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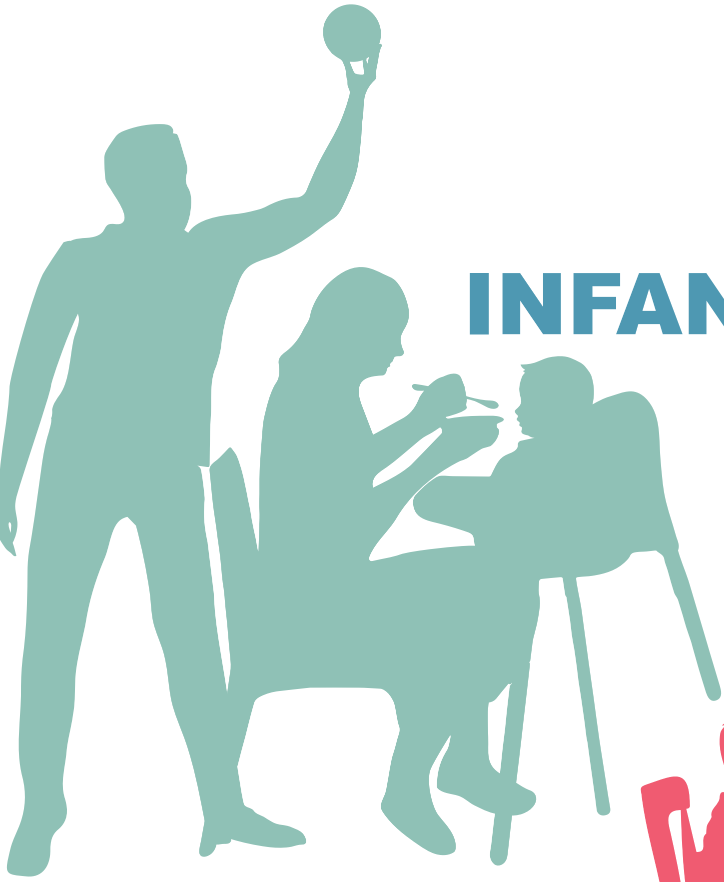
SUPPORTING FAMILIES FOR **NURTURING CARE**

MODULE 3

NUTRITION FOR INFANTS AND YOUNG CHILDREN



The Module 3 'Nutrition for Infants and Young Children' is intended to support home visitors and other health professionals in providing advice and support to parents and families on infant and young child nutrition. It includes three modules:

Module 3a 'Breastfeeding'

Module 3b 'Introducing Complementary Foods'

Module 3c 'Nutrition of Children Aged 2-6 Years'

MODULE 3a.

BREASTFEEDING

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DEFINITIONS USED IN THE TEXT

Exclusive breastfeeding. Feeding the infant only with mother's milk (either on the breast or with expressed milk from their own mother) without other foods or water, with the exception of vitamins, minerals and medicines.

Supplementary feeding – additional liquids and foods given to the infant before the age of 6 months (recommended length of exclusive breastfeeding); additional liquids refer to donor human milk, infant formula or other substitute for mother's milk (e.g., glucose solution).

Combination feeding – solid or semisolid food given to the infant in addition to breast milk, when mother's milk is no longer sufficient to meet nutritional needs.

Neonate – a child between the first and 28th day postpartum.

Infant – a child aged 29 days to one year.

Baby – for the purposes of this text, a baby is a child from birth to one year old.

Term baby – a baby born after 37 weeks of gestation.

Dyad – a group of just two people (mother and child) that have a strong interaction and share a close emotional bond with each other.

KEY MESSAGES

- Breastfeeding is the simplest, smartest and the most cost-effective way to raise healthier children and a stronger family.
- The benefits of breastfeeding for the child and mother last for a lifetime. Breastfeeding should be one of the public health priorities of every country and have the same importance globally as vaccination.[1] One dollar invested in promotion, support and protection of breastfeeding yields a return of 35 dollars to the country through the health of its inhabitants.[36]
- It is estimated that over 820,000 deaths in children under the age of 5 worldwide could be prevented annually if all children were properly breastfed.
- WHO and UNICEF recommend exclusive breastfeeding up to the age of 6 months and continued breastfeeding up to the age of two, with the introduction of appropriate and safe foods starting from the 6th month. The European region has the lowest rate of exclusive breastfeeding at 6 months and less than 20% of children are breastfed at 12 months.
- Nearly all women are biologically capable of breastfeeding, bar very few severely limiting medical disorders. However, breastfeeding practices are affected by a wide range of historical, socioeconomic, cultural and individual factors.
- Women make the decision whether to breastfeed during pregnancy. Unfortunately, many of them fail to achieve their set breastfeeding targets. All healthcare practitioners providing care for pregnant women, mothers and children need to possess the necessary knowledge and skills in order to provide them with assistance and support.

LEARNING OUTCOMES

By the end of this module, you will be able to:

- describe the advantages of breastfeeding and mother's milk nutrition for the mother, child, family and community
- explain to the parents which factors contribute to the successful lactogenesis and maintenance of lactation
- advise breastfeeding mothers and their families on nutrition and health issues during breastfeeding
- provide advice and assistance to mothers in the prevention and management of the most common issues
- support the natural nutrition of a sick neonate and infant
- carry out a self-assessment of your knowledge and skills related to this topic
- find additional information on this topic

I

PROTECTING, PROMOTING AND SUPPORTING BREASTFEEDING

Protection, promotion and support of breastfeeding is one of the public health priorities of most countries around the world.

Breastfeeding is one of the most effective ways to ensure child health and survival. However, contrary to WHO recommendations, fewer than half of infants under 6 months old are exclusively breastfed. Breastmilk is the ideal food for infants. It is safe, clean and contains antibodies which help protect against many common childhood illnesses. Breastmilk provides all the energy and nutrients that the infant needs for the first months of life, and it continues to provide up to half or more of a child's nutritional needs during the second half of the first year, and up to one third during the second year of life. Putting newborns to the breast within the first hour of life – known as early initiation of breastfeeding – is critical to newborn survival and to establishing breastfeeding over the long term. When breastfeeding is delayed after birth, the consequences can be life-threatening – and the longer newborns are left waiting, the greater their risk of death.

Breastfed children perform better on intelligence tests, are less likely to be overweight or obese and less prone to diabetes later in life. Women who breastfeed also have a reduced risk of breast and ovarian cancers.

Breastfeeding, along with appropriate complementary feeding, continues to contribute to the development and health of the child, including the prevention of infections, allergies, obesity and later, in adulthood, it protects against many chronic non-communicable diseases (heart disease, asthma…). Breastfeeding improves maternal health throughout her life, helps to establish an emotional bond with the child, reduces the risk of postpartum depression, reduces post-natal bleeding and the risk of anaemia, contributes to the normalization of body weight and its long-term effects include the reduction of the risk from osteoporosis and malignant breast and ovarian diseases. Breastfeeding contributes to more harmonious family relations, relieves the family budget and saves time.

Breastfeeding can do all this and more, but it requires a social support system that builds mothers' self-confidence and family support.

In some health care and social institutions, breastfeeding is still not optimally promoted and supported, as existing practices hinder, rather than facilitate, an effective initiation and continuation of breastfeeding. As a result, many children are deprived of the benefits offered by breastfeeding.

Low rates and early quitting breastfeeding, especially in marginalized and lower-income communities, have enormous adverse health and social impacts for women, children and the community. That has a direct effect on higher treatment costs and deterioration of the existing health inequality. **Breastfeeding is a basic right of the child and its mother, and governments are obliged to ensure the best possible conditions for the exercise of these rights.**

Public health initiatives for the protection, promotion and support to breastfeeding should be based on the Global Strategy for Infant and Young Child Nutrition, adopted in 2002 as a joint WHO-UNICEF document. The Strategy clearly defines the parameters of optimal nutrition of infants and young children and advocates for nutrition exclusively with mother's milk, without supplementary drinks or feeding, during the first six months of life, as well as for continued breastfeeding with appropriate complementary foods up to the age of two or as long as the mother and child want (published and revised in 2005).

These documents have become part of the *Baby Friendly Hospital Initiative* (hereinafter: BFHI), published in 1991 and republished in 2009. The main goals of this initiative are to provide each neonate with the best possible start in life by creating a healthy environment that supports breastfeeding, as well as the standards for relevant health care procedures, implementation of ten steps to successful breastfeeding and the suspension of distribution of free and/or cheap substitute for mother's milk.

II WHY BREASTFEEDING IS IMPORTANT

Breastfeeding is one of the most effective ways to ensure child health and survival. Breastmilk is the ideal food for infants. It is safe, clean and contains antibodies which help protect against many common childhood illnesses. Breastmilk provides all the energy and nutrients that the infant needs for the first months of life, and it continues to provide up to half or more of a child's nutritional needs during the second half of the first year, and up to one third during the second year of life.

Breastfed children perform better on intelligence tests, are less likely to be overweight or obese and less prone to diabetes later in life. Women who breastfeed also have a reduced risk of breast and ovarian cancers.

Conclusions of the First World Congress on Breastfeeding (Madrid, 2012):

- There is no substitute for breast milk and no comparison is allowed.
- Breastfeeding and mother's milk are the normative standard in infant feeding and nutrition.
- Low breastfeeding rates are a public health issue, not a lifestyle choice.
- Breastfeeding has short-term and long-term neurodevelopmental benefits.

1. BENEFITS OF BREASTFEEDING FOR THE CHILD, MOTHER, FAMILY AND COMMUNITY

In the first six months of life, exclusive breastfeeding provides all the nutrients and water a baby needs. After six months, all babies need complementary foods, in addition to breast milk. However, breast milk continues to be an important source of energy and high-quality nutrients beyond six months of age.

Benefits of a baby having breast milk are:

- it contains the complete nutrients a baby needs
- it is easily digested and efficiently used by the baby's body
- it protects a baby against infection
- it provides long-term protection against chronic non-communicable diseases (such as obesity, hypertension and diabetes).

Breastfeeding protects against sudden infant death syndrome
Breastfed babies are 60 percent less likely to die from SIDS than those not breastfed. The effect is even more significant for infants exclusively breastfed.

Breastfeeding promotes attachment
Mother-child bonding is enhanced when mothers interact with their infants while breastfeeding. Longer breastfeeding is associated with more sensitive maternal responsiveness and the security that comes with attachment.

Workplace policies to support breastfeeding are good for business
Workplace policies in support of breastfeeding increase employee retention, performance, loyalty, productivity, and morale.

Breastfeeding makes babies smarter
Adults who were breastfed as children score 3.3 points higher on cognitive development indicators, which leads to more years of schooling.

Breastfeeding is good for the environment
Breastfeeding leaves no carbon footprint. Breast milk is renewable and produced and fed to the baby without pollution, packaging, or waste.

Breast milk: more than nutrition

Beyond providing perfect nutrition and protection against infection and death, constituents in breast milk likely affect epigenetic programming at a critical time when an infant's gen expression is being developed for life.

Breastfeeding: a public health imperative

"If a new vaccine became available that could prevent 1 million or more child deaths a year, and that was moreover cheap, safe, administered orally, and required no cold chain, it would become an immediate public health imperative. Breastfeeding can do all this and more13."

Breastfeeding protects women too

Women who breastfeed compared with women who don't breastfeed or breastfeed less have a 32% lower risk of type 2 diabetes, a 26% lower risk of breast cancer, and a 37% lower risk of ovarian cancer.

Breastfeeding needs protection

The International Code of Marketing of Breast-milk Substitutes provides guidelines to prevent the inappropriate marketing of breastmilk substitutes, including infant formula, feeding bottles, nipples, follow-on milk, and related products16. It needs to be legislated and monitored. When manufacturers and distributors are in violation, they should be sanctioned.

Counselling mothers/parents/caregivers

When counselling mothers/parents/caregivers about the benefits of breastfeeding, remember to use the principals of counselling:

- accept what a mother/parent/caregiver thinks and feels
- recognize practices and praise a mother/parent/caregiver
- give practical help
- provide relevant information
- use simple language
- offer suggestions, not commands.

Composition of breast milk

- The composition of breast milk varies from feed to feed and is based on a baby's age. Colostrum is the first breastmilk women begin to produce at the end of pregnancy and in the first few days after delivery. It is thick yellowish or clear in colour. It contains higher protein than breast milk later on.
- A few days after delivery, colostrum changes into mature milk. There is an increased amount of mature milk. A woman's breasts feel full, hard and heavy. Some people call this the milk "coming in," but this can be confusing to a new mother. It is better for health-care workers to describe the changes in her milk in the first week.
- Foremilk is the thinner milk and is produced in greater amounts early in a feed. It provides protein, lactose, water and other nutrients. Babies do not need water before six months old, even in hot climates.
- Hindmilk is the whiter milk produced later in a feed. It contains more fat than foremilk
- Fat provides the energy in a breastfeed, so it is important for a baby to get both types of milk.

NOTE: A common worry includes a mother's milk being "too thin" or "not enough." This is an opportunity for a health worker to build a mother's confidence and provide relevant information. When a baby has both foremilk and hindmilk, they get a complete "meal" including all the water they need.

Colostrum

- Colostrum is the first milk a newborn consumes immediately after birth. The amount of colostrum in the first few feeds is very small, approximately 2–10 mL Remember, a baby is learning to suck, swallow and breathe. So, these small amounts prevent them from choking.

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Reflection and discussion

The benefits of breastfeeding

PARENTS' FREQUENT QUESTIONS	HOW TO ANSWER	COMMENT
I breastfed my child for a year, and now he/she has a cold every 2-3 months.	• Breastfeeding does not rule out infections during growing up, it helps the body cope with them more easily and the symptoms accompanying these infections are milder. • Breastfeeding also has a number of other lifelong benefits.	Common infections at an early age boost the proper development of the child's immunity.
I read in the papers that it has been proved that breastfeeding does not protect the child from asthma.	Serious and quality studies unequivocally confirm that breastfeeding protects against asthma.	It would be best to seek information from healthcare practitioners, brochures and websites recommended by them.

BENEFITS OF BREASTFEEDING FOR THE COMMUNITY: Breastfeeding should be one the public health priorities of every country! Enormous amounts of money are spent (unnecessarily) on baby formulas, as well as on the treatment of diseases that could have been prevented or mitigated by breastfeeding. Every dollar invested by the state in the promotion of and support to breast feeding pays back 35 dollars through the health of its citizens (costs of treatment, sick leave, work incapacity).[36]

IMPORTANT

Positive effects for the child (when breastfeeding is initiated from day one and when the child is fed exclusively by the mother's milk) are visible after three months of exclusive breastfeeding and increase with longer breastfeeding.

Self-assessment
True/False statements

Additional resources
Annex 1: WHO growth standards

	TRUE	FALSE	COMMENT
The mother has the right to decide whether to breastfeed.	x		It is the mother's right to decide whether to breastfeed her child; she makes this decision based on an informed choice. It is the duty of healthcare practitioners to inform parents about the benefits of breastfeeding and the risks of mixed feeding or formula feeding and to respect the choice of the mother/parents.
The decision to breastfeed concerns only the mother and her child.		x	• Low breastfeeding rates are a public health issue, not a lifestyle choice. • Breastfeeding should be one of the health priorities of every country. • Mothers need the support of healthcare practitioners, family and the whole community. • Responsibility for the issue of great social importance cannot be shifted to mothers.

https://www.who.int/tools/child-growth-standards/standards

The WHO presented new growth standards for children from birth to 5 years of age in 2006. In the development of these standards, breastfed infants were established as the biological norm against which all other children are compared.

2. MEDICAL CONTRAINDICATIONS FOR BREASTFEEDING

Physicians should make case-by-case assessments to determine whether a woman's environmental exposure, her own medical condition, or the medical condition of the infant warrants her to interrupt, stop, or never start breastfeeding.

There are very few absolute contraindications for breastfeeding, whether they originate from the mother or the child. Permanent contraindications are quite rare; for the mother, they include HTL virus infections, maternal addiction, i.e., intravenous use of "heavy drugs", the mother's treatment with cytostatic and radioactive substances or some other medications contraindicated for breastfeeding and rare congenital metabolic disorders in the neonate (galactosemia, phenylketonuria). Much more common are situations when the contraindications are temporary and the mother can breastfeed successfully after treatment, e.g., in case of active tuberculosis, acute infection with herpes simplex or herpes zoster virus with changes on the breast skin or short-term use of medications contraindicated for breastfeeding.

Dilemmas are frequent when the mother is HBs positive or has hepatitis C, is seropositive for cytomegalovirus, when she has an acute infection or a fever, when she is taking certain medications. Parents in these situations often receive contradictory advice regarding breastfeeding, not only on various portal and from non-professionals, but sometimes also from health care workers.

Much more common are the so-called relative contraindications, which could more accurately be called obstacles and challenges for breastfeeding. It is especially important to know and advise mothers that fever is not a contraindication for breastfeeding, unless it is caused by an illness during which breastfeeding is not recommended. It is not a rare practice to stop breastfeeding if the nursing mother runs a temperature of 38°C or higher. This harms the process of breastfeeding and there is no evidence of a higher incidence of infections in children. The nursing mother's temperature can sometimes also be caused by the milk stasis, so disruption of breastfeeding harms the mother's health condition, because no one can empty the breast as well as the child. Mastitis is not a contraindication for breastfeeding either; if an abscess occurs, breastfeeding from that breast is temporarily discontinued until drainage is performed.

Tobacco smoking is not a contraindication to breastfeeding, but healthcare practitioners should advise all mothers who smoke not to smoke at home (which also applies to other family members), and to make an extra effort to quit smoking as soon as possible.

Nursing mothers should avoid alcoholic beverages because alcohol concentrates in breast milk and its use can depress milk production. Tiny amounts of alcoholic beverages are allowed during celebrations, but breastfeeding should be avoided in such cases for the next two hours after drinking.

Additional resources

Annex 2: Contraindications for breastfeeding

III

COMPOSITION OF HUMAN MILK

IMPORTANT

THERE IS NOTHING SIMILAR IN COMPOSITION TO MOTHER'S MILK!

- Human milk is a complex living substance capable of change, which follows, supports and directs the child's development.
- It is the source of all nutritional ingredients that the baby needs.
- It cannot be produced artificially or replicated.
- Human milk is the most specific personalized medicine from the first day postpartum. The unique composition of human milk is irreplaceable in the process of programming the healthy human species.
- Today, human milk is defined as a biological system, not just food, and is considered a medical resource.

1. NUTRITIONAL, IMMUNOLOGICAL, BIOMODULATORY, BIFIDOGENIC FACTORS

There is no substitute for breast milk. It contains **thousands of different ingredients**, e.g., proteins, fats, lactose, vitamins, iron, minerals, water and enzymes. Most of these ingredients cannot be produced artificially.

Breast milk is the **body's best natural defence**. When a child is born, mother's milk is the first baby's vaccine that helps protect it from infections and diseases.

Bifidogenic factors stimulate the growth of the neonate's intestinal flora. Lactose (milk sugar) and oligosaccharides (complex sugars that act as prebiotics) act synergistically on the growth of bifidobacteria and lactobacilli.

Biomodulatory factors are various bioactive agents that have a modulatory effect on the growth, development and function of the epithelium, the immune system and the nervous system, and the gastrointestinal tract. They also have neurometabolic effects.

The ingredients of human milk influence the nourishment, growth and maturation of the nervous system.

HAMLET – the protein-lipid complex of α-lactalbumin and oleic acid may protect the breastfed child from leukaemia and other malignant diseases. In laboratory conditions, this complex has been proved to kill over 40 types of malignant cells.

Stem cells – Human milk is a relay between the mother's genome during lactation and the epigenetic regulation of the genes of the child receiving it.

Pasteurization of milk inactivates the immunological and anti-infective factors, but its nutritional and biological components remain unchanged.

The immunological properties cannot be reproduced in baby formulas.

MESSAGE FOR MOMS: Your body produces the right ingredients in the right amount of milk to always meet your child's needs!

