12

Lactation and Postpartum Contraception

A number of women in the community had stopped breastfeeding their babies early, so Dr. N puzzled over how to balance what he told the new mother about breastfeeding and about contraception. Breastfeeding was important for the baby and a contraceptive should not interfere with that. The mother should try to space her next pregnancy by about 2 years, so perhaps a contraceptive was quite necessary. He knew that women in this community generally breastfed their babies on demand for the first several months. This very practice would help protect the woman from becoming pregnant for about 6 months. Dr. N carefully explained breastfeeding practices to his patients, and he made certain they had contraceptive supplies at home well before the baby's 6-month birthday.

Breastfeeding contributes significantly to both birth spacing and child survival. Breast milk is an ideal source of nutrition for infants and provides an important level of immunological protection against infection. In addition, the lactational amenorrhea method (LAM) is a highly effective method of contraception. Other methods of contraception, such as barrier methods, progestin-only methods, and the intrauterine device (IUD) are also excellent options for women postpartum. Staff at family planning clinics have an important role in promoting breastfeeding.

LACTATION

Breastfeeding practices vary considerably in Africa. Breastfeeding is quite prevalent in both North Africa and sub-Saharan Africa, where about a third of children aged 4 to 6 months are fully breastfed (not receiving supplemental solid foods or milk). In countries such as Burundi and Mali, more than half the children aged 4 to 6 months are fully breastfed.[75]

Populations with low contraceptive use in which infants are intensively and extensively breastfed have lower fertility rates than populations with infrequent, short durations of breastfeeding.[2,4,38] Several cultures practice sexual abstinence after childbirth, often while the mother is breastfeeding. This practice decreases postpartum fertility and contributes to child spacing. The length of postpartum abstinence varies from country to country, with average periods of abstinence close to a year or longer reported in Burkina Faso, Cameroon, and Cote d'Ivoire (see Table 12:1).

To provide appropriate advice to postpartum clients, staff should understand related cultural practices. Traditional beliefs include taboos on breastfeeding during pregnancy and sexual relations during lactation.[86] However, as countries modernize, the length of both breastfeeding and postpartum abstinence may decline.[34] Women in rural areas tend both to fully breastfeed longer and to practice abstinence longer,[27] while women who live in urban areas and those of higher socioeconomic status more commonly bottle feed.[3] Recently, the duration of breastfeeding has increased among women in both urban and rural areas of countries such as Kenya and Ghana.[84] Women who are younger, have more years of education, use modern contraceptives,[52] and have wage employment tend to breastfeed for shorter durations.[64,78] Polygynous marriages may play a role in both extended periods of abstinence and breastfeeding.[63,75]

POSTPARTUM AND LACTATIONAL PHYSIOLOGY

Women may be infertile for a brief period after giving birth, but the postpartum woman may regain her fertility before she detects signs

that her menstrual cycle is about to resume. The breastfeeding woman will have a longer period of infertility than will the non-breastfeeding woman, but neither can predict when fertility will return.

Most nonlactating women resume menses within 4 to 6 weeks of delivery, but approximately one-third of first cycles are anovulatory, and a high proportion of first ovulatory cycles have defective luteal phases.[22] Fifteen percent of the second and third menstrual cycles are anovulatory, and a quarter of those that are ovulatory have luteal-phase defects. Among nonlactating women, the first ovulation occurs on average 45 days postpartum.

Table 12:1 Median duration of any breastfeeding, full breast-feeding, postpartum amenorrhea, postpartum abstinence and postpartum insusceptibility

Country/Date	Breast-feeding	Full Breast-feeding	Amenor-rhea	Abstinence	Insuscepti-bility
Burkina Faso 1993	25.2	0.6	14.6	18.9	22.2
Cameroon 1991	17.4	1.9	10.4	13.3	16.0
Central African Republic 1994-95	20.6	2.1	14.1	10.4	16.4
Cote d'Ivoire 1994	20.3	3.7	12.3	11.8	16.6
Ghana 1993	21.4	2.0	13.0	9.0	16.2
Kenya 1993	21.1	0.7	10.8	3.0	12.9
Madagascar 1992	19.4	1.6	12.5	3.6	13.4
Malawi 1992	21.2	1.2	11.9		
Mali 1995-96	21.6	6.8	13.6	2.8	14.4
Namibia 1992	17.3	1.7	8.3	6.0	12.8
Niger 1992	20.9	0.6	15.2	2.0	15.8
Nigeria 1990	19.5	1.5	14.6	10.8	19.0
Rwanda 1992	27.9	5.5	16.6	0.6	17.1
Senegal 1997	20.9	4.5	13.2	2.9	15.1
Sudan 1989-90	19.5		13.9	5.0	15.2
Tanzania 1996	21.5	2.2	12.1	5.6	15.7
Uganda 1995	19.5	3.5	12.6	2.2	13.4
Zambia 1996	20.0	2.5	11.5	4.7	14.1
Zimbabwe 1994	18.5	0.7	12.9	3.5	14.1

Source: Data from the Demographic and Health Surveys

Breastfeeding extends postpartum infertility by delaying ovulation and by reducing the likelihood of conception once ovulation or menses return. After the sixth month postpartum, it is increasingly likely that a woman will resume ovulation before menstruation returns.[7,42,51] However, even after menses return, the hormonal effects of lactation lead to fewer ovulatory cycles and luteal phase defects, further decreasing fertility.[2,17,24,38,39]

Infant suckling causes both the production of breast milk and the prevention of ovulation through complex hormonal reflexes. Suckling stimulates sensory cells in the nipple and areola, which signal the hypothalamus to release various hormones. One of these hormones, prolactin, stimulates milk production. Suckling directly reduces the release of gonadotropin-releasing hormone (GnRH) by the hypothalamus,[56] which in turn suppresses the release of luteinizing hormone (LH) required for follicle stimulation in the ovary. Suckling also triggers the release of the hormone oxytocin from the posterior hypothalamus. Oxytocin causes the muscle cells in the areola to contract and squeeze out milk, known as milk "let down." Auditory stimuli (e.g., a crying baby) and other stimuli can lead to "let down." Maternal conditions such as pain, fatigue, sore breasts, stress, and anxiety may inhibit this process.

