



REVIEW ARTICLE

Breast-feeding in clinical practice

Elsa R.J. Giugliani*

Abstract

Objective: to present an updated review on practical aspects of breast-feeding promotion and management.

Methods: review of relevant publications from scientific journals, technical books and publications by international organizations.

Results: nowadays, exclusive breast-feeding is recommended for a period of approximately 6 months, and maintenance of complementary breast-feeding should continue for 2 or more years. Despite abundant scientific evidence on the superiority of breastmilk over other types of milk, the number of women who breast-feed their infants according to present recommendations is still low. Health care providers can improve this scenario by encouraging breast-feeding and helping nurturing mothers to overcome breast-feeding hindrances. Therefore, health professionals must have the necessary knowledge and skills for managing the different stages of lactation. This way, they will be able to provide prenatal counseling, guidance and help during the breast-feeding initiation period, careful evaluation of breast-feeding techniques and adequate interventions in the event of any problems associated with breast-feeding. This article is concerned with some important topics related to breast-feeding in clinical practice.

Conclusion: breast-feeding is the ideal method for infant feeding, and it can certainly be facilitated by health care providers through adequate clinical practice.

J. pediatr. (Rio J.). 2000; 76 (Supl.3): S238-S252: breast-feeding, human milk, lactation.

Introduction

The human species evolved, but 99.9% of its existence still revolves around breast-feeding its offspring.¹ Therefore, humans are genetically programmed to be fed milk and breast-feed at the beginning of their life.² Although biologically determined, breast-feeding is influenced by social and cultural aspects, and ceased to be a universal practice in the 20th century. Nowadays, biological expectation is opposed to cultural expectation. Some

consequences of this change such as malnutrition and high infant mortality were already observed in underdeveloped regions. However, its long-term implications are still unknown since genetic alterations do not occur as fast as cultural changes. Some say that the widespread use of nonhuman milk in young children is the largest uncontrolled experiment in which human species has ever participated.

The widespread use of milk from other species and its dire consequences were fiercely argued against in the 1970s, giving rise to a campaign for bringing back the "breast-feeding culture". At the same time, scientific evidence showing the superiority of breastmilk as a source of food, protection against diseases, and affection began to turn up. In other words, replacing breastmilk with other types of milk became evidently disadvantageous.

* Professor at the Department of Pediatrics of the Universidade Federal do Rio Grande do Sul (UFRGS), PhD in Medicine, School of Medicine of Ribeirão Preto (USP); Consultant in Lactation by the International Board of Lactation Consultant Examiners; Examiner of the initiative proposed by the Hospital Amigo da Criança in Brazil.

Despite the increase in breast-feeding rates in most countries, including Brazil³ the tendency towards early weaning still continues, and the number of breast-fed infants according to the World Health Organization's recommendations is still low. In Brazil, the latest nationwide survey into breast-feeding practice pointed to an average breast-feeding duration of 7 months and an exclusively breast-feeding duration of only 1 month. Although most women (96%) start to breast-feed, only 11% breast-feed exclusively from 4 to 6 months, 41% keep breast-feeding until the end of the first year of life, and 14% until the second year.⁴

According to Almeida,⁵ it is necessary to change the existing paradigm of breast-feeding campaign policies. The biological aspects are usually emphasized, disregarding the social, political and cultural aspects that determine breast-feeding. The author stresses that "... women need to be assisted and supported so that they can accomplish their new social role - wife-mother-nurturer - in an efficient way." We, health professionals, have a key role in assisting lactating women. To accomplish this role, it is necessary to draw on knowledge and skills that help to properly guide breast-feeding management. The management includes some practical breast-feeding aspects, and aims at providing health professionals with adequate tools for better assisting mothers with the management of lactation.

Definitions

It is of paramount importance that the definitions of different breast-feeding standards be unified. In 1991, the World Health Organization⁶ established well-defined indicators for breast-feeding, which have been used all over the world. The internationally acknowledged breast-feeding categories are the following:

- *Exclusive breast-feeding* - the mother or wet nurse gives the infant only breastmilk, or expressed human milk, without any other fluids or solids, except from drops or syrups that contain vitamins, mineral supplements or medication;
- *Predominant breast-feeding* - the child is mainly fed human milk. However, the child may be fed water or water-based drinks (sweetened water, teas, infusions), fruit juices, oral rehydration salts, drops or syrups that contain vitamins, minerals and medication, and ritual fluids (in limited amount).
- *Breast-feeding* - the child is fed human milk (expressed or directly from the breast);
- *Complementary feeding* - the child is fed breastmilk and other solid, semi-solid foods or fluids, including non-human milk.

Exclusive and predominant breast-feeding categories together constitute "full breast-feeding."

Even though there is no official definition of supplemental and complementary foods, the word supplemental is used in this revision to refer to water, teas and/or breastmilk substitutes children receive in their first months of life; while complementary refers to foods recommended to complement breastmilk when the infant is around 6 months.

Breast-feeding duration

Several researchers have tried to speculate on breast-feeding duration in the human species if culture did not have any influence on it. According to a number of theories - based on information about non-human primates, especially gorillas and chimpanzees, whose genetic load is 98% identical with that of man - the natural breast-feeding period for humans ranges between 2.5 and 7 years.² Ethnographic studies show that infants used to be traditionally breast-fed during 3 or 4 years, self-weaning when allowed to be breast-fed on demand.²

The World Health Organization⁷ recommends exclusive breast-feeding during a period of 4-6 months and complementary breast-feeding until the child is 2 years or older. There is some evidence that providing babies younger than 6 months with complementary foods does not present any advantages (except in isolated cases). On the contrary, this practice could harm babies' health (for further information and references, see the article "Complementary Feeding" in this supplement). Therefore, several countries, including Brazil,⁸ have already officially decided that exclusive breast-feeding should continue until approximately the sixth month of life.

Breastmilk is still an important source of nutrients⁹ for infants in their second year of life, also providing protection against infectious diseases.¹⁰

Why breast-feeding is so important

There are a great number of breast-feeding advantages for infants, mothers, family and society as a whole.

Breast-feeding has a striking effect on infant mortality as there are several factors in breastmilk that serve as protection against common infections such as diarrhea and acute respiratory diseases.

The association between infant mortality and absence of breast-feeding is liable to demographic, socioeconomic, dietary and environmental changes. The protection against infant mortality afforded by breastmilk is more effective in young, exclusively breast-fed infants who live in poverty and promiscuity, drink poor quality water, eat contaminated foods and have low energy density diets.^{11,12} In Malaysia, for instance, the number of deaths associated with the ingestion of nonhuman milk in infants younger than 1 year was estimated to be 28 to 153 in relation to every 1000 live births. This number varied according to sanitary conditions and availability of drinkable water.¹³

A recent meta-analysis,¹⁰ based upon six data sets from 6 countries (Brazil, Philippines, Gambia, Ghana, Pakistan, and Senegal) in 3 different continents, revealed a mortality rate associated with infectious diseases 6 times higher in non-breast-fed infants younger than 2 months, if compared to breast-fed infants. Protection decreased as the infant grew up, ranging from 1.4 to 4.1 in infants aged between 2 and 12 months, and 1.6 to 2.1 in the second year of life. The protection against diarrhea-associated deaths was much more effective than that against respiratory diseases in the first 6 months. However, after this period, the protection against deaths caused by both diseases was similar. The study draws attention to the fact that, while the protection against diarrhea-associated deaths dramatically decreases with age, the protection against deaths caused by respiratory infections remains constant during the first two years of life.