2. COLOSTRUM, TRANSITIONAL MILK, MATURE MILK

- Colostrum contains immune factors to protect a baby. It has more antibodies and other anti-infective proteins than mature milk. This is part of the reason why colostrum contains more protein than mature milk.
- Colostrum contains more white blood cells than mature milk. Colostrum helps to prevent dangerous bacterial infections and provides the first immunization against many diseases.
- Colostrum has a mild laxative effect, which helps to clear the baby's gut of meconium (the first dark stools). This also clears bilirubin from the gut and helps to keep levels low preventing severe jaundice.
- Colostrum contains many growth factors to develop a baby's immature intestine. It also provides a protective lining to the baby's gut. This helps to prevent the baby from developing future allergies and intolerance to other foods.
- Colostrum is rich in vitamin A, which helps to reduce the severity of infections. The first feeds help this protection.
- Colostrum is present in the breasts before a baby is born. Babies should not be given any drinks or food before they start breastfeeding. Artificial feeds given before a baby has colostrum increase the risk of allergies and infection.

Colostrum, or the first milk is produced from the 28th week of pregnancy and in the first days after delivery. Colostrum is the first immunization against bacteria and viruses and protects against infections, primarily owing to its elevated levels of immunoglobulins, especially IgA. It is easier to digest, creates a protective layer in the neonate's intestines and reduces the permeability of the intestines for food proteins and has a laxative effect (helps the excretion of meconium, thus preventing the occurrence of neonatal jaundice). Colostrum is thick due to its high concentration of ingredients in a small volume and yellow due to the large amount of beta-carotene (provitamin A), significantly differing from the appearance of mature milk.

Transitional milk is secreted from the second week after delivery.

Mature milk is secreted from the 14th day. It contains less protein and more fats, carbohydrates and vitamins and trace elements, following the needs of the child It is white in appearance and thinner; to mothers, it may seem too thin, watery, transparent, so they may fear that its quality is poor and that it does not meet the needs of the child.

3. BREAST MILK COMPOSITION VARIES OVER TIME

The first milk during a meal is thinner, with less fats (foremilk) and serves to quench the baby's thirst; this is followed by thicker milk, with more fats, which serves (hindmilk) to satisfy the baby's hunger. If babies suckle for too short a period, he/she will only get the first, watery milk, and will be deprived of the additional fat and calories coming at the end. This cause of insufficient growth should be taken into account if there is enough milk, and the child suckles well but does not grow as much as it should.

The highest amount of fat is early in the morning and later in the afternoon.

The composition of breast milk follows the need of the child and changes depending on the age of the child and season.

The milk of mothers of preterm babies is adapted to the growth needs of premature babies by its composition, especially the amount of protein and higher calorie density.

Self-assessment

Questions frequently asked by parents/ how to answer

1. How do I know if my milk is of good quality?
2. Should I take the milk to the laboratory for quality assessment?

Recommended answers

1. Breast milk is a meal of ideal composition for a neonate/infant. The composition changes according to the needs of the child: age, gestational age, sex. It varies during the day and even during a single breastfeeding. Even severely malnourished mothers in food-scarce environments produce milk that is adequate for their child.
2. By examining one sample of milk, it is not possible to conclude if the milk is of good quality. Examination of the composition of human milk is carried out in highly specialized laboratories, according to an established methodology.

The only dilemma for parents and healthcare professionals is if there is enough milk and if the neonate/infant is able to suckle the required amount.

Additional resources

Annex 3: Composition of human milk
Annex 4: Breast milk microbiome

IV

LACTATION

1. BREAST ANATOMY

Knowledge and understanding of how breastfeeding works will allow to you help mothers/parents/caregivers. In this session, we review the anatomy and physiology of breastfeeding. We will discuss milk production and milk transfer from mother to baby. Your goal as a health worker is to help a mother/parent/caregiver decide what is best for their situation. If you understand how breastfeeding works, you will have a deeper understanding and provide more specific support.2) Areola: Dark skin surrounding the nipple, a baby needs to have a large amount of the areola in its mouth to feed well.

1. **Montgomery's glands:** Secrete an oily fluid to keep the skin healthy, clean and lubricated. They are the source of the mother's smell of the mother's breasts, helping the baby to find the breast and recognize her.
2. **Alveoli:** Small sacs made of milk-secreting cells. There are millions of alveoli –A hormone called prolactin makes these cells produce milk.
3. **Muscle cells:** Surround the alveoli contracting and squeezing the milk out. A hormone called oxytocin makes the muscle cells contract.
4. **Ducts:** Small tubes, or ducts, carry milk from the alveoli to the outside. Between feeds, milk is stored in the alveoli and small ducts. The ducts join to form seven to 10 larger ducts that pass through the nipple. The larger ducts beneath the areola dilate during feeding and hold the breast milk temporarily during the feed. The secretory alveoli and ducts are surrounded by supporting tissue and fat.

SPECIAL NOTE: BREAST SIZE

After reviewing the structures and the anatomy of the breast, we want to consider a special counselling point with mothers. Some mothers think their breasts are too small to produce enough milk. This is the moment to support them with knowledge and understanding.

How should the health worker counsel this mother?

Small breasts and large breasts both contain about the same amount of glandular tissue, so they can both make plenty of milk. It is the fat and other tissue that give the breast its shape, and make up most of the difference between large and small breasts.

Small breasts may have less milk storage between feeds than larger breasts. Babies of mothers with small breasts may need to feed more often. Ultimately, the amount of milk produced in a day is as much as from larger breasts.

The ratio of glandular and fatty tissue varies from woman to woman. The ability to produce milk is not determined by breast size, but by the amount of glandular tissue.

For the baby, the nipple is a visual, olfactory and oral stimulus for breastfeeding. Unmyelinated nerve fibres make it extremely sensitive. The nipple is "plastic", meaning that, in response to suckling, an erection occurs, the nipple elongates and changes its shape. An assessment of breastfeeding success based on the appearance of the nipple is not reliable.

Sebaceous glands give the nipple its specific smell, which the child recognizes after a few days, and the regulate the skin pH. Sebum has a bactericidal effect and "lubricates" the nipple during breastfeeding.

Nipple care products change the skin's pH which, instead of saprophytes, is populated by pathogens. They often have an intense smell, so nipples no longer "smell like mom" for the baby; therefore, these products should be removed before breastfeeding, which creates micro ridges.

Self-assessment

Questions frequently asked by parents/ how to answer

1. My nipples are flat, will I be able to breastfeed?
2. Will I be able to breastfeed with inverted nipples?
3. Which nipple care product do you recommend?

Recommended answers

1. It is difficult to estimate the elasticity of the nipples in advance according to their appearance. It is important to explain to the mother what "deep latch" means and monitor the first feedings. Improper breast emptying technique can exacerbate the problem due to an oedematous areola. The nipple "extraction" technique with a syringe can help some mothers. Regula ruse of silicone nipples is not recommended. For most mothers, nipples form when the baby starts suckling and this solves the problem.
2. If the nipples are fully retracted, this could be a problem for breastfeeding. You should definitely try, every mother-neonate pair is specific. Most of these mothers can successfully breastfeed with the aid of a silicone nipple. For those few mothers whose babies do not manage to latch on to the breast, the option of feeding with expressed milk is available.
3. Nipple care products change the skin's pH which is populated by pathogens instead of saprophytes. They often have an intense smell, so the nipples no longer "smell like mom" for the baby; therefore, these products should be removed before breastfeeding which creates micro ridges. Exposure of the nipples to the air as often as possible and care with a few drops of breast milk are recommended.

2. PHYSIOLOGY OF LACTATION

Lactation is the process of milk secretion. Lactation and breastfeeding are complex processes, influenced by a number of endogenous and exogenous factors.

- Endogenous factors are related to the mother's physical and psychological health, previous experiences, plans related to breastfeeding.
- Exogenous factors pertain to socioeconomic and family factors and the support of hospital staff.
- Psycho-social factors are more important than socioeconomic factors.
- The amount of milk to be secreted does not correlate with the size of the breast.
- *The key factor is the quality of the mother-baby interaction.*

MILK PRODUCTION: During pregnancy, the regulation is hormonal, while after parturition, it is hormonal and autocrine.

Breast preparation for lactation – During pregnancy, not only the foetus grows, but the breast also prepares for the new role. The breast can grow up to 46% compared to its pre-pregnancy size. In some women, significant breast size increase is noticed only after parturition.

Postpartum milk supply – The drop in progesterone levels after placenta expulsion is thought to be the main trigger for the sudden onset of milk secretion after delivery. Another key prerequisite is breast stimulation, i.e., early initiation of breastfeeding.

In the first day after delivery, 10-50 ml of milk is produced; in the following days, the amount increases and the colostrum changes into mature milk.

The timing of the start of milk secretion is different for each mother, from 24 to 120 hours. Delayed secretory activation is associated with the shorter duration of breastfeeding.

Two hormones are crucial for breastfeeding – prolactin and oxytocin. The baby's suckling is the driving force for the secretion of hormones through the sensory impulses from the nipple.[18]

Prolactin is secreted during breastfeeding in order to provide the milk for the next feeding. More prolactin is secreted at night and therefore, night feeds are important, especially in the beginning. Prolactin is also responsible for ovulation suppression.

Oxytocin works before and during breastfeeding to allow the milk already in the breast to be expressed. It causes uterine contractions, which accelerate uterine involution and thus reduce the risk of postpartum bleeding and infection. These contractions, or "autolysis" of the uterus can be very painful during breastfeeding, especially in multiparous women.

Lactogenesis 2 – after the initial hormonal phase of milk secretion, further regulations takes place mainly locally, based on the principle of supply and demand.

Efficient suckling and breast emptying are extremely important for breastfeeding, i.e., regulation through milk volume. The absence of efficient suckling and milk removal depresses milk production.

Impact of pregnancy hormones on emotions and behaviour. In addition to milk secretion, lactation hormones also affect the woman's behaviour and emotions.

- **Prolactin** promotes the mother's aggressive/defensive behaviour ("tiger mother"), helping the mother to put the baby's needs first.
- **Oxytocin** (the love hormone) stimulates the feeling of altruism; it helps the woman both physically and emotionally in the process of transition to motherhood.
- Prolactin combined with oxytocin, which occurs shortly after parturition and during breastfeeding, promotes euphoria and a selfless commitment to the child, thereby contributing to the mother's satisfaction, the bonding process and the baby's physical and emotional health.
- **Prolactin and oxytocin are also secreted in men after physical contact with the baby!**

IMPORTANT

The secretion of lactation hormones is controlled by the neocortex; it can be said that milk flows from the head through the breasts to the baby. The most important for successful breastfeeding is the mother's self-confidence. Breastfeeding failure can be influenced by pain, fear, worry and the lack of self-confidence.

3. OXYTOCIN REFLEX

Symptoms and signs observed by the mother:

- a burning sensation in the breasts before and during breastfeeding;
- milk flowing from the breast if breastfeeding is suddenly interrupted;
- milk flowing from the other breast during breastfeeding;
- painful uterine contractions or bleeding during breastfeeding;
- thirst during breastfeeding.

The absence of these symptoms and signs does not mean that the reflex is not active; they are sometimes discreet or not recognized by the mother.

The reflex is assisted by the mother's feelings, e.g., touch, smell, seeing the baby or hearing the baby cry, as well as the mother's emotions when she thinks lovingly of her child.

Inhibition of the oxytocin reflex may occur when the mother is in pain or distress, meaning that her comfortable position and state of relaxation help milk flow.

Milk contains different factors to control or inhibit milk production. One main factor is called the feedback inhibitor of lactation (FIL). If milk is not removed and the breast is full, this inhibitor decreases production of milk. If milk is removed from the breast, then the inhibitor level falls and milk production increases. Thus, the amount of milk that is produced depends on how much is removed.

KEY POINTS

- **If a baby stops suckling from one breast, that breast stops making milk.**
- **If a baby suckles more from one breast, that breast makes more milk and becomes larger than the other one.**
- **For a breast to continue to make milk, the milk must be removed.**
- **If a baby cannot suckle from one or both breasts, the breast milk must be removed by expression to enable production to continue.**
- **This local control of breast-milk production is especially important after the first few weeks, when the level of prolactin decreases.**
- **Milk production is a give and take process: The mother's body makes as much milk as the baby drinks. For a mother to produce enough milk, her baby must suckle often and remove the milk. Her breasts will respond and produce as much milk as the baby takes. To remove and transfer the milk efficiently, it is necessary for the baby to suckle effectively.**

NOTE: If a baby cannot suckle, the breast milk must be removed by expression to enable production to continue. This is an important point that we will discuss later in the course when we talk about expressing breast milk.

Self-assessment
Questions frequently asked by parents/ how to answer

Is there any milk in my breasts during labour?	Yes, colostrum starts to be produced between the 16th and 22nd week of pregnancy. Many mothers are not aware that they have milk in their breasts, because it does not leak and is difficult to get by expressing.
When will my milk come?	The volume of milk normally increases 30-40 hours after delivery (placenta expulsion). It sometimes takes time for the mother to become aware of this change. Milk production is usually established two-three days after childbirth, but for some mothers it happens only after day 3 or later.
How can I recognize milk inflow?	• Breast fullness, feeling of heaviness, warmth, burning sensation. • Leaking of milk. • Change in the baby's feeding regimen and behaviour while breastfed. • If you empty your breasts, you will notice a gradual change in colour, from the thick and yellow colostrum to the thinner and paler mature milk
What if there is no milk on day 4?	• Breasts should be emptied regularly and completely. "Skin to skin" contact can help increase milk production. • We will monitor the neonate's weight in order to assess if the child is getting enough milk. • If the beginning is difficult, do remember that many mothers have managed to slowly increase milk production to the full volume required by the child within one or two weeks, and some even after several weeks.

- **95-97% of mothers can successfully breastfeed regardless of breast and nipple size.**
- **The baby is ready for suckling right after birth.**
- **There is enough colostrum for the first feeding and for two babies.**
- **A woman can nurse one infant with one functional breast.**
- **Only breast milk is used for nipple care; its benefits and healing properties (stem cells and protection against infection) should be used, and smell of the breast preserved.**

4. CONDITIONS LEADING TO DELAYED ONSET OF LACTATION

If the expected increase in the amount of milk does not occur in the first 72 hours after delivery, delayed lactation is deemed to exist.[10] It is estimated that 5–10% of women (perhaps even 25%) have delayed lactation. If we recognize that the mother has some of the risk factors for delayed lactation, we can provide her with additional help and support.[11]

WHEN CAN WE EXPECT DELAYED LACTATION

Primiparous women	• On average, one day later than multiparous women.
Parturition	• Large amount of intravenous infusion during labour • Prolonged labour (expulsion phase) • Stress and pain lead to inhibition of the oxytocin reflex • Unplanned caesarean section (it is not known whether the stress is due to the surgery, medications, delayed breastfeeding or other factors) • Blood loss exceeding 500 ml • Residual placental tissue • Late onset of lactation
Maternal health	• Obesity and insulin resistance • Diabetes • Hypertension • Smoking, alcohol
Breast conditions	• Premature birth (no growth of breast tissue during late pregnancy); it can be compensated by good support and help to the mother • Breast underdevelopment / insufficient glandular tissue • Breast surgery • Unusual nipple anatomy (flat or inverted nipples) or piercing.

CONDITIONS LEADING TO UNSUCCESSFUL LACTOGENESIS

In a small number of women, lactation cannot be established due to breast surgery or injuries, severe maternal diseases, endocrinological disorders (e.g., Hypopituitarism or polycystic ovary syndrome) or insufficient glandular breast tissue (about 5% of women).

Additional resources

Annex 5: Breast anatomy and physiology of lactation

V

PREPARATION FOR BREASTFEEDING

IMPORTANT

Experience shows that the mother tends to breastfeed her baby more successfully if she knows more about breastfeeding and if she is better prepared. Most pregnant women make the decision to breastfeed during pregnancy. The adventure of motherhood begins long before childbirth!

Although most pregnant women plan to breastfeed, many arrive at the maternity ward unprepared for breastfeeding.

Equally important are timely information, education and positive messages that provide support, boost self-confidence and reduce fear.

1. COUNSELLING PREGNANT WOMEN ON BREASTFEEDING

Pregnant women should receive breastfeeding counselling by the 32nd week of gestation, ideally during the second trimester. Ideally, every visit to the pregnancy counselling centre should be used for breastfeeding counselling. Do involve the fathers from the very beginning!

Self-assessment
Questions frequently asked by parents/ how to answer

FREQUENTLY ASKED QUESTIONS	HOW TO ANSWER	COMMENT
How should I prepare my breasts for breastfeeding?	Physical breast preparation for breastfeeding is not necessary.	Pregnancy prepares the breasts for breastfeeding.
How should I maintain personal hygiene?	By showering without using too much soap. Do not put alcohol on the nipples.	The nipple and areola have their own microflora that should not be disturbed.
Should I prepare the nipples for breastfeeding, harden them?	Do not rub the nipples with a rough towel or pull them too hard.	The nipple is formed during breastfeeding; it is important to place the baby well and have it latch on to the nipple properly.
Will my breasts change and sag after breastfeeding?	• During pregnancy and after lactation breasts grow up to 46% compared to the size before pregnancy. • The nipple and areola become more pigmented.	Breasts are not changed by breastfeeding but by pregnancy.

My mother did not breastfeed, will I be able to?	Your mother's experience has no predisposition significance for your breastfeeding success.	You may have hereditary breast structure. Breastfeeding itself is a combination of a range of circumstances that represent an individual experience.
I have silicone implants; will I be able to breastfeed?	Silicone implants are not an obstacle to breastfeeding if the mother has the will and desire.	Implants are placed under the glandular tissue, which does not impair the breastfeeding function of the breast.

2. PREGNANT WOMEN WHO REQUIRE SPECIAL ATTENTION

Information about pregnant women that may be important for breastfeeding success:

1. **Pregnancy** – which pregnancy is it, is it desired, planned, spontaneous or in vitro, last period, expected date of delivery;
2. **Medical history** – previous gynaecological issues or surgeries, chronic diseases, if the mother takes any medications, allergies, history of infectious diseases, smoking, alcohol;
3. **Family history**;
4. **Experience and issues** with breastfeeding with the previous child/children;
5. **Breast examination** – size, shape, nipples, aesthetic or other surgeries.

HOW TO IDENTIFY PREGNANT WOMEN WITH SPECIAL CONCERNS

LIFE ISSUES	HEALTH ISSUES
• difficulties with breastfeeding the first child or never breastfeeding before • family issues • depression • she is isolated, no social support • young/single mother • unwanted pregnancy • pregnant women exposed to violence and neglect	• depression • surgery, cosmetic surgery or breast injury • chronic disease • a child with special needs or twins • obesity • difficulties with conception, assisted reproduction

INVOLVEMENT OF FATHERS

When the partner / father of the child is involved from the beginning, it is easier for the pregnant woman to embrace healthy lifestyle habits and go for regular check-ups. The partner's support for breastfeeding can also have a decisive influence on the success of this "venture". Hence, fathers should be involved from the beginning: joint visits to the counselling centre for pregnant women, joining parenting schools and childbirth preparations, visits to the maternity ward, presence at childbirth, visits during hospitalization should be encouraged.

Message to the mothers: NO 'Breastfeeding is the best' YES 'Breastfeeding is normal'

- **Message that breastfeeding is the best only increases socio-cultural pressure.**
- **Failure if her breasts 'don't work'.**
- **Facing difficulties in breastfeeding and premature quitting breastfeeding increase the risk of postnatal depression, anxiety, sense of loss and regret.**

NEVER USE THE WORD 'YOU FAILED', 'FAILURE' ETC.
INTERACTION WITH HEALTHCARE PROFESSIONALS: skilled partners as opposed to technical experts.