Full or nearly full breastfeeding is associated with longer periods of lactational amenorrhea and infertility. Frequent, continuous stimulation of the breast by around-the-clock suckling strengthens the reflex that produces the contraceptive effect.[21,42] Together, a high frequency of breastfeeding episodes per day and a longer duration of suckling per breastfeeding episode significantly delay the return of ovulation.[7,21,31] Supplementary use of bottle feeding appears to reduce breastfeeding frequency far more than supplementary use of cup and spoon feedings.[7] However, even partial breastfeeding can inhibit ovulation and prolong amenorrhea. In summary:

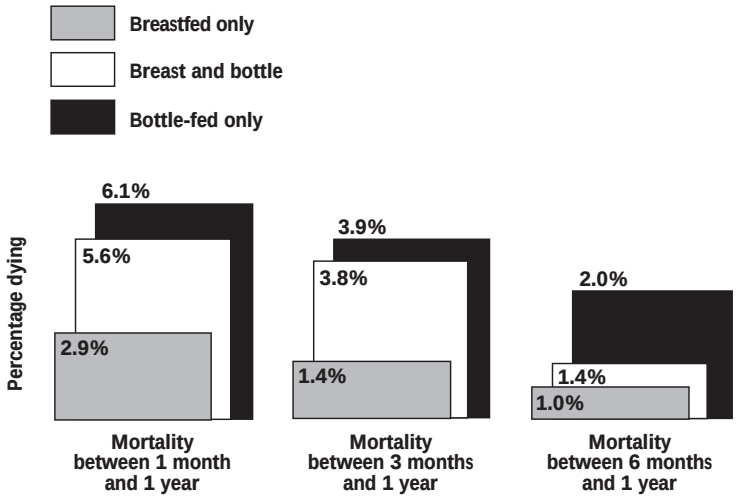
- Breastfeeding delays the onset of ovulation and the return of menses after childbirth.
- The longer a woman breastfeeds, the more likely she will begin menstruating while she is still breastfeeding.

- Breastfeeding decreases fertility even after menstrual bleeding resumes.
- A woman may ovulate before her first menses, especially with prolonged or supplemented breastfeeding.
- Low frequency and short duration of breastfeeding, sometimes due to supplemental feeding, can decrease lactational infertility.

HEALTH BENEFITS OF BREASTFEEDING

At any age, breastfeeding increases an infant's survival chances.[58,59,65,66,74,87] (See Figure 12:1.) Infants who are breastfed during the first 2 months of life have only 37% of the risk of death during that period that non-breastfed infants face.[66] Breastfeeding improves child survival the most in countries with high levels of infant mortality and among poorer subgroups within each population.[65]

Figure 12:1 Infant mortality during first year of life by source of milk



Source: Adapted from Galway et al. (1987)

Breastfeeding improves infants' chances of survival for two reasons: (1) breast milk has unique nutritive and anti-infective properties, and (2) breastfeeding contributes to birth spacing, which in turn promotes survival. Breast milk contains all the nutrients an infant needs for the first 4 to 6 months of life. The mixtures of protein, fat, carbohydrate, and trace elements in breast milk change over time to meet the infant's evolving needs.[52] The particular combination of minerals, vitamins, and amino acids found in human milk is distinct from that in cow's milk, which has a much higher proportion of protein and is more difficult to digest.[35] Many infant formulas combine protein, carbohydrates, and electrolytes in good balance, but they are still inferior to breast milk. However, when the woman cannot breastfeed or the infant fails to grow, formulas meeting the Codex requirements are the best option.

Several anti-infective agents are found in human milk. Immunoglobulins, leukocytes, and the bifidus factor all help guard the newborn against several types of bacteria and other harmful organisms.[35,52,71] These anti-infective agents are always present in breast milk and are concentrated in the colostrum, the breast milk available during the first few days of an infant's life. On the other hand, these agents are absent from infant formula. As a result, breastfed infants have lower risks of respiratory and gastro-intestinal illness,[18,30,46,52] and preterm infants who are breastfed have lower rates of neonatal necrotizing enterocolitis.[52]

Breastfed infants are less likely to develop allergies, including eczema, cow's milk allergy, and allergic rhinitis.[52] Asthma may be less common and less severe among children who are breastfed.[46] Decreases in the incidence of otitis media[46,52] and dental carries[48] are also associated with breastfeeding.

Frequent breastfeeding also improves infant health by lengthening the time between births. Children born within 2 years of their immediately older sibling have a 52% to 161% higher probability of dying within the first 5 years of life than children born more than 2 years after their immediately older sibling.[29] (See Chapter 1 on Benefits of Family Planning.) This greater risk may be due to maternal depletion and sibling competition as well as pregnancy-induced wean-

ing of the child.[65] Thus, the lengthening of the birth interval that breastfeeding can provide can indirectly raise survival chances for a child.[87]

Lower cost is another advantage of breastfeeding over infant formula. Because formula is expensive, some mothers try to save money by diluting the mixtures, which reduces their nutritional value. Some families make their own formula by mixing flour and sugar with water to give the appearance of milk.[14] Formula is often contaminated from using impure water supplies, which can result in diarrhea, a major killer of infants in developing countries. Exclusive breastfeeding (no supplementation) is highly protective against diarrhea.[33,70]

