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SPECIAL REPORT FROM ACOG

Breastfeeding: Maternal and Infant Aspects

Committee on Health Care for Underserved Women
Committee on Obstetric Practice

The promotion of breastfeeding has been an ongoing priority of the College. Working with national and international groups dedicated to promoting the health of infants worldwide, ACOG has participated in an interdisciplinary group effort to formulate guidelines for breastfeeding. These guidelines were developed by the ACOG Committee on Health Care for Underserved Women and the ACOG Committee on Obstetric Practice and are presented in this special report in an effort to give them the widest possible exposure and eventually reach those who would benefit most—mothers and their babies. These guidelines, as well as additional information, can be found at www.acog.org.

Ralph W. Hale, MD
ACOG Executive Vice President

ABSTRACT: *Evidence continues to mount regarding the value of breastfeeding for both women and their infants. Human milk provides developmental, nutritional, and immunologic benefits to the infant that cannot be duplicated by formula feeding. Breastfeeding also provides significant benefits to women. It is critical that women make an informed choice in deciding what is best for them, their families, and their babies. The American College of Obstetricians and Gynecologists strongly supports breastfeeding and calls on its Fellows, other health care professionals caring for women and their infants, hospitals, and employers to support women in choosing to breastfeed their infants. Specifically, obstetrician–gynecologists and other health care professionals caring for pregnant women should regularly impart accurate information about breastfeeding to expectant mothers and be prepared to support them should any problems arise while breastfeeding.*

Background

With the development of iron-fortified formula, breastfeeding rates began to decrease in the late 1950s as formula feeding gained popularity. In 1971, only 24.7% of mothers left the hospital breastfeeding. Since that time, breastfeeding initiation rates have been increasing fairly consistently, but they have not yet reached the goal set by the U.S. Public Health Service for Healthy People 2010 (1). In 2005, 72.9% of all U.S. mothers initiated breastfeeding (2). Although this is close to the target rate of 75% in the early postpartum period, there is still a long way to go to achieve breastfeeding rates of 50% at 6 months, and 25% at 12 months (1).

The increase in the proportion of women initiating breastfeeding reflects a growing awareness of the advantages of breast milk over formula. Improvement in breastfeeding initiation rates, however, has been uneven, as women attempt to overcome practical obstacles. Breastfeeding initiation rates are lowest among non-Hispanic black women, women younger than 20 years, women enrolled in WIC (Special Supplemental Nutrition Program for Women, Infants, and Children), and those who completed high school or less. Breastfeeding initiation rates vary considerably by state with the lowest rates (less than 55%) occurring in Arkansas, Kentucky, Louisiana, Mississippi, and West Virginia (2).

In 2005, the rate of any breastfeeding at 6 months reached 39.1%, the highest rate in the nearly 35 years such data have been collected. The lowest 6-month rates are among mothers with the same demographic and socioeconomic characteristics as those who have the lowest breastfeeding initiation rates (2).

The sharpest decrease in breastfeeding (approximately 20%) occurs within the first month after discharge. Accounting for this precipitous decrease, the most common reasons given for

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premature discontinuation are insufficient milk production, difficulty with attachment (latch-on and infant suckling), and lack of maternal confidence (3–6). Some concentrated educational efforts have had a statistical impact in specific populations (7). Compared with other demographic groups, the breastfeeding initiation rates increased most rapidly among black women between 1993 and 2003. However, despite this welcome trend, the breastfeeding rates at hospital discharge in 2003 remained lowest among black women at 48.3% compared with national rates of 66.0%. Additionally, women enrolled in WIC are among those with the most rapid increases in rates of breastfeeding, although their rates remain well below national averages (8).

This document addresses primarily breastfeeding by healthy mothers with healthy infants born at term. Human milk and breastfeeding are recommended for premature newborns and mother–infant pairs with other special needs; however, specific information in this regard is beyond the scope of this document.

Benefits of Breastfeeding

Research in the United States and throughout the world indicates that breastfeeding and human milk provide benefits to infants, women, families, and society. This research has been conducted in a variety of settings, resulting in information derived from culturally and economically diverse populations.

In 2005, the American Academy of Pediatrics (AAP) published a revised policy statement, "Breastfeeding and the Use of Human Milk" (9). The statement was developed by the AAP Section on Breastfeeding, which evaluated the considerable amount of research literature on relationships between breastfeeding and infant health and development. The statement summarizes established infant protective effects, as well as positive associations that require further study (see box). Many of the benefits of breastfeeding for both the mother and infant are recognized to be enhanced by exclusivity and duration (9). Early studies, which failed to account for these factors, led to inconsistent conclusions. Obstetrician–gynecologists who review these sources of evidence for infant benefit will be better prepared to care for the women in their practices.

Infants

The benefits of breastfeeding for the infant have been established in the following areas. Human milk provides species-specific and age-specific nutrients for the infant (10). Colostrum, the fluid secreted from the breast immediately after the infant's birth, conveys a high level of immune protection, particularly secretory immunoglobulin A (IgA). During the first 4–7 days after birth, protein and mineral concentrations decrease, and water, fat, and lactose increase. Milk composition continues to change to match infant nutritional needs. In addition to the right balance of nutrients and immunologic factors, human milk contains factors that act as biologic signals for promoting cellular growth and differentiation. Human milk also contains multiple substances with antimicrobial properties, which protect against infection (10, 11). However, human milk alone may not provide adequate iron for infants older than 6 months, infants whose mothers have low iron stores, and premature infants at all ages (11).

Women

The benefits of breastfeeding for women are well documented. Benefits start in the immediate postpartum period with the release of oxytocin during milk letdown. This results in increased uterine contractions aiding with uterine involution and a decrease in maternal blood loss (12). Additionally, evidence exists that oxytocin and prolactin contribute to the mother's feelings of relaxation and of her attachment to her baby. Breastfeeding also is associated with a decreased risk of developing ovarian and breast cancer (13–15). Moreover, breastfeeding delays postpartum ovulation, supporting birth spacing (16–18).

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Research on Established and Potential Protective Effects of Human Milk and Breastfeeding on Infants

According to the American Academy of Pediatrics' policy statement, "Breastfeeding and the Use of Human Milk," the findings of extensive research suggest various benefits of breastfeeding as indicated in the following excerpt.

Infectious Diseases

Research in developed and developing countries of the world, including middle-class populations in developed countries, provides strong evidence that human milk feeding decreases the incidence and/or severity of a wide range of infectious diseases including bacterial meningitis, bacteremia, diarrhea, respiratory tract infection, necrotizing enterocolitis, otitis media, urinary tract infection, and late-onset sepsis in preterm infants. In addition, postneonatal infant mortality rates in the United States are reduced by 21% in breastfed infants.

Other Health Outcomes

Some studies suggest decreased rates of sudden infant death syndrome in the first year of life and reduction in incidence of insulin-dependent (type 1) and non-insulin-dependent (type 2) diabetes mellitus, lymphoma, leukemia, and Hodgkin disease, overweight and obesity, hypercholesterolemia, and asthma in older children and adults who were breastfed, compared with individuals who were not breasted. Additional research in this area is warranted.

Neurodevelopment

Breastfeeding has been associated with slightly enhanced performance on tests of cognitive development. Breastfeeding during a painful procedure such as a heel-stick for newborn screening provides analgesia to infants.

Breastfeeding and the use of human milk. AAP Policy Statement. American Academy of Pediatrics. Section on Breastfeeding. Pediatrics 2005;115:496–506.

(To review the full-text AAP document online with complete references, go to http://pediatrics.aappublications.org/cgi/reprint/115/2/496.)

Although breastfeeding causes some bone demineralization, studies indicate that "catch-up" remineralization occurs after weaning. Importantly, clinical studies have demonstrated a protective effect of breastfeeding, such as a lower incidence of osteoporosis and hip fracture after menopause (19, 20).

Families and Society

Studies indicate that the breastfed child has fewer illnesses and, therefore, fewer visits to the doctor and hospital (21). This translates into lower medical expenses and, for women who work outside the home, less absenteeism from work. Because women now constitute a large portion of the workforce, the improvement in work productivity may be significant for society as well. More than 60% of all women return to outside employment during the first year after birth of a child.

Breastfeeding, while demanding maternal time and attention, can save families and public programs considerable money compared with formula feeding (22). Society may benefit as well when the ecologic issues of disposal of formula cans, bottles, and bottle liners are considered.

Obstacles to Breastfeeding

Women need to know that breastfeeding, like other aspects of having a new baby, has its demands as well as its rewards. Women who initiate breastfeeding should be assured that they will have support and that there are options for problem solving and professionals available to help address the difficulties they may encounter. Any doubts a woman has regarding her ability or willingness to continue or potential barriers to breastfeeding should be discussed and she should be encouraged to try breastfeeding. Physicians and other health professionals should recognize the potential effectiveness of applying their knowledge and skills to encourage and support women in initiating and continuing breastfeeding. Studies support the influence of the physician's recommendation to breastfeed exclusively, even when mothers have not made a clear choice to do so. For example, physicians who express support for exclusive breastfeeding have a higher percentage of mothers who breastfeed for an extended period (4, 23).

Modern society has created obstacles to breastfeeding that may contribute to the low percentage of mothers (13.9% in 2005) breastfeeding exclusively at 6 months postpartum (2). Short hospital stays make the teaching of breastfeeding a challenge. Lack of spousal or partner support and family customs may discourage breastfeeding. Although some employers recognize that encouraging breastfeeding as a policy improves employee morale and decreases absenteeism (24, 25), having to return to work may still be an obstacle. An unfriendly social environment may also make it difficult to breastfeed in public. Although the effect of these obstacles can be mitigated by educating the families, employers, and society, some women will decide that the challenges outweigh the benefits for themselves and their babies.

Who Can Breastfeed

Nearly every woman can breastfeed her child. Mother and newborn can more easily learn the basics and how to deal with the challenges if they have skilled and experienced support. The patient population for maternity services has changed dramatically over the past decade with an increase in the percentage of mother–infant dyads with risk factors for breastfeeding problems. These include mothers who have cesarean deliveries, have multiple births, have near term infants, had breast surgery, or have been separated from their infants (6, 26, 27). Women who have cesarean deliveries should be reassured that they can breastfeed their newborns as well as women who have vaginal deliveries. With early identification and proactive management, additional support can be

focused on promoting the three key factors: the establishment of adequate milk production, attachment (latch-on and infant suckling), and maternal confidence. With an increase in the percentage of mothers with risk factors for breastfeeding problems, physicians should recognize opportunities in the early postpartum period for preventive management.

Some women are incorrectly informed, or assume, they cannot breastfeed because of their anatomy or other special circumstances, such as women who have inverted nipples or have had breast surgery. In reality, these circumstances do not necessarily prevent breastfeeding. True inverted nipples are rare. If milk production can be established by means of hand or electrical expression, inverted nipples should not preclude breast-milk feeding or direct breastfeeding with the use of a silicone nipple shield. Most women with nipples that appear flat or inverted can breastfeed given appropriate assistance in the early days of lactation. Pumping for a minute or two before offering the breast to the newborn has been shown to facilitate latch-on (10). Lactation is possible for women who have had breast surgery unless it involved the complete severing of the lactiferous ducts. Women may breastfeed after reduction mammoplasty, depending on the degree of interruption to the ductile system (28). Those who have had augmentation mammoplasty may facilitate breastfeeding through frequent emptying during the time of lactogenesis. Breast biopsies involving an areolar incision have the potential to be problematic, but women can compensate by augmenting production on the uninvolved side. Women with periareolar incisions and women who have had breast reductions should be counseled about monitoring infant growth because they are at increased risk of producing an insufficient supply of milk. Pierced nipples have not been associated with breastfeeding difficulties unless there is infection or scarring. Nipple devices should be removed before feeding to avoid the risk of infant choking (29). Women with hypoplastic or tubular breasts may have difficulty producing sufficient milk and should seek specialized advice; this condition is rare.

Some babies with cleft lips or palates may be able to breastfeed. The soft breast tissue may fill the defect and enable the infant to develop a seal. Sometimes a palatal obturator allows the infant to breastfeed and not aspirate milk. Mothers with premature infants can breastfeed. However, a premature infant has special nutritional needs. In all of these situations, evaluation by experts may be beneficial.

Who Should Not Breastfeed

Although it is true that most women can breastfeed, there are exceptional circumstances. All clinicians should understand these exceptions so that a patient's frustration and disappointment can be minimized. The contraindications to breastfeeding are few (9, 30). Women who should not breastfeed are those who:

- Take street drugs or do not control alcohol use (9)
- Have an infant with galactosemia (9)
- Have certain infections, such as human immunodeficiency virus (HIV); human T-cell lymphotropic virus type I or type II; active, untreated tuberculosis or varicella; or active herpes simplex with breast lesions (10)
- Are taking antineoplastic, thyrotoxic, and immunosuppressive agents (9, 10, 31)
- Take certain medications or are undergoing treatment for breast cancer (10, 31)

Drugs ingested by a woman can be transmitted to her newborn through breastfeeding. If the effect of the drug on the newborn is detrimental, or questionable, it should be avoided. This is especially true of alcohol and illicit drugs. Alcohol is a toxin. A woman who drinks significant amounts of alcohol should not breastfeed (11). Information on infant exposure to street drugs in breast milk, such as cocaine, 3,4-methylenedioxymethamphetamine (MDMA), lysergic acid diethylamide (LSD), phencyclidine (PCP), and heroin, can be found in ACOG's resource *Special Issues in Women's Health* (32). There is evidence that women who participate in a successful methadone maintenance program may breastfeed (31).

Infants with galactosemia should neither breastfeed nor consume any formula containing lactose (eg, cows' milk) because doing so will exacerbate the condition. These infants should be fed special lactose-free formula.

Some infections contraindicate breastfeeding; others require precautions. Approaches to breastfeeding vary according to the infection and the environment. Information about breastfeeding in relation to common maternal infections is available for further reference (10). Highlights of this information follow.

Women in the United States who have human immunodeficiency virus (HIV) or human T-cell lymphotropic virus infections should not breastfeed because breast milk can transmit these infections to the infant. In some countries with high infant mortality rates, however, the benefits of breastfeeding in providing nutrition and preventing infections may still outweigh the risks of transmitting HIV or human T-cell lymphotropic virus.

If a woman has active pulmonary tuberculosis, the repeated and prolonged close contact involved in feeding exposes the infant to risk of airborne infection. Therefore, the woman should not be in contact with her baby until she has been adequately treated and is considered to be noncontagious. The infant can be given the mother's expressed breast milk because it does not contain *Mycobacterium tuberculosis* (10).

A woman with active varicella (chickenpox) lesions should neither breastfeed nor bottle-feed her infant. She should be isolated from the infant while she is clinically infectious. Once the infant has received varicella-zoster immune globulin (10), the woman can provide expressed breast milk for the infant if there are no skin lesions on the breasts. She can resume breastfeeding when she is no longer clinically infectious. An immunocompetent woman who develops herpes zoster infection (shingles) can

continue breastfeeding if lesions are covered and are not on the breast. Maternal antibodies delivered through the placenta and breast milk will prevent the disease or diminish its severity. An infant may be given varicella-zoster immune globulin to reduce risk of transmission (10). Breastfeeding also is contraindicated in women who have active herpes simplex infections on the breast until the lesions are cleared.

Hepatitis infections do not preclude breastfeeding. With appropriate immunoprophylaxis, including hepatitis B immune globulin and hepatitis vaccine, breastfeeding of babies born to women positive for hepatitis B surface antigen poses no additional risk for the transmission of hepatitis B virus (33). If a woman has acute hepatitis A infection, her infant can breastfeed after receiving immune serum globulin and vaccine (10). The average rate of hepatitis C virus (HCV) infection reported in infants born to HCV-positive women is 4% for both breastfed and bottle-fed infants. Therefore, maternal HCV is not considered a contraindication to breastfeeding (34).

In women with cytomegalovirus infection, both the virus and maternal antibodies are present in breast milk. Because of this, otherwise healthy infants born at term with congenital or acquired cytomegalovirus infections usually are not affected by the virus if they are breastfed. A study of infants who developed infections during breastfeeding found that the infants also developed an immune response, did not develop the disease, and rarely manifested symptoms (30).

Many medications are compatible with breastfeeding (31). Information about the current data on the transfer of drugs and other chemicals in human milk can be found in the AAP/ACOG resource *Breastfeeding Handbook for Physicians* (see "Resources"). There is also a new online National Library of Medicine database on drugs and lactation available at http://toxnet.nlm.nih.gov/. Generally, breastfeeding is contraindicated for women taking antineoplastic, thyrotoxic, and immunosuppressive agents. Similarly, women who are receiving therapeutic radioactive isotopes or undergoing chemotherapy or radiation therapy should not breastfeed (31, 33, 35). Medications with relative contraindications may sometimes be used cautiously by timing doses to immediately follow a feeding (35). Diagnostic radioactive isotopes require temporary interruption of breastfeeding. For additional information, refer to guidelines developed by the Nuclear Regulatory Commission (36).

Preconception and Prenatal Education on Breastfeeding

The health benefits of breastfeeding and the health risks of not breastfeeding warrant professional cooperation and coordination among all health care workers to educate and encourage women and their families to choose breastfeeding. Patient education materials can reinforce the message (see "Resources"). The obstetrician–gynecologist has many opportunities during periodic gynecologic examinations and prenatal visits to promote breastfeeding, allay a woman's anxieties, and suggest solutions or resources to make breastfeeding a practical choice for the patient and her family.

Periodic Gynecologic Examinations

Obstetrician–gynecologists can advocate breastfeeding to all reproductive-aged women by mentioning breastfeeding during the breast examination portion of routine gynecologic visits, if appropriate. Women whose breast anatomy appears to be normal can be told that if they decide to have a baby, there are no structural impediments to breastfeeding.

Prenatal Visits

Teaching the pregnant woman and her partner about childbirth and breastfeeding is an integral part of good prenatal care. Other family members who could support breastfeeding may be included. Education can occur in the physician's office or clinic. The advice and encouragement of the obstetrician–gynecologist are critical in making the decision to breastfeed. Other health professionals, such as pediatricians, nurses, and certified lactation specialists, also play an important role. Alternatively, hospitals and other organizations, including mother-to-mother groups and other lay organizations, can provide education for pregnant women and their partners.

Some women who choose to breastfeed were breastfed themselves or had a sibling who was breastfed, which established it as normal behavior in their household. These women would probably benefit from some education and reinforcement concerning breastfeeding. Women whose family and friends have not shared breastfeeding experiences also approach pregnancy with a desire to do what is healthiest for their babies. Guidance and consideration of life situations are important in helping these women and their families make a decision about feeding their infants. Information about the benefits and challenges of breastfeeding compared with the use of formula will help them make good decisions.

The initial prenatal visit is an optimal time to encourage or reinforce the decision to breastfeed. Most patients seek information and guidance from their physicians, and the importance of the physician's recommendation should never be underestimated. A large percentage of women make decisions about infant feeding before pregnancy or in the first trimester. The first visit is, therefore, an ideal time to emphasize the advantages of breastfeeding compared with formula feeding, as well as the advantages of exclusive breastfeeding. Mothers who intend to combine breastfeeding and bottle-feeding rather than exclusively breastfeeding are less likely to reach their own breastfeeding goals (37). Some experts suggest replacing the question, "Are you planning to bottle-feed or breastfeed?" with statements that do not equate the two feeding methods. Suggested statements that would promote discussion include, "Have you noticed your breasts are changing in preparation for feeding your baby?" or "What have you heard about breastfeeding?" Barriers should be explored to determine if they can be addressed in such a way as to encourage breastfeeding. During the

breast examination, the physician can perform a breastfeeding-specific examination and answer any questions about the usual pattern of changes in the breasts during pregnancy and breastfeeding. If there are no structural problems, the woman can be reassured about her ability to breastfeed. If her nipples appear to be inverted, she should know that appearance is not necessarily prognostic and she may be able to breastfeed. The techniques to assist in nipple eversion, however, are not recommended during pregnancy because there is no evidence to support their effectiveness (10). Any abnormal breast masses noted on this examination should be adequately explored with the use of technology such as ultrasonography and, possibly, biopsy as indicated.

Prenatal Breastfeeding Instruction

Today, with shorter postpartum hospital stays, it is important for pregnant women to come to the hospital for delivery with a good foundation of knowledge gained during the antepartum period. Prenatal education groups have been shown to be particularly effective in increasing duration of breastfeeding (38). Education in the hospital can then focus on operational aspects of breastfeeding such as latch-on and feeding techniques.

A woman who is appropriately counseled on breastfeeding options and chooses not to breastfeed should be reassured that her milk production will abate during the first few days after delivery. Hormone treatment to stop milk production is no longer recommended. Current recommendations include a well-fitted support bra, analgesics, and ice packs to relieve the pain. She also can be assured that if she changes her mind, she may still be able to initiate breastfeeding within the first few days postpartum. Several hospital protocols and practices have been shown to increase rates of successful breastfeeding (see the box) (39).

Labor

Certain pain management interventions in labor may decrease breastfeeding initiation rates. To support a mother's desire to breastfeed, pain management should be balanced to ensure pain relief for the mother while avoiding excessive amounts of medication, particularly narcotics that can adversely affect the infant's ability to breastfeed effectively. Although cesarean delivery may make breastfeeding more challenging (29), patients who have a cesarean delivery should still be encouraged to breastfeed. Women undergoing cesarean deliveries using a regional anesthetic or under nonemergent situations are more likely to initiate and continue breastfeeding than those who have undergone an emergency cesarean delivery or received general anesthesia (40).

Delivery

The immediate postpartum period should allow the woman and her newborn to experience optimal bonding with immediate physical contact, preferably skin to skin. Separation may lead to complications such as hypothermia and hypoglycemia, increasing the likelihood of supplementation. The initial feeding should occur as soon after birth as possible, preferably in the first hour when the baby is awake, alert, and ready to suckle. The longer the interval between birth and the first feeding, the more likely the use of supplementation (41). Newborn eye prophylaxis, weighing, measuring, and other such examinations should be deferred until after the first feeding or until they can take place without separating the infant from the mother (9). Such procedures usually can be performed later in the woman's room.

Postpartum Support for Breastfeeding

All hospitals should have trained personnel available to provide breastfeeding support and should offer 24-hour rooming-in to maximize the interaction between the woman and her newborn. Rooming-in allows the mother to begin recognizing her infant's hunger cues. Rooming-in and promoting skin-to-skin contact have numerous advantages for

Ten Hospital Practices to Encourage and Support Breastfeeding*

1. Maintain a [supportive] written breastfeeding policy that is communicated to all health care staff.
2. Train all pertinent health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits of breastfeeding.
4. Offer all mothers the opportunity to initiate breastfeeding within 1 hour of birth.
5. Show breastfeeding mothers how to breastfeed and how to maintain lactation even if they are separated from their infants.
6. Give breastfeeding infants only breast milk unless medically indicated.
7. Facilitate rooming-in; encourage all mothers and infants to remain together during their hospital stay.
8. Encourage unrestricted breastfeeding when baby exhibits hunger cues or signals or on request of mother.
9. Encourage exclusive suckling at the breast by providing no pacifiers or artificial nipples.
10. Refer mothers to established breastfeeding and/or mothers' support groups and services, and foster the establishment of those services when they are not available.

*The 1994 report of the Healthy Mothers, Healthy Babies National Coalition Expert Work Group recommended that the UNICEF-WHO Baby Friendly Hospital Initiative be adapted for use in the United States as the United States Breastfeeding Health Initiative, using the adapted 10 steps above.

Healthy Mothers, Healthy Babies National Coalition. Baby friendly hospital initiative feasibility study: final report. Alexandria (VA): HMHB; 1994.

both the infant and mother. Infants cry less, sleep more, and become adept at breastfeeding sooner (41, 42). Mothers also sleep better and have increased milk production (43, 44). Separation of a breastfeeding woman and newborn should be avoided whenever possible. Most newborn care and procedures, including bathing, blood drawing, physical examinations, and administration of medication and phototherapy, can be performed in the mother's room (9). In this way, mother and baby can benefit together from the nursing care available.

Postpartum Education on Breastfeeding

Instruction During Hospital Stay

Hospital personnel should have adequate time allotted to each patient, no matter when the delivery occurs, and provide a specific program on practical aspects of breastfeeding that women master before discharge. Trained staff should assess breastfeeding behavior of the woman and newborn during the first 24–48 hours after birth for correct nursing positions, latch-on, and adequacy of newborn milk transfer (9). They also should ensure that the woman is skilled in the technique of manual expression of milk. Milk expressed by hand into a plastic spoon can be fed to the infant. This simple skill can help augment milk production and feed the sleepy baby or one who latches poorly. If the mother becomes engorged at home, she will know from this instruction how to soften the breast, feed the baby, and preserve production. During a rooming-in experience, a woman can learn to observe and respond to her newborn's signs of hunger, such as increased alertness or activity, mouthing, or rooting. She should understand that crying is a late sign of hunger. Personnel should teach mothers that newborns need to be breastfed on demand approximately 8–12 times every 24 hours until satiety (9); time at the breast varies and often is 10–15 minutes on each breast, and breastfeeding should not be limited unless a mother experiences soreness.

Instructions should indicate that breastfeeding should not be painful, but minor discomfort is common during the first 2 weeks. Discomfort may occur temporarily as the woman's milk is beginning to be produced. A physician should assess any significant pain or tenderness promptly. Generally, painful breastfeeding almost always results from poor positioning or latch-on, which should be immediately corrected, rather than from breastfeeding "too long." ACOG's "Breastfeeding Your Baby" pamphlet is a resource that can be used to help women with positioning and latch-on (see "Resources"). Latch-on is one of the most important steps to successful breastfeeding (see the box). Several helpful approaches are reviewed in greater depth in the *Breastfeeding Handbook for Physicians* (see "Resources").

Instructions for the First Week of Breastfeeding

Before discharge the woman should be educated about indicators of adequate intake and informed that for most breastfeeding infants, no water is required. She also should be educated about age-appropriate elimination patterns of her newborn during the first week after birth. At least six urinations per day and three to four bowel movements per day are to be expected by 5–7 days of age. She can be shown how to keep simple records for the first few weeks, noting the frequency and length of feedings and the number of bowel movements and wet diapers, for discussion with her health care providers. Although new, more absorbent diapers make it difficult to assess frequency of urination, a simple gage of adequate breast-milk intake is loose, bright-yellow bowel movements by day 5. She should understand expected patterns of newborn weight loss and gain. Before gaining weight, the breastfeeding newborn may lose 5–7% of birth weight in the first week. When the loss is greater than 5–7% or reaches that level in the first 3 days, a clinician should evaluate the breastfeeding process to address any problems before they become serious. A weight loss of up to 10% is the maximum that is acceptable only if all else is going well and the physical examination findings are negative for problems. Follow-up should confirm that the newborn is beginning to regain weight after the first week (10). Continued meconium elimination by

Positioning and Latch-On for Breastfeeding

When observing an infant being breastfed, take note of the following:

- Position of mother, body language, and tension. Pillows may provide support for the arms or the infant.
- Position of infant: Ventral surface should be to mother's ventral surface, with lower arm, if not swaddled, around mother's thorax. Infant cannot swallow if head has to turn to breast, and grasp of areola will be poor. Infant's head should be in crook of arm and moved toward breast by the mother's arm movement if cradle hold is used.
- Position of mother's hand on breast not in way of proper grasp by infant
- Position of infant's lips on areola about 1–1½ inches (2.5–3.7 cm) from base of nipple
- Lips flanged and lower lip not folded in so that infant does not suck it
- Actual events around the presenting breast to assist infant in latching on
- The infant's response to lower lip stimulus by opening mouth wide
- The motions of the masseter muscle during suckling and sounds of swallowing indicative of appropriate suckling
- Ratio of sucks to swallows becomes 1:1 as feeding progresses
- Mother comfortable with no breast pain

Modified from Lawrence RA, Lawrence RM. Breastfeeding: a guide for the medical profession. 6th ed. Philadelphia (PA): Elsevier Mosby; 2005, with permission from Elsevier.

day 5 also should prompt further evaluation of the breastfeeding process.

Phone-In Resource

The departure of a woman and her newborn from the hospital can be a joyous but daunting experience. The family is now responsible for the care and feeding of the newborn. Whether or not they have a support system at home, a phone-in resource is needed for ongoing instruction and advice. The obstetrician–gynecologist's office, the place where the woman has received most of her care, should be that resource or at least provide links to other resources in the community, such as lactation specialists and support groups. Many times these specialists and groups are available through local hospitals.

Postpartum Care

All breastfeeding women and their babies should be seen by a pediatrician or other knowledgeable health care practitioner when the baby is 3–5 days old (9). Timing depends in part on time of discharge from the hospital and other risk factors such as those for hyperbilirubinemia (45). This early visit is important in order to evaluate health status of the newborn (eg, weight, hydration, and hyperbilirubinemia) at this critical age, as well as to observe the woman and newborn during breastfeeding. Breastfeeding infants should have a second ambulatory care visit at 2–3 weeks of age to further monitor weight gain and provide ongoing support to the mother (9).

Women can be reassured that eating a well-balanced diet generally will provide the nutrients their infants need. One exception is that many individuals do not synthesize adequate amounts of vitamin D from the sunlight. Furthermore, unprotected exposure to sunlight is not recommended. For this reason vitamin D is added to milk for general consumption and to infant formula. Breastfed babies should also receive vitamin D supplementation (200 international units of oral drops daily) beginning in the first 2 months of life and continuing until daily consumption of vitamin D fortified milk or formula is 500 mL (9, 46, 47) or vitamin D supplemented foods are added. Vitamin D supplementation for a woman will not significantly increase the content of vitamin D in her breast milk. In general, mothers can be reassured that the quantitative and caloric value of their breast milk will not be affected with dieting and exercise (48).

On average, it is estimated that women will need approximately 500 kcal per day more than recommended levels for nonpregnant and nonlactating women. Additional maternal food intake generally will provide additional needed vitamins and minerals (with the possible exceptions of calcium and zinc). Women of childbearing age need to maintain a calcium intake of 1,000 mg per day at all times, including during pregnancy and lactation (1,300 mg for adolescents through 18 years of age). Dietary intake is the preferred source of all needed nutrients. However, many women breastfeed on a lower calorie intake level than suggested, consuming bodily stores instead. The resultant weight loss of the mother usually does not affect breastfeeding but may result in the woman having deficiencies of magnesium, vitamin B_6, folate, calcium, and zinc (11, 47). Corrective measures can be suggested by a nutritionist for improving nutrient intakes of women with extreme or restrictive eating patterns (11). Women should be encouraged to drink plenty of fluids to satisfy their thirst and maintain adequate hydration. However, fluid intake does not affect milk volume. Breastfeeding women need not avoid spicy or strong flavored foods unless the infant seems to react negatively to specific foods.

The spouse or partner can play a vital support role for the breastfeeding woman by doing such things as bringing the newborn to her for feeding, changing the newborn, holding the newborn, and offering encouragement. Couples should be encouraged to discuss emotional adjustments to their new family status. Couples may find that caring for a baby can complicate their own relationship, including a desired resumption of sexual intercourse. Health care providers should address contraceptive needs, and the emotional adjustments, as well as physical problems of soreness, fatigue, and vaginal dryness secondary to lactation.

Contraception

Women should be encouraged to consider their future plans for contraception and childbearing during prenatal care and be given information and services that will help them meet their goals. Many women resume intercourse before they return for their postpartum checkup and may be at risk of becoming pregnant. Avoiding unintended pregnancy is important for a woman who is breastfeeding because there will be fewer variables that can affect her milk production and nutrition status if the next pregnancy is delayed until she has completed breastfeeding (10). Most women desire a birth interval of greater than 1 year, so a discussion of contraception with both breastfeeding and nonbreastfeeding women is important. For more information on contraception and breastfeeding refer to the *Breastfeeding Handbook for Physicians* (see "Resources").

The average time to first ovulation is 45 days postpartum (range, 25–72 days) for a woman who does not breastfeed (49). In contrast, ovulation in women who breastfeed exclusively can be delayed 6 months. When carefully defined criteria are met, this can be used as a reliable natural form of family planning or birth spacing temporarily (see section on "Lactational Amenorrhea").

Nonhormonal Methods

Nonhormonal contraceptive options neither affect breastfeeding nor pose a risk to the infant. Such methods include intrauterine devices, condoms, diaphragms, or cervical caps. Intrauterine devices may be particularly well suited to breastfeeding women because they often desire highly effective long-term contraception, they are parous, and they desire a method that has no impact on breastfeeding. Diaphragms and cervical caps

may need to be refitted postpartum. Prelubricated latex condoms have noncontraceptive advantages in helping to prevent sexually transmitted diseases and to relieve vaginal dryness. Female sterilization or vasectomy may be considered by couples desiring permanent birth control (49).

Hormonal Methods

Limited data exist about the impact of hormonal contraception on breastfeeding. Although some studies suggest that estrogen-containing hormonal contraceptives may decrease the amount of breastmilk produced, no well-designed randomized controlled trials have proved this association. Evidence related to the effect of progestin-only methods is similarly lacking. Package inserts recommend delaying or avoiding hormonal contraception. This reflects early concerns that have not been supported by subsequent research and experience. A recent Cochrane review concluded that evidence is insufficient to reach conclusions about the impact of hormonal contraception on breastfeeding (50). Based on clinical experience in the absence of conclusive data, ACOG makes the following practical recommendations for hormonal contraception in breastfeeding women:

- Progestin-only oral contraceptives can be prescribed or dispensed at discharge from the hospital to be started 2–3 weeks postpartum (eg, the first Sunday after the newborn is 2 weeks old).
- Depot medroxyprogesterone acetate can be initiated at 6 weeks postpartum.
- Hormonal implants can be inserted at 6 weeks postpartum.
- The levonorgestrel intrauterine system can be inserted at 6 weeks postpartum.
- Combined estrogen–progestin contraceptives, if prescribed, typically should not be started before 6 weeks postpartum, and only when lactation is well established and the infant's nutritional status is appropriate.

There are certain clinical situations in which earlier initiation might be considered, such as uncertainty about the opportunities for follow-up. Given the overall lack of data, health care providers may consider earlier initiation of progestin-only methods (eg, before hospital discharge) and initiation of estrogen-containing hormonal contraception after the period of hypercoagulability associated with pregnancy has resolved (eg, 2–4 weeks).

Lactational Amenorrhea

Women who breastfeed can make use of the natural contraceptive effect of lactation. The lactational amenorrhea method is most appropriate for women who plan to breastfeed exclusively for 6 months. If the baby is fed only breast milk or is given supplemental nonbreast-milk feedings only to a minor extent and the woman has not experienced her first postpartum menses, breastfeeding provides greater than 98% protection from pregnancy in the first 6 months after delivery (49, 51, 52). Four prospective clinical trials of the contraceptive effect of the lactational amenorrhea method demonstrated cumulative 6-month life-table, perfect-use pregnancy rates of 0.5%, 0.6%, 1.0%, and 1.5% among women who relied solely on it. To suspend fertility, women should be advised that intervals between feedings should not exceed 4 hours during the day or 6 hours at night (Fig. 1). Supplemental feedings should not exceed 5–10% of the total (53–57). For example, more than one supplemental feeding out of every 10 might increase the likelihood of returning fertility.

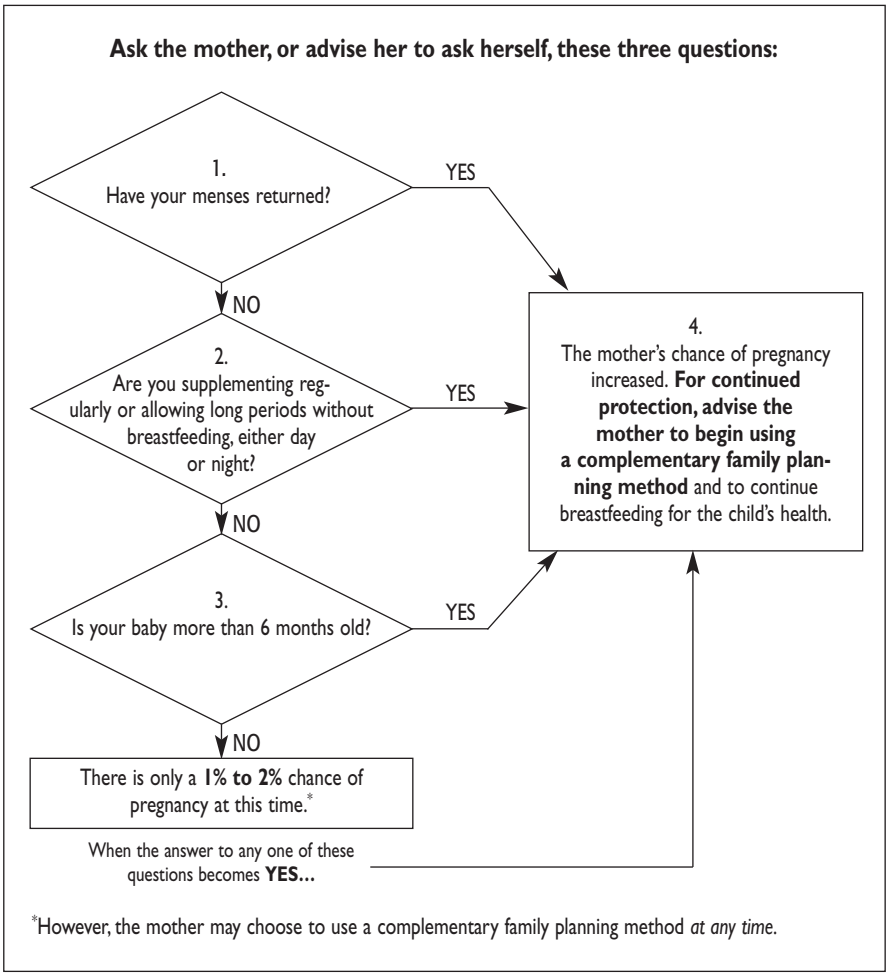

Figure 1. Algorithm for lactational amenorrhea method (LAM). (Labbok M, Cooney K, Coly S. Guidelines: breastfeeding, family panning, and the lactational amenorrhea method—LAM. Washington, DC: Institute for Reproductive Health, Georgetown University; 1994.)

Feeding practices other than direct breastfeeding, insofar as they may reduce the vigor and frequency of suckling and the maternal neuroendocrine response, increase the probability of returning ovulation (58). If there is uncertainty regarding the extent to which a woman is breastfeeding, it would be prudent to recommend additional methods of family planning.

Vaccination

Neither inactivated nor live vaccines administered to a lactating woman affect the safety of breastfeeding for mothers or infants. Breastfeeding does not adversely affect immunization and is not a contraindication for any vaccine. Although live vaccines multiply within the mother's body, most have not been demonstrated to be excreted in human milk. Inactivated, recombinant, subunit, polysaccharide, conjugate vaccines, and toxoids pose no risk for mothers who are breastfeeding or for their infants (59). For information on vaccines, refer to *Medications and Mother's Milk* (see "Resources").

Maintaining Milk Supply

Regular breastfeeding generally ensures adequate milk supply. As the baby grows and requires more milk, the woman's supply increases to accommodate the baby's needs. This matching of supply with demand may extend even to situations such as multiple births and continuing to breastfeed a child along with a subsequently delivered infant (tandem feeding). Avoiding unintended pregnancy is important for a woman who breastfeeds because variations in her milk production and nutrition status are minimized if she is not simultaneously breastfeeding and pregnant (10). Galactagogues, which are intended to enhance milk supply, should be used only with caution. Although some have been studied (35, 60–62), they also are used primarily outside of FDA regulation regarding content, safety, strength, and effectiveness.

Bottle Supplements and Pacifiers

The use of pacifiers and supplemental bottle-feeding are considered by many to be deterrents to sustained breastfeeding. However, evidence is not clear that a direct effect on breastfeeding exists (6, 63–66). Poor breastfeeding outcomes and the use of bottles and pacifiers may be common results of behaviors such as extending intervals between feedings and beginning weaning. Because introduction of a pacifier or bottle has the potential to disrupt the development of effective breastfeeding behavior, their use should be minimized until breastfeeding is well established. It is important to help mothers understand that substituting for or delaying breastfeedings may ultimately reduce milk supply because of the reduction in stimulation derived from infant suckling. Encouraging good breastfeeding practices should be the primary focus of counseling along with increasing the mother's understanding that the use of pacifiers and bottles often has been associated with reduced breastfeeding (6, 65, 66).

Interruption of Breastfeeding

Separation of mother and infant should be avoided whenever possible, especially during the early establishment of lactation (first 3 weeks). If it is known in advance that hospitalization or a trip, for example, will require the mother to be separated from the infant for more than a day, careful planning can ensure that the ability to breastfeed will be preserved and breast milk will be available for the infant. During the separation, regular pumping of the breasts should be sufficient to maintain the milk supply. The milk may be saved for feeding the infant. When the separation is because of hospitalization, the milk should be discarded if it is judged to contain drugs that are contraindicated. Anesthetics are not contraindicated (67). When the mother and infant are reunited, the reestablishment of normal breastfeeding generally progresses well.

Breast Pain

Breast and nipple pain is a common problem for the breastfeeding woman, and is the second most common factor leading to cessation of breastfeeding (68). The cause should be diagnosed and treated promptly. Breast pain may result from engorgement, nipple pain, or mastitis.

Engorgement

Engorgement results from ineffective or infrequent removal of milk from the breast and leads to full, hard, and tender breasts. This may result from mother and infant separation, a sleepy baby, sore nipples, or improper breastfeeding technique. Prevention involves ensuring proper latch-on and milk removal and encouraging on-demand feeding (10, 68).

Nipple Pain

Sore nipples are the most common complaint raised by mothers in the immediate postpartum period. Soreness usually results from poor positioning or latch-on. Trauma, plugged ducts, candidiasis, harsh breast cleansing, or use of potentially irritating products, and skin disorders also may contribute to nipple pain. The first-line treatment should be counseling about basic latch-on techniques (69). Purified lanolin cream and breast shells (to protect the nipples from friction between feedings) may be suggested to facilitate healing (68, 70).

Mastitis

Mastitis occurs in 2–9.5% of breastfeeding women (71, 72). It most commonly occurs between the second and third weeks postpartum but may be seen any time throughout the first year (73). Mastitis is manifested by a sore, reddened area on one breast and often is accompanied by chills, fever, and malaise. The fever can be as high as 40°C. A segment of the breast becomes hard and erythematous.

The differential diagnosis includes clogged milk duct, marked breast engorgement, and a rare but lethal condition, inflammatory breast carcinoma. Clogged milk ducts present as localized

tender masses. They respond to warm wet compresses and manual massage of the loculated milk toward the nipple. Breast engorgement is always bilateral with generalized involvement. It occurs most commonly in the first 2 weeks postpartum. The major feature that differentiates mastitis from inflammatory breast cancer is the knowledge of previous negative breast examination results during the pregnancy. If examination results have been normal, breast engorgement is the more likely diagnosis (71). Inflammatory breast cancer presents as unilateral erythema, heat, and induration that is more diffuse and recurrent (74).

The most common causative agent in mastitis is *Staphylococcus aureus,* occurring in 40% of cases (75). It also is the most common cause of abscess. Other common organisms in mastitis include *Haemophilus influenzae* and *H parainfluenzae, Escherichia coli, Enterococcus faecalis, Klebsiella pneumoniae, Enterobacter cloacae, Serratia marcescens*, group B streptococci, and *Pseudomonas pickettii* (74, 76–78).

The condition usually can be treated successfully with narrow-spectrum antibiotics (the first choice for women who are not allergic is dicloxacillin, 500 mg, four times daily for 10–14 days), hydration, bed rest, and analgesics such as acetaminophen or ibuprofen. The mother should continue to breastfeed or express the milk from both breasts because it is important to empty the affected breast. Discarding the milk from the affected breast is not recommended when a mother with mastitis is being treated, except in unusual circumstances. It does not pose a risk for the healthy, term infant. Breast milk from the unaffected breast may be used under any circumstance. The antibiotics commonly used to treat mastitis and anti-inflammatory agents, such as ibuprofen, are safe to use when breastfeeding (33, 79).

If mastitis is not treated aggressively, it may become chronic or an abscess may develop. Treatment is successful in curing mastitis if started early; the most common cause of recurrent mastitis is inadequate treatment. Delayed administration of antibiotics is associated with an increased incidence of breast abscesses. Many staphylococcal infections are caused by organisms sensitive to penicillin or a cephalosporin. Empirical treatment with dicloxacillin may be started (75, 80). Women who are allergic to penicillin may be given erythromycin. If the infection is caused by resistant, penicillinase-producing staphylococci, an antibiotic such as vancomycin or cefotetan can be used. All antibiotics should be continued until 2 days after the infection subsides, a minimum of 10–14 days.

Abscess

An abscess is diagnosed by the presence of a palpable mass or fever that fails to abate within 48–72 hours of antibiotic therapy. Generally, abscesses have been treated with incision and drainage. Multiple abscesses may require multiple incisions, with a finger inserted to break down the locules. Breast milk should be discarded for the first 24 hours after surgery, with breastfeeding resuming thereafter if there is no drainage into the breast milk (10). Recently, ultrasonographically guided needle aspiration was shown to be successful in treating abscesses (81, 82).

Working Mothers and Time Away

Many mothers are employed outside the home. In some situations they can feed their infants at work, but this is not common. Health care professionals can help the mother consider the method by which she plans to feed her infant when she returns to work. Employers are increasingly supportive of accommodating the needs of their breastfeeding employees (24). If a woman wants to continue to breastfeed or breast-milk feed, she should plan to pump her breasts to maintain her milk supply and to provide stored milk for the caregiver to feed the infant in her absence. A mother can be reassured that breastfeeding has already benefited her infant and that continuing breastfeeding and the use of breast milk to whatever degree she finds possible will be of further benefit. She also should be assured that professional support is available to help her continue breastfeeding. The physician should continue to support the woman, ultimately helping her choose the best alternative possible for feeding her infant if she chooses to stop breastfeeding.

Expressing Milk

Several methods are available to collect milk. Health care professionals should ensure that breastfeeding women can successfully express milk by hand. Because use of a breast pump is more efficient, rental or purchase of a pump can be considered. In general, electric pumps are more efficient than hand pumps. Pumping both breasts simultaneously is more effective and saves time.

On occasion, women have to educate employers about the necessity of time and location to pump breasts during the workday. The influence of the physician in creating a better environment should not be underestimated. A physician's letter or telephone call to the employer explaining how simple but vital the breastfeeding employee's needs are can be effective. Women who pump milk should have clean pumping and washing facilities available and, ideally, a refrigerator to store milk.

Storage of Milk

Human milk should be stored in a cool, safe place to maximize its preservation and minimize contamination. Breast milk can be stored in the refrigerator or on ice in glass or plastic containers. The use of refrigerated milk within 2 days is recommended, which is well before appreciable bacterial growth usually occurs. Breast milk intended for longer storage should be frozen as soon as possible and kept at the lowest and most constant temperatures available; for example, a deep freezer is preferable to a refrigerator freezer with a self-defrost cycle. Frozen milk can be stored for 3–6 months. Milk should be dated and used in date order to avoid loss of beneficial properties over time. Frozen milk can be thawed quickly under running water or gradually in the refrigerator. It should not be left out at room temperature for

more than 4–8 hours, exposed to very hot water, or put in the microwave. Once the milk has thawed, it should be used within 24 hours or discarded (10, 83).

Breastfeeding Expectations in Daily Life

There is an increased level of acceptance of breastfeeding nationally, but sporadic instances of authorities forbidding breastfeeding in public remain. Supportive laws and policies are becoming the norm. Recently, breastfeeding mothers have had increasing success in leading active lives. Couples commonly take their babies with them to meetings, outings, restaurants, and while traveling. Women who wish to be unobtrusive while breastfeeding their babies in public can do so.

Physicians' offices and other health care facilities should welcome and encourage breastfeeding by providing educational material and an atmosphere receptive to breastfeeding women. All staff members should be aware of the value and importance of breastfeeding and understand that their contacts with patients can help them decide to breastfeed and encourage them to continue (see the box).

Health care providers should be aware that the giving of gift packs with formula to breastfeeding women is commonly a deterrent to continuation of breastfeeding (84, 85). A professional recommendation of the care and feeding products in the gift pack is implied. It should be recognized and explained to new mothers that formula companies try to attract the interest of pregnant women with these gift packs. Physicians may conclude that noncommercial educational alternatives or gift packs without health-related items are preferable.

How Long to Breastfeed

During the first 6 months of life, exclusive breastfeeding is the preferred feeding approach for the healthy infant born at term. It provides optimal nutrients for growth and development of the infant. The American College of Obstetricians and Gynecologists recommends that exclusive breastfeeding be continued until the infant is approximately 6 months old. A longer breastfeeding experience is, of course, beneficial. The professional objectives are to encourage and enable as many women as possible to breastfeed and to help them continue as long as possible. Gradual introduction of iron-enriched solid foods in the second half of the first year should complement the breast-milk diet. The AAP recommends that breastfeeding continue for at least 12 months, and thereafter for as long as is mutually desired (9). Although some women continue breastfeeding during and after a subsequent pregnancy, the mother may wish to wean when a subsequent pregnancy occurs or the infant may wean naturally. Weaning creates a hormonal milieu conducive to remineralization of bone and maternal replenishment. This may be a consideration favoring delay of the next pregnancy until the mother has completed breastfeeding.

There are no rules about when to wean. Various situations and preferences may influence the timing. Whenever possible, the weaning process should be gradual. Eliminating a feeding every 2–3 days will achieve a comfortable transition for the infant and prevent engorgement in the mother. An infant weaned before 12 months should receive iron-fortified infant formula rather than cows' milk (9). If an infant is younger than 6 months, weaning can be accomplished by substituting a bottle or cup for a breastfeeding. If an infant is 6 months or older, he or she may use a cup and substitute other foods for breastfeeding. It should be recognized that the baby may wean by itself abruptly or gradually.

Abrupt weaning can be difficult for the mother and the baby, but certain measures can be helpful. The mother should wear a support bra. She does not need to restrict fluids. She may manually express just enough milk to relieve the engorgement. Cool compresses will reduce engorgement. Hormonal therapy is not recommended.

Office Tips

- Make ACOG Patient Education Pamphlets and other patient education materials available in waiting and examination rooms.
- Offer a call-in telephone number for advice—yours or another health care resource available in the community or hospital of birth.
- Provide information about and telephone numbers of lactation consultants and resources such as La Leche League in your community.
- Show videos on breastfeeding; if women's health videos normally play in the waiting room, include those on breastfeeding so all patients see them, not just pregnant or breastfeeding patients.
- Provide seating, such as pillows and a rocking chair for women with infants, that keeps breastfeeding in mind.
- Have pumps and an appropriate room for employees and patients. If in a medical office complex with other practices, make its availability known to other employees (they may be your patients) or collaborate in setting up a room elsewhere in the building.
- Identify a staff member interested in being a special resource on breastfeeding in the office and facilitate further training for the individual in order to assist you, other staff, and patients.
- Develop breastfeeding statistics for your practice and encourage staff by showing changes over time on displays in staff areas.
- Ask about hospital policies and practices and offer to help with staff training and patient orientation materials.
- Find out about breastfeeding skills, interests, and services of family physician and pediatric colleagues in the community. Encourage women and parents to choose a supportive caregiver for the infant and meet with him or her during pregnancy.

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Breast Cancer Detection

Clinical breast examination and breast self-examination are recommended for breastfeeding women, just as for all women aged 19 years and older. Because of normal changes in the breasts during pregnancy and lactation, cancer detection by palpation becomes more difficult. Studies indicate there are delays in the diagnosis of breast cancer during pregnancy and lactation, including greater intervals between palpation of a lesion and diagnosis. These delays result in an increased risk of metastatic disease at diagnosis and a reduced chance of diagnosis at stage I (86). If a mass or other abnormality is detected during lactation, it should be fully evaluated, including biopsy, if indicated. Breastfeeding can continue during the evaluation. Although the milk is not affected by a mammogram, a woman may want to breastfeed her infant just before the procedure to reduce discomfort. During lactation, mammograms are less reliable because of the associated increase in breast tissue density, which may make the test more difficult to interpret (74). Ultrasound examination can provide further assistance in evaluating palpable breast masses (solid or fluid-filled) during lactation (29).

Clinical breast examinations of women who may become pregnant are especially important. Increasing age is one of many risk factors for breast cancer; this concern is especially important for women who are having babies in their late 30s and early 40s. Although regular breast examinations should continue during the 1- or 2-year period of pregnancy and lactation, detection of abnormalities may be more difficult during that time. Therefore, some women and their health care providers may consider a screening mammogram before age 40 years for women planning pregnancies in their late 30s.

Emerging Issues

Environmental Toxins

Numerous national organizations have evaluated the issue of environmental contaminants in human milk. These environmental sources include food, water, air, cleaning products, and other daily exposures. Although additional research is needed, to date, there is little or no evidence of morbidity in a nursing infant from common chemical agents even though most of these substances are detectable in breast milk, including some persistent organic pollutants (87, 88).

Milk Banks

Some women who cannot breastfeed look to donor breast milk rather than formula to nourish their infants. Donor human milk is particularly beneficial for infants in neonatal intensive care units, primarily very low birth weight infants and those with gastrointestinal pathology (89). The Human Milk Bank Association of North America (HMBANA) is the only professional membership association for milk banks in Canada, Mexico, and the United States, and sets the standards and guidelines for donor screening, storage, sterilization of milk, and modern distribution methods. For more information, refer to the Human Milk Banking Association of North America at http://www.hmbana.org. In the United States, these banks have been able to meet the needs of neonatal intensive care units throughout most of the country, although priority is given to the most vulnerable infants. Locations of milk banks include Raleigh, North Carolina; San Jose, California; Denver, Colorado; Newark, Delaware; Iowa City, Iowa; and Austin, Texas. Informal sources, including Internet sites, for matching donors and families in need of human milk generally should not be recommended for safety reasons, such as transmission of infection caused by improper screening, sterilization, and storage.

Conclusion

In addition to supportive clinical care for their own patients, obstetrician–gynecologists should be in the forefront of fostering changes in the public environment that will support breastfeeding, whether through change in hospital practices, through community efforts, or through supportive legislation. The American College of Obstetricians and Gynecologists' Executive Board has indicated that "The American College of Obstetricians and Gynecologists strongly supports breastfeeding and calls upon its Fellows, other health professionals caring for women and their infants, hospitals, and employers to support women in choosing to breastfeed their infants. All should work to facilitate the continuation of breastfeeding in the work place and public facilities. Breastfeeding is the preferred method of feeding for newborns and infants. Health professionals have a wide range of opportunities to serve as a primary resource to the public and their patients regarding the benefits of breastfeeding and the knowledge, skills, and support needed for successful breastfeeding" (90).

With the cooperation of many dedicated health care providers, it appears that the Healthy People 2010 goals may be achievable. However, even if 75% of women initiate breastfeeding, two thirds of them will need to continue breastfeeding to reach the proposed target of 50% of all women breastfeeding at 6 months. This will be a challenge given that in 2004, the rate of any breastfeeding at 6 months was 36.2% (2). The greatest benefits for mother and infant and the best continuation rates accrue with exclusive breastfeeding in approximately the first 6 months. Obstetrician–gynecologists should ensure that women have the correct information to make an informed decision and, together with pediatricians, they should ensure that each woman has the help and support necessary to continue to breastfeed successfully (91, 92). The combined efforts of all health care providers will be necessary to meet these goals.

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