Breast-feeding prevents deaths from the very first days of life, as proved by a European multicenter study on mortality caused by necrotizing enterocolitis.¹⁴ Pre-term new-borns who were not breast-fed or who had a mixed breast-feeding regimen presented, respectively, a 10.6 and 3.5 times higher chance of dying of enterocolitis if compared to their exclusively breast-fed peers.

In addition to reducing mortality, breastmilk provides protection against the incidence and severity of diarrhea, pneumonia,¹⁵ otitis media,¹⁶ several neonatal infections¹⁷ and other infections.¹²

The American Academy of Pediatrics,¹⁸ in a recent document, cites, among other benefits, a possible protection against the sudden death syndrome in breast-fed infants, insulin-dependent diabetes, Crohn's disease, ulcerative colitis, lymphoma, allergic diseases and other chronic diseases of the digestive tract.

In addition to protecting against diseases, breastmilk provides the infant with a high-quality diet, promoting his/her growth and development. It is worth remembering that breast-fed infants may have a different growth pattern from those who are artificially fed. Therefore, the National Center for Health Statistics (NCHS) curve was considered inadequate for exclusively breast-fed infants due to the fact that it was built based on infants whose diet did not consist of exclusive breastmilk.^{19,20} Exclusively breast-fed infants, even in developed countries, present a reduction in score *z* of the NCHS growth curve weight/age rate from the third month to the end of the first year of life. The same occurs with the length/age indicator, however the reduction is less pronounced and presents a tendency to stabilize or even increase after the eighth month. The World Health Organization is engaged in elaborating new growth reference patterns, whose data are already being collected in 6 different countries (Brazil, United States, Norway, Ghana, Oman and India) from infants exclusively breast-fed until, at least, the fourth month, and with complementary feeding until, at least, 1 year.²¹

The association between breast-feeding and improved development was shown in a recent meta-analysis of 20

carefully selected studies.²² This meta-analysis showed that, after the adjustments of some confounding factors, breast-fed infants presented significantly higher scores for cognitive development than formula-fed infants, especially those who were born prematurely. This difference was observed between 6 months and 15 years, and was directly correlated with breast-feeding duration.

Breast-feeding also contributes to women's health, providing protection against breast cancer²³ and ovarian cancer,²⁴ lengthening the time between childbirths.²⁵ The efficiency of breast-feeding as contraceptive is 98% in the first 6 months after childbirth providing that the breast-feeding regimen is exclusive or predominant, and that the mother continues amenorrheic.²⁵ Another advantage for breast-feeding women is that they have quicker uterine involution, and consequently, reduced postpartum bleeding and anemia.²⁶

The economic aspect is extremely important for poor families. The average monthly expenses with the purchase of baby milk in the first 6 months ranges from 23% to 68% of the minimum wage.²⁷ Still, other expenses should be added such as with baby bottles, pacifiers, and cooking gas. In addition, there are occasional expenses incurred by diseases, which are very common in non-breast-fed infants.

It is difficult to quantify the real impact of breast-feeding. It is known that breast-fed infants are less prone to diseases, require less medical care, hospitalizations and medication, in addition to preventing their parents from missing work frequently. As a result, the breast-feeding practice may bring benefits not only to infants and their families, but also to society as a whole.

Only in the late 1980s, exclusive breast-feeding in the first months of life was considered to be safer than other types of feeding. The protective effect of breastmilk against diarrhea and respiratory diseases may substantially decrease as infants are fed any other kind of food such as water or teas. This is due to the fact that infants who are not exclusively breast-fed receive fewer protection factors, in addition to being fed usually contaminated foods or water.

A case-control study carried out in Pelotas, state of Rio Grande do Sul, showed that the chances of death were much higher in infants who were fed with another type of milk.¹² The risk of diarrhea-associated death in the first year of life was 14 times higher in non-breast-fed infants and 3.6 times higher in infants who were subjected to mixed breast-feeding, if compared to exclusively breast-fed infants. Another study showed the effect of formula feeding on pneumonia-related hospital admission rates. The chance of hospital admission was 61 times higher in infants who were not breast-fed during the first three months of life than in exclusively breast-fed infants.²⁸

The supplementation of breastmilk with water or teas, regarded as harmless until shortly, has proved to be detrimental to baby health. Studies carried out in Peru²⁹ and in the Philippines³⁰ showed that the prevalence of diarrhea

duplicated in infants younger than 6 months who were fed water or teas in comparison with exclusively breast-fed infants.

The supplementation of breastmilk with water or teas in the first 6 months of life is unnecessary, even in dry and hot regions.^{31,32} Normal new-borns, even when receiving little colostrum on the first 3-4 days of life, do not need fluids other than breastmilk as they are born to relatively high tissue hydration levels.³³

In addition to effective protection against infections, exclusive breast-feeding is important in terms of nutrition. Supplementary foods and fluids reduce the intake of breastmilk,^{32,34} which may be a disadvantage, since many foods and fluids fed to infants are less nutritious than breastmilk, and may also interfere with the bioavailability of breastmilk key nutrients such as iron and zinc.³⁵⁻³⁷

Another important aspect related to breast-feeding regimens is postpartum amenorrhea. It is known that lactation amenorrhea depends on the frequency and duration of breastfeeds.³⁸ In communities where women breast-feed their infants for a short period and initiate complementary feeding at an early date, the average duration of postpartum amenorrhea is shorter, and so is the length of time elapsed between childbirths.³⁹⁻⁴¹

Breast-feeding counseling

To promote, protect and support breast-feeding practices, it is necessary to be well-informed about breast-feeding, in addition to having clinical and advising skills.

Breast-feeding counseling⁴² (in replacement for consultation) implies helping women to make decisions empathetically, teach them to listen and learn, build confidence and give support. It is important that mothers feel that the physician (or any other health professional) is interested in helping them, so that they can establish trust and feel supported. The following techniques and attitudes may facilitate successful counseling:

- Non-verbal communication, showing interest (by nodding, smiling), paying attention, listening to and sensitizing women in an appropriate manner.
- Open-ended questions, allowing the chance for the patients to express themselves.
- Empathy, that is, showing mothers their feelings are understood.
- Avoidance of words that might sound judgmental such as right, wrong, good, bad, etc.
- Acceptance of mothers' feelings and opinions without having to agree or disagree with what they think.
- Recognition of and compliments on what the mother and her baby are doing right, thus reinforcing mother's trust; encouragement of healthy practices, helping her to accept suggestions more easily.
- Little information at each advising session, concentrating on information that is relevant to the moment.