Breastfeeding has several benefits for the mother as well. Breastfeeding causes the release of oxytocin, which stimulates uterine contractions, and these in turn, help decrease postpartum hemorrhage. Breastfeeding mothers experience a rapid return of uterine tone. In addition, women who breastfeed have a lower risk of ovarian cancer[76,81] Women who have ever breastfed have a lower risk of breast cancer, and the degree of protection increases with duration of lactation.[16] Although reports are conflicting, breastfeeding may also protect against osteoporosis in later life.[16] Finally, extended breastfeeding facilitates the emotional bond between mother and infant, which may lead to better care of the infant and to increased psychological well-being.[46]

Human Immunodeficiency Virus and Breastfeeding

Human immunodeficiency virus 1 (HIV-1) can be transmitted by an infected mother to her infant in utero, during childbirth, and through breast milk. That HIV-1 can be transmitted by breastfeeding has been conclusively demonstrated by prospective studies of mothers who were infected postnatally.[13,85] Rates of maternal-fetal transmission through all three routes combined average 23% to 42%.[69] Most infants who are infected with HIV-1 acquire the infection in utero or during childbirth. When the mother is infected prenatally, breastfeeding adds an estimated 14% to the risk of HIV-1 transmission.[13] When the mother was infected postnatally, the risk of HIV-1 transmission is 29%.[14] The risk of perinatal

transmission of HIV-2 is much lower than the risk of perinatal transmission of HIV-1.[1] (See Chapter 5 on HIV, AIDS, and Reproductive Health.)

All babies born to an HIV-infected mother carry passively acquired maternal antibodies to HIV. Those infants who are not infected will gradually lose these antibodies, which nevertheless may persist in some cases until the infants are 15 months of age. Because standard tests for HIV detect HIV antibodies and not the virus itself, they cannot reliably determine which infants born to HIV-positive mothers have been infected until the child has lost the maternal antibodies.[25] Thus, the HIV status of infants born to HIV-infected mothers cannot be ascertained until well after birth. It is possible that new, inexpensive HIV tests will be developed that will yield positive results only if the infant is HIV-positive when cord blood is tested. In such cases, a negative result would not conclusively indicate that the infant was HIV-negative.[57] If such a test is developed, HIV-positive mothers might be advised that an infant who tests positive could be breastfed.

Clearly, the twin facts that breastfeeding greatly reduces infant morbidity and mortality on the one hand but that HIV can be transmitted by breastfeeding on the other pose a dilemma. In particular, there has been much discussion on whether breastfeeding should be discouraged in areas where HIV is prevalent.[9,13,20,28,32,40,61,77] The World Health Organization concluded in 1998 that:

> When children born to women living with HIV can be ensured uninterrupted access to nutritionally adequate breast-milk substitutes that are safely prepared and fed to them, they are at less risk of illness and death if they are not breast-fed. However, when these conditions are not fulfilled, in particular in an environment where infectious diseases and malnutrition are the primary causes of death during infancy, artificial feeding substantially increases children's risk of illness and death.[91]

Nutrition for Breastfeeding Women and Their Infants

Breast milk provides the new infant with adequate calories and protein for the first 6 months of life and offers immunologic protec-

tion derived from maternal antibodies and other factors. The breastfed infant is, therefore, less likely to suffer from diarrheal and other infectious diseases.[87] For maximum protection, breastfeeding should be continued for at least 2 years and practiced exclusively for at least 6 months "on demand," day and night, whenever the baby is hungry.

Sustained breastfeeding may not be possible for the mother who works away from the home. In such cases, she should try to nurse the infant several times both day and night and make certain her baby is getting good protein supplements or expressed breast milk. The excellent protein balance in breast milk complements other foods given to the infant. If a woman must give her infant bottled formulas, she should prepare and mix them in the correct concentration so that the baby receives enough protein and calories for healthy growth.

What happens if an infant does not get adequate nutrition? Two extreme syndromes that may result are marasmus and kwashiorkor. Infantile marasmus is often caused by premature weaning from breast milk, often because the mother is pregnant again and believes she cannot continue to breastfeed. Substituting grossly inadequate feeding from other sources deprives the infant of necessary calories and proteins. Kwashiorkor affects a child who is weaned to a diet sufficient in calories but deficient in proteins and nitrogen. For every case of marasmus or kwashiorkor, however, many other children suffer more moderate forms of malnutrition.

Women need more calories when they are breastfeeding. They derive a substantial part of these calories from stores built up during pregnancy. Any increase in calories or decrease in energy expenditures will help the breastfeeding mother retain her health, although a balanced diet including protein sources is best. Nursing mothers also need calcium, iron, and vitamins, which should be supplied through diet or supplements.[92] Family planning can aid a mother's nutrition by preventing a rapid succession of pregnancies that can drain her reserves of nutrition built up during pregnancy. If the mother diets or does not gain sufficient weight during pregnancy, she will need even more calories and proteins during breastfeeding.

Complications of Breastfeeding

Breastfeeding is associated with few serious complications. Lactating women may have breast tenderness, breast infections, and other problems that can be managed with straightforward clinical remedies. More important, instructing the mother both before and after delivery on how she can address potential problems can make breastfeeding easier (see Table 12:2). If a woman is undernourished and breastfeeding, she may be at risk of energy depletion.[47] Thus, any intervention in the postpartum period should include feeding the mother during the period in which she is breastfeeding the infant.

When women lactate, their estrogen levels are very low and they may have less vaginal lubrication than usual. They may need to use a simple lubricant during sexual intercourse to reduce discomfort. With sustained breastfeeding and the suppression of estrogens, some women will experience other symptoms similar to those of menopause: hair loss, dermatologic changes, and hot flashes.[48] These side effects diminish when menstrual cycles resume or when breastfeeding declines. It is important not to use estrogen treatment for these symptoms, because estrogen decreases milk production.

