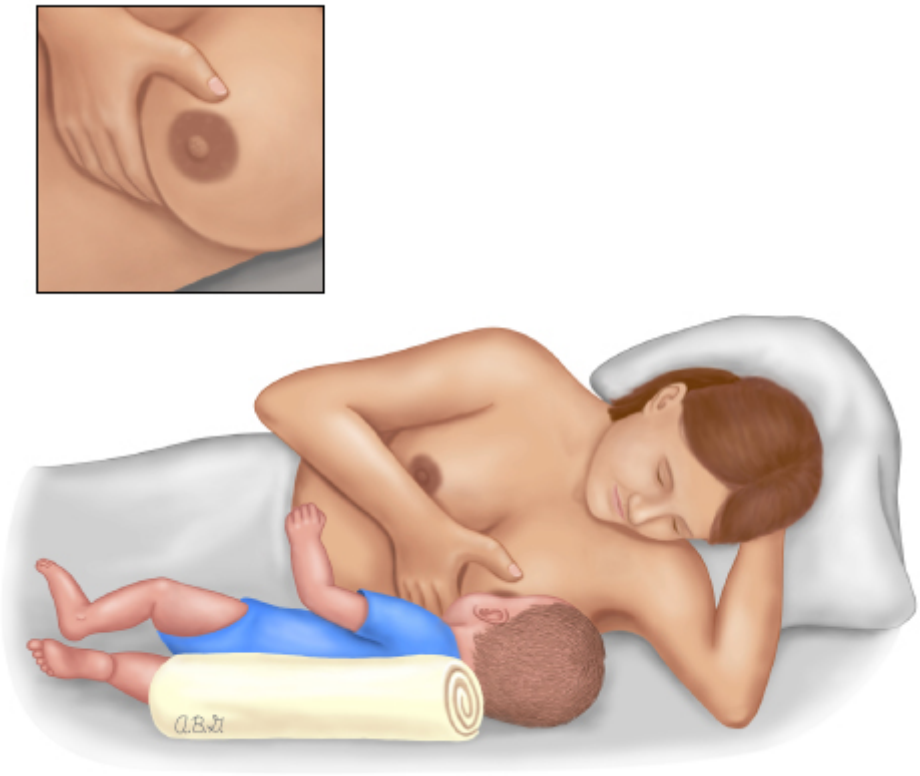
Graphic 71940 Version 5.0

## Football position for breastfeeding


The football position allows a woman to easily see the baby at her breast. It is often preferred by women who have an abdominal incision, after a cesarean section, or by women with large breasts or a small premature baby. The baby is supported by a pillow as the mother sits, which should allow the baby's head to be at the level of the mother's breast. To feed from the right breast as shown above, the baby's body and legs are under the right arm, with the head supported with the mother's right hand. The mother's free hand (the left hand in this example) supports and guides the breast to the infant's wide open mouth.

Graphic 70124 Version 7.0

## Side-lying position for breastfeeding

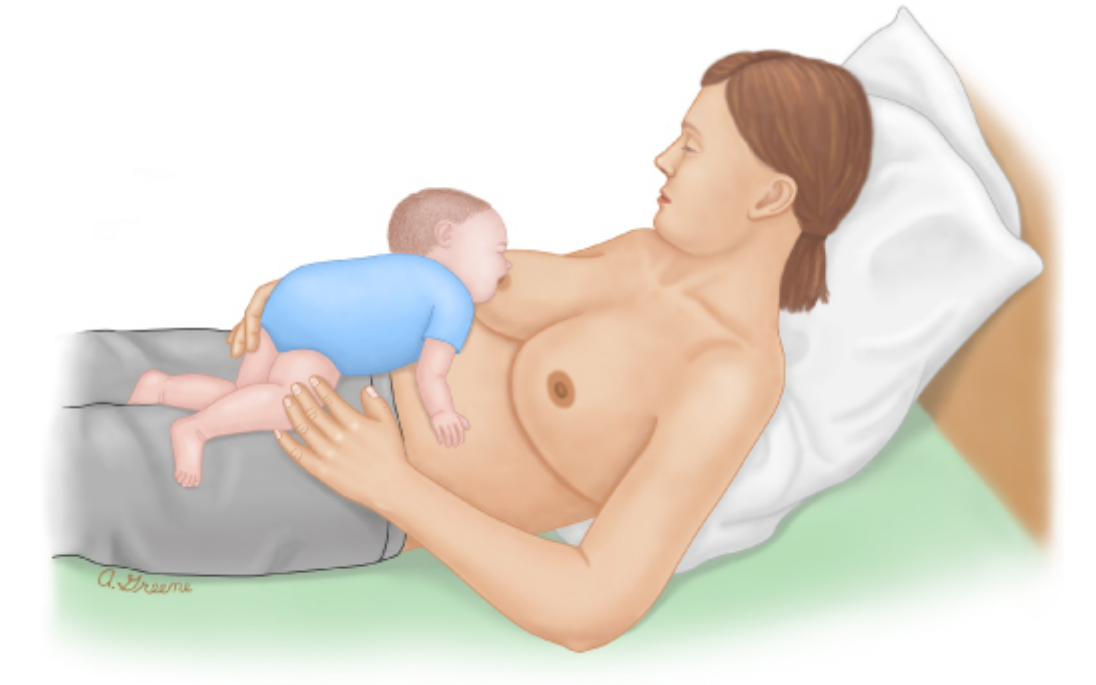


The side-lying hold allows the mother to nurse while lying down. When using this position, there should be no excess bedding around the infant. The side-lying hold should not be used on a waterbed, a couch, or a recliner because this poses a suffocation hazard to the infant.

To nurse from the left breast, the woman lies on her left side. The baby's head and body lie parallel to the woman's body, with the baby's mouth close to and facing the woman's left breast. The woman may prefer to have a pillow under her head, with her left hand between her head and the pillow. The mother's free hand (the right hand in this example) supports and guides the breast to the infant's wide-open mouth. The thumb on the free hand may be placed on top of the areola and the breast supported with the cupped fingers. Care should be taken to position the hand away from the nipple so that the thumb and fingers do not interfere with latching.

Graphic 71497 Version 4.0

## Laid-back breastfeeding



The laid-back breastfeeding position facilitates the natural breastfeeding behaviors with the full body skin-to-skin contact between the mother and baby. It promotes a strong letdown of breast milk from the mother and allows the baby to have more control over the milk flow.

Graphic 94837 Version 2.0