- Simple language, according to mothers' level of education.
- Suggestions instead of orders.
- Information on every procedure and conduct.

The emphasis on certain topics during a breast-feeding advising session may vary according to the time and moment in which the session is held. Some important topics related to the promotion and management of lactation in different moments and circumstances are presented next.

Prenatal Assistance

The education of women and their preparation for lactation during the prenatal period confirmedly contributes to the success of the breast-feeding practice, especially in the case of primiparae.⁴³ During prenatal assistance, women should be informed about the benefits of breast-feeding, or in other words, about the disadvantages of using nonhuman milk; they should also be advised on breast-feeding techniques in order to enhance their trust and skill.

The physical preparation of breasts for lactation has not proved to be beneficial and has not been recommended as routine.⁴³ Exercises for protracting nipples during pregnancy such as stretching the nipples and Hoffman's Maneuver normally do not work and could be harmful and even induce the early onset of parturition. Devices used to protract the nipples have not proved to be efficient. Most nipples develop normally as pregnancy advances, without any treatment.⁴⁴

In the case of flat or inverted nipples, an intervention right after childbirth is more important and efficient than prenatal interventions.⁴³

Breast-feeding initiation

The first 14 days after childbirth are crucial to successful breast-feeding, as lactation is established within this period, which is a moment of intense learning for the mother and her baby.

Mothers should begin to breast-feed as soon as possible, preferably during the first hour after childbirth.⁴³ The new-born might not suckle spontaneously before 45 minutes to 2 hours after birth,⁴⁵ however, the skin-to-skin contact immediately after birth is very important. The early mother-baby contact is associated with longer breast-feeding duration,⁴⁶ better mother-baby interaction,⁴⁷ better control over the new-born's temperature,⁴⁸ higher levels of glucose^{49,50} and reduced baby crying.⁵⁰ In addition, the early suction of breast may reduce the risk of postpartum hemorrhages by the release of oxytocin,⁵¹ and the risk of jaundice as it increases gastrointestinal motility.⁵²

Breast-feeding on demand should be encouraged since new-borns pick up the habit of suckling frequently, and not sticking to schedules. Unrestricted breast-feeding reduces initial weight loss in new-borns, favors quicker regain of

birth weight^{52,53} promotes faster “milk letdown”,^{52,54,55} increases breast-feeding duration,^{54,56} stabilizes new-borns’ glucose levels,^{49,57} reduces the incidence of hyperbilirubinemia⁵⁸ and prevents breast engorgement.⁵⁹ It is important to observe that frequent breast-feeding on demand does not increase the risk of mamillary trauma.^{60,61} Mamillary trauma is more closely associated with the breast-feeding technique than with the frequency and duration of breastfeeds.⁴³

The time the new-born spends suckling at each breast-feed should not be determined as the new-born’s ability to empty the breast varies among infants, and may vary throughout the day, depending on the circumstance, in the same infant. It is important that the infant empty the breast as the milk at the end of the breast-feed - hind milk - contains more calories and satiates the infant.⁶²

Supplemental foods (water, teas, other types of milk) should be avoided, since there is some evidence that their use is associated with early weaning.⁴³ It is not clear, however, whether supplements interfere with the infant’s eating habits, reduce mother’s trust or whether they indicate any difficulty associated with breast-feeding. Anyway, breast-feeding mothers need qualified personnel to help them prevent and/or overcome difficulties, thus avoiding the use of supplements and their deleterious effects. Obviously, the use of supplements is sometimes recommended by physicians. In the absence of breastmilk, mothers should use, whenever possible, pasteurized human milk from a human milk bank. The use of a little cup to feed supplements to infants, including pre-term new-borns, has been preconized by the World Health Organization.⁴³ The baby bottle is a source of contamination to the infant and also has a negative effect on breast-feeding. It has been observed that some infants have a preference for bottle nipples, presenting a marked difficulty in breast-feeding.⁶³ Some authors believe that the difference between breast suction techniques and artificial teats may lead to “confusing suction practice”.⁶³

The use of pacifiers has been contraindicated due to its possible interference with breast-feeding. Infants who suck on pacifiers are, in general, breast-fed with less frequency,^{64,65} which may hinder milk production. Although there is no doubt about the association between the use of pacifiers and shorter breast-feeding periods,⁶⁵⁻⁶⁷ the direct effect of using pacifiers on breast-feeding duration has not been clearly established. The use of pacifiers might be a sign that the mother no longer wants to breast-feed - pacifiers reduce the need for breast-feeding - instead of interrupting breast-feeding, especially in mothers who present some difficulty in breast-feeding and have low self-confidence.⁶⁴

Although the role of bottle nipples and pacifiers as obstacles to breast-feeding is not yet clearly defined, it is recommendable to avoid unnecessary exposure of new-borns to these potential risk factors in order to guarantee a successful breast-feeding practice.⁴³

Differently from what happens to other mammals, breast-feeding in the human species is not purely instinctive. Mothers and babies have to learn how to breast-feed and be breast-fed. This learning, which was formerly facilitated by the most experienced women in the extended families, is nowadays much dependent on health professionals.

Today it is known that breast-feeding techniques are important for the effective transfer of milk from the breast to the infant^{68,69} and for the prevention of mamillary pain and trauma.⁷⁰ Therefore, it is essential that the mother be informed about breast-feeding techniques, preferably during pregnancy or right after childbirth. No mother/baby pair should leave the maternity ward before, at least, one breastfeed is critically observed. The assessment of a breastfeed indicates whether or not the mother needs help and the kind of help needed. The following items should be observed⁷⁰:

- Are the mother and the baby wearing adequate clothes that allow free movement? The breasts should be totally exposed and the baby should be dressed with clothes that leave his/her arms free (the baby should not be wrapped).
- Is the mother comfortably positioned, relaxed, not leaning forward or backward? It is advisable to provide a foothold above floor level.
- Is the baby’s body close to and completely turned towards the mother’s, thorax to thorax? One of the basic rules of a good breast-feeding technique is to maintain the baby’s head and body aligned.
- Is the baby’s lower arm placed around the mother’s waist and not between the baby’s and the mother’s bodies?
- Is the baby’s body bent over the mother’s, with his/her buttocks firmly secured?
- Is the baby’s neck slightly stretched?
- Is the mother holding her breast, forming a C shape, with her thumb placed on top of it and the other four fingers placed on the lower area, leaving the areola free? The fingers should not be placed in a shape resembling a pair of scissors, thus getting in the way of the baby’s mouth and the areola.
- Is the baby’s head leveled with the breast, and is the baby’s mouth positioned in front of the breast? Mothers should remember that it is the baby who goes to the breast and not the opposite.
- At the time of placing the baby’s mouth on the breast, does the mother stimulate the baby’s lower lip with her nipple so that the baby, by reflex, opens his/her mouth wide and lowers his/her tongue?
- Immediately after the baby opens his/her mouth, does the mother take the baby to her breast in a swift movement? Once again, mothers should remember that it is the baby who goes to the breast and not the opposite.