THE LACTATIONAL AMENORRHEA METHOD OF CONTRACEPTION

Breastfeeding provides more than 98% protection from pregnancy in the first 6 months if the infant's diet is not supplemented (or supplemented only to a minor extent) and if the woman has not experienced her first postpartum menses.[42] One clinical study of LAM found a cumulative 6-month pregnancy rate of 0.5% among women who relied solely on LAM and used the method perfectly.[68] Thus, LAM is an excellent method of contraception and has a pregnancy rate less than most other reversible methods. (see Figure 12:2).

Breastfeeding in general is an effective contraceptive at the population level and can also be an effective contraceptive for an individual

woman, depending on the frequency and duration of suckling and whether she is menstruating. Because frequent and exclusive breastfeeding suppresses ovulation, LAM is an effective temporary, introductory contraceptive for up to 6 months postpartum, as long as a woman follows the general guidelines to recognize her return to fertility.

LAM may also be appropriate beyond 6 months or if the infant is supplemented, as long as she breastfeeds intensely. The 6-month limit for LAM exists primarily because infant diets need to be supplemented after that time to ensure continued growth and development[52] and to avoid iron-deficiency anemia.[6] Cumulative pregnancy rates during lactational amenorrhea (regardless of whether the infant received supplementary food) at 6 and 12 months are 2.9% and 5.9%, respectively, compared with 0.5% at 6 months for LAM.[43]

Table 12:2 Complications of breastfeeding and their management

Problem	Description	Solution
Sore breasts	Mother has pain in breasts (not nipples) while breastfeeding.	Reassure mother this is not unusual. Correct positioning of infant may help. The pain may be related to a poorly functioning let-down response and will usually disappear within a few weeks.
Engorgement	Breasts enlarged with generalized tenseness and tenderness.	Mother should breastfeed frequently and for 10 to 15 minutes on each side at each feeding. 1) In first few days there is little milk. This discomfort will diminish with time. Mother may use mild analgesic. 2) If separated from infant for long period, mother should massage breasts and manually empty every 4 hours until she returns to infant.

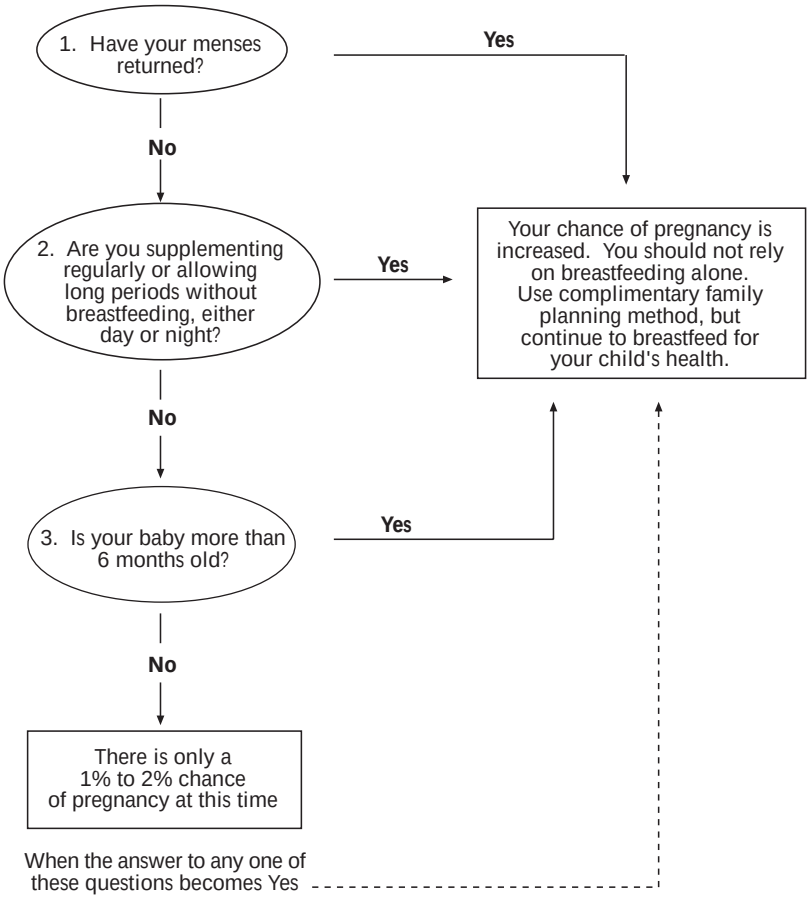
Table 12:2 Complications of breastfeeding and their management (Continued)

Problem	Description	Solution
Plugged duct	Distinct area of breast engorged. Not red, no fever.	Mother should apply moist heat to breast and massage the breast beginning behind the plugged duct and moving toward the nipple. The baby should be breastfed frequently and position changed during each feeding to help dislodge plug.
Leaking	Milk coming from nipple unexpectedly.	This is a normal occurrence. Mother should not stimulate nipple. She should apply pressure directly over nipples with finger, thumb, or brassiere.
Breast infection (Mastitis)	Reddened, tender, localized area of one breast. Fever, flu-like symptoms. Baby may be irritable. Usually caused by staphylococcus.	Keep breast empty. Mother should continue breastfeeding; the infection will not harm baby. Antibiotics appropriate for staph infection should be given. Gently massage affected area while nursing. Moist heat should be applied to the breast, the mother should be urged to drink fluids and to rest in bed. If infection localizes or fever continues, abscess may need draining.
Sore, cracked, fissured nipples ("Nipple trauma")	Tender, reddened nipples, with cracks and occasional bleeding.	Mother should clean breasts with water and expose to heat or sunlight after feedings. Infant should suck for short intervals with frequent feedings and may need assisted feeding until nipples heal. Avoid feeding for long periods of time. Mother can release suction with finger.

