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

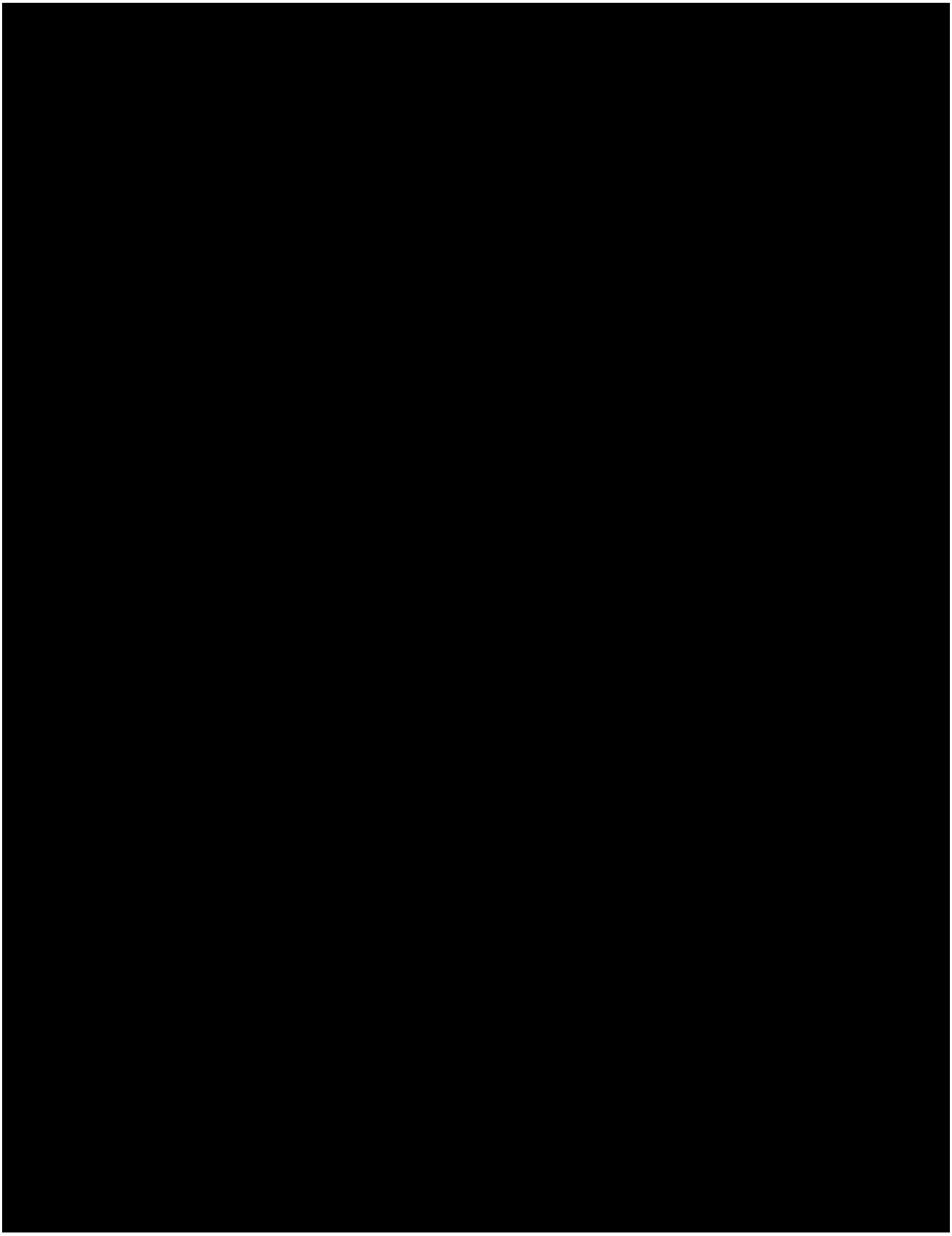
Obstetrician–gynecologists can advocate breastfeeding to all reproductive-aged women by mentioning breastfeeding during the breast examination portion of routine gynecologic visits, if appropriate. Women whose breast anatomy appears to be normal can be told that if they decide to have a baby, there are 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 whe ralr