- Does the baby grasp the nipple and part of the areola (about 2cm)? Remember that the baby extracts the milk by pressing the lactiferous sinuses with his/her gum.
- Is the baby's chin in contact with the breast?
- Does the baby keep his/her mouth wide open on the breast, without pressing his/her lips?
- Are the baby's lips curved outwards, forming a "lock"? To visualize the baby's lower lip it is sometimes necessary to press the breast with the hands.
- Is the baby's tongue on the lower gum? Sometimes, the baby's tongue is visible; however, most of the times, it is necessary to slightly lower his/her lower lip.
- Is the baby's tongue curved upwards on the borders?
- Is the baby latched on, without slipping or letting go of the nipple?
- Do the baby's jaws move?
- Can you see or hear the baby swallow?

The following signs indicate an incorrect breast-feeding technique:

- The baby's cheeks sink in every time the baby suckles.
- The baby's tongue makes some noises; swallowing, however, may be noisy.
- The breast seems to be stretched or deformed during the breastfeed.
- The nipples have red striae, whitish or flat areas when the baby lets go of the breast.
- Pain while breast-feeding.

Special Situations

Painful nipples / Mamillary trauma

At the beginning of breast-feeding, women may experience discreet pain or discomfort when the baby starts to suckle, which is considered normal. However, nipples that are very sore and hurt, despite very common, are not normal, and most times originate from an incorrect breast-feeding technique (wrong positioning or inadequate grasping of the areola). Mamillary trauma is an important cause of weaning and, for that reason, it is essential that it be prevented. Prevention can be achieved through the following measures⁴⁴:

- Correct breast-feeding technique.
- Exposure of breasts to open air or sunlight in order to keep them dry.
- Nonuse of soaps, alcohol or any siccative substances on the nipples - these substances make nipples more vulnerable to lesions.
- Regular breast-feeding - regularly breast-fed infants are less hungry when put to breast and will probably use reduced force when they suckle; in addition, infrequent feedings favor the excessive fill of breasts with milk,

reducing the flexibility of the areola and, consequently, increasing the risk of trauma.

- Technique for interrupting the breastfeed, which consists of inserting the index finger or little finger through the baby's commissure of lips, temporarily replacing the nipple with the finger.

The (intermediate) nipple shields did not prove to be effective in the prevention and treatment of mamillary trauma/fissure. Actually, these shields may cause injuries to the nipples.⁴⁴

In the event of mamillary traumas, an intervention is necessary so that they do not progress or scar quickly. Useful measures for the treatment of mamillary traumas include⁴⁴:

- Correction of the breast-feeding technique whenever an incorrecion is detected.
- Changes in position during the breastfeeds, that is, alternation of different positions.
- Application of breastmilk on the nipples after the breastfeeds - although there are no scientific data that advocate this procedure, some experts recommend it⁷² due to the anti-inflammatory properties of breastmilk, thus reducing the risk of secondary infection.
- Topic agents such as modified anhydrous lanolin or creams containing vitamin A and D in important traumas - form a barrier that prevents the loss of humidity in the deepest layers of the skin, thus facilitating cicatrization. Creams containing synthetic hydrocorticoids (mometasone 0.1% and halobetasol propionate 0.05%) have been recommended by experts⁷² in cases of important fissures, although there are no studies that prove their efficacy. Corticoids should only be recommended in the absence of bacterial or fungal infection and, if used, they do not need to be suspended before the breastfeeds.
- Systemic analgesia, if necessary.

The use of drying methods (hair driers, lamps) has not been recommended for the treatment of mamillary traumas.⁴⁴ It is recommended that healthy and normal nipples be kept dry in order to prevent fissures. Nevertheless, drying methods may be harmful to injured nipples. The epidermis of the nipple recovers more quickly if there is a wet barrier to stop the loss of humidity in the deepest layers of the skin.

The use of nipple shields, except in rare cases, should be discouraged. These shields could actually exacerbate lesions or even cause them to appear.⁴⁴

Flat or inverted nipples

Flat or inverted nipples may hinder breast-feeding initiation, but do not necessarily prevent it, once the baby uses the areola as a "teat". The diagnosis of inverted nipples

may be made by pressing the areola between the thumb and the index finger - the flat nipple protracts while the inverted nipple retracts.

Successful breast-feeding may be attained by women that have flat or inverted nipples through an intervention right after childbirth, which consists of⁷³:

- Providing mothers with confidence - they should know that they will overcome the problem if they have patience and perseverance, and that the baby's suction helps the protraction of the nipples.
- Helping mothers with the baby's grasping of the nipple - if the baby cannot grasp the nipple by himself/herself, the mother may need to help him/her to grasp the nipple and part of the areola; it is important that the areola be flaccid and, sometimes, it is necessary to try different positions and decide to which of them the mother and the baby adapt better.
- Teaching mothers techniques for the protraction of the nipple before the breastfeeds such as simple stimulation of the nipple, suction with a manual pump or an adapted 20ml syringe (cut in order to eliminate the narrow exit and with the piston inserted into the cut end).
- Advising mothers to express the milk while the baby is not yet sucking effectively - this helps to maintain milk production and smoothens the breasts, facilitating the baby's grasp; the expressed milk must be given to the baby in a little cup (preferably).

Breast Engorgement

Breast engorgement reflects a failure in the self-regulation mechanism of lactation physiology, resulting in congestion and increased vascularization, accumulation of breastmilk and edema due to the obstruction of lymphatic drainage by the increased vascularization and alveolization. The increase in the intraductal pressure makes the accumulated breastmilk more viscous through a process of intermolecular change, originating "urate/crystallized milk".⁵

Discreet engorgement is normal and does not require intervention. Excessive engorgement occurs more frequently among primiparae between 3 to 5 days after childbirth. Breast engorgement is favored by a large amount of breastmilk, delayed breast-feeding initiation, infrequent breastfeeds, restriction of the duration and frequency of breastfeeds and inefficient suction by the baby. Therefore, breast-feeding on demand, starting soon after childbirth and the use of correct techniques are efficient measures that can prevent breast engorgement.

When breast engorgement occurs, the following measures should be followed⁷³:

- Regular breast-feeding. It is necessary to pump a little breastmilk before breast-feeding if the areola is tense, so

that it becomes soft enough for the baby to grasp the nipple properly. If the baby does not suckle, the breast must be manually pumped or a suction pump should be used. It is essential that the breast be emptied of milk; if the breastmilk is not extracted mastitis and mammary abscess may occur.