Table 12:2 Complications of breastfeeding and their management (Continued)

Problem	Description	Solution
Thrush or moniliasis	Persistently sore nipples (no cracks), inflammation of nipples and areola; baby has white patches in mouth.	Treatment with anti-monilial cream after each feeding if severe. Treat with 1 tsp. baking soda in 1 cup water for mild cases.
Inadequate milk	Baby not gaining weight; sucking not of interest to baby for more than a few minutes at a time.	Check infant attachment to assure sufficient nipple contact. Encourage complete emptying of the breast by expression. The more the mother nurses, the more milk that is produced. Discourage supplementing breast milk in the first months. If there is weight loss and failure to thrive, examine infant in clinic and determine if another method of feeding is warranted.
Flat or inverted nipples	Infant unable to grasp nipple and suckle adequately.	Late in the last trimester is the best time to help flat or inverted nipples to protrude. While supporting the breast, draw out nipple with thumb and index finger. Do 5 to 6 times a day. Use of a milk cup may be helpful in last weeks of pregnancy. *CAUTION*: too much nipple stimulation late in pregnancy can trigger uterine contractions

Figure 12:2 Use of the Lactational Amenorrhea Method (LAM) for child spacing during the first 6 months postpartum



Source: Labbok et al., (1994)

The perfect-use pregnancy rates during LAM compare favorably with those for other methods of contraception during perfect use. Combining breastfeeding and another method of contraception begun at 6 weeks postpartum (or sooner) should provide even greater protection. (See Table 12:3.)

POSTPARTUM CONTRACEPTION

Because postpartum infertility can be brief and lactational infertility unpredictable, contraceptive counseling should begin in the prenatal period. LAM is a contraceptive method that is begun immediately after delivery. Early postpartum care offers an opportunity to teach mothers how to breastfeed fully, which can lead to the successful use of LAM. In addition, the first postpartum visit, recommended around 4 weeks after delivery, is the focal point of many family planning programs because the woman usually is highly motivated to avoid another pregnancy. This time can be used to review the LAM criteria for continuing the method or for initiating another method of birth control.

CONTRACEPTION FOR THE NONBREASTFEEDING WOMAN

Ideally, the nonbreastfeeding woman should begin using a contraceptive method immediately postpartum or within 4 weeks postpartum. After appropriate counseling and consent, all of the following methods can be initiated in the postpartum period: combined oral contraceptives, progestin-only contraceptives, diaphragm, cervical cap, spermicides, IUD, condoms, and tubal ligation.

For most nonbreastfeeding mothers, there are few precautions for the methods of contraception they can choose. Nonetheless, a few guidelines for clinicians and clients are worth noting:

- Begin any discussion of immediate postpartum sterilization, Norplant insertion, IUD insertion, or Depo-Provera injection well before the delivery. Norplant may be inserted and Depo-Provera may be safely injected postpartum. Discussing these options before delivery will help ensure that consent is fully informed.
- Advise the woman to begin taking combined birth control pills about 2 to 4 weeks after delivery, because the risk of thrombophlebitis and thromboembolism is greatest just after delivery.[55,90]

Table 12:3 Methods of postpartum contraception

Method	Pregnancy Rates	Advantages	Disadvantages	Comments
Lactational amenorrhea (LAM)	2% if used perfectly	• Nutritional and anti-infective advantages for the infant • Low cost • Maternal health benefits	• May be ineffective if not used perfectly • Additional nutritional demand on mother • HIV may be transmitted to infant via breast milk • Return of fertility unpredictable • Inadequate protection against STIs	• Requires patient education • Backup method of contraception should be available at all times • Mother requires nutrition counseling
Abstinence	0% if used perfectly	• 100% effective if practiced properly	• May be unrealistic for some men and women and in certain cultures	• Applies to most couples at varying times
Withdrawal	4% to 19%	• Very effective method if used correctly • Requires no fitting or hormones • Inexpensive • Can be used anytime and anywhere	• Ineffective if used incorrectly	• Requires participation of each partner • A method all clients should know about and have positive reinforcement • Excellent backup method

Table 12:3 Methods of postpartum contraception (Continued)

Method	Pregnancy Rates	Advantages	Disadvantages	Comments
Spermicides/ female barrier methods	6% to 26%	• No effect on breastfeeding • May protect against STIs • Can be used immediately postpartum	• May be irritating • May not be widely available • Nonoxynol-9 may be passed in breast milk • Can be expensive if used frequently	• Cervical cap and diaphragm must be (re)fitted after 6 weeks postpartum
Condoms	3% to 14%	• Protect against STIs		• A male method
Fertility awareness methods	1% to 25% (depends on method)	• No effect on breastfeeding • Can be very effective if used correctly	• Mucus changes during lactation are more difficult to interpret • Many methods dependent on physiology of ovulation • Inadequate protection against STIs	• Not recommended until regular menstruation has resumed

Table 12:3 Methods of postpartum contraception (Continued)

Method	Pregnancy Rates	Advantages	Disadvantages	Comments
IUD	0.1% to 2% (depends on type of IUD)	• No effect on breastfeeding • Very effective • Postpartum insertion is cheaper, easier, and less painful • Can be placed immediately postpartum or interval	• Postpartum insertions may have higher risk of expulsion • Slight increase in risk of pelvic infection and increased menstrual bleeding • Risk of pelvic infection must be assessed • Inadequate protection against STIs	• Counseling should occur during prenatal visits
Tubal ligation	0.5%	• Highly effective • No direct effect on breastfeeding • Can be done immediately postpartum or interval	• Anesthesia can temporarily pass into breast milk • Involves short separation of mother and infant • Is irreversible • Requires antepartum counseling • Inadequate protection against STIs	• Risk of regret is higher in areas of high infant mortality or high rates of divorce or marital dissolution • Problems of general anesthesia eliminated with use of regional or local anesthetic
Progestin-only contraceptives (Injectables, implants, minipills)	0.05% to 5% (depends on method)	• Very effective • Does not decrease milk volume • Is safe for breastfeeding	• Some hormone may pass into breast milk	• Recommended waiting until breastfeeding is well established