Additional resources
Annex 6: What needs to be mentioned in the conversation with a pregnant woman about breastfeeding

Module 5: Partnership in supportive parenting – the involvement of fathers
https://www.issa.nl/content/supporting-for-families-nurturing-care

VI

INITIATION OF BREASTFEEDING

1. KEY STEPS IN THE MATERNITY HOSPITAL

The basis of the “Baby-Friendly Hospital Initiative“ are 10 steps to successful breastfeeding which have been recognized and endorsed as key factors for breastfeeding success. The most important steps in the maternity ward are “skin-to-skin“ contact, rooming-in of the mother and baby, responsive breastfeeding and the avoidance of unnecessary supplementary feeding. The more steps consistently applied in the maternity ward, the greater the breastfeeding success.8

Early skin-to-skin contact between mothers and infants should be initiated as soon as possible after birth. It should be uninterrupted for at least 60 minutes. Mothers should also be supported to initiate breastfeeding as soon as possible. According to research, babies who start to breastfeed within the first hour are more likely to survive the first month of life. The longer the delay, the greater the risk of death.

SKIN-TO-SKIN CONTACT

Body contact comforts the mother and child and helps to stabilize the child’s heartbeat and breathing, keeps the child warm with the heat of the mother’s body, helps in metabolic adaptation and stabilization of blood sugar in the newborn, prevents the child from crying by reducing stress and energy consumption, allows the child’s colonization with the mother’s bacteria, facilitates the bonding of the mother and child because the child is awake for the first hour or two after birth and allows the child to find the breast and latch on to it with its mouth.

The mother is here again! Through the skin, the newborn **feels** the warmth of the mother’s body, mother’s touch and becomes familiar with the feeling of being embraced. It **hears** the mother’s voice and recognizes the mother’s heartbeat. The newborn also makes eye contact. **The first eye contact** between the mother and the baby is a moment whose importance cannot be overstated; it’s the moment the mother will never forget. This intense moment often makes the mother decide to breastfeed.

IMPORTANT

- Enable a continuous and relaxed contact between each mother and a healthy newborn for at least an hour. A mother should hold her baby like this as much as possible for at least one hour after delivery, without interruption. She does not have to lie flat during this time. She may be more comfortable sitting up or leaning back, holding the baby between her breasts, and letting them respond naturally
- Start immediately, even before cutting the umbilical cord, or as soon as possible during the first few minutes.
- “Skin-to-skin“ contact is also possible during a caesarean under spinal/epidural anaesthesia.
- During a caesarean section under general anaesthesia, “skin-to-skin“ contact can be made with the child’s father immediately after birth and with the mother after waking up (after a few hours).
- In twins, the first twin can have physical contact with the mother until the birth of the second one begins.

Recommendations for placing the child:

- The naked child is placed on the mother's bare breasts and belly.
- Before it is placed, the child can be wiped (palms are not wiped).
- The child is placed on its belly on the mother's belly, arms outstretched, legs slightly apart and flexed.
- The child is covered with a towel or compress, and a cap must be put on its head.
- The nose and the mouth must not be covered, the head is turned to the side, with the neck straight without flexion to ensure airway patency.

DELIVERY ROOM STAFF CONDUCTS CONTINUOUS SUPERVISION!!!

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Reflection and discussion

MANAGING OBSTACLES FOR “SKIN-TO-SKIN” CONTACT

IT IS OFTEN THOUGHT THAT…	FACTS
The newborn must be bathed.	Bathing the newborn is not recommended during the first 24 hours. Routine procedures (weighing, vitamin K) can be postponed for an hour.
The newborn is not awake.	In the first postpartum hours, the newborn is awake, its sense of smell and taste are sharpened, it is ready for feeding.
The mother should have an episiotomy or rupture stitched up.	The mother is more relaxed when the child is with her, barriers for skin-to-skin contact during the stitching of episiotomy are hidden in the habitual staff practices.
The maternity ward is crowded.	If the newborn is judged to be vital, staff monitor the mother and baby while performing other tasks.
The mother is tired.	There is nothing that will make the mother happier and more relaxed than the close contact with her newborn.
The mother does not want to take the newborn in her arms.	That can be the first sign of depression or risk of child abandonment.

IMPORTANT

THE PARENTS’ ‘BIRTH’ – At the moment of birth of their child, the parents are also born in their new role. The first hour after the child’s birth is the “golden hour“ of family creation, especially if the father is also present. All routine procedures for the newborn can be postponed; the parents and the child should be provided with peace and privacy.

FIRST BREASTFEEDING – HELP AT THE START OF BREASTFEEDING

When a mother and baby are skin-to-skin without interruption, the baby will typically work through a series of instinctual pre-feeding behaviours called the 9 stages. The 9 stages are: birth cry; relaxation; awakening; activity; crawling; first resting; familiarizing; suckling; sleeping. This may be over in a few minutes or an hour or more. A longer period of skin-to-skin contact is recommended if the baby has not suckled by one hour after birth.

The first feeding should be regarded as familiarization with the breast, not as feeding. The mother should be helped into a comfortable position. After the phase of rest and adaptation to the unfamiliar environment, the newborn puts its hand to the mouth and makes suckling movements and sounds. It moves towards the nipple, finds it and latches on to it with its mouth wide open.25

A newborn should not be forced by pushing the breast into his mouth. Neither the mother nor the newborn should be pressured regarding the speed of initiation of breastfeeding and its duration.

* See Chapter VII for more information on breastfeeding assessment and support.

Additional resources

Annex 7: 10 steps to successful breastfeeding (WHO initiative 'Baby Friendly')

Video clip

Breastfeeding in the first postpartum hours. Global health media project: https://www.youtube.com/watch?v=uMcgJR8ESRc (10 minutes)

ADVANTAGES OF ROOMING-IN

- The natural instinct of the mother and the newborn is to be together after birth; there is no reason to separate a healthy newborn from its mother.
- Rooming-in allows the mother to develop maternal instincts at a time when her body's hormones are programming her for that role.
- Rooming-in encourages bonding even when the mother is not breastfeeding the child.
- Postponing and limiting rooming-in can have an adverse effect on the establishment of the emotional bond and breastfeeding success.[12]

Reflection and discussion

HOW TO EXPLAIN TO FUTURE PARENTS THE ADVANTAGES OF ROOMING-IN

- When the newborn is placed next to you, it sleeps better and cries less.
- The longer and more successful breastfeeding is, the faster the newborn gains weight.
- Responsive breastfeeding is easier when the newborn is close, and it also stimulates the production of more milk.
- By caring for your child, you will gain the necessary self-confidence.
- You will see that the child is fine, and you will not worry if it is crying if it is placed in another part of the maternity ward.
- The child is exposed to a lower risk of infection.
- You may be afraid that you won't be able to rest; it has been shown, in fact, that the mother sleeps better when the baby is placed next to her.

Possible obstacles to rooming-in: the thought that it can be tiring for the mother; need to take the child to the ward for medical procedures; belief that newborns should be controlled; staff do not have the time or skills to help the mother learn to care for their child; mothers ask that their children be taken to the ward. This is due to established practice and inconsistent attitudes.

If separation of the mother and child is necessary, you should note the reason in the medical documents and the need for separation should be constantly reviewed so that the separation is as short as possible. During the separation, the parents should be encouraged to come and see the child, if possible, and the mother should be encouraged to collect her milk for as short as possible.

2. RISKS OF UNNECESSARY SUPPLEMENTARY FEEDING

A small amount of colostrum is sufficient for the size of the newborn's stomach, it prevents hypoglycaemia in a healthy, full-term, eutrophic newborn and it easily learns to coordinate suckling, swallowing and breathing. Healthy term babies also have sufficient body water to meet their own metabolic needs, even during extreme heat. Breast milk provides enough liquid to replace fluid loss. The neonates have a larger amount of extracellular fluid, which is secreted during the transition from intrauterine to extrauterine life. Diuresis of this fluid and excretion of meconium leads to physiological weight loss in the first days of life.

AVERAGE REPORTED COLOSTRUM INTAKE IN HEALTHY BREASTFED TERM BABIES[9]

TIME (HOURS)	INTAKE (ML PER FEEDING)
First 24 hours	2–10
24–48 hours	5–15
48–72 hours	15–30
72–96 hours	30–60

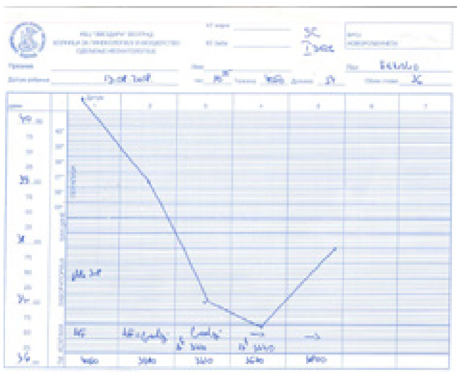
Unnecessary supplementary feeding can put off the child from suckling due to a feeling of fullness. This can lead to a decrease in the amount of milk or breast engorgement. If supplementary feeding is applied in order to soothe the child, the mother's self-confidence is impaired.

Case study

A paediatrician in a maternity hospital examines a girl born by caesarean section, with a birth weight of 4050 g. The child is 48 hours old and has lost 340 g since birth. The staff is faced with a dilemma whether to give the child supplementary food or not.

Facts that can be of help in deciding:

- The mother is motivated to breastfeed the child.
- The child was born by caesarean section. Due to intravenous fluid intake during the operation, the amount of extracellular fluid in the child is increased, so a high weight loss can be expected.
- The loss is 8.3%, although on the temperature chart it visually looks much higher (the percentage is calculated, not the absolute loss in grams).



Instead of supplementary feeding, the mother should be given help and support. The weight is measured twice a day to assure the mother that in fact, there is no problem. Without unnecessary supplementary feeding, weight loss is minimal on day three and on day four, the child suckles well and gains weight.

The mother went home confident that she can successfully breastfeed her baby. The visiting nurse will monitor breastfeeding during regular visits.

POSSIBLE INDICATIONS FOR INTRODUCING SUPPLEMENTARY FEEDING OF HEALTHY, TERM NEONATES[9]

SIGNS OF INSUFFICIENT MILK INTAKE				INDICATIONS IN THE MOTHER
Clinical signs of dehydration: dry skin and mucous membranes, retracted fontanelle, scarce urination				Delayed lactation (milk is produced on day 4 or day 5)
Weight loss	0–24 h	max.	5–6%	
	24–48 h	max.	7–8%	Primary glandular insufficiency (<5%)
	48–72 h	max.	9–10%	
				Breast pathology

Necessary steps in deciding on supplementary feeding

It is the healthcare professionals' responsibility to inform the parents of the benefits and risks of supplementary feeding, to document the parents' decisions and to provide support to the parents once they have made the decision.

For each newborn, position, latching on to the breast and milk transfer should be assessed before proceeding with complementary feeding.

Each supplementary feeding should be recorded (content, quantity, method of feeding and medical indication or reason).

If supplementary feeding is medically justified, the primary aims are to feed the newborn and enable optimal breast milk production. At the same time, the causes of low milk production, inadequate feeding or milk transfer should be considered.

If the newborn is not breastfed (premature, sick), the mother should empty the breasts often, usually once every time the newborn receives supplementary food or at least 8 times in 24 hours. Breasts should be completely emptied each time.52 Engorgement of the mother's breasts should be avoided as this will further compromise milk production and may lead to other complications.

From the moment of making a decision on supplementary feeding, the criteria for its discontinuation should be considered. Efforts should be focused on addressing the underlying issue and assisting mothers in stimulating lactation, positioning and comfort during breastfeeding, while assessing the signs that show that their newborn is latching well. It is important to monitor the mother and the child carefully.

Which milk should be used for feeding a newborn?

1. The first choice is the child's own mother's milk.
2. If there is no own mother's milk, the next choice is milk from a human milk bank.
3. The next choice is baby formula: specialized formulas are used for premature and sick children; for other children who need supplementary feeding or formula feeding, hypoallergenic formulas or other formulas that meet international quality standards are recommended.

In practice, it is difficult to obtain milk from the human milk bank even from premature and sick newborns, so healthy newborns deprived of their own mother's milk baby are left with formulas.

If supplementary feeding is not medically indicated, the mother should be informed of the risks, and this should be recorded in the medical documentation. Supplementary feeding should be given in a small amount (10-15 ml per meal), using a small cup and also a teaspoon or a syringe.

Reflection and discussion

HOW TO ENCOURAGE ROOMING-IN AND BREASTFEEDING AT NIGHT

MOTHER:	NURSE:
“I don’t have enough milk.“	Why do you think so? Babies need a very small amount in the beginning. Mammary glands produce a sufficient amount of milk for the first few days and, as the needed quantity increases, the baby will provide the amount of milk it needs by frequent suckling. Your colostrum is rich in nutrients and is quite sufficient for the baby.
“My baby keeps asking to be breastfed.“	How smart your baby is! Exercise is important and suckling stimulates more milk production.
“I am tired. Can you feed my baby in the box tonight?“	We help you learn to care for your baby both day and night so that you feel safe when you go home. Long breaks between feedings reduce the amount of milk produced during the day. I can help you rest without disturbing the baby’s breastfeeding.

Additional resources

Annex 8: Indications for introducing supplementary feeding
Annex 9: Unjustified reasons for introducing supplementary feeding

3. RESPONSIVE BREASTFEEDING

We advise the mother to breastfeed the baby as often as the baby asks and not to limit the number and the length of feedings. The mother learns to recognize hunger cues and does not wait for the baby to start crying inconsolably.

If the child is breastfed responsively and not according to a set schedule, lactation is established faster, and a larger amount of milk is produced. This reduces the risk of neonatal jaundice, breast engorgement and mastitis. This approach leads to a higher percentage of exclusive breastfeeding and a longer breastfeeding duration.

Mothers often state that they do not know what is the “normal“ behaviour of the newborn. There is no simple answer to that question because every child has its own personality. Being together with her baby from the start, the mother, with assistance and support of the staff, will get to know the baby, learn to interpret its cues and respond to them.

Breastfeeding patterns: A newborn wants to suck about every one to three hours in the first seven days, or even more often. Sometimes the child asks to be nursed often for several hours (cluster breastfeeding), which the mother can interpret as hunger or some other issue. When the milk comes in, 8-12 feedings in 24 hours are normal. The interval between some feedings can be longer. Breastfeeding at night is important, especially in the beginning, in order to ensure sufficient stimulation for milk production.

The child should be allowed to suckle whenever it wants. It satisfies its needs, whether it is hunger or thirst, as well as the mother's needs if her breasts are full.

Sore nipples are the result of improper latching on to the breast and not of overly frequent or long feedings. When the child latches on to the breast properly, there will be no difficulties if the mother breastfeeds it long or often.

Self-assessment

It cannot always be left up to the child to decide when and how much to suckle.

PROBLEM	WHAT SHOULD BE DONE
Exceptionally long feedings (when most feedings last longer than 40 minutes), very short feedings (most feedings shorter than 10 minutes) and very frequent feedings (more than 12 feedings in 24 hours).	Check if the child's latch is correct and if it has any health issues.
The child is sleepy due to premature birth or jaundice.	Encourage the child to suckle. Feed the child with breast milk from the cup until it grows stronger.
The mother's breasts are full and painful.	Wake up the newborn for feeding.

Tips for mothers on how to wake up a sleeping baby

- Uncover the child and unswaddle it to allow free limb movement.
- Feed the child in an upright or semi-seated position, not lying down.
- Gently massage the child and talk to it.
- If the child is still sleepy wait half an hour and try again.
- Avoid painful interventions such as pinching or patting the child's feet.

FEEDING AN INFANT ON ARTIFICIAL NUTRITION

Formula-fed children should also be fed responsively, not on a schedule. Sometimes the child is forced to be fed because the formula meal has already been prepared. This can lead to overfeeding the child.

In bottle feeding, there is no difference between foremilk and hindmilk (hind milk contributes to the feeling of satiety of a breastfed child). The child's position is often such that the milk simply flows into the mouth, instead of the child actively suckling. There is also often pressure from parents to empty the bottle completely.

You should try to make the position of the child during feeding similar to suckling. During the feeding, the mother should watch the child for satiety cues (turning away from the bottle, lazy suckling) in order to stop the meal in time.

Additional resources

Annex 10: Hunger cues – recognizing the newborn's signals

Bottle feeding at a controlled rate https://www.youtube.com/watch?v=1cvF1nawMNI

4. DISCHARGE FROM THE MATERNITY HOSPITAL

Discharge from the maternity hospital is planned together with the parents. If the baby has difficulties with suckling (low weight, premature birth, anatomical obstacles) or significant weight loss, a diet plan is prepared, and weight control is performed.

The mother has learned:

- the correct position for breastfeeding so that it is not painful;
- to place the child correctly on the breast;
- to recognize when the baby is properly suckling and swallowing
- that the baby should have 8–12 feedings in 24 hours;
- to monitor elimination (at least 5 wet diapers and 3-4 stools after the 4th day);
- how to empty her breasts;
- when to seek help from medical professionals.

The visiting nurse takes over the care of the mother and newborn after their discharge from the maternity hospital.

The role of the visiting nurse is:

- to motivate the mother to breastfeed, building her confidence;
- to create a supportive atmosphere for breastfeeding in the family;
- to assist with placing the child on the breast;
- to observe the breastfeeding;
- to cooperate with the paediatrician;
- to organize an examination and weight control even before the age of one month, if necessary.

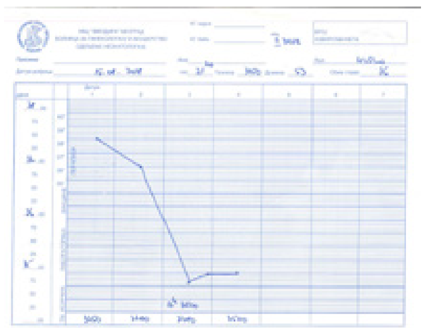
Case study

A male term newborn was born with a weight of 3920 g. In the first 36 hours, it lost 8.5%, and in the next 24 hours, it lost another 20 g. During his stay in the hospital, he was exclusively breastfed, without supplementation. The discharge of the mother and the newborn was planned on day 3 (age 60 hours). During the examination, the newborn was vital, without signs of dehydration. The mother states that he urinated less on the previous days, several meconial stools were registered, now the stool is transitional. Clinically subicteric, bilirubin values measured transcutaneously within the limits of physiological values for his age.

The staff may have a dilemma whether to discharge the mother and the newborn from the maternity hospital or keep them for observation for another day. Should supplementation be advised because of the risk of continuing weight loss?

Facts that can be of help in deciding:

- the mother is multiparous, she breastfed her first child for 13 months;
- the mother is motivated to breastfeed;
- the child is actively suckling, there are no clinical signs of dehydration;
- bilirubin values are within physiological limits for his age;
- the mother wants to go home because she is separated from her older child for the first time.



The mother and baby were discharged, and the mother was given advice on breastfeeding and weight control in the maternity clinic. The mother was advised to assess whether to come for the check-up in 7 days or earlier in consultation with the visiting nurse (if the baby is more yellow, if the baby suckless or urinates less). The parents brought the child for a check-up 7 days after discharge from the maternity hospital. The mother is please, the child suckles actively, urinates well and has one to two stools per day. It gained 150 g in weight. We commended the mother for doing well and advised her to continue breastfeeding and go for regular check-ups at the health centre when the baby is one month old.

During discharge from the maternity hospital, it should be considered whether the mother has self-confidence and positive previous experience with breastfeeding or is worried and afraid, who she lives with, whether she has help and support from her family. After the discharge, the care of the mother and newborn is taken over by the visiting nurse, but sometimes additional supervision and control should be provided.

- Empathy and support to the mother are just as important for breastfeeding success as professional help.
- It is especially important that healthcare practitioners have a consensus of opinion.
- Although the decision to breastfeed is the most important thing a mother can do for her child, it is her right to choose whether to breastfeed or not.

VII

BREASTFEEDING ASSESSMENT AND ASSISTANCE

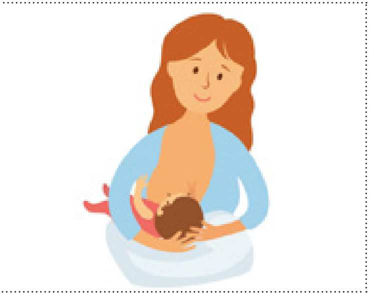
Breastfeeding is a natural way of child feeding, but the process itself is an acquired skill that must be practiced by both mother and baby.