- Delicate massaging of the breasts - important for the fluidification of viscous breastmilk and for the stimulation of the breastmilk ejection reflex.⁵
- Stimulation of the breastmilk ejection reflex before pumpings or breastfeeds with delicate massaging of the breasts and maternal relaxation.
- Cold compresses (or ice wrapped in a piece of cloth) at regular intervals (every two hours in the most severe cases), during 15 minutes - the local hypothermia provokes vasoconstriction, consequently reducing blood flow and milk production.⁵
- Systemic analgesia, if necessary.

Warm compresses increase milk production,⁵ which could be a disadvantage in the event of breast engorgement.

Presence of blood in breastmilk

This phenomenon is more frequent in primiparous adolescents and women older than 35 years and is due to the capillary rupture caused by the sudden increase in intra-alveolar osmotic pressure at the initial stage of suckling.⁵ This phenomenon is temporary (first 48 hours) and tends to be overcome as the breasts are pumped empty.⁵

Blockage of lactiferous ducts

The blockage of lactiferous ducts occurs when the breastmilk produced in a certain area of the breast does not flow properly, which can take place when breast-feeding is infrequent, the breastmilk is not being adequately expressed or when there is local pressure, for instance, a tight bra. The blockage manifests itself through the presence of sensitive mammary nodules in a mother without any other breast diseases. The affected area may present symptoms such as pain, heat and erythema, not followed by high fever.

To unblock a lactiferous duct, mothers should breast-feed their babies on a regular basis and try different positions, offering the affected breast first, with the baby's chin positioned towards the affected area, thus facilitating the extraction of the breastmilk from the area. In addition, local heat and soft massage of the affected region, towards the nipple, before and after the breastfeeds, help to unblock the ducts.⁷⁴

Mastitis

Mastitis is a bacterial infection of one or more segments of the breast. Most times, the fissures serve as a gateway for bacteria, commonly *Staphylococcus aureus*. Maternal fatigue is an important risk factor for mastitis.

The area affected by mastitis is sore and warm, presenting hyperemia and edema. The complete involvement of the area is signaled by fever and malaise.

A treatment with antistaphylococcal antibiotics (dicloxacillin, amoxicillin or erythromycin) must be used as early as possible,⁷³ so that mastitis does not evolve into mammary abscess. Despite the presence of bacteria in breastmilk in the event of mastitis, the maintenance of breast-feeding is recommended, as this does not present any risks for a healthy full-term new-born.⁷⁵ In addition to antibiotic therapy and total emptying of the affected breast, by maintaining breast-feeding and manually extracting the breastmilk after the breastfeeds (if necessary), the treatment also includes rest, painkillers, non-steroid anti-inflammatory such as ibuprofen and abundant fluid intake.⁷³ If the problem persists after 48 hours, the presence of mammary abscess should be investigated. The abscess may be spotted by palpation of the breast, when there is a feeling of fluctuation. In such cases, surgical drainage and maintenance of lactation are recommended provided that the drainage tube or incision are sufficiently distant from the areola.⁷³ Some authors do not recommend breast-feeding from the breast affected by an abscess until the patient is properly treated with antibiotics and the abscess has been surgically drained.⁷⁵ If the affected breast cannot be used for breast-feeding, the healthy breast should be used.

The baby does not suckle or suction is inefficient

When, for any reason, the baby is not suckling or if suction is inefficient, and the mother wants to feed him/her, she should be advised to stimulate the breast regularly (at least 5 times a day) through manual pumping or through a suction pump. This will guarantee the production of milk. In addition, the breastmilk may be fed to the baby in a little cup or through a nasogastric tube, depending on the case. The use of supplements (preferably containing maternal milk) and when to start using them depends on some characteristics presented by the infants. Normal full-term new-borns with adequate weight and without risk factors for hypoglycemia may "fast" for a longer period on the first day of life.

The baby might not suckle at the beginning for several reasons, which may be grouped into the five following modalities⁷⁶:

- Babies who are reluctant to being breast-fed. Quite often, the reason for this initial reluctance may be associated with the use of artificial teats or pacifiers, and pain when put to the breast. The procedure in these cases is restricted to calming the mother and her baby down, suspending the use of artificial teats and pacifiers and insisting on the breastfeeds for a few minutes each time.
- Babies who cannot grasp the areola appropriately. In these cases, the baby might not be well-positioned, with the mouth not open enough, or might have sucked at artificial teats or pacifiers. In addition, the baby cannot

grasp the breasts properly because they are tense, engorged, or the nipples are inverted. The problem must be corrected.

- Babies who cannot keep sufficient grasp of the areola. In these cases, the baby begins to suckle, however, after some time, he/she lets go of the breast and cries. Usually, the baby behaves like that because he/she is not properly positioned, cannot breathe properly when put to the breast, is not being held firmly, or the flow of milk is steady. To reduce the overabundant initial flow of milk, the mother could pump out some milk before giving her breast to the baby.
- Babies who do not suckle. The baby may not suckle because he/she is not hungry (check if the baby was not given any supplement); he/she is sleepy or ill; does not have enough strength to suckle, as is the case of premature or hypotonic babies; or because he/she is not mature enough to start suckling, which could occur with full-term babies, with proper weight. It is important to remember that anesthetics prescribed to a mother during labor could sedate the baby.⁷² Babies who do not suckle should be stimulated to do so by introducing the little finger in their mouths; the fingertip should touch the junction between the hard palate and the soft palate. Mothers should be advised to do this exercise with their babies.
- Babies who refuse one of the breasts. It is possible for a baby to have difficulty suckling on one of the breasts since there is some difference between the breasts (nipples, flow of milk, engorgement); the mother can not position the baby adequately on one of the sides; or the baby feels pain in a given position (e.g.: clavicle fracture). An alternative that is sometimes successful in making the baby suckle on the "refused" breast is the football player position (the baby is held against the arm on the same side of the breast that is going to be used for breast-feeding, the mother's hand holds the baby's head, and the baby's body is positioned on the side, below the armpit). If the baby still refuses one of the breasts, it is possible to maintain exclusive breast-feeding on just one of the breasts.

Delayed milk letdown

In some women, milk letdown occurs only after a few days. In these cases, the health professional should reassure the mother, and also suggest techniques for stimulating the breast such as frequent baby suction and pumping. In these cases, the use of a food supplementation device is advisable. This device (e.g.: a syringe), containing milk (preferably pasteurized human milk), is placed between the mother's breasts, and connected to the nipple through a tube. The infant suckles the nipple, and at the same time, receives the supplementation. This way, the infant continues to stimulate the breast and feels satiated.

Breast-fed infant who does not gain appropriate weight

First, it is necessary to distinguish between the infant who gains weight more slowly from that who does not gain weight appropriately. In the first situation, the infant gains weight consistently, although more slowly; this is usually associated with familial or genetic factors. These infants look healthy, are alert, responsive, have normal muscle tone and skin turgor, present good suction, feed 8 to more times a day, with breastfeeds that have an average duration of 15 to 20 minutes, urinate frequently (6 or more times a day, diluted urine) and also evacuate frequently or in great amounts. The infant who does not gain weight appropriately (does not gain weight at all or even loses weight) usually presents weight below the third percentile or below 2 standard deviations of the reference population weight mean, and is usually apathetic or cries weakly, has reduced muscle tone and skin turgor, feeds less than 8 short breastfeeds, urinates and evacuates little.