Table 12:3 Methods of postpartum contraception (Continued)

Method	Pregnancy Rates	Advantages	Disadvantages	Comments
Combined oral contraceptives	0.1% to 5%	• Very effective	• Estrogens may reduce milk volume • Mineral content of breast milk may be altered • Hormone may pass into breast milk • Slightly increased risk of thrombophlebitis and thromboembolism immediately after delivery • Inadequate protection against STIs	• Evidence suggests no negative effects on infants from breast milk • May be initiated after 2 weeks postpartum (if not breastfeeding) • Once breastfeeding is well established, low dose pills affect milk volume little

- Avoid use of the diaphragm and cervical cap until 6 weeks after delivery. The risk of toxic shock syndrome increases when bleeding is present. (See Chapter 17 on Vaginal Barriers and Spermicides.) A woman should have her diaphragm or cervical cap refitted at the first postpartum visit.
- Suggest that lubricated condoms are a good option, at least in the short run before the woman is ready for another, preferred contraceptive method.
- Caution women that it may be difficult to practice natural family planning before their cycles are reestablished and cyclic signs of fertility return. Advise them that substantial periods of abstinence are necessary if they do not use a back-up method of contraception.
- Before delivery, discuss the option of inserting the Copper T 380A IUD. Insertion of this IUD within 10 minutes after expulsion of the placenta may be a good option for some women.[62] However, high rates of IUD expulsion have been noted (see Chapter 15). The LNg 20 IUD is also a good option.
- Inform women about postcoital methods of contraception, where these are available.

CONTRACEPTION FOR THE BREASTFEEDING WOMAN

Lactational amenorrhea method (LAM)

LAM provides effective protection against pregnancy for up to 6 months postpartum. Women who wish to use LAM to avoid becoming pregnant should use another method of contraception as soon as LAM indicates a return to the risk of pregnancy. Breastfeeding women who do not wish to use LAM could begin using contraceptives either immediately after delivery or at the first postpartum examination, preferably no later than 4 weeks after delivery. Clinicians should reinforce breastfeeding and provide appropriate contraceptive services that do not interfere with the woman's ability to breastfeed.

Nonhormonal Methods

Abstinence is 100% effective in preventing pregnancy. A number of cultures promote a period of abstinence postpartum, although the length of abstinence varies. In Nigeria, a period of abstinence often parallels the period of lactation. The husband might sleep in a separate dwelling or with another of his wives. Some mothers observe traditional customs that prohibit intercourse for a long period of time, until some activity of the child marks the end of the abstinent period. For example, some cultures prohibit intercourse until the youngest child can carry a bowl of food to the father, lift a three-legged stool, or walk steadily, all of which might occur between 1 and 2 years of age.

A study in Zaire found a median duration of 4.5 to 8.8 months of postpartum abstinence. The study found that women who were poorer and less urbanized abstained for longer periods of time than did urbanized, wealthier women. The duration of abstinence was also associated with duration of breastfeeding.[27] Only 18% of women continued to abstain after they resumed menstruating. In this case, the other 82% would be the target population for family planning methods.

The woman practicing abstinence should be counseled about other contraceptive methods if she desires to resume intercourse. In particular, women should know where and how to obtain emergency contraceptives in case of unprotected intercourse during a fertile time. Assure all women that intercourse will in no way harm milk production unless they become pregnant.

Spermicides and barrier methods have no effect on breastfeeding. The lubricated condom protects against sexually transmitted infections (STIs) and spermicides such as foams, foaming suppositories, creams, and jellies may help offset dryness due to estrogen deficiency. Condoms and spermicides may be used safely even in the immediate postpartum period. However, the diaphragm cannot be refitted until the cervix, vagina, and uterus have involuted. The cervical cap should be refitted at about 6 weeks and should not be used before that time. Some animal studies have found that the spermicide nonoxynol-9 is absorbed through the skin and secreted in very small quantities in breast milk,[10] although no negative effects have been reported.

Charting menstrual cycles and fertility awareness methods (FAM) are not recommended before regular menstruation has resumed. Some FAM rely on detecting minimal changes in cervical mucus and basal body temperature (BBT) to determine whether ovulation has occurred. Once ovulation resumes, some women can detect mucus changes during lactation, but reliable determination of ovulation is more difficult in lactating women than in nonbreastfeeding women. Research is under way to discover what instructions should be given to nursing women using these methods.[73] Because BBT cannot be measured unless a woman has at least 6 hours of uninterrupted sleep, mothers who breastfeed at night cannot use FAM that involve recording BBT.[40] Breastfeeding disrupts fertility signs and symptoms even after menses resume. Thus, a woman may need to have prolonged periods of abstinence when she uses FAM before her regular menstrual pattern returns.[50]

The **IUD** also is an excellent choice for the breastfeeding woman. The copper on the Copper-T does not affect the quantity or quality of breast milk.[88] (See the following section on Hormonal Methods for information on the IUDs containing natural or synthetic progesterone.) Some women experience mild uterine cramping when they breastfeed with an IUD in place, but the cramping does not usually interfere with lactation or with the effectiveness of the IUD. IUD insertion is less painful and removal rates for pain and bleeding are lower for the lactating mother than for other women.[8,15]

IUDs may be inserted immediately after expulsion of the placenta or during the first week postpartum, but preferably within 48 hours of delivery. Expulsion rates tend to be higher when IUDs are inserted immediately postpartum, but recent experiences have been very encouraging (see Chapter 15). IUDs inserted postpartum have a pregnancy rate of less than 1% at 12 months postpartum.[62] Although a few case reports and a small case-control study have suggested that the risk of uterine perforation from IUDs inserted at 6 weeks postpartum is higher among breastfeeding women, other studies have found very low perforation rates in both breastfeeding and nonbreastfeeding women.[8,15,83]

Tubal ligation is an excellent method for women who do not want to have more children. A tubal ligation can be performed immediately postpartum, although it can disrupt lactation if it requires general anesthesia or separation of mother and infant. Both problems can be minimized by performing the procedure with only local anesthetics and analgesics.[49] (See Chapter 21 on Voluntary Surgical Contraception.) Women may wish to express and store breast milk before the procedure. For 12 hours following surgery, anesthetics may pass through to the breast milk. During this period, women can express and discard their milk and feed the infant on the stored milk.