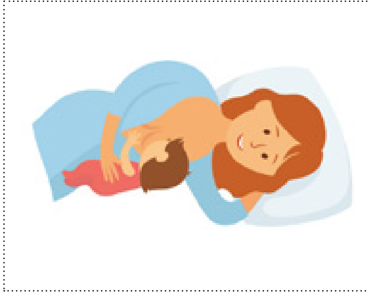
Each mother-baby pair (dyad) is unique; even multiparous women soon realize that the experience is new and different with each child, so familiarization and adjustment take time. The mother and the baby must learn to work as an efficient team. The key message for the mother is not to give up if everything does not work as she anticipated from the beginning!

1. FEEDING OBSERVATION

While observing breastfeeding, a health care professional assesses the need for verbal support and giving practical advice to the mother. He/she watches the mother, the child and the breast, observing the position of the child, how it latches on to the breast and suckles.

Breastfeeding position is the way in which the mother holds the baby in order to place it on the breast successfully. There are many positions that a mother can take while breastfeeding: lying on her side, cradle position, “rugby“ position, etc. Primiparous women, mothers after vacuum extraction or forceps delivery with extensive episiotomy, or after a caesarean section need advice and help in choosing a breastfeeding position. Later, the mother and her baby find the position that suits them best!

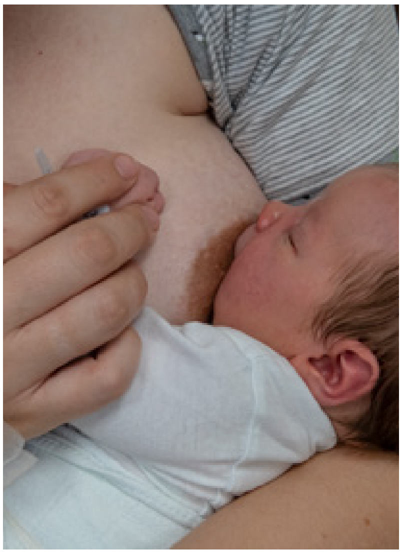




Four main elements in assessing the child’s position:

- The child’s head and body must be aligned.
- The mother must hold the child’s body next to her body.
- If the child is a newborn, the mother should support its whole body, not just the head and shoulders.
- The child’s face should be level with the nipple.

The breastfeeding position must be comfortable for the mother! In her desire to breastfeed her baby successfully, the mother sometimes, especially in the first days, takes various incredible and forced positions, inevitably resulting in back pain, neck stiffness and other discomforts. -Since the child sometimes suckles 10–12 times in 24 hours, it is important that the mother is comfortable, i.e., that she has back support (if seated on a chair or armchair, she should also have leg support). Regular pillows and those specially designed for this purpose can be of immense help!



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Placing the baby on the breast – latching on

The key to successful breastfeeding is the child's good attachment and latch on the breast. It is important that the entire nipple and as much of the areola as possible should be in the baby's mouth (the so-called deep latch), with the nipple turned upward toward the roof of the baby's mouth. Thus, the nipple will reach the comfort zone deep in the baby's mouth, at the junction of the soft and hard palate; if the nipple is deep in the mouth, the baby will be able to suckle more successfully, stimulating milk flow. If the baby has a shallow grip on the nipple, it will be pressed against its hard palate; in this way, the baby will get very little milk, breastfeeding is painful, and the risk of nipple damage is high.

After 4–6 weeks, when the baby has established head and neck control, it will be able to achieve a good latch on its own.

CORRECT LATCH AND GOOD FEEDING TECHNIQUE	INCORRECT LATCH
• The baby's mouth is wide open. • The upper lip is over the nipple and areola. • The lower lip is bent outward. • The baby's chin touches the breast. • The nipple is deep in the mouth, it does not hit the hard palate but the baby's soft palate, a vacuum has been established. • The baby is suckling rhythmically, with breaks for swallowing that you can see or hear; the cheeks are round, not sunken.	• The nipple appears flattened or ridged when removed from the baby's mouth at the end of the feed. • The baby is holding the nipple in its mouth, is not suckling or is sleeping on the breast. • Loud suckling, smacking sounds are heard. • The mother feel pain in her nipples during and after breastfeeding.

Reflection and discussion

ADVISING THE MOTHER ON CORRECTLY PLACING THE BABY ON HER BREAST

- The baby is placed so that its whole body is next to your body and its head at breast level. The baby's head, neck and body are aligned, facing the breast.
- Bring the child closer to you; the baby's body is straight, shoulder and hip should be in a straight line because the child swallows more easily in that position.
- Remember the rule: the child approaches the mother and not the other way around!
- The breast is close to the baby's mouth and the baby should be allowed to explore the breast.
- Trigger the suckling reflex by gently stroking the baby's mouth with the nipple; you can express a drop of milk and apply it over the nipple.
- When the baby fully opens its mouth (as if yawning), direct the nipple towards the palate; the nipple slides into the baby's open mouth down the upper lip and the tongue is extended under the nipple.
- The baby's chin touches the nipple, its lower lip is curved towards the chin, the tongue is under the nipple and the nose is slightly apart from the nipple.
- Once the baby latches on to the breast, you can improve the latch by gently drawing the baby's body closer to you in order to improve the latch.
- Some mothers make a mistake by trying to push the nipple into the baby's mouth when the mouth is not wide open.

- Hold the breast all the time with your free hand in order to make the baby's suckling easier. Make sure that your fingers are not too close to the nipple so that the baby has room to latch on.
- Sometimes the breasts should be additionally prepared for breastfeeding, e.g., when engorged. Place warm compresses on the breasts for 10–15 minutes before the initiation of breastfeeding in order to stimulate milk flow. Then massage the breasts gently and lightly in working towards the nipple (as if "playing" on the nipple), and then express a few drops of milk manually in order to soften the nipple area and spread them over the nipple.

Difficulties in latching on may arise if the child is sick, cold, in pain, not hungry or used to a pacifier; if the mother holds the baby in an incorrect position, if the mother is impatient, if she changed her perfume; if the breast is hard, swollen, if the milk is released quickly, if there is little milk.

The mother should not feel pain during breastfeeding! The first moments of breastfeeding can be accompanied by a brief discomfort or pain. If the mother feels pain during the entire feeding, it means that the baby did not latch on to the breast properly and suckles inefficiently.[7] The mother should be advised to stop the feeding (by inserting her index finger next to the nipple in the baby's mouth and gently pushing the nipple out of the mouth) and to try again.

How to address the issue of breast rejection?

Breast rejection will be prevented by early and frequent physical contact, using the correct position, a quiet environment, patience and tenderness.

- Encourage physical contact between the mother and child in a quiet environment when the baby is not hungry.
- Do not force the baby to latch on when it is crying – breastfeeding should be associated with pleasant feelings.
- Feed the baby with breast milk from a cup until it associates breastfeeding with the feeling of satisfaction.
- Help the mother to put the child in an appropriate latching position.
- Help the mother to express some milk before feeding if the milk is released too quickly or if the breast is engorged.
- Heal oral thrush.
- Avoid pacifiers and dummies, feed the child from the cup if necessary.
- Advise the mother against using products that can cause an unpleasant breast taste or smell.

Video clip

Video: Breastfeeding positions https://www.youtube.com/watch?v=HEOgV1Hj8HA

Video: Correct positioning of the child at the breast
https://www.youtube.com/watch?v=D-GSqvjJ4H8

Video: Every moment counts: breastfeeding is more than a meal
https://www.youtube.com/watch?v=9hrGAQfSc4Q&feature=youtu.be

Additional resources

Annex 11: Observation of breastfeeding
Annex 12: Assistance in breastfeeding observation (checklist)
Poster: The Ten steps to Successful Breastfeeding
https://www.who.int/multi-media/details/ten-steps-to-successful-breastfeeding

2. ASSISTANCE WITH BREASTFEEDING

The success of breastfeeding will be best assessed by a direct impression of how breastfeeding is proceeding. During the time in the maternity hospital, breastfeeding should be assessed at least once per each shift.

Breastfeeding assessment should be an integral part of the visiting nurse's home visit. If the child's position and latch are correct, the mother should be commended and encouraged, and should not be burdened or confused with unnecessary "technical instructions". If we are happy with how breastfeeding is going and if the child has a sufficient number of wet and soiled diapers and is making satisfactory progress in gaining weight, our interventions are not necessary.

When controlling breastfeeding, always check the condition of the mother's breasts. In most cases, this is all you need to do, given that the most important actions are putting the child to the breast and the moment when the child finishes its feeding.

Examine the mother's breasts only if there is a problem. Ensure privacy and ask for permission before touching them. Notice the shape of the breasts and nipples, check for any swellings, skin damage or redness, scars from previous surgeries.

If a problem is observed, explain to the mother how you can help her and ask her if she wants you to show her how. The goal is to help the mother put the child on the breast herself. The position of the person helping the mother should be comfortable and relaxed, without leaning.

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3. SHORT FRENULUM OF THE TONGUE

One of the causes of breastfeeding difficulties can be the short tongue frenulum (ankyloglossia) Many children with ankyloglossia have no problems at all; it is estimated 25–44% of these children have difficulties with suckling or bottle-feeding. The most common issues are poor latch, inability to suck continuously, the child is restless on the breast, poor progress despite well-established lactation and damage to the mother's nipples.[26] The fact is that the problem of short frenulum is becoming more frequent, but indications for an intervention are sometimes set hastily.

Evaluating the problem of ankyloglossia requires two assessments: an objective assessment of the degree of ankyloglossia (tongue anatomy and mobility) and an assessment of efficiency of suckling, to be performed by trained personnel. Based on this assessment, the need for intervention (frenotomy) is assessed, which is then discussed with the parents.

Frenotomy (section of the short frenulum) is a simple procedure which, in young infants, when performed by trained experts, can be performed without anaesthesia and with few complications.[27] It is recommended that, if necessary, frenotomy should be performed as early as possible so that the mother can continue with breastfeeding without disruption. Mothers report that the baby's latch and suckling are better already in 48 hours after frenotomy, while mothers who previously complained of sore nipples report that they no longer feel pain. After the intervention, further support to the breastfeeding mother is needed.

VIII

THE QUANTITY OF MILK AND THE CHILD'S PROGRESS

Every mother's greatest fear is whether she has enough milk for her child and whether it is progressing well. It has been shown that this is one of the most common reasons for the (unnecessary) introduction of supplementary feeding and even for a complete transition to artificial nutrition.

It also happens that healthcare professionals disagree in their views of the neonate's and infant's progress, which further confuses parents.

1. EXPECTED INFANT WEIGHT GAIN

The mother and family members may lack self-confidence during breastfeeding, so they often think that there is not enough milk and misinterpret the child's behaviour.[14] The parents should be informed of reliable signs of sufficient milk intake which indicate that breastfeeding is effective: 1) sufficient number of wet and soiled diapers, and 2) the child's progress. This information boosts the mother's self-confidence and ability to breastfeed effectively.

IMPORTANT

FIGURES TO REMEMBER	PROGRESS IN GAINING WEIGHT
• Average physiological weight loss is 7% • Maximum physiological weight loss is 10% • Return to birth weight in 10–15 dana • Norm for progression > 600 g per month (25 to 30 g per day in the first trimester) • Loss of 400 to 600 g is considered a milder nutritional deficit for which no supplementation should be given, but the child should be monitored, and lactation encouraged; weight control after 7 days, expected progress of 25–30 g per day, minimum of 180 g after 7 days	0–4 months 155–241g per week 4–6 months 92–126g per week 6–12 months 50–80g per week According to WHO growth standards http://www.who.int/childgrowth/en/

A child usually doubles its birth weight in 5 months and triples it at the age of one year.

By the age of one year, the average child grows in length by 50% from the length at birth, while the head circumference increases by 33%.

MEASURING WEIGHT

Children are weighed daily in the maternity hospital and the pattern of urine and stool elimination is monitored.

After discharge, the first control and weight measuring are at the age of one month. Earlier weighing (after 15 days or before) is necessary only for premature children, low-weight or sick children, if there are latching difficulties (flat or inverted nipples, etc.) or if the mother's lactation is delayed. If the mother is insecure and fears that she does not have enough milk, measuring the child's weight will reassure her and prevent the unnecessary introduction of artificial nutrition.

There is no point in measuring the child every day, especially not in improvised home conditions. It can only confuse the parents and sometimes it is not even safe! It is also not advisable to weigh the child before and after breastfeeding in order to estimate the quantity of the milk sucked. The feedings, especially in the beginning, vary in duration; sometimes the child suckles from only one breast, sometimes from both, so one feeding does not provide the true picture of the feeding effectiveness. It is especially harmful if, after such measurements, it is concluded that breastfeeding is not successful and that parents should be advised to introduce supplementary feeding!

A child who does not gain weight despite effective suckling and sufficient milk intake may be sick. If the child eats too little or shows signs of illness, medical help should be sought. However, if the child seems ready for feeding and shows no signs of illness, low weight may be the result of insufficient milk supply, often due to poor breastfeeding technique. Then the mother and child need help with breastfeeding.

A child with a congenital heart defect or neurological problems may gain weight slowly even if the quantity and intake of milk are sufficient.

The weight of all children should be monitored, including those who are not breastfed.

2. WHAT IS THE NORMAL RANGE IN BREASTFEEDING

Parents often say that not knowing what is “normal“ infant behaviour is a problem for them. The results of some interesting studies conducted on this topic show how wide the range of normal behaviour of infants is when it comes to breastfeeding and how great individual differences are.

Children included in one study[28] on this topic were healthy term infants aged 1 to 6 months. They were fed exclusively by responsive breastfeeding and their growth was in accordance with the WHO growth standards. (Data from the study do not refer to the first 4 postpartum weeks).

HOW MUCH AND WHEN

- 4–13 feedings in 24 hours
- 2/3 of the children suckled evenly both during the day and at night, 1/3 eliminated the night feed (between 10 pm and 4 am)
- duration of feeding ranged from 12 to 67 minutes

BREASTS

- 30% always suckled from only one breast
- 13% always suckled from both breasts
- 57% combined
- during breastfeeding, a child suckles an average of 67% of milk from the breast

HOW MUCH IS ENOUGH

The child suckles according to its appetite and stops when it is full or wants to change the breast:

- on average, a child suckles 75 ml (30–135 ml) from one breast;
- The average amount of sucked milk during one breastfeeding, from one or both breasts, is 54–234 ml;
- it is normal for one breast to produce more milk than the other;
- the range of milk intake in 24 hours is 478–1356 ml, and the average is 789 ml;
- boys suck 76 ml of milk more than girls.

The older the child, the less frequent and shorter the feedings, but the daily intake remains approximately the same. Between 3 and 6 months, children grow relatively slower and have smaller metabolic needs, so they do not need an increase in the quantity of milk.

3. INSUFFICIENT QUANTITY OF MILK

In the first days and weeks after childbirth, the biggest fear for every mother and sometimes even more for the family members, is that there is not enough milk, and that the child is hungry. The fear that there is not enough milk is the most common reason for the unnecessary introduction of supplementation, and often for breastfeeding failure.

The most common reason for insufficient milk production is poor emptying of the breasts due to improper position, improper suckling and latching to the breast, too short of insufficiently frequent feedings and breastfeeding according to an established schedule.

Milk expression (emptying of the breast) and production are linked. If the breast is not sufficiently emptied, milk production will decrease. When a child suckles effectively, there is usually enough milk.

If the child fails to suck on the breast sufficiently because it was born prematurely, is low-weight or sick, this also reduces breast stimulation.

Psychological factors, pain, stress and a lack of the partner's or family support are equally important as the medical or "technical" issues related to breastfeeding. Sometimes the mother lacks self-confidence, feels tired, overwhelmed, worried or finds it difficult to meet the child's needs. If she is in a stressful situation, she will probably tend to breastfeed the child less often and for shorter periods of time and will offer supplementary food.

Additional resources
Annex 13: Causes of insufficient milk production
Guide for breastfeeding mothers
https://www.who.int/publications/i/item/9789241550468

TIPS FOR HEALTHCARE PROFESSIONALS ON HOW TO HELP THE MOTHER AND THE FAMILY

Use your communication skills to listen to and observe the mother and to respond and enhance her self-confidence.

Find out the cause of ineffective milk transfer and offer practical solutions: better placement of the child on the breast, greater frequency and longer duration of breastfeeding. Advise to avoid supplementary feeding, pacifiers and dummies, and encourage and commend the mother, insisting on her relaxation.

Explain that milk production is increased by more frequent and longer feedings and by emptying the breasts between feedings and talk to the family about the support the mother needs.

Monitor the child's progress until the weight is satisfactory and the mother gains the necessary self-confidence.

Reflection and discussion

COMMUNICATION SKILLS USE

- Listen to the mother and ask her important questions
- Observe the child – alertness, appearance, behaviour.
- Observe breastfeeding according to the "Assistance in observing breastfeeding" form.
- Respond to the mother's needs and tell her what you notice. Use positive words and avoid criticism or judgement.
- Provide clear information using understandable terms.
- Make suggestions to improve the situation and discuss with the mother if they are feasible.
- Encourage the mother's self-confidence.

Improving the amount of suckled milk

- Find out the causes of the small amount of suckled milk and try to eliminate them:
  - help the child latch on to the breast,
  - find the way to increase breastfeeding frequency,
  - explain to the mother how to recognize that the child has finished with one breast before offering thee other (the mother should not rely on the clock),
  - encourage "skin-to-skin" contact and close contact with the child during breastfeeding,
  - explain to the mother how to calm down the child who is restless at the breast,
  - recommend avoiding or reducing the use of milk formulas.
- If the amount of milk is too small and does not cover the child's needs, supplementary feeding should be introduced for a few days until the amount of milk increases.

Increase in milk production

- In order to increase milk production, the breasts must be stimulated by frequent emptying (by breastfeeding or expression).
  - You can suggest to the mother to gently massage her breasts while breastfeeding in order to facilitate milk release.
  - Advise her to express the milk between feedings and feed the child with that milk from a cup; this is especially important if the child suckles poorly or does not like frequent feedings.
- Talk to the family about how to balance the need to care for the child with their other obligations.
- Make sure that the mother is eating well, has regular meals and drinks enough fluids. Sometimes the intake of special foods or herbal supplements that are believed to boost milk production and are acceptable for use during breastfeeding can increase the mother's self-confidence in her own ability to breastfeed. The use of special foods or supplements cannot replace the need for frequent breastfeeding and correct breastfeeding technique.
- Encourage the father/partner to monitor whether the mother manages to relax and rest during the day.

Monitoring the progress of breastfeeding

- Monitor how the mother and child progress during breastfeeding after the measures you have taken. Monitoring frequency depends on the severity of the situation.
- Monitoring does not imply only measuring the child's weight. Notice the signs of improvement that you can point out to the mother – increased alertness, less crying, stronger suckling, more frequent urination and stools, as well as breast changes, such as reduced breast swelling and better milk release.
- Monitoring also allows you to talk to the mother and encourage her self-confidence by highlighting successful actions.
- If the child's weight was too low, so there was a need to introduce supplementation, reduce the quantity and number of formula meals as the situation improves. Monitoring the child should be continued for several weeks after discontinuing formula milk in order to ensure that the quantity of breast milk is sufficient.

Self-assessment

Does the mother have enough milk?

The mother tells you that she thinks she does not have enough milk	What will you tell her? What will you ask her in order to find out if the quantity of milk is really insufficient?
You have concluded that the child is not getting enough milk	How can you help the mother to increase the quantity of milk that her child needs?

IMPORTANT

COMMON MISTAKES

Mistakes usually happen in the initial period!

- Some mothers do not feed the child enough (in the beginning, it has to be 10 to 12 times in 24 hours), they cut out the night feeding too soon, they don't devote enough time to breastfeeding.
- Giving bottles and pacifiers confuses the child and is not recommended in the first month or two.
- Unnecessary use of artificial nipples and incorrect breastfeeding also disrupt optimal milk production.
- Young mothers may also experience insecurity, great fatigue, improper nutrition, anxiety, etc., followed by temptation… Mothers who are impatient and lack self-confidence very quickly start to feed their baby with formula milk and their initial desire to breastfeed the baby is likely to end in complete failure! Bottle feeding can compromise milk production to such an extent that it stops completely. In that case, there is no return to breastfeeding!

MESSAGE TO THE MOTHERS

- **Try to get enough sleep, rest and relaxation. Idea: suggest to your friends and family to get you an hour or two of babysitting instead of the gift for the baby, so that you can go for a walk, for coffee or to the hairdressers'.**
- **Don't let anyone convince you that formula milk is just as good for the baby as your own milk!**

4. RELACTATION

Definition of relactation: Re-establishment of milk production when breast milk production is significantly reduced or when the mother stops breastfeeding completely.

If the mother has stopped producing milk and she wishes to continue breastfeeding, a healthcare professional can help her to stimulate relactation. Relactation may be necessary if the child was sick and could not suckle, if the mother did not express the milk until the child could suckle, if the mother did not breastfeed the child in the beginning, but now she wants to, if the mother was sick and quit breastfeeding, if the mother adopted the child and previously breastfed her biological children, etc.

As with breastfeeding, the mother's motivation and persistence are crucial for relactation. Closeness with the child, cuddling, playing not only during feedings but at all times when the child is awake are necessary.

TIPS FOR RELACTATION

- **allow the child to suckle as often as possible, day and night, whenever it wants (10–12 times),**
- **massage the breasts and express milk between feedings, especially if the child does not want to suckle often,**
- **continue feeding with formula milk until the amount of milk is sufficient for the growth and development of the child,**
- **gradually reduce the quantity of supplementary food (10 ml per day per meal),**
- **provide family support so that the mother has enough time for relactation.**

Medicines for increasing the volume or stimulating the production of milk can only be effective with a simultaneous stimulation of the breasts by breastfeeding or expression.

Relactation will be easier if the child is very young (under two months) and has not gotten used to bottle and if the mother recently stopped breastfeeding.

5. BREASTFEEDING CRISIS

Breastfeeding crisis or lactation crisis occurs in many moms and unfortunately many give up breastfeeding because of it. There are situations when it may seem to the mother that the baby has greater needs than she can meet. This happens especially in the afternoon/early evening or for a few days during the baby's so-called growth spurt, i.e., during the phase of amplified feeding needs. These are normal stages that all babies go through (some earlier, some later, with different intensity), usually at the age of 2-3 weeks, 6 weeks or around 3 months. Periods of increased need are taxing for the mom and baby, but they pass quickly.

If the mother feels that her breasts are empty or notices that they are smaller than in previous days and weeks, that does not mean that there is no milk!

Reflection and discussion

TIPS FOR MOTHERS ON SUCCESSFUL BREASTFEEDING

- Increase the frequency of feedings to 8-12 times or more, if needed; don't forget night feedings.
- Do not set the interval and length of feedings, leave it to the baby.
- Check if the baby takes a good position.
- Don't wait until for the breasts to "fill up" so that the baby could eat enough. There is always milk for the baby in them, even when they seem to be empty. Moreover, if the baby suckles more often, not only will the volume of milk increase in a few days, but the baby will also gain more weight because it will eat more of the hind, more nutritious milk.
- Feedings must be more frequent, but also more efficient. A baby who is not lively and does not suckle effectively, but sleeps with the nipple in its mouth, should be prompted by "skin-to-skin" contact, unswaddling (in a warm room, of course) or carrying in a carrier during breastfeeding.
- Any supplementation with tea or adapted milks may disrupt the supply and demand ratio in the production of breast milk.
- Empty the breast after feeding if it is still hard and full of milk. During some feedings, the baby eats everything and wants more, while during others, it doesn't. This happens in exceptional cases when the baby is nervous about something, when it is teething, when the mother changes her deodorant, etc. When the baby no longer wants to suckle even after being prompted (after skin-to-skin contact or carrying), empty the breast after feeding to avoid milk stasis.
- Drink enough fluids. Not too much, but enough: that's about one glass during one feeding.
- Rest. This is especially important if you breastfeed often, because you force yourself to sit or lie down with the baby a lot. Besides breastfeeding, it would be good to find something that's mentally relaxing, at least for a few minutes a day.
- Apply some of these tips and wait for a day or two. It may seem like a long time, but as these methods are based on the experience of many other mothers and the latest scientific knowledge, there is no reason to doubt your own success. Relax, enjoy your time with the baby and believe in yourself.

6. WEANING / DELACTATION

Breastfeeding is much more than just a way of feeding a child! It is also a source of closeness and comfort. If discontinuation of breastfeeding is really necessary, it is important that it be gradual, as time permits. There are recommendations how to make this process as easy for both the mother and the baby. During this time, the child should be given a lot of love and extra attention.

In our language, there is no special term for quitting breastfeeding and the term "weaning" is often used.

How long should a child be breastfed?

WHO recommendations are that breastfeeding should last for at least one year and extended breastfeeding in the second year, or even longer, is increasingly encouraged. Breast milk is the best source of nutrients at any age and findings increasingly indicate that the long-term benefits from breastmilk for the child are directly related with the length of breastfeeding. Throughout the history of our species, prolonged breastfeeding has been a customary practice. Only in the last century has the length of breastfeeding been shortened, and the number of breastfed children has declined. The causes are not backed by science but are primarily influenced by culture. Fortunately, we are slowly beginning to return to nature, and we will certainly see less, and less criticism and advice faced by mothers who decide to breastfeed their child in the second year or longer.

Natural discontinuation of breastfeeding

Ideally, the child should stop with breastfeeding when it outgrows this need (breastfeeding discontinuation is guided by the child's needs). A change in breastfeeding rhythm occurs after the introduction of non-milk food. The child is more interested in other foods at the end of the first year, when it tries different foods, tastes, and learns to drink from a cup, it gradually stops suckling. Some children in the become less interested in the second year because they do not have the patience to remain still during breastfeeding. When you leave the decision to quit breastfeeding to your child, you will save yourself the unpleasant task of weaning when it is not ready yet!

When mom decides that it's enough

When the mom decides to quit breastfeeding, regardless of whether the reason is an exceptional situation or the mother's feeling it's time, quitting breastfeeding takes a lot of time and patience. Breastfeeding is an intimate bond between the mother and the child, so feelings about this decision can be mixed.

How stopping will go depends on the child's age and on how it accepts the changes. If possible, the weaning process should take several weeks. If the baby shows no signs of wanting to stop being breastfed, it will not give up so easily after being nursed for a year or more.

When discontinuing breastfeeding is not advisable

the mother has recently returned to work, the child may not yet be used to the change in routine, so it will be exceedingly difficult to stop breastfeeding completely. Depending on the age of the child, you should consider quitting breastfeeding before returning to work or a combination of breastfeeding and feeding the child with breast milk.

If the child is sick, it usually asks to suckle more often. This not only provides comfort to babies, but also provides them with enough fluids and energy during illness, when they often refuse other foods.

If a significant change is taking place in the household, such as relocation or divorce, this may disrupt weaning.

What should be given to the child instead of breast milk?

If the child is under one year of age, it will need a formula milk fortified with iron. Children under one year should not be given cow's milk!

Why is sudden discontinuation of breastfeeding not advisable?

Abrupt breastfeeding discontinuation may lead to breast problems, engorgement or even mastitis; it also leads to a sudden drop in breastfeeding hormones, which can cause depression, this is something to keep in mind if the mother was already prone to depression.

Abrupt cessation of breastfeeding can be very stressful for the baby and can cause emotional trauma. Breastfeeding is not only a source of food for the baby, but also of emotional security. There is no way to explain to your baby why it cannot suckle anymore! Gradual cessation of breastfeeding allows closeness during breastfeeding to be gradually replaced by other forms of physical and emotional closeness.

If the mother has to stop breastfeeding for medical reasons, it should be considered once again if there is another solution. Another medicine can often be used instead of the prescribed one that is safe for the child. The same applies to diagnostic procedures, surgical interventions or the mother's hospitalization.

Medications that suppress lactation

Medicines are often used to stop lactation. There are very few medicines registered for delactation. Locally available is Cabergolon/Dostinex, whose indications for use include suppression of lactation. This medicine has numerous possible side effects, and its disadvantage is the high price. The advice is to use it only in exceptional situations when an abrupt termination of breastfeeding is necessary.

Bromergon/Bromokriptin should never be used to stop breastfeeding. Delactation is not even mentioned among the indications for its use, although it is used a lot in our country and doctors recommend it. This medicine can have numerous side effects, from mild ones, such as a drop in blood pressure and headache, to severe and dangerous ones, such as hallucinations and stroke. This medicine has not been used in Europe and the US to stop lactation for several years now.

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Additional resources
Annex 14: Tips to make the weaning process easier for the mother

IX

MOST COMMON PROBLEMS IN BREASTFEEDING – PREVENTION AND SOLUTIONS

Flat or inverted nipples, ridges, breast engorgement and mastitis are the most frequent problem cited by mothers as breastfeeding issue; the experience of healthcare professionals is much the same. Although these problems can often be successfully prevented, treated or alleviated, they are among the most common causes of early cessation of breastfeeding.

Clearly, providing timely information to pregnant and postpartum women and their families on how they can avoid and overcome these obstacles can prevent many inconveniences and their negative experiences with breastfeeding, as well as denying their children the best food that nature intended for them.

1. FLAT OR INVERTED NIPPLES

About 10% of women who are breastfeeding for the first time have flat or inverted nipples, as a consequence of insufficient elasticity of the muscle tissue that lifts the nipple. It is impossible to estimate how the nipple will function during breastfeeding by its appearance alone.

This issue is most pronounced in the milk production phase when the breast is swollen and the area around the nipple is oedematous and tight. Fortunately, the problem is usually temporary – tissue elasticity improves, the baby grows stronger and improves its suckling technique. During this period, the mother should be supported, and the baby's weight should be checked more often in order to confirm breastfeeding success.

A silicone nipple cap can help; it is important that the size fits the size of the nipple (of course, they should not be indiscriminately recommended to every mother).

Niplettes (nipple extraction devices that work on the vacuum principle) or the syringe option can help some women. Care should be taken not to cause swelling or damage the nipple.

Special problems with flat nipples are experienced by children who normally have difficulties with suckling (premature, low-weight, sick children). In these cases, additional monitoring of breastfeeding and the child progress is required, as well as the individual feeding plan.

A story from the maternity hospital

A multiparous mother reports that her first child could not suckle due to inverted nipples. The mother maintained lactation for a year and fed the child with her milk with an earnest effort, because it took her a long time to empty her breasts for every meal. She is ready to go through the same "ordeal" again.

She was advised by the maternity hospital staff that she should try putting the baby on her breast anyway. During our evening visit, we find the mother with a beaming face because, contrary to her expectations, the baby managed to grip the nipple and suckle. Once again, we were convinced that every dyad (mother-baby pair) is a unique experience.

2. RIDGES AND SORE NIPPLES

The most common cause of sore and cracked nipples is a poor latch. Overly frequent and long feedings can also contribute to the damage (the mother does not know how to calm the child, so she offers the breast as soon as it cries). Individual sensitivity can also have an impact. Sometimes the cause of painful feedings is a short tongue frenulum, which can be revealed by examining the newborn.

Ridges are very unpleasant and painful; they make breastfeeding difficult and sometimes cause the mother's reluctance to continue breastfeeding. That is why prevention is the best: explain the importance of the good position and attachment to the mother, monitor the feeding, respond in time as soon as the mother complains of pain or redness and nipple damage are noticed. If nipple damage occurs, the mother is advised to expose the nipples to the air as much as possible and to avoid nipple pads which delay epithelization and contribute to the development of infection. Good hand hygiene is essential, as is the hygiene of the baby's mouth (treatment of oral thrush, if it occurs). A silicone nipple can help relieve pain and further nipple damage until the damage heals; sometimes the damaged nipple should be spared for a few hours, with regular milk expression.

Reflection and discussion

NIPPLE CARE

Is it normal to feel pain during breastfeeding?	You should not feel and suffer any pain; gently remove the nipple from the baby's mouth and try again.	If you feel intense pain during breastfeeding, it means that the baby's latch on the nipple is shallow.
How should I treat damaged nipples?	After breastfeeding, spread a thin layer of your milk on the nipple.	Milk contains antibodies and various substances that prevent the development of bacteria.

3. BREAST ENGORGEMENT AND BLOCKED MILK DUCTS

Breast fullness is a normal occurrence in the first days of breastfeeding; excessive fullness is not normal. Breast engorgement usually occurs if the baby does not suckle enough or does not have a good position, i.e., does not empty the breast. It may happen that the baby suckles less than before or suckles only from one breast. Long breaks in breastfeeding also contribute to breast engorgement; a tired mother eager for sleep is happy if the baby sleeps 5 or 6 hours without waking up, but it often happens that after that, breasts become hard and tense. In addition, a tight bra can also contribute to breast engorgement.

Reflection and discussion

HOW CAN THE MOTHER PREVENT BREAST ENGORGEMENT

- The baby should be breastfed for two hours or more, first on the "problematic" breast, because the baby suckles more strongly when it is hungry.
- The baby should be breastfed in various positions to help empty all parts of the breast.
- A small amount of milk should be gently emptied before feeding, which will soften the areola and make the child's placement on the breast easier.
- She should check if the nipple itself is not blocked by rinsing it with water.
- She should remove a tight bra.
- She should put warm compresses on the breast before breastfeeding or milk expression, and cold ones after breastfeeding.
- She should sleep when the baby sleeps and ask family members for help with other duties.

Breast massage should be gentle, so that the tissue is loosened gently with the fingertips, not by roughly traumatizing the breast. A warm shower or warm compresses can help empty the breasts. During the period of rest, cold compresses are recommended. Warm compresses should not be placed over the nipple, especially not if wet!

4. MASTITIS

What is mastitis?

There is no consensus among experts as to whether the term mastitis always implies a bacterial infection, but it is certainly an inflammatory process.[24] It seems that the problem begins with the invasion of saprophytic bacteria from the skin to the milk ducts; they propagate in the ducts, creating a microfilm that makes milk flow difficult. Breasts are tense, the mother complains of the pain described as a pinprick and a burning sensation in the chest. These are symptoms of subacute/chronic mastitis. If the problem is not solved (sometimes the body "fights it" itself) , an invasion of pathogenic bacteria and acute mastitis occurs. The most common cause of acute mastitis is pyogenic staphylococcus, which secretes toxins responsible for symptoms such as elevated temperature, fever, fatigue and in the most severe cases, breast abscess. Mastitis can also be caused by fungi, especially if the child has thrush in the mouth.[21]

Its occurrence is most common in the first postpartum weeks, although it can also occur at any time during lactation. Unlike milk engorgement and milk stasis, mastitis occurs on one breast!

If signs of mastitis appear (chills, shivering, elevated temperature), the mother is advised to see her doctor immediately to exclude other plausible causes of high temperature and start therapy as soon as possible. Analgesics/antipyretics are needed to treat the pain and fever. Antibiotic therapy is indicated if the mother has an elevated temperature for more than 24 hours, if the symptoms persist even after 24 hours of frequent and efficient breastfeeding or breast emptying and if the mother's condition worsens. During mastitis, the most important thing is to continue breastfeeding and to empty the breasts energetically. The mother should be provided with rest, but without breaks in breastfeeding (it's the mother who is resting, not the breast!).

All factors leading to breast engorgement are also conducive to the occurrence of mastitis. Ridges increase the risk of infectious mastitis. Prevention is rigorous hand hygiene and regular replacement of inserts. If mastitis reoccurs, if the same region is always affected and if the redness and swelling do not go away, the existence of an abscess should be considered (ultrasound breast examination and, based on the findings, consultation with the surgeon are recommended). If an abscess occurs, surgical treatment (incision and drainage) is necessary.

Reflection and discussion

WHAT SHOULD BE DONE WHEN MASTITIS IS SUSPECTED

My breast is hard and tense and my temperature high. What shall I do?	Empty your breasts intensively, with regular feedings. If during the next few hours, the temperature drops, it means that it was milk stasis or early mastitis, so the problem is solved.
Can I continue breastfeeding if I have an elevated temperature?	During mastitis, the most important thing is to continue breastfeeding! No one can empty the breast like a baby. Sometimes, milk taste can change (becomes more salty) due to the inflammatory process in the breast.
When should I see a doctor?	If, despite regular emptying, the breast remains hard and swollen and the skin above the affected area is red or livid, or if the temperature is persistently high, see your doctor. You probably need an antibiotic and sometimes it should be checked by ultrasound if an abscess is forming.
Can I breastfeed while taking an antibiotic or fever medicine?	The doctor will prescribe an antibiotic that allows you to continue breastfeeding (one or two tablets of paracetamol or ibuprofen cannot harm the child and will help you).

The ultrasound confirmed that I have a breast abscess and drainage was recommended. Does that mean that I have to quit breastfeeding?	It doesn't! During the treatment of mastitis, you will continue to breastfeed on the healthy breast. Interruption of breastfeeding on the affected breast will be short, until the abscess is drained.
Can mastitis reoccur?	Reoccurrence of mastitis is not uncommon; if the same region is affected again, the probability of abscess occurrence is higher.

A novelty in the treatment of mastitis is the attempt to prevent and treat milder forms in the initial phase with probiotic bacteria. These are certain tested strains that have proved effective and are currently available in some European countries.[19,22]

Additional resources
Brochure "Most common problems related to breastfeeding"
https://www.unicef.org/parenting/food-nutrition/5-common-breastfeeding-problems

5. LESS CONSIDERED OBSTACLES

INFLUENCE OF THE MOTHER'S CONCERNS ON BREASTFEEDING SUCCESS

There is an interesting study[29] on the impact of concerns related to breastfeeding on the success of breastfeeding itself; concerns are often present and associated with discontinuation of breastfeeding. In that study, 50% of the women with a prenatal decision to breastfeed gave formula to their babies between days 30 and 60 and 20% stopped breastfeeding by day 60. The conclusion of the study is that the development of strategies to reduce the mother's concerns should be prioritized, especially concerns about how the baby is suckling and whether the amount of milk is sufficient, notably in the first 14 days postpartum. These are mothers who could have continued breastfeeding with the right intervention at the right time.

SUPPORT FROM THE PARTNER AND FAMILY

The key role of the father in breastfeeding support is increasingly recognized. In the research "Breastfeeding: practice and problems in the Serbian healthcare system", (Nina Soković, Harvard University, 2015), 55% of mothers believed that their partners were not sufficiently informed about breastfeeding and 41% of fathers knew how to help their spouses with the problems they encountered.[30]

WHY WOMEN FAIL TO MEET THEIR BREASTFEEDING TARGETS

In a study[31] that asked mothers "Did you breastfeed your child as long as you wished?" 60% of the mothers stopped lactating earlier that they wanted. The factors most commonly cited are the following: mother's problems related to lactation (painful feedings, nipple irritation, painful breast engorgement, mastitis); mother's concerns that she is not producing enough milk, problems in milk ejection; concerns about the baby's nutrition (weaker progress), and only after that the mother's or child's illness.

40.3% of mothers had a problem with insufficient milk quantity, 22.3% of mothers failed to solve the most common/severe issue (breast engorgement, mastitis), while 40.5% of mothers did not breastfeed as long as they wanted to.[2]

These are mothers who could have continued breastfeeding with the right intervention at the right time.

THE MOST COMMON REASONS FOR QUITTING BREASTFEEDING – EXPERIENCES OF HOME VISITING NURSES

The most common reasons for premature breastfeeding termination: ridges, painful breasts (12), insufficient motivation of the mother and family (10), mother's assessment that she does not have enough milk (7), mastitis, breast engorgement (5), fatigue (5), impatience (4), insufficient support (4), lack of knowledge (3), insecurity, confusion (2), empty breasts (2), aesthetic reasons, implants (4).

Visiting nurses also cited a low pain threshold, being spoiled, the convenience of the bottle, better sight of milk quantity, other responsibilities of the mother. .

Obstacles to successful breastfeeding in the first few days include difficulties with the breastfeeding position, ridges, breast engorgement, inverted nipples, painful breasts and nipples, practices in maternity hospitals (early formula supplementation, late first feeding, different attitudes), negative previous experience.

* A survey conducted among visiting nurses from Belgrade during the training course "Child nutrition, care and immunization – importance for early development" by the City Institute for Public Health, held in February 2016 (50 participants).

Many women who chose to breastfeed in the course of pregnancy, start giving their child supplementation or stop breastfeeding altogether too soon and without good reason.

Most of these mothers could have successfully breastfed and would have probably done so successfully had they been better informed and had they had more support from healthcare practitioners, family and community in the first days and weeks after childbirth.

LETTER FROM THE HAPPY PARENTS TO THE NURSE FROM THE PRIMARY HEALTH CARE CENTRE PARENTING SCHOOL

Dear Snežana,

It's already been three and a half months since baby Nina was born and I'm only now getting back to the old routine. The baby is doing great, she is growing, enjoying it, and so are we, together with her. The tips we got at the school for expectant mothers have been extremely helpful indeed, especially "The baby's first day at home", so we had a smooth transition on the first day. :)

I wanted to share my experience with breastfeeding with you and other moms-to-be who come to the school for pregnant women and to encourage them not to give up breastfeeding if they have little or no milk in the beginning. I nursed my baby for a full month and a half for two and a half hours both day and night, with supplementation after each breastfeeding. You of all people know how hard it all was for me, coupled with the fear that the child will reject the breast, that my milk will never come in sufficient quantities, etc. Not to mention preparing supplementation in the middle of the night, pumping milk after every breastfeeding, etc. And then, after a month and a half, my baby started to reject the bottle and continued suckling to our delight, and to the astonishment of both our paediatrician and paediatric nurses! Persistence has paid off! In addition to all that, my breasts are the same from the very first day after delivery – soft, with no difference to speak of before and after breastfeeding and I never managed to express more than 20 ml of milk. Although paediatricians gave up on my breastfeeding, Nina is a happy and healthy baby who loves being breastfed and who, with mom's and dad's help, has managed to stimulate milk in sufficient quantities. :)

Say hello to future moms and tell them to believe in themselves and their baby, to be persistent and they will succeed in breastfeeding!

MATERNAL HEALTHCARE

1. BREASTFEEDING MOTHER'S NUTRITION

There are many misconceptions about the breastfeeding mother's nutrition: that she needs special foods, that she should eat more, that there are many types of foods she should avoid. Mothers do not have to eat special foods or cut out certain foods completely. The most important advice is to have a balanced diet and regular meals.

A woman's body stores fat during pregnancy so she can produce milk during breastfeeding. She produces milk partly from these supplies and partly from the food she eats. During the breastfeeding period, the mother needs an additional 450–500 calories, or a total of between 2,500 and 3,000 calories per day, depending on the reserves that the woman's body managed to save during pregnancy in the form of fat deposits, and depending on her physical activity. The greatest need for calories is in the first four to six months, i.e., in the phase when the baby is exclusively breastfed. It is enough to add three slices of bread, 100 grams of meat or poultry, one portion of fruit, vegetables and dairy products to the daily menu. When the baby starts to take non-milk food, you can cut these "extras" from your diet.

As universally known, a healthy diet is one of the pillars of good health, both in childhood and later in life. When planning pregnancy, as well as during pregnancy and breastfeeding, it is the right time for the mother, as well as the father and other family members to improve their own diet (even slight changes to the daily menu can be greatly beneficial to your health). This will also have long-term positive effects on the nutrition of the child that was breastfed. *The dad's role in all this is invaluable and irreplaceable!*

IMPORTANT

Many women are impatient to "regain" their slim figure and are afraid that breastfeeding will delay their return to the desired pre-pregnancy weight. Especially important for them will be the information that breastfeeding actually promotes the "melting" of fat deposits formed during pregnancy; the only thing required is patience.

Immediately after childbirth, the mother's diet must be light and more liquid: milk, freshly squeezed fruit juices, fruit compotes, biscuits, vegetable soups. However, already in the second postpartum week, the diet should be varied and mixed.

Proteins and carbohydrates: The need for proteins is increased: at least one third of the daily intake should be of animal origin, from fish, meat, milk and eggs. Meat also meets the increased needs for vitamin B, iron and zinc. Sources of carbohydrates are bread, cereals and pulses, as well as fruits and vegetable.

Fats: Fats should participate in the breastfeeding woman's diet with 20-30 percent, of which at least 10 percent must by polyunsaturated fatty acids. They are crucial for the normal growth and development of the brain and retina. They are mostly present in blue sea fish, which is recommended 2-3 times a week, in olive and pumpkin seed oil and in seeds (flax, sesame, caraway).

Vitamins and minerals: Breastfeeding mothers have an increased need for B-complex vitamins and vitamin C. Vitamin C needs can be met by eating fresh fruits and vegetables and vitamin B needs can be met by eating cereals, wholemeal products and meat. Brewer's yeast is also a rich source of vitamin B. During breastfeeding, there is also an increased need for vitamins A, E and D. However, if the mother had a proper diet during pregnancy, there is a depot of these vitamins in her body and, even if the mother does not take enough of them, they will be secreted in the milk from the stocks created.

Foods recommended for breastfeeding women: Every community has traditional ways to promote lactation in breastfeeding women, depending on the customs, dietary habits, religious and ethnic specificities. Traditions and customs of each family and community should be respected, but the potentially harmful effect of these practices on the mother and/or child should be assessed. For example, there is a belief that beer is good for stimulating lactation. These families should be informed that alcohol is harmful for the child and should not be consumed during breastfeeding.

Galactagogues are ingredients, herbs or medicines that stimulate milk production. All galactagogues, especially medicines, should be used with caution and in consultations with a doctor. Galactagogues should not replace evaluation and counselling of mothers on proper breastfeeding and other measures that may affect milk secretion. When it comes to herbal supplements that are safe for both the baby and the mother, they can be an additional aid for the successful initiation and maintenance of breastfeeding.

Reflection and discussion

FOOD AND DIETARY SUPPLEMENTS THAT CAN INCREASE MILK PRODUCTION

- Brewer's yeast contains a large amount of vitamin B and is recommended during breastfeeding, but not in the form of beer, because it contains alcohol.
- Oats have a positive effect on the hormones responsible for milk production. It can be eaten cooked, as porridge, biscuits or in the form of oatmeal cakes.
- Chickpeas are traditionally used as excellent food for nursing mothers, as soups, stews and spreads (hummus), as well as boiled wheat.
- Seeds, especially sesame and flax seeds.
- Tea with aniseed and cumin, as well as nettle and lemon balm tea, are recommended. There are numerous other herbs that promote lactation and can be found in industrially prepared teas for nursing mothers.

Certain strong-smelling foods (onions, broccoli, cabbage, cauliflower, spices or beans) can make milk unpleasant and cause restlessness in some babies. If that occurs, you should take a break from eating these foods.

Fluid intake should not be forced or restricted. Three to four additional glasses of water per day are usually enough to meet the increased needs of a nursing mother for liquid, preferably during the feeding. The best drink is water, and fresh fruit juices are recommended in small quantities. Carbonated and sweetened beverages, beverages containing artificial colours, flavours or sweeteners and energy drinks should be completely eliminated.

Caffeine intake does not only include coffee, but also energy drinks, instant coffee, green tea, Coca-Cola. One percent of caffeine gets into breast milk and the peak concentration is in 60 minutes. If the mother takes excessive amounts of caffeine, the child experiences mood swings, nervousness, spasms, as well as sleep disorders. The American Association of Paediatricians does not recommend more than 3 cups of coffee a day, but each mother should judge the amount of coffee that will not affect her child based on the child's behaviour.

THE TASTE OF MOTHER'S MILK

Can a breastfed baby taste what the mother had for lunch? Yes, it can! It can even influence the affinity for certain foods later in life, says Gwen Dewar, an expert in evolutionary anthropology and comparative psychology1, author of the website „Parenting science".

The mother ate a spicy meal and breastfed the baby an hour later. Will the food flavours find their way to breast milk? Will the baby taste garlic, rosemary or basil? There is increasing evidence that the food the mother eats can affect the taste of milk; this area is intensively examined and discussed at world congresses dedicated to child nutrition.

Does the baby remember the tastes of breast milk, and does it affect the acceptance of non-milk foods? There is still no answer to the question whether a child will prefer the food it tasted in the mother's milk, if it matters how old the child was and how often the mother ate certain food. What we know for sure is that the baby starts to learn the tastes of food long before it starts eating solid food. It is the same with amniotic fluid: increasing evidence indicates that the tastes and smells of the mother's food can also be found in the amniotic fluid; the foetus the taste and smell, swallows the amniotic fluid and is exposed to various tastes and smells even before birth (prenatal learning). It is also known that breastfed children accept new tastes and different ingredients more easily when non-milk foods are introduced and are more likely to have a more varied menu later on. These children are also less fussy about food later in life. It has been proved that the longer a child is breastfed, the more likely he/she is to enjoy eating vegetables. *It is possible that all these beneficial effects on later nutrition, and therefore on health, are the result of the possibility for babies to feel the taste of various foods in the mother's milk; this seems to be yet another of the many benefits of breastfeeding!*

[1] https://www.parentingscience.com/

Reflection and discussion

NUTRITION ADVICE FOR MOTHERS DURING BREASTFEEDING

- Regular meals and snacks are important, find time for yourself.
- Eat a variety of foods because these different smells and tastes in milk will help the baby to accept non-milk foods more easily.
- Fruits and vegetables are especially important as they contain the necessary minerals and vitamins.
- Avoid snacks instead of meals, fast food, ready-made food with artificial colours , sweeteners and other additives.
- Avoid sweet and greasy foods, as well as sweetened juices.
- Drink before you feel thirsty, since thirst is an early symptom of dehydration (you will know that you drink enough fluids if your urine is light yellow). Drink a glass of water during each feeding; thirst is one of the symptoms of oxytocin reflex. Drink as much fluid as you feel you need. Excessive amounts of fluid will not increase milk production and may even decrease it.
- Vitamin B stimulates milk production. It can be found in brewer's yeast and in whole grains.
- **Postpone weight loss.** If you start losing weight immediately and start avoiding certain foods ore at too little, you can expect it to have a negative effect on lactation.

2. SMOKING DURING BREASTFEEDING

There are over 4000 chemicals in tobacco smoke (including cyanide and lead) and 60 have been proved to be carcinogenic. Mothers who smoke (especially “heavy“ smokers who smoke more than 20 cigarettes a day) may have a deficiency of beta carotene, vitamins B6, B12 and C. The child may be anxious, nervous and may have sleeping disorders. Nicotine can reduce milk secretion and hence also the child's progress; mastitis is more common in smoking mothers.

There is a higher incidence of sudden infant death syndrome in the homes of smokers, and these children are more likely to have middle ear inflammation, asthma and a higher risk of developing cardiovascular diseases later in life.

Pregnant women and nursing mothers should be encouraged to quit smoking or at least to reduce the number of cigarettes smoked, and they should certainly continue to breastfeed. Nicotine in the milk is reduced to a half 97 minutes after smoking a cigarette. It is recommended that there should be a longer interval between a cigarette and breastfeeding.

ALCOHOL CONSUMPTION DURING BREASTFEEDING

The concentration of alcohol in the milk is equal to that in the blood. After 30-60 minutes of taking alcohol, it will be in the milk. For alcohol to be eliminated from milk, it takes about 2 hours if you have 1 drink, 4 hours if you take 2 drinks and 6 hours if you take 3. The effect also depends on the mother's body weight, the amount of fat tissue, if alcohol was taken on an empty stomach or with food. It is not necessary for the mother to empty the breast, because alcohol does not remain in the milk but disappears just as it does from blood. The absolute ban of alcohol consumption during breastfeeding (which can last up to two years) is perceived by some mothers as excessively restrictive. Perhaps a more flexible attitude is more acceptable for some mothers: one or two alcoholic drinks that the mother has on a special occasion, with the above-mentioned precautions, will not harm the baby. On the other hand, frequent or regular consumption of alcohol during breastfeeding can have many adverse effects on the child and is not acceptable.

3. MEDICINES AND BREASTFEEDING

Concerns regarding the safe use of medicines during breastfeeding is one of the (common) reasons for premature, and sometimes unjustified discontinuation of breastfeeding. When we consider administering a medicine to a breastfeeding woman, our aim is to not only to protect the child from the side effects of the medicine taken by the mother, but also to provide the necessary medication of the mother.

During the period of breastfeeding, 60–70% of mothers take at least one medicine. The most common indications for prescribing medication are infections, pain and depressive disorders. Virtually all medicines are excreted in breast milk! Fortunately, in the case of most medicines, the amounts are tiny, and therefore unlikely to cause negative effects for the baby, so therapy with most medicines is not a significant cause for concern. If medicine is necessary, one can generally choose those that are safe for the child. Stopping breastfeeding in most cases can be more detrimental to the child than the medicine.

Breastfeeding is not indicated if the mother receives cytostatic or radionuclide therapy.

Alternative medicines should be used instead of chloramphenicol, tetracycline, metronidazole or quinolone antibiotics.

Factors influencing the transport of medicines into breast milk: the rate and degree of passive transport are influenced by the level of the medicine in the mother's plasma, the physiological differences between plasma and milk and the physicochemical properties of the medicine. Differences in the composition of blood and milk determine which physicochemical characteristics affect diffusion. Milk differs from plasma by its lower pH, lower buffering capacity and higher fat content. The degree of binding to plasma proteins, lipophilicity and molecular weight also influences the transfer of the medicine into the milk.

Factors which contribute to the higher degree of transfer into the milk based on the medicine characteristics: higher bioavailability and concentration after administration per os, low degree of binding of the medicine to plasma proteins, lower volume of the medicine distribution, molecular size, weak base medicines, medicines with higher liposolubility, long medicine elimination half-life.

The presence of medicine in the milk need not necessarily lead to a significant exposure of the newborn's body to the medicine (omeprazole, gentamicin).

Prematurely born babies and infants generally have a lower metabolic capacity and capacity for medicine excretion (one third of the capacity at 7-8 months) when the medicine is in the systemic circulation.

In addition, in newborns who were exposed to the medicine in utero and immediately before parturition, breastfeeding will increase the concentration of the drug in the blood.

Herbal medicines can also have an effect on the child. Caution should be exercised with self-medication and traditional methods of treatment. Dietary supplements, as well as over-the-counter medications should not be used without consulting a professional.

IMPORTANT

Practical principles and tips for minimizing the potential risk to the infant as a result of the nursing mother's therapy

1. Assess the need for therapy of a nursing woman and avoid medications if possible; avoid medicines known to be toxic for children and adults.
2. Administer the medicine in the lowest therapeutic dose and for the shortest possible time.
3. Avoid combined therapy.
4. Apply a single dose of the medicine immediately before the baby's longest sleeping interval, usually after breastfeeding before bedtime in the evening.
5. Breastfeed before the next dose when several doses are administered; this method is not efficient for medicines with a long half-life.
6. If possible, use medicine with local or inhaled administration instead of oral or intravenous administration.
7. Use reliable sources to obtain information and make a decision on the specific medicine during breastfeeding.
8. Medicines that are safe for use infants are also safe for the nursing mother, but medicines that are safe for se during pregnancy are not always safe for use during breastfeeding.
9. Preference is given to medicines whose use has been tested in infants and newborns.
10. Avoid herbal medicines.
11. Monitor the child for symptoms and signs indicating a problem.
12. Avoid the use of new drugs if there is a therapeutic equivalent with data on safe use during lactation.
13. Recognize risk factors – prematurely born child, child morbidity, mother takes several medications;
    - choose medicines with the shortest t1/2 and the highest degree of binding to plasma proteins,
    - choose medicines with the lowest bioavailability,
    - choose medicines with the lowest liposolubility.

Additional resources

National guidelines for the use of medicines during breastfeeding, 2020.
https://iris.who.int/handle/10665/44117

4. MATERNAL ILLNESS AND BREASTFEEDING

There are few reasons related to the mother's health that require discontinuation of lactation and transition to formula. It is important to distinguish if the disease itself is a contraindication for breastfeeding or if it just makes breastfeeding difficult.

If a breastfeeding woman needs a diagnostic or therapeutic procedure, administration oof medicines or hospitalization, information that should be available is whether the woman is breastfeeding, how old the child is and if it is exclusively breastfed or breastfed with formula supplementation or if non-milk food has already been introduced. If possible, postpone the planned surgical intervention until the end of breastfeeding. On the other hand, unnecessary delaying the required diagnostic procedure (e.g., mammography) until the end of breastfeeding can harm the health and life of the mother!

In the case of an acute illness of a nursing mother, when there is a need for diagnostic procedures (radiological, anaesthesia), for the mother's hospitalization or surgical intervention, healthcare practitioners advise the mother to continue breastfeeding or maintain lactation based on evidence. If necessary, they consult with the relevant experts (gynaecologist, neonatologist, breastfeeding counsellor, clinical pharmacologist, institution's pharmacist).

When hospitalization of the mother is required, it would be ideal, if the mother's condition allows, that there are conditions for the "convenience" hospitalization of the child for continued breastfeeding. If there are no conditions for the child's stay together with the mother or if the mother's health condition does not allow it, family members bring the child for breastfeeding and the mother is provided with the appropriate kit and instructions for milk expression and safe storage.

If the mother requires a therapy which is considered a contraindication for breastfeeding, she should receive encouragement and instructions for the regular breast emptying in order to maintain lactation.

When prescribing medicine to a nursing mother, consider whether the administration of the medicine is necessary, whether a substitute that is safer for the child can be administered instead, what dose of the medicine is the safest for the child and what are the recommendations for use. The institution should have its own recommendations/protocols for breastfeeding in place in case of need for radiological diagnostic procedures or general anaesthesia. Guidelines for the hospitalization of a breastfeeding woman should be an integral part of the institution's breastfeeding policy.[32,33]

Acute maternal disease

The mother can breastfeed in almost all situations when she is sick. Continuing to breastfeed during illness has numerous advantages for both the mother and the child. When the mother has an infection, her body produces antibodies that are transferred to the milk and help to protect the child. An abrupt discontinuation of breastfeeding can cause breast engorgement and fever, and the child may become restless. During maternal illness, breastfeeding is the simplest way of feeding; there is no formula preparation, no sterilization of bottles and nipples, the mother does not have to get up while feeding the child. The mother and the family should be informed that any interruption in lactation poses a risk of permanent interruption of breastfeeding, with all the risks for the child's health related to breast milk deprivation.

In the course of the illness, the separation of the mother from the baby should be reduced to a minimum. The mother should be given plenty of fluids, especially if she runs a fever. She should be helped in taking a comfortable position for feedings. If the mother is not feeling well and finds it too hard to breastfeed, the milk can be expressed and given to the child from a cup until the mother feels better. To the extent possible, when choosing medicines, those least harmful for the child should be selected.

If the mother had to stop breastfeeding for a brief time due to illness, she should be provided with help and support to resume breastfeeding (relactation) upon recovery.

Chronic maternal illness requires an individual approach, depending on the mother's health condition and medicament therapy she receives. Many mothers with chronic diseases, such as asthma, lupus, cystic fibrosis, multiple sclerosis, epilepsy or thyroid disease have successfully breastfed. A mother with diabetes, for example, may have complications during childbirth, which may affect breastfeeding; with the help and assistance of healthcare practitioners and family, it is possible to overcome problems.

5. DIAGNOSTIC AND THERAPEUTIC PROCEDURES AND BREASTFEEDING

BREASTFEEDING AND MAMMOGRAPHY

Breastfeeding after a mammogram is completely safe; X-rays have no effect on the milk and the baby. The problem with mammography during lactation is that mammogram interpretation is difficult due to the increased density of breast tissue. It is recommended that the image should be examined by an experienced radiologist with experience with breasts in lactation. Immediately before an examination, breasts should be thoroughly emptied (using a pump or by breastfeeding); some even recommend that the mother should take the baby with her to the examination and breastfeed it immediately before the exam. There are dilemmas among mothers (not only here, but internationally as well) about this, especially among women who have an indication for regular mammographic checks – breastfeeding must not delay the planned mammography!!!

BREASTFEEDING AND GENERAL ANAESTHESIA

It is commonly believed that anaesthetics and analgesics are powerful drugs and that their presence in breast milk affects the baby. Hence, women are advised to stop breastfeeding at least 24 hours earlier and to empty their breasts.

The facts are:

- most anaesthetics are safe for the baby and only 1–2% of the aesthetic given to the mother appears in the milk;
- absorption form the baby's intestines is also negligible;
- the mother can breastfeed as soon as she wakes up from general anaesthesia and becomes conscious;
- almost all analgesics are safe for the baby; acetaminophen and ibuprofen are safe; narcotic analgesics should be administered more cautiously, but are also generally considered safe;
- it should be kept in mind that pain inhibits lactation, so an adequate painkiller helps to maintain lactation.

If a nursing mother requires anaesthesia for a surgical intervention or some other procedure, she should always consult an anaesthesiologist, as there are exceptions and sometimes also other elements to be taken into account when deciding whether to continue breastfeeding. There is certainly no reason for a woman not to continue breastfeeding after short-term anaesthesia for curettage. You should also pay attention to what medicines/antibiotics the mother is taking.

The same applies to dental interventions (anaesthesia, dental imaging). The woman should tell the dentist that she is breastfeeding in order to make the right choice of antibiotics if needed (YES: cephalosporins and penicillin products; NOT RECOMMENDED: tetracyclines, (Dovicin and similar), fluoroquinolones (Ciprocinal) and medicines for anaerobes (Metronidazole, Orvagil)).

XI

SUPPORTING BREASTFEEDING OF SICK NEWBORNS

The message "mother's milk is best" gains its full meaning in the nutrition of sick newborns. Newborn babies in special and intensive care units can suckle if they have a coordinated suckling, swallowing and breathing reflex (usually at around 34 weeks of gestation) if they are not on mechanical ventilation and if they are clinically stable. Children under 34 weeks of gestation, children on mechanical ventilation and children with disease progression cannot be breastfed. Children with a cleft palate, other anomalies, such as heart defects, and with neurological or genetic disorders, such as Down syndrome, may have difficulty suckling.

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ALL NEWBORN CHILDREN CAN BE FED WITH BREAST MILK. Exceptions are exceedingly rare congenital metabolic disorders (phenylketonuria, galactosemia, lactose intolerance).

Every unit treating sick newborns and infants should have an up-to-date breastfeeding policy that all staff are familiar with and provide staff training to acquire the necessary skills.[34] Mothers should be provided with privacy, information and appropriate nutrition and parents should be given oral and written information about the benefits of breastfeeding and nature's natural nutrition. The mother needs help in initiating and maintaining lactation and if the child cannot suckle, other suitable methods of feeding with breast milk are applied.

Rooming-in should be provided whenever possible and for newborns in intensive care, parents should have unrestricted access. Interventions and care should be planned so that they interfere with breastfeeding as little as possible. Mothers who need to express their milk should be provided with an appropriate space furnished with well-maintained and sterile equipment for safe milk expression and storage.

1. MAINTENANCE OF LACTATION (GALACTOPOIESIS)

If the mother is separated from the newborn for more than six to eight hours (premature child, sick newborn placed in the intensive care unit or transferred to another institution), she should start emptying the breasts.[13]

Reflection and discussion

TIPS FOR MOTHERS ON MANUAL BREAST EMPTYING

- Breast emptying must be regular, 6-8 times in 24 hours to mimic breast stimulation provided by a healthy, term neonate who is with the mother.
- Milk expression should last for 20 minutes; the interval between two releases should not exceed 5 hours and it must be done at least once during the night.
- During the initial releases, the amount of milk may be minimal; it increases with practice.
- The most important steps in manual expression are stimulating milk release, finding milk ducts and gently squeezing the part of areola where the ducts are located, as well as repeating the procedure on all parts of the breast.
- The oxytocin reflex can be triggered when the mother is in a comfortable and relaxed position, when she thinks about her child and watches it (even in a picture), gently warms

and massages the breast and gently stimulates the nipple between the thumb and the forefinger.

- Explain to the mothers the importance of hand hygiene for collecting and storing her milk and give them practical tips and recommendations.

In addition to collecting milk, manual breast emptying can reduce the uncomfortable feeling of breast engorgement, reduce the swelling of the areola of an overfilled breast so that the baby can latch on, and it can also activate blocked outlet ducts. In these cases, manual breast emptying takes less time.

Pumps, manual or electric, can greatly facilitate milk collection, especially if the child is unable to suckle for a protracted period of time or if the mother and child are separated for other reasons (mother's illness, early return to work). Electric pumps of the new generation are adapted to the unique needs of mothers; their disadvantage is the high price, and issue which in many, high-income countries is solved by mothers being able to get them for use, something that we should also advocate in our community. Milk expression kit must be maintained and sterilized according to the manufacturer's instructions.

2. RECOMMENDATIONS FOR MILK STORAGE

There are situations when a mother can be away from home for several hours, going for screenings or a medical intervention, the older child gets sick, etc. and increasingly often, it happens that mother has to return to work very soon after delivery. Sometimes, the mother is simply sorry to throw away the excess milk. In all these situations, milk can be saved for later use.

Storing begins with milk expression, manually or with a pump (manual or electric). It is important that the mother receives instruction for the hygienic collection and storage of milk (hand washing, maintenance of equipment and utensils).

Expressed milk can be used to feed the child in the following hours, stored in the refrigerator or frozen for late ruse; it can be used to prepare purées and mashes when the time comes.

Proper milk storage is extremely important in order to preserve the nutritional and anti-infective properties of breast milk and prevent bacterial contamination from the external environment. Milk can only be used if it stored properly!

If the mother collects milk for her sick, hospitalized child, she receives instructions and recommendations from the healthcare practitioners caring for her child. The same goes for mothers donating milk to milk banks.

3. FEEDING TECHNIQUES

Children who are unable to suckle, temporarily or permanently, are fed by one of the alternative methods. The need for an alternative feeding method and the most acceptable method should be decided individually for every mother and child.

Tube feeding is necessary for children who lack coordination between suckling and swallowing. Syringes, droppers and spoons can be used for very small amounts of milk, e.g., for colostrum. The child cannot control milk flow, so there is a possibility of choking if the milk is given too quickly.

The most common way of feeding newborn children is by bottle with a pacifier. Feeding a child with a bottle can make latching more difficult and sometimes even lead to breastfeeding failure, so it is not recommended as a feeding method either for a child who cannot suckle yet or for the one who receives supplementary food. Preference is increasingly given to feeding from a cup.

Advantages of feeding from a cup

- It stimulates coordination of suckling, swallowing and breathing.
- It allows the child to control the quantity and speed of feeding.
- The child is held close to the mother and has the possibility for eye contact.
- A cup is easy to maintain.

Feeding from the cup is recommended as a transitional method to breastfeeding. The mother should be trained to feed the child independently using the cup. This is an ideal method for supplementation with breast milk while the child is still small and weak and sufficient food intake cannot be ensured by suckling alone.

What kind of milk should be used to feed the newborn?

- The first choice is its own mother's breast milk.
- In the absence of its own mother's breast milk, the next choice is milk from the human milk bank.
- The next choice is formula milk: specialized formulas are used for premature and sick children, while hypoallergenic formulas are recommended for other children who need supplementary feeding.

IMPORTANT

ANOTHER WOMAN'S MILK – INFORMAL SHARING OF HUMAN MILK

Throughout human history, children deprived of their own mother's milk were often nursed by other women; those children had a significantly higher chance of survival than children who were fed with animal milk. When technological progress allowed the production of baby formulas, the need for nursing women declined significantly.

The issue of nutrition of premature and sick children is resolved through milk banks, which collect and store the milk of own and donor mothers in a safe way.

In recent years, as awareness of the benefits of human milk nutrition is growing, there is also a growing trend of informal use of another mother's milk.[15] When deciding to feed their child with another woman's milk, the parents must be aware that, aside from the benefits, there are also limitations and risks. They should have the information about the health status of the donor mother, if she smokes or consumes alcohol, if she uses any medications, if she has been tested for viruses (HIV, hepatitis, cytomegalovirus), if the milk is collected with strict observance of hygienic measures and if it is stored and transported appropriately .16 The mother may not understand that the milk of a relative whose child is six months old is not the best choice for her premature child; this milk contains bacteria from the infant's mouth, which pose a health risk for the child whose immune system is not developed.

Additional resources
Annex 15: Keeping and storing breast milk
Cup feeding
https://youtu.be/X2t57eNGMEs?si=fwatbnOt5tUsKqUu

XII

COMPLIANCE WITH THE CODE PROHIBITING ADVERTISING OF BREAST MILK SUBSTITUTES

The International Code of Marketing Breast Milk Substitutes is a set of recommendations to WHO member countries and aims to regulate the marketing of breast-milk substitutes, feeding bottles and pacifiers. The name commonly used is WHO CODE.

The Code was adopted in 1981 and has been expanded in recent years by numerous supplementary documents and resolutions of the WHO General Assembly. One of the new recommendations is not to use the term "breast milk substitutes" from the original code; namely, there is no real substitute for breast milk , but only necessary and acceptable substitutes, if they are necessary.

"The aim of the Code is to contribute to ensuring safe and adequate nutrition for infants through the protection and promotion of breastfeeding and ensuring the proper use of breast milk substitutes where necessary, based on adequate information and appropriate distribution of substitutes" (Article 1 of the Code).

Advertising of formula milks and bottles can undermine confidence in breastfeeding, both among mothers and in the wider community. The International code and related resolutions contribute to the safe and adequate infant nutrition by reducing the exposure of healthcare practitioners and mothers to misinformation that diminish the importance of breastfeeding and by allowing formulas to be used appropriately when necessary. Healthcare professionals can protect families from formula milk advertising by adhering to the Code and by not distributing to mothers products bearing logos of formula milk manufacturers and distributors, their promotional materials and samples or accepting gifts from them.

What the Code refers to: Formula milks, any other food or liquid that a child receives instead of breast milk up to the age of 6 months, as well as bottles and pacifiers.

Who should comply with the code: Manufacturers and distributors, healthcare professionals and healthcare institutions.

What the labels should contain: Notices should be in the local language, must contain warnings about the risks of artificial nutrition and must not contain idealized language or illustrations that emphasize the benefits of artificial nutrition.

WHAT THE CODE PERMITS

- Use of safely prepared formulas for children who need it
- Sale of products covered by the Code with the indication of necessary information (e.g., the composition of the plastic used for the feeding bottle)
- Scientific and factual information for healthcare professionals
- Precise instructions for formula preparation on the package, in the local language

WHAT THE CODE PROHIBITS

- The Code prohibits marketing and promotion of products that fall within the scope of the Code and national laws
- Contracting parents directly: advertising, giving free samples out to mothers or family members
- Promotion for healthcare professionals with free samples and gifts
- Promotion in healthcare institutions: posters, free samples, gifts
- Promotion of inappropriate baby food

Self-assessment
True/false statements

1. If manufacturers' flyers promoting formula milk are distributed to mothers, it can adversely affect the nutrition of infants.	T	F
2. Breastmilk substitutes include formula milks, teas and juices, as well as other products.	T	F
3. The International Code and the Baby Friendly Hospital Initiative prohibit the use of formula milks in maternity hospitals.	T	F
4. Healthcare practitioners may receive all brochures and publications from manufacturers and distributors if they are not distributed directly to mothers.	T	F
5. Donated formula milks should be given to mothers or infants in emergency situations.	T	F
6. The Code prohibits manufacturers and distributors of milk formulas from sponsoring seminars, congresses and other types of professional training for healthcare practitioners.	T	F

1. True: the aim of the manufacturer's flyer is to increase the sale of their product.
2. True: Breast milk substitutes include formula milks, other milk products, food and beverages (teas and juices for young children), as well as supplementary food for bottles (cereals or vegetable mixes for children under the age of 6 months when they are advertised or considered suitable as partial or total breast milk substitute).
3. False: Children who are not breastfed can be fed with the formulas that the maternity ward bought in a similar way as other food, but not with the formulas donated by the company that produces them.
4. False: Publications for healthcare professionals should contain only scientific data and product facts and must have permission for distribution from the Ministry of Health.
5. False: Donated formula milks may aggravate children's health and should not be distributed. Governments need to plan for and procure infant formula that may be needed in the context of emergencies. Governments should prohibit all donations of products that fall within the scope of the Code.
6. False: Manufacturers and distributors of formula milks are allowed to sponsor seminars, congresses and other professional events, with the undertakings of both the company and the healthcare professional to inform the institution management.

Additional resources
Annex 16: The Code and our national legislation
Code of Marketing Breast Milk Substitutes
https://www.who.int/teams/nutrition-and-food-safety/food-and-nutrition-actions-in-health-systems/code-and-subsequent-resolutions

XIII ANNEXES

ANNEX 1: WHO GROWTH STANDARDS

In 1993, the WHO Committee of Experts pointed to the problem with existing infant and toddler growth charts that were recommended for international use. It was concluded that most of the children whose data were used in the creation of those charts were not breastfed and that the growth curves of healthy breastfed children differed significantly from the charts in use. This led to the unnecessary inclusion of supplementary feeding and even discontinuation of breastfeeding, as well as the premature introduction of non-milk foods. Hence, the need was identified to create a growth standard that would assess the growth of breastfed children.

The Multicentre Growth Reference Study (MGRS) was conducted between 1997 and 2003. The study included 8,500 children of different ethnic backgrounds from different environments on different continents (Brazil, Ghana, India, Norway, Oman and the US).

The aim of the study was to create common international standards for the growth of children from birth to 5 years of age. The study included healthy term babies who were exclusively breastfed for 4 months with continued breastfeeding up to the age of one year, whose mothers did not smoke and who live in conditions that do not hinder growth and development.

The new growth standards show how children should grow when they are provided with optimal nutrition and a healthy environment.

It was found that, under these conditions, the growth of children up to the age of 5 is remarkably similar across different ethnic groups.

Breastfed children were set as the norm, a standard against which other children will be compared.

The standards reiterate the right of every child to a healthy environment, e.g., growing up without tobacco smoke.

The results of the study and new growth charts were published in 2006. The WHO invited the ministers of health of member states, national associations of paediatricians and other important actors in the health sector to make decisions on whether the new standards for monitoring the growth of children will be officially adopted in their countries. The Association of Paediatricians of Serbia adopted the new WHO standards for monitoring the growth and nutritional status of children from birth to the age of five years.

https://www.who.int/tools/child-growth-standards/standards

ANNEX 2: CONTRAINDICATIONS FOR BREASTFEEDING

There are few absolute contraindications for breastfeeding, whether they originate from the mother or the child. Conditions that constitute permanent contraindications for breastfeeding are rare; situations when contraindications are temporary and the mother can successfully breastfeed after recovery are much more frequent, whether it is an acute disease or after the completion of the necessary therapy which is a contraindication for breastfeeding. The so-called relative contraindications, which could more accurately be called barriers or challenges for breastfeeding, are much more common. Parents often receive contradictory and confusing, or even wrong advice for stopping breastfeeding when stopping is not actually indicated or breastfeeding only needs to be stopped for a brief time.

MOTHER

HIV infection – In developed countries, breastfeeding is not recommended for HIV-positive mothers, because the risk of HIV transmission through breastfeeding is greater than with formula.

Breast Abscess – Breastfeeding is not recommended until drainage is completed and antibiotic treatment started. Breastfeeding should continue on the healthy breast.

Herpes simplex virus type I (HSV-1) – A mother with an active herpes infection on the breast skin should not breastfeed on that breast but may breastfeed on the other; care should be taken not to contaminate the child by contact with the affected breast. The breast should be emptied using a pump and expressed milk should not be used.

Varicella – If the mother is ill 5 days before delivery until 2 days after delivery, the child must be isolated from the mother. The child can be fed with the mother's expressed milk until the moment when the mother is no longer contagious. The newborn must receive varicella-zoster immunoglobulin as soon as possible. Separation from the mother is not recommended for older children, because the mother is contagious even before the onset of skin changes, so the child has already been exposed. The child will receive antibodies with the mother's milk.

Shingles (Herpes zoster) – If the lesions are on the breast skin or the surrounding area, breastfeeding is not recommended until the changes are completely healed; the mother should express her breast milk and maintain lactation.

Active untreated tuberculosis – Active untreated tuberculosis is a contraindication for breastfeeding. No close contact is allowed with the baby, including breastfeeding, until the mother has completed two weeks of therapy to prevent transmission of the disease (regardless of how the infant is fed). Breastfeeding is initiated and maintained by expression as long as the contact is not allowed, so women with inactive tuberculosis can breastfeed. Medicines used in the treatment of tuberculosis are considered compatible with breastfeeding.

Lyme disease / Borreliosis – Breastfeeding can be continued during treatment.

HTLV-I infection – Breastfeeding is not recommended.

Maternal therapy with antimetabolites or chemotherapy – These are the few medications for which breastfeeding is contraindicated.

Breast cancer detected during pregnancy – If the mother is receiving chemotherapy, this is a contraindication for breastfeeding. If the mother is not undergoing chemotherapy, the continuation of breastfeeding should be individually evaluated.

Use of radioactive isotopes for diagnostic or therapeutic purposes – Breastfeeding is not recommended.

Recently acquired syphilis – The contact between the mother and the baby can begin after a 24-hour therapy, in case there are no lesions on the breasts and nipples. If such lesions are present, breastfeeding should be initiated or resumed after the treatment is completed and when the lesions have healed.

Untreated brucellosis – As brucellosis may be transmitted to infants through breast milk, breastfeeding should be discontinued until treatment is completed.

Mothers with substance use disorders – Refers to mothers who use intravenous drugs.

NEONATE

Galactosemia
Phenylketonuria
Lactose intolerance

CONDITIONS THAT ARE NOT A CONTRAINDICATION FOR BREASTFEEDING

HbsAg positive mothers – Breastfeeding is not contraindicated. These children receive their first dose of the vaccine immediately after birth, along with immunoglobulin which protects them against infection until post-vaccination immunity is established.

Mothers infected with hepatitis C (persons who have hepatitis C virus antibodies or hepatitis C virus – RNA positive blood) – No link between the way the child is fed, and the risk of infection has been proved. Caution is advised only if the mother has ridges, so that the child does not swallow the mother's blood.

Cytomegalovirus (CMV) – If the mother is a seropositive germ carrier, the risk of infection exists only in preterm babies with an exceptionally low birthweight (below 1500 g), when the decision on breastfeeding is made based on current recommendations, taking into account that freezing and pasteurization significantly reduce the amount of CMV in the blood.

The mother's high temperature – is not a contraindication for breastfeeding unless caused by an illness during which breastfeeding is prohibited. It is not an uncommon practice to interrupt breastfeeding when the nursing mother's temperature is 38°C or higher. This harms the breastfeeding process, and it has not been established that the incidence of infection in children increases. The nursing mother's temperature can sometimes be caused by milk stasis, so stopping breastfeeding harms the mother's health, because no one can empty the breast as well as the child.

Neonatal jaundice – it is not a contraindication for breastfeeding, nor should breastfeeding be interrupted while the child is jaundiced. Only in rare cases of severe hyperbilirubinemia may there be a need for a temporary short-term cessation of breastfeeding.

ANNEX 3: COMPOSITION OF HUMAN MILK

There is no substitute for human milk. It contains thousands of different ingredients, such as proteins, lipids, lactose, vitamins, iron, minerals, water and enzymes. Most of these ingredients cannot be produced artificially.

Nutritional composition of human milk

- Water 87.6 ml / 100 ml of milk
- Proteins:
  - whey proteins 60–70%, less casein (coagulating protein)
  - beta lactalbumin (there is no alpha lactalbumin, which causes sensitization and allergy)
  - specific composition of amino acids: essential amino acids make up 45%, taurine is especially important for the maturation of the nervous system and retina and for the conjugation of bile acids (neonatal jaundice prevention)
- Lipids: LC PUFA (long-chain polyunsaturated fatty acids), especially omega-3, are an essential component of cell membranes, especially of the CNS and retina; it is rich in cholesterol which is necessary for the construction of cell membranes; biomodulatory effect – early programming of normal nutritional status
- Carbohydrates: it is rich in lactose; energy source, bifidogenic effect of oligosaccharides (over 200 different molecules at the beginning of lactation).
- Minerals
- Vitamins and trace elements

Some components of breast milk, such as vitamin D and omega-3 fatty acids, are a result not only of what the mother ate the day before, but also of what she ate, what was her physical activity and what types of toxins and stressors she was exposed to many months before the baby was born.

Bifidogenic factors act synergistically on the growth of Lactobacillus and bifidobacteria.

Lactose (milk sugar) increases acidity, oligosaccharides (complex sugars) act as prebiotics, i.e., as food for probiotic bacteria.

OLIGOSACCHARIDES – mom's sweet secret

- 8% in human milk, only 0.1% in cow's milk
- more than 200 different types
- milk superheroes
  - they bind bacteria and help their elimination
  - they regulate immune system maturation
  - food for probiotic bacteria (prebiotics)

Protective factors

Cellular – macrophages, lymphocytes, neutrophils

Humoral:

- Immunoglobulins – IgA (prevents the penetration of antigens from the intestinal mucosa to the circulation and thus reduces susceptibility to intestinal and respiratory infections
- Lactoferrin (acts bacteriostatically, synergistically with IgA)
- Lysozyme (a non-specific antimicrobial factor, a bactericide that prevents the colonization and growth of bacteria in the intestines and respiratory system)
- Interferon
- Lipase
- Complement components
- Antiviral factors: specific (antibodies) and non-specific (unsaturated fatty acids, interferon)

Biomodulatory factors

- Bioactive agents (hormones, growth factors, neuropeptides, anti-inflammatory agents)
- Modulatory effects on the growth, development, epithelium function, immune and nervous systems, gastro-intestinal tract (GIT)
- Neurometabolic effect
- Stem cells (new hypotheses of matrilineal heredity)

Human milk acts as a relay between the mother's genome during lactation and epigenetic regulation of the genes of the child who receives it.

Ingredients of human milk that affect nutrition, growth and maturation of the nervous system:
Amylase, choline, insulin-like growth factor I and II, lactoferrin, lipase, long chain polyunsaturated fatty acids, oligosaccharides.

Hormones: prolactin, thyroid hormones, epidermal growth factor, beta-endorphins, relaxin, erythropoietin, cortisol, leptin, insulin, progesterone, oestrogen, androgen, gastrin, resistin, adiponectin, ghrelin.

HAMLET – The protein-lipid complex of α-lactalbumin and oleic acid may protect a breastfed child from leukaemia and other malignant diseases. In laboratory conditions, it has been proved that this complex kills over 40 types of malignant cells.

ANNEX 4: HUMAN MILK MICROBIOME

Our health and good functioning of our body depend on various communities of microorganisms that reside in unexpected parts of our body. These findings still cause astonishment and even disbelief among experts and lay people.[20]

For a long time, breast milk was considered to be sterile. Today, we know that it contains a special combination of microorganisms called **the human milk microbiome**. Numerous studies are now conducted in order to determine which factors influence the composition of breast milk microbiome. The mother's psycho-social distress is associated with a reduced diversity of bacteria in her milk.[3] It seems that the mother's diet (consumption of dairy products, meat or foods rich in carbohydrates[4]) also affects the composition of the milk microbiome. One of the assumptions is that in this way, mother's milk prepares the child for life in the natural environment in which it grows up.

The intestinal microbiome of the neonate comprises bacteria that populate its large intestine. An interesting question is where these bacteria come from. During birth, the child swallows the mother's vaginal secretion, and it also receives part of the bacteria from the external environment after birth. Birth method (natural or caesarean section) also affects the types of bacteria colonized in the child. There is no doubt that part of the bacteria comes from breast milk. In the colostrum, bacteria previously thought to enter the milk from the baby's mouth can be isolated even before birth.[5] The practical importance of this finding is that direct suckling is important. During breastfeeding, the milk is mixed with the child's saliva, creating products that affect the regulation of the oral microbiome and thus also the neonate's intestinal microbiome. In this way, the mixing of saliva and milk represents a unique biochemical synergy that stimulates early congenital immunity.[22]

The neonate's intestinal microbiome is influenced by:

- breast milk (oligosaccharides, buffer capacity, milk microbiome)
- method of delivery (preference for vaginal delivery),
- skin-to-skin contact,
- the mother's intestinal and vaginal flora, use of antibiotics during pregnancy,
- the mother's diet.

ANNEX 5: LACTATION

BREAST ANATOMY

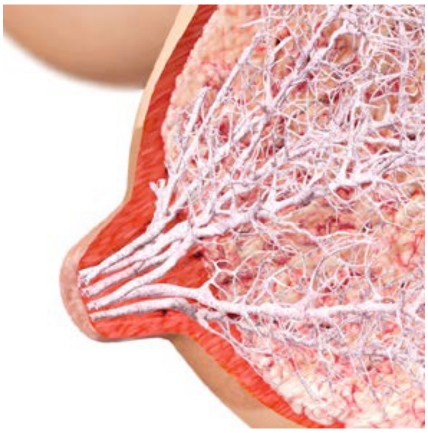
The mammary gland consists of 15–20 lobules, cluster-like glandular tissue structures, surrounded by connective and fatty tissue. Milk is produced in the alveoli; they are surrounded by a muscle layer (myoepithelial cells) that pump the milk from the alveoli to the ducts. Alveoli develop during pregnancy.

Secondary milk ducts are a complex network of tiny tubes through which milk from the alveoli reaches the main ducts. They flow into the main milk ducts which open directly in the nipple and deliver milk to the baby.

Less than 4% of milk is stored in the ducts, so it is clear that the let-down reflex is necessary for breast emptying. It can be inhibited by stress, so the mother's comfortable position and relaxation help milk flow.

65% of glandular tissue is located in the diameter of 3 cm from the nipple base, while ducts are grouped near the skin surface. Rough pressure on the ducts and glandular tissue can make milk flow difficult.

The ratio of glandular and fatty tissue varies from one woman to another. Milk production capacity is determined by the amount of glandular tissue and not breast size.



THE NIPPLE has 4–18 lactiferous ducts that open at the tip. It contains sebaceous glands and myoepithelial cells. The nipple is "plastic", which means that, in response to suckling, an erection occurs, the nipple elongates and charges shape (an assessment of breastfeeding success based on the nipple appearance is not reliable). The nipple is a visual, olfactory and oral breastfeeding stimulus for the baby. Unmyelinated nerve fibres make the nipple extremely sensitive.

Sebaceous glands give the nipple its specific smell, which the child recognizes after a few days and regulate the pH of the skin. Sebum has bactericidal effect and "lubricated" the nipple during breastfeeding.

Various products change the skin's pH – the saprophytic flora becomes pathogenic, "does not smell like mom", the smell is unpleasant, they have to be removed before breastfeeding which creates micro-ridges.

Hormones involved in the lactation process:

- reproductive (oestrogen, progesterone, placental lactogen, prolactin, oxytocin)
- metabolic (glucocorticoids, thyroxine, insulin) which have an indirect role

MILK PRODUCTION: Hormonal during pregnancy, hormonal and autocrine regulation after parturition.

Secretory differentiation phase (lactogenesis 1) takes place during pregnancy.

- intensive development of the lobules
- the number of ducts increases (oestrogen in the first months of pregnancy)
- the number of alveoli increases (progesterone secretion increases after 3 months)
- creation and occurrence of colostrum

Therefore, during pregnancy, not only the foetus grows, but the breast also prepares for its new role. The breast can grow up to 46% compared to its pre-pregnancy size. Some pregnant women notice a significant increase in the breast size only after childbirth.
The mammary gland is ready for breastfeeding already after the 16th weeks of gestation. Greater milk production is inhibited by placental hormones, primarily progesterone.

Secretory activation phase (lactogenesis 2) begins after childbirth.

The drop in progesterone level after placenta expulsion is believed to be the main trigger for the sudden onset of milk secretion after delivery. Another important prerequisite is breast stimulation, i.e., early start of breastfeeding.

Inhibition by progesterone is extremely strong – residual parts of placenta delay lactogenesis 2.

In the first day after childbirth, 10-15 ml of milk is produced; in the following days, the amount increases and the colostrum changes to mature milk.

The time of secretory activation is different for each mother, from 24 to 120 hours. Delayed secretory activation is associated with shorter duration of breastfeeding.

The two most important hormones for breastfeeding are prolactin and oxytocin. The baby's suckling is the driving force for hormone secretion via sensory impulses from the nipple.

Prolactin is secreted during breastfeeding to provide milk for the next feeding. More prolactin is secreted at night, and this is why night feedings are important, especially in the beginning. Prolactin is also responsible for the suppression of ovulation.

Oxytocin works before and during breastfeeding to allow the flow of milk already in the breast. It also causes uterine contractions that accelerate the involution of the uterus and thus reduce the risk of postpartum bleeding and infection. These contractions, or "autolysis" of the uterus can be very painful during breastfeeding, especially in multiparous women.

Less than 4% of milk is stored in the ducts, so it is clear that the let-down reflex is necessary for breast emptying.

Autocrine milk secretion control. After the initial hormonal phase, further regulation takes place mainly locally, based on the supply and demand principle.

- Effective suckling and breast emptying - regulation through milk volume is crucial.
- Milk production no longer depends on the mother's hormone level; high prolactin levels are insufficient for milk secretion.
- If there is no effective suckling and milk removal, production is reduced – an inhibitory peptide in the glandular tissue of the breast reduces secretion (FIL – feedback inhibitor of lactation).
- The hormonal impact on both breasts is equal, but the higher volume will be in the breast from which the child suckles more milk (e.g., if the child suckles from only one breast, the other breast regresses).

Milk volume and inhibitory peptide make a fine natural security system.

ANNEX 6: CONTENT OF EDUCATION FOR PREGNANT WOMEN ON BREASTFEEDING

Everything listed below should be discussed with women up to the 32nd week of pregnancy.

What do you know about breastfeeding?

How do you plan to feed your child?

Which people close to you will help you with breastfeeding?

Importance of exclusive breastfeeding for the child

- protects against many diseases, e.g., from respiratory tract infections, diarrhoea, ear infections
- helps the growth and development of the child
- milk composition varies according to the child's needs
- children who are not breastfed face a higher risk of disease

Importance of skin-to-skin contact immediately after birth

- the child is serene and feels warm
- it stimulates the bond between the mother and the child
- it helps in the initiation of breastfeeding

The importance of positioning the baby and drawing it close to breast

- good positioning and drawing close to the breast help the child get plenty of milk and for the mother, it prevents nipple and breast inflammation and pain.

A good start of breastfeeding

- breastfeeding when the child asks for it
- how to recognize that the child is getting enough milk
- physiological weight loss
- the importance of rooming-in
- why pacifiers and dummies are not recommended

Breastmilk is the only food and liquid that the child needs in the first 6 months.

The importance of continued breastfeeding even after 6 months, when other foods are introduced

The risks and dangers of not breastfeeding

- loss of protection against acute and chronic diseases
- contamination of supplementary food, errors in formula preparation
- costs
- when the mother decides not the breastfeed, that decision is difficult to change

ANNEX 7: TEN STEPS TO SUCCESSFUL BREASTFEEDING

WHO: Protecting, Promoting and Supporting Breastfeeding in Healthcare Facilities: Baby Friendly Hospital Initiative , 2018, revised edition.

The most important management procedures

1. a. Full compliance with the International Code on Marketing of Breast Milk Substitutes and relevant WHO General Assembly resolutions.
   b. Having a written policy in place on nutrition of newborns and infants, which is regularly communicated to the staff and parents.
   c. Establishing a data monitoring and management system.
2. Ensuring that staff have sufficient knowledge, competencies and skill to provide support to breastfeeding.

The most important clinical practices

3. Discuss the importance of breastfeeding and breastfeeding techniques with expectant mothers and their families.
4. Facilitate the direct and continuous skin-to-skin contact and encourage mothers to start breastfeeding immediately after delivery.
5. Provide support for mothers to start and continue breastfeeding and to resolve common difficulties.
6. Do not give suckling newborns any food or liquid in addition to breastmilk unless there are medical reasons.
7. Enable mothers and their newborn children to room-in and be together 24 hours a day.
8. Train mothers to recognize hunger cues of their child and respond to them.
9. Provide advice to mothers on how to use feeding bottles, nipples and dummies and the risks involved.
10. Plan for discharge from the maternity hospital so that parents and their newborn children can have timely access to further support and care.

https://www.who.int/multi-media/details/ten-steps-to-successful-breastfeeding

ANNEX 8: INDICATIONS FOR SUPPLEMENTARY FEEDING

POSSIBLE INDICATIONS FOR THE INTRODUCTION OF SUPPLEMENTARY NUTRITION FOR HEALTHY, TERM NEONATES

INDICATIONS RELATED TO THE NEWBORN

Asymptomatic hypoglycaemia, documented by laboratory blood glucose measurement (not by bedside screening methods), unresponsive to adequate frequent breastfeeding. Newborns with symptoms of hypoglycaemia or those with glucose <1.4 mmol/L in the first four hours or <2.0mmol/L after four hours should be treated with intravenous glucose. Breastfeeding should be continued during glucose therapy IV.

Cues or symptoms that may indicate inadequate milk intake

i. Clinical or laboratory evidence of extreme dehydration (high sodium, poor suckling, lethargy, etc.) that does not improve after an expert evaluation and appropriate breastfeeding assistance.[79]

ii. Weight loss ≥8–10% (age of five days [120 sati] or later) or weight loss greater than the seventy-fifth percentile for the age.

Although a weight loss of 8–10% may be within normal limits, if everything else is going well and physical examination results are normal, it indicates the need for careful evaluation and potential assistance with breastfeeding. A weight loss greater than that may indicate inadequate milk transfer or low milk production, but a detailed evaluation is required before automatically introducing supplementary feeding.[19,20,80]

Weight loss nomograms for healthy newborns by hour of life can be found at https://newbornweight.org/

iii. Delayed bowel movements, less than 4 stools at the age of four days and continuous meconium stools at the age of 5 days (120 hours). [48,80]

Monitoring of urination and stool patterns is necessary at least until the occurrence of secretory activation. Although there are large deviations in newborn children, patterns can be useful in determining whether breastfeeding is adequate.[81,82]. In newborns with more frequent bowel movements during the first five days after birth, there is less initial weight loss, yellow stool appears earlier, and they return to their birth weight sooner.[83]

Hyperbilirubinemia (see ABM Clinical Protocol number 22: Jaundice Management Guidelines)

i. Jaundice related to poor milk intake by suckling despite appropriate intervention. It typically occurs between the age of 2 and 5 days and is accompanied by persistent weight loss, limited bowel movement and excretion of uric acid crystals.

ii. Jaundice caused by breast milk when values reach 340–425 μmol/L in an otherwise well-progressing infant, where stopping breastfeeding is considered based on diagnosis or for therapeutic purpose. Diagnostic procedures primarily involve laboratory evaluation and not stopping of breastfeeding.

INDICATIONS RELATED TO THE MOTHER

- Delayed onset of milk production (3–5 days or later)
- Primary glandular insufficiency (<5%)
- Breast pathology or previous breast surgery
- Temporary discontinuation of breastfeeding, due to certain medications (e.g., chemotherapy) or temporary separation of the mother and child without available expressed breast milk
- Unbearable pain during breastfeeding that does not ease after the intervention.

ANNEX 9: UNJUSTIFIED REASONS FOR SUPPLEMENTARY FEEDING OF THE NEWBORN

DILEMMAS / UNJUSTIFIED REASONS	ANSWERS
"No milk" – belief that colostrum is insufficient before milk comes in.	The mother and the family should be informed about the importance of colostrum, including dilemmas regarding its yellow colour. Small amounts of colostrum are normal, physiological and appropriate for healthy newborns.
Supplementary nutrition is needed in order to prevent weight loss and dehydration.	Some weight loss is common in the first week of life and occurs due to diuresis of extracellular fluid and elimination of meconium.
There is a risk from the occurrence of hypoglycaemia in the newborn.	Healthy term newborns do not develop symptomatic hypoglycaemia as a result of suboptimal breastfeeding.
Breastfeeding is associated with postnatal jaundice.	The more frequent the breastfeeding, the lower the bilirubin concentration. Bilirubin is a powerful antioxidant and jaundice is common in newborns. Colostrum is a natural laxative that helps eliminate meconium and prevents reabsorption of bilirubin from the intestines.
Insufficient time to counsel mothers on the practice of exclusive breastfeeding when they ask for supplementary nutrition.	The time that healthcare practitioners spend talking and listening to mothers is just as important as other, more active interventions that they may consider to be their "real job").
Medicines may be contraindicated for breastfeeding.	For most diseases, medications safe for nursing mothers and children are available. Consult the recommended websites!
Supplementary food will calm a restless or agitated child.	Teach postpartum women other child calming techniques.
Mothers need to rest or sleep.	After delivery, mothers are restless when they are separated from their children, so they are actually getting less rest. Mothers miss the opportunity to learn something about the child's usual behaviour and timely recognition of hunger cues. The greatest risk for receiving supplementary food is between 19.00 and 09.00 hours.
Sore nipples will recover if the mother takes a break in breastfeeding.	Length of breastfeeding is not the root cause of sore nipples. More important causes are the position, latch and sometimes, individual anatomical deviations (e.g., ankyloglossia).

ANNEX 10: HUNGER CUES

Early cues: “I am hungry”


Fidgeting


Mouth opening


Head turning/rooting

Advanced cues: “I am really hungry”


Stretching


Increased movement

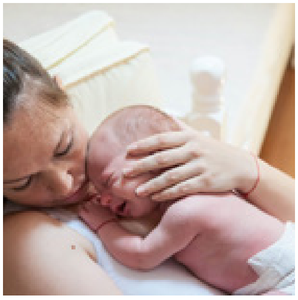

Putting the hand in the mouth

Late cues: “Soothe me, then give me something to eat”


Crying


Agitated movements


Face redness



Time to soothe a crying baby:

Hugging

Skin-to-skin

Cooing

Cuddling

Satiety cues

At the beginning of breastfeeding, most children have increased muscle tension. As they become satiated, they slowly relax.

Most babies let go of the breast when full, while some babies still suckle gently before falling asleep.

ANNEX 11: OBSERVATION OF BREASTFEEDING

OBSERVATION OF BREASTFEEDING

WHAT WE OBSERVE IN THE MOTHER

- Age
- Appearance
- Does she seem healthy or sick
- Is she happy or sad
- Is she relaxed or tense
- Are there signs of closeness with the child

WHAT WE OBSERVE IN THE CHILD

- General condition
- Is it awake or sleepy
- Is it calm or crying
- All conditions that can affect breastfeeding
- How does the child react when hungry and close to the mother – does it look for the breast or move away

WHAT WE NOTICE ON THE BREASTS

- How do breasts and nipples look
- Is the mother saying that her breast hurts or acts as if she is afraid to place the child on the breast
- How does the mother hold her breast for breastfeeding; do her fingers prevent the child from clasping the areola widely enough

WHAT IS THE CHILD'S POSITION FOR BREASTFEEDING

- Are the head and body (pelvis) aligned
- Is the body close and supported
- Is the child's facing the breast approaching it with the nose

HOW DID THE CHILD LATCH ON TO THE BREAST

- A larger part of the areola can be seen above the child's upper lip than below his lower lip
- Mouth wide open, lower lip turned outwards
- Chin touches the breast

HOW THE CHILD SUCKLES

- We listen
- We watch the child's cheeks: round, not sunken during breastfeeding
- Does the child let go of the breast by itself and does it seem satisfied.

ANNEX 12: ASSISTANCE WITH OBSERVATION OF BREASTFEEDING (CHECKLIST)

BREASTFEEDING OBSERVATION CHECKLIST

Mother's name ______________________________ Date __________________

Child's name ______________________________ Child's age _____________

Signs of breastfeeding success: **