It is important to emphasize that the growth of breast-fed infants is different from that presented by infants who are fed other kinds of milk. Therefore, the use of habitual growth curves (NCHS) may cause the false impression that breast-fed infants start not to gain weight appropriately from the age of 3-4 months on.¹⁹

The inadequate gain weight in breast-fed infants may be due to factors related either to the infant or the mother.⁷⁷ Table 1 presents the main causes for reduced ponderal index in breast-fed infants.

The most common causes for reduced ponderal index in breast-fed infants are related to problems with breast-feeding techniques and management such as inadequate positioning, inadequate grasp of the nipple, infrequent and/or short breastfeeds and absence of night breastfeeds. Therefore, it is essential to have a detailed history and careful observation of the breastfeeds in order to eliminate these problems.

Table 1 - Main causes for inadequate weight gain in breastfed infants

Infant-related factors	Mother-related factors
<p>Low milk intake</p> <p>Weak suction</p> <ul style="list-style-type: none"> - Physical/structural factors: cleft lip/palate, short lingual frenulum, micrognathia, macroglossia, choanal atresia - Iatrogeny: medication for the mother or infant, causing the infant to be sleepy, use of bottle nipples, pacifiers or nipple shields - Other: neonatal asphyxia, prematurity, jaundice (may cause infant to become lethargic), Down's syndrome, hypothyroidism, neuromuscular dysfunction, diseases of the central nervous system, abnormal suction pattern <p>Short and/or infrequent breastfeeds</p> <ul style="list-style-type: none"> - Mother-baby separation - Use of pacifiers - Supplementation with water/teas/fluids - Early introduction of complementary foods <p>Low milk intake yield</p> <p>Vomiting and diarrhea Malabsorption Infection</p> <p>Increased energy needs</p> <p>Newborn is too small for gestational age Neurological diseases Stimulating substances in breastmilk - much caffeine (coffee, tea, cola, soft drinks) Serious congenital heart disease</p>	<p>Low milk production</p> <p>Problems with lactation techniques and management</p> <ul style="list-style-type: none"> - Bad positioning - Inadequate grasp of the nipple - Infrequent and/or short breastfeeds - Rigid schedule - No night breastfeeds - Use of nipple shields - Breast engorgement - Flat or inverted nipples <p>Insufficient breast development - little or no increase in breast size during pregnancy, absence of turgid breasts during puerperium, with frequently great difference in size between the two breasts</p> <p>Others - infection, hypothyroidism, untreated diabetes, Sheehan's syndrome, pituitary tumor, mental disease, retained fetal membranes, fatigue, emotional disorders, drugs (estrogen, antihistamines, sedatives, diuretics, high-dose vitamin B6), important dietary restriction, breast reduction surgery, tobacco, pregnancy</p> <p>Inhibited milk ejection reflex</p> <p>Psychological inhibition - stress, pain Previous breast surgery Tobacco Alcohol Pituitary disease</p> <p>Abnormal breastmilk composition</p> <p>Low-fat diet Strict vegetarian diet, without vitamin B12 supplementation Hypernatremia Stimulating substances in breastmilk</p>

Low milk production

A very common complaint during the breast-feeding period is "little breastmilk" or "poor breastmilk". Many times, this is a reflection of mothers' insecurity in feeding their babies. Insecurity makes mothers often interpret baby cries and frequent breastfeeds (normal behavior for young babies) as hunger signs. The anxiety felt by the mother and family may be passed on to the infant, who responds with anguished cries. Many times, supplementation with other types of milk soothes mother's anxiety; this tranquillity is passed to the infant, who cries less frequently, thus reinforcing the mother's presumption that the infant was really hungry. Once supplementation is initiated, the infants suckles less frequently, and as a result, there will be lower production of milk, process that usually coincides with breast-feeding interruption.

The best indicative sign of breastmilk sufficiency is when the infant gains weight. The urinary frequency (at least 6 to 8 times a day) and frequent evacuation indirectly indicate the amount of breastmilk intake.

If milk production seems to be insufficient to the infant, through reduced ponderal index in the absence of organic pathologies, one should check, during the breast-feeding period, whether the infant is positioned correctly and whether he/she has a good grasp of the nipple. To increase milk production, the mother should breast-feed more frequently, offering the baby both breasts at each breastfeed; give the baby some time to completely empty the breasts; alternate breasts several times at a breastfeed if the infant is sleepy or does not suck effectively; avoid bottled milk, pacifiers and intermediate nipple shields; have a balanced diet; take in plenty of fluids (remember that fluids in excess do not increase milk production, and might even reduce it;⁷⁸ and take a rest. In some selected cases, when the suggested measures do not work, the use of medication (metoclopramide, chlorpromazine)⁷⁷ may be of help.

Breast reduction surgery

Generally speaking, reduction mammoplasty does not interfere with breast-feeding, provided that the cutaneous innervation of the nipple is preserved, patent lactiferous ducts and the six lactiferous ducts are intact, in communication with the lactiferous pores, allowing sensations that trigger milk production and ejection reflex.⁷⁹ Therefore, surgical breast reduction techniques that maintain the areola and the nipple linked to the mammary gland through a pedicle would not affect lactation, at least theoretically.⁷⁴ However, in clinical practice, several women who had been previously submitted to reduction mammoplasty did not succeed in breast-feeding their infants, although, prior to surgery, they had been informed that they would be able to breast-feed normally. Actually, there are several reports in literature showing that lactation is usually affected after breast reduction surgery.^{80,81} A controlled cohort study carried out in Brazil⁸² showed that previous

reduction mammoplasty presented a significant negative impact on breast-feeding rates, especially on exclusive breast-feeding rates. At the end of the first month, 29% of the women submitted to the surgery were breast-feeding exclusively compared to 77% of women without previous surgery. In the third month, these rates were respectively 12% and 55%.

Therefore, women who were submitted to reduction mammoplasty can breast-feed normally, although many of them can not produce enough milk to feed their babies. These women and their infants must have a rigid follow-up, as it is not easy to predict which of them will have problems with lactation caused by breast reduction surgery.

Infant crying / Misunderstanding of a baby's normal behavior

New-borns behave in varied ways, depending on several factors such as gestational age and baby's personality and sensitivity, intrauterine experiences, delivery and several environmental factors, including mother's emotional state. Mothers should remember that each baby is unique, responding differently to distinct experiences. Some infants cry more often than others and have greater difficulty in the transition from intrauterine to extrauterine life. These infants usually frustrate mothers' expectations, which could bring more dissatisfaction to the baby. The baby then responds by increasing his/her demands.

Newborns need to be breast-fed more frequently, and this behavior is considered normal. Several mothers, especially those who are insecure and who have low self-esteem, usually interpret this behavior as hunger, poor or insufficient milk, and usually end up feeding the baby with supplemental foods.

Infant crying is an important cause of weaning. Mothers often interpret infant crying as hunger or colic. They should be informed that infants cry for several reasons, and adaptation to extrauterine life is one of them. Most times, babies calm down when warmly held or put close to the breast, reinforcing the idea that they need to feel safe and protected. Mothers need to understand their babies' basic needs if they want to be in peace. Mothers who get tense, frustrated and anxious with infant crying tend to convey these feelings to the infant, causing them to cry even more, creating a vicious cycle.

Working mothers

The fact that mothers work outside the home may be an obstacle to breast-feeding but does not prevent it at all. Mothers who are stimulated to breast-feed after they go back to working should follow the next recommendations:

Before going back to work, they should:

- Breast-feed exclusively.
- Get acquainted with the facilities for pumping and storing breastmilk at their place of work (privacy, refrigerator, schedules).

- Pump milk (preferably manually) and freeze the milk for future use. Begin storing milk 20 days before returning to work.

After going back to work:

- Breast-feed frequently when at home, also at night.
- Avoid bottled milk. Offer food in a little cup or on a spoon.
- During working hours, empty the breasts through manual pumping and store the milk in the refrigerator. Take the milk home and offer it to the infant on the same day, on the following day, or freeze it. Raw milk (non-pasteurized) may be stored in the refrigerator for 24 hours and in the freezer or ice-box for 21 days. Pasteurized milk may be stored in the ice-box/freezer for 6 months.

Mothers should be aware of their rights as nurturers. The Brazilian law establishes a maternity leave of at most 4 months after delivery and 2 half-hour breaks every 2 hours of work (or, optionally, permission to finish work one hour earlier) so that the mother can breast-feed her infant until he/she turns 6 months.

Mothers with infectious diseases

HIV-positive mothers

Epidemiological studies prove that the HIV virus may be transmitted through breastmilk.⁸³ The additional risk of vertical transmission of the virus through breastmilk was estimated in 14% (7%-22%) in women who were infected before childbirth⁸⁴ and in 26% (13%-39%) when mother is infected during lactation.⁸⁵

A recent document released by WHO, UNICEF and UNAIDS⁸⁶ recommends that every pregnant woman be provided with voluntary advice and testing; women infected with the HIV virus be informed of the transmission risks through breastmilk so that they can make an informed decision on how to feed their infants and have their decision supported. Among the safe options to avoid transmission of the virus is the pasteurization (heating at 62.5 °C for 30 minutes) of breastmilk.⁸⁷ The Brazilian Ministry of Health recommends that HIV-positive mothers cannot feed their infants.

There are still many questions to be examined as far as the transmission of the HIV virus through breastmilk is concerned. The results of a randomized clinical essay recently carried out in Durbin, South Africa,⁸⁸ are intriguing. This study showed that exclusively breast-fed babies born to HIV-positive mothers had a reduced risk of being infected with the virus in the third month of life (14%) if compared to infants who were partially breast-fed (24%). The authors suggest that artificial feeding may damage the gastrointestinal mucosa, allowing easy virus penetration. The transmission rate among formula-fed infants was 19%. Although these results are encouraging, the scientific community has warned about the necessity of new studies that confirm these findings.

HTLV-1-positive mothers

HTLV-1 (Human T-Cell Lymphotropic Virus Type I) is associated with the development of malignant neoplasms and neurological problems in adults. As some studies suggest transmission of the virus through breastmilk, breast-feeding has been contraindicated for HTLV-1-positive mothers.⁷⁵

Mothers with tuberculosis

The treatment of infants whose mother was diagnosed to have tuberculosis varies according to the time at which the diagnosis was made (Table 2). According to the World Health Organization,⁸⁹ there is no need to separate mothers and their babies or disallow lactation at any time. On the other hand, the American Academy of Pediatrics Committee on Infectious Diseases recommends that women with active and suspectedly contagious tuberculosis must not breast-feed or have intimate contact with the infant until 2 weeks after adequate treatment has been administered.⁷⁵

Mothers with hepatitis A

Perinatal hepatitis A virus transmission is rare; the disease is seldom serious in this period. Breast-feeding is not contraindicated, and some experts recommend giving immunoglobulin (0.02 ml/kg) to newborns whose mothers started to present the symptoms of the disease between 2 weeks before and 1 week after delivery, although the efficacy of this procedure is not yet established.⁷⁵

Mothers with hepatitis B

There is no evidence that breast-feeding increases the risk of mother-baby hepatitis B virus transmission.^{75,90,91} Therefore, breast-feeding is not contra-indicated for HBsAg positive mothers. The vaccine and the use of specific intravenous hepatitis B immunoglobulin (HBIG) after childbirth practically eliminate any theoretical risk of virus transmission through breastmilk.⁷⁵

The American Academy of Pediatrics Committee on Infectious Diseases⁷⁵ recommends that infants born to HBsAg positive mothers receive the initial dosis of the vaccine and immunoglobulin (0.5 ml) during the first 12 hours of life. There is no need to delay breast-feeding initiation until the infant is immunized. When the mother is not tested for the presence of ABsAg, this test must be applied whenever possible. While waiting for the test results, the newborn must receive the vaccine in the first 12 hours of life. If the test result is positive, the infant must receive immunoglobulin as soon as possible, within the first 7 days after birth. If it is not possible to carry out the test, the vaccine alone is very efficient in preventing the disease; it is not justifiable to administer immunoglobulin to all newborn infants.

Mothers with hepatitis C

Epidemiological studies have not proved hepatitis C (HCV) virus transmission (through breastmilk in HCV positive mothers), even though the virus and anti-HCV

Table 2 - Control of tuberculosis in mothers and babies, according to the time at which the active infection was diagnosed in the mother

Active pulmonary tuberculosis diagnosed before delivery		Active pulmonary tuberculosis diagnosed after delivery		
>2 months before		<2 months before	<2 months before	>2 months before
Sputum negative before delivery	Sputum positive before delivery	-	-	-
Treat the mother	Treat the mother	Treat the mother	Treat the mother	Treat the mother
Breastfeed	Breastfeed	Breastfeed	Breastfeed	Breastfeed
Chemoprophylaxis for the infant is not necessary	The infant should be given Isoniazid during 6 months	The infant should be given Isoniazid during 6 months	The infant should be given Isoniazid during 6 months	The infant should be given Isoniazid during 6 months
BCG vaccine at birth	BCG vaccine after the end of chemoprophylaxis	BCG vaccine after the end of chemoprophylaxis	BCG vaccine after the end of chemoprophylaxis	If the BCG vaccine was not given at birth, it has to be given after the end of chemoprophylaxis

Monitor every infant's weight gain and health

Infants who present symptoms of yellow fever or HIV infection can not receive the BCG vaccine

Source: World Health Organization⁸⁹

antibodies have been found in human milk.⁷⁵ The Centers for Disease Control and Prevention (U.S.) do not contraindicate breast-feeding in HCV-positive mothers. On the other hand, the American Academy of Pediatrics Committee on Infectious Diseases⁷⁵ recommends that the mothers be informed about the theoretical risk of transmission through breastmilk, however this risk has not been confirmed. The prevention of mamillary fissures in breast-feeding HCV-positive mothers is important as it is not known whether the infant's contact with his/her mother's blood favors the transmission of the disease.

Mothers infected with cytomegalovirus

Even though cytomegalovirus (CMV) is found in breastmilk and could be transmitted to the infant probably through the placental transfer of antibodies from the mother, the disease is not common in newborns. Therefore, breast-feeding is not contraindicated in full-term newborns whose mothers were CMV-positive before childbirth. These infants, when not breast-fed, may be infected with CMV by other means, including saliva, and may develop the symptoms, as they do not receive specific antibodies from the mother and other protective factors found in breastmilk.⁹²

Premature newborns, with low concentration of antibodies from their mothers, and those whose mothers became CMV-positive during lactation may develop the symptoms of the disease and present sequelae. The decision to breast-feed pre-term newborns whose mothers are CMV-positive should take into consideration the benefits of breastmilk and the risk of the virus transmission. The pasteurization of breastmilk inactivates the virus and, when the milk is frozen at -20 °C, the viral load is reduced.⁷⁵

Mothers with toxoplasmosis

Recommending that mothers with toxoplasmosis should not breast-feed is not justifiable as the transmission of the disease through breastmilk has never been demonstrated.⁷⁵

Use of medication during lactation

The use of drugs during lactation should be avoided. Some drugs can be ejected in breastmilk in an amount that would be enough to cause detrimental effects on the infant. Little is known about the effects of drugs passed along to the infant through breastmilk. Thus, physicians should be very careful when prescribing any drug or medication to breast-feeding mothers.

The American Academy of Pediatrics Committee on Drugs⁹³ groups the drugs into the following categories, according to the risks they pose to the infant:

- Drugs that are contraindicated during lactation - Documents showing the toxicity of drugs during lactation are few and far between. Drugs that must be avoided during lactation include: amphetamine, bromocriptine, cyclophosphamide, cyclosporine, doxorubicin, ergotamine, phencyclidine, phenindione, lithium and metrotexate, in addition to the so-called recreational drugs (cocaine, heroin and marijuana). The use of radioactive compounds requires breast-feeding interruption for a period of 4-5 half-lives of the compound.
- Drugs that should be carefully prescribed to breast-feeding mothers, since they are associated with important adverse effects on some infants: - 5-aminosalicylic acid,

aspirin, clemastine, phenobarbital, primidone and sulphazaladine.

- Drugs whose adverse effects on breast-fed infants are unknown, but which should be carefully prescribed due to their potential adverse effects: anxiolytics, antidepressants, antipsychotics, chloramphenicol, metoclopramide, metronidazole and tinidazole.
- Drugs that are compatible with breast-feeding.

When there is no doubt about the need for medication and once the most adequate drug(s) has/have been selected (see several publications on drugs during lactation), the physician should be careful to prescribe the medication using the minimum dosis and reduced treatment, and should recommend that mothers use the prescribed medication right after breastfeeds. Drugs that are taken 30 to 60 minutes before breast-feeding have high concentrations in breastmilk. In addition, every time the mother is using some medication, possible undesirable effects on the infant could be observed. These effects include: eruptions, colic and changes in the infant's eating habits and sleep-wake patterns

Mothers with chickenpox

Neonatal varicella is associated with high mortality rates. It is recommended that mother and baby be kept apart (therefore, the baby cannot be breast-fed) if the mother presents chickenpox on the first 6 days postpartum and if the baby does not have any lesions, until the mother is no longer contagious.⁹² During this period, the mother must express milk from her breasts until she can breast-feed her baby. Nothing is known about the presence of the virus in breastmilk and about the possibility of the infant being infected through breast-feeding.⁷⁵

Smoking mothers

It is believed that the benefits of breast-feeding outweigh the harmful exposure of the infant to nicotine through his/her mother's milk. Therefore, smoking is not contraindicated during the breast-feeding period.⁹² However, every smoking mother should be warned against the possible detrimental effects of tobacco on child's development.⁹⁴ In addition, they should be aware of the fact that tobacco could affect milk production.⁹⁵ To minimize the effects of tobacco on the infant, breast-feeding mothers who cannot quit smoking should be advised to cut down on the amount of cigarettes they smoke, avoid smoking in the room where the infant is, and take a two-hour break between their cigarette-smoking and breast-feeding.⁹²

Mothers who use alcohol

Alcohol is found in breast-feeding mothers' milk if this substance is present in the serum while the mother is breast-feeding. Acetaldehyde, ethanol metabolite that accounts for most of the toxicity level of alcohol, is not found in breastmilk.⁹⁶ The effects of alcohol consumption on breast-fed infants whose mothers use alcohol have not been well-

established yet. A study which assessed one-year-olds whose mothers were heavy drinkers showed a discreet delay of motor development.⁹⁷ This study, however, does not eliminate the possibility that such developmental delay could originate from intrauterine exposure to alcohol or other confounding factors.

The American Academy of Pediatrics Committee on Drugs⁹³ regards alcohol consumption by mothers as compatible with breast-feeding. On the other hand, the AAP recommends that consumption of alcohol by the mother should not exceed 0.5 g/kg/day, which corresponds approximately to 55-70 g of liqueur, 225 g of wine or 2 cans of beer.

Final considerations

There is enough epidemiological evidence supporting the recommendation of exclusive breast-feeding for approximately 6 months and the maintenance of complementary breast-feeding until 2 years of age or longer. However, the number of women who follow this recommendation is still low. Suboptimal breast-feeding rates include factors such as lack of knowledge about the importance of breast-feeding for both child's and mother's health, some cultural practices and beliefs, inadequate recommendation of breastmilk substitutes, mother's lack of confidence in her breast-feeding skills and improper practices adopted by health professionals.

We, health professionals, play an extremely important role in wife-mother-nurturer assistance. For that reason, we have to make use of updated information and skills concerning not only clinical management of lactation but also counseling techniques. This way, we will be committed to our role as health professionals and citizens, ensuring every child's right to be breast-fed as established by the Statute for Rights of Children and Adolescents.

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Correspondence:

Dr. Elsa R. J. Giugliani

Hospital de Clínicas de Porto Alegre, Serviço de Pediatria
Rua Ramiro Barcelos, 2350 - 10º andar

CEP 90035-003 – Porto Alegre, RS, Brazil

Phone: +55-51 3336.0282 – Fax: +55-51 3316.5119

E-mail: elsag@vortex.ufrgs.br