Hormonal Methods

The use of hormonal contraception in a lactating woman is an area of dispute among experts.[37] All steroids pass through the breast milk to the infant in very small quantities, which have not been shown to be harmful. Estrogens, however, decrease the volume of milk, even in the small doses found in the 30 (and presubably 20) mcg combination oral contraceptives.

Progestin-only contraceptives such as Norplant, the LNg IUD, the Progestasert IUD, Depo-Provera, and minipills (progestin-only pills) appear to have no adverse effects on lactation.[44,52] Because progestin-only pills do not interfere with the infant's growth and development,[12,36,44,54,60,67,79] these methods are excellent options for lactating women who wish to postpone a subsequent pregnancy. The methods are simple to use and are highly effective.

Even when they are started in the first week postpartum, minipills have demonstrated no adverse effect on lactation or infant growth.[54,60] Likewise, studies of Depo-Provera started 2 to 4 days postpartum or at 7 days postpartum[52] or within 6 weeks postpartum[45] have found no adverse effects. Two studies of Norplant insertions after 30 days postpartum found no negative effect on psychomental development and breastfeeding performance.[79,80] One study found slightly smaller early weight gains among exclusively breastfed infants,[80] but the other found no difference in infant growth between women given Norplant and control subjects.[79] (See Chapter 14 on Norplant, Depo-Provera, and Progestin-only Pills.)

Although Norplant and Depo-Provera probably have no adverse effects on lactation or infant health if used immediately postpartum, opinions vary about whether they should be used. Some clinicians worry about early exposure of the infant to progestins, regardless of the amount, although there is no scientific support for this concern. The provider may wish to share this information with the client and wait until breastfeeding has been well established before inserting Norplant rods or giving the Depo-Provera injection. However, if a breastfeeding woman is unlikely to return for a postpartum visit and requests Norplant after delivery (especially if she plans to supplement the infant's diet relatively soon after birth), the contraceptive benefit of using this method would probably exceed the theoretical risks. In the case of Depo-Provera, because the hormonal levels are relatively high in the days immediately following injections, breastfeeding should be well established before injections begin. Immediate postplacental or postpartum insertion of the LNg IUD and the Progestasert IUD have not been studied.

Combined oral contraceptives are not the contraceptive of choice for breastfeeding mothers. Even in low-dose combined pills, the estrogen component reduces the milk supply.[82,89] Use of combined pills could also change the composition of breast milk, perhaps decreasing its mineral content. Still, the available evidence suggests that use of combined pills during partial nursing does not harm infants.[89] The appropriate time to provide combined pills to lactating women remains a subject of disagreement. Using low-dose combined oral contraceptives after the first postpartum examination is less likely to interfere with breastfeeding, because lactation has already been established. Nevertheless, milk volume will be reduced. Experts advise against using combined pills when other alternatives, such as the IUD or minipill, are available.[23]

Emergency contraception (postcoital) is an option for both breastfeeding women and nonbreastfeeding women who suspect they may have had unprotected intercourse. Women should be aware of these options for preventing pregnancy. Emergency contraceptive pills containing estrogen may have a temporary effect on milk production, although no studies have been conducted in this area. As always, the

woman should be allowed to make an informed choice based on the known risks and benefits. (See Chapter 13 on Combined Oral Contraceptives and Chapter 15 on Intrauterine Devices.)

Effects of Hormonal Contraception on the Breastfed Infant

Although contraceptive steroids taken by the mother can be transferred to the nursing infant through breast milk, the amounts are small. The dose consumed by the infant (the equivalent of one pill for every 4 years of full lactation) is so low that any negative effects on the infant are unlikely.[49] The main concern is that estrogen suppresses the quantity of milk.

Combined oral contraceptive use during lactation is not the only possible source of estrogen and progestin exposure for the infant. When a mother becomes pregnant and continues to breastfeed her prior infant, that child is exposed to estrogen and progesterone in the mother's milk. Because dairy cattle may be pregnant when they are milked, cow's milk and infant formula made from it may have relatively high levels of estrogen and progesterone.

Although early studies of high-dose oral contraceptives demonstrated some effect of hormones on nursing babies,[12] most of those reports were anecdotal and have not been supported by studies using low-dose pills. However, although the short-term effects of absorbing contraceptive steroids through breast milk appear minimal, the long-term consequences have not been studied.[26,37,40]

THE ROLE OF FAMILY PLANNING IN BREASTFEEDING

We conclude that the best public health strategy promotes (1) breastfeeding, (2) LAM, (3) the availability of a back-up method to LAM users, and (4) the prompt provision of contraception to women who do not use LAM postpartum, including those who are breastfeeding but do not fit the criteria to rely on LAM. In addition, all women should know about the availability of emergency contraception if the need arises.

Oral contraceptives containing estrogen—even those with low-dose preparations—adversely affect breastfeeding performance[82,89] and should be discouraged. However, breastfeeding women who are informed of this fact often still choose oral contraception and are even encouraged to do so by clinicians.[56,72] The challenge for family planning clinicians is to promote both breastfeeding and an appropriate contraceptive method that complements breastfeeding. Breastfeeding and contraception are not physiologically incompatible, although in many societies they might be perceived as incompatible because a lactating woman would not be expected to be sexually active. Nevertheless, many women do resume sexual relations while breastfeeding. The public health challenge is to avoid presenting breastfeeding and contraception as mutually exclusive alternatives and instead to promote them both by emphasizing their health benefits for mothers and children.

INSTRUCTIONS FOR BREASTFEEDING AND FAMILY PLANNING

1. Breastfeeding is a convenient, inexpensive, and nutritious way to feed your baby, and it helps to protect the baby against infection and diarrhea.
2. When you are nursing your child, your own nutrition is important. Eat and drink to satisfy your own hunger and thirst. It is important to take sufficient fluids and extra calcium, iron, and protein in addition to a regular well-balanced diet. You may have to use supplements to get the extra vitamins and iron.
3. If you choose to rely on the lactational amenorrhea method (LAM) as a temporary method of contraception, you must feed your baby frequently and limit supplemental feeds, especially bottles. Begin using another method of contraception when you resume menstruation, when you reduce the frequency of breastfeeds, when you introduce regular supplemental feeds, or when your baby turns 6 months old. Always have a back-up method of contraception available.

4. Use emergency contraception if you have intercourse at a time when you might become pregnant. Postcoital contraception is effective as a one-time method.
5. You can become pregnant while partially breastfeeding your baby, even before having your first menstrual period. If you are breastfeeding and providing regular bottle supplements, begin using a birth control method as soon as your clinician advises, but no later than the time of your first postpartum exam (4 weeks after delivery).
6. If you are not breastfeeding, begin using a birth control method immediately or at the time of the 4-week postpartum visit. You can become pregnant before your first menstrual period after childbirth.
7. Intercourse and menstruation do not reduce the quality and quantity of your breast milk. You do not need to stop breastfeeding because you start having intercourse again or start your period. You can continue breastfeeding when you start using another birth control method and even if you conceive another child. Pregnancy will cause changes in your breast milk, but does not prevent breastfeeding.
8. Use lubricants, such as lubricating jelly, birth control foam, or saliva to make intercourse easier after childbirth. Decreased estrogen production during breastfeeding causes your vagina to lubricate itself more slowly.
9. If you are infected with HIV, the virus that causes AIDS, you could transmit the virus to your baby through breast milk. Talk to a midwife or doctor about the best way to feed your baby. Protect your partner from acquiring HIV, as well. If your partner has the infection, you must still protect both yourself and him from other sexually transmitted infections.

No matter what other methods of contraception a woman is using, if she is at any risk because her partner tests positive for the human immunodeficiency virus (HIV) or because she does not know his HIV status, she should be advised to use plastic or latex condoms with every sexual act. No other contraceptive method besides abstinence provides the same degree of protection.

SPECIFIC COUNSELING ISSUES FOR WOMEN AFTER DELIVERY

- Working women can continue to breastfeed. However, LAM may be a less reliable method for these women because they often have longer intervals between feeding. They should use a complementary method of contraception.
- Women may need a single-decision, long-term contraceptive method (IUD, Norplant, sterilization) if transportation to and from services is a problem. LAM may give the woman time to make necessary arrangements, such as saving money and organizing care for her family, so that she may seek these methods.
- Women with other infants can breastfeed their newborn. Involvement of the other children in the care of the newborn can promote family bonding.
- Some women are concerned that breastfeeding will cause their breasts to sag, while other cultures prize the breast that has "matured." Explain to clients that pregnancy, rather than breastfeeding, is the cause, and that wearing a support brassiere during pregnancy and lactation can diminish sagging.

Table 12:4 Keys to successful breastfeeding

Prenatal period	Early postpartum period	Late postpartum period
• Patient and family education • Family support • Supportive and knowledgeable health professionals • Appropriate breast examination • Breast care: — No soap or drying agents to nipples and areolas; water only — Well-fitted cotton brassiere — Nipple conditioning when appropriate — Colostrum expression not recommended — Exposure of breast to air and sunshine may help condition nipple — No excessive nipple manipulation • Good nutrition: — Gradual and steady weight gain — No weight reduction diets — Daily supplement of 30 mg of ferrous iron beginning in the second trimester, taken between meals — Limited caffeine intake — No alcohol — No sodium restriction or diuretics • Daily exercise • No smoking	• Awake, alert mother and infant • Immediate (delivery or recovery room) nursing; preferable within 60 minutes of delivery • Proper positioning of the mother and infant; proper infant attachment and removal • Frequent, on-demand feeding, usually every 1 1/2 to 3 hours around the clock for the first several weeks • Sufficient post-milk-ejection nursing (10 to 15 minutes per side) • No formula or water • No artificial nipples or nipple shields • Both breasts used at each feeding. Starting side alternates • Proper breast and nipple care: — Breast milk to nipples after each feeding — Adequate air drying after feeding — Only water for cleansing nipples and areolas — Well-fitted cotton nursing bra • Physical and psychological comfort • Good maternal nutrition and hydration: — At least 500 extra calories per day — Adequate liquids; drink to satisfy thirst — No universal food restrictions — No high-calorie/low-nutrient foods — Limited postpartum weight loss to 1/2 point per week (2-3 pounds/month). Do not drop below ideal weight for height • Adequate rest (rest or sleep when the baby sleeps)	• Follow-up within 24 to 48 hours after hospital discharge (home visits, phone, or otherwise) • Breastfeeding “expert” available to answer patient questions • Home visiting by nurse or appropriate professional • Encouragement from family friend or community helper for support • Baby’s first visit with health care provider within 7 days of hospital discharge

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