both the infant and mother. Infants cry less, sleep more, and become adept at

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

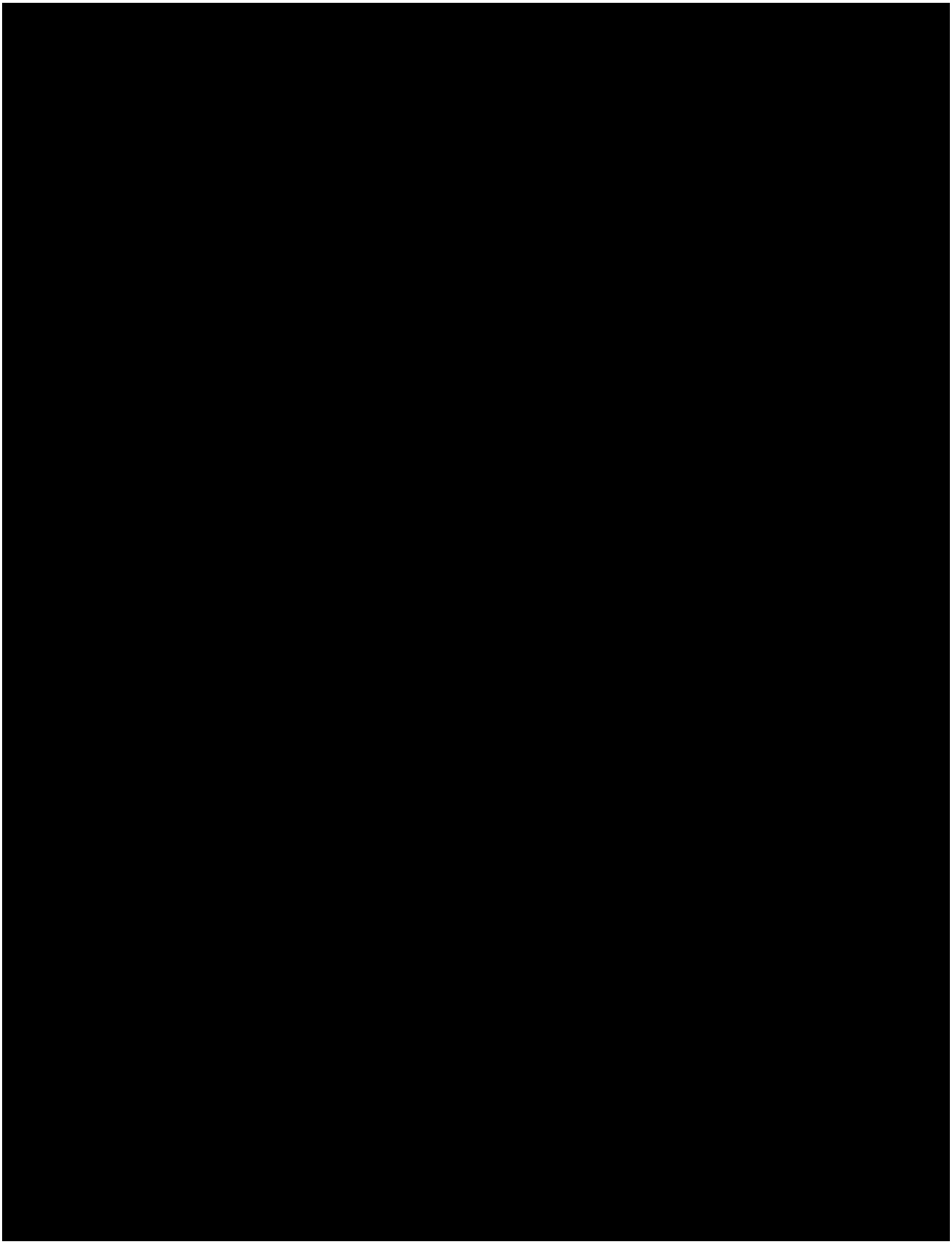
Women should be encouraged to consider their future plans for contraception and childbearing during prenatal care and be given information and services that will help them meet their goals. Many women resume intercourse before they return for their postpartum checkup and may be at risk of becoming pregnant. 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.



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*, occur-

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-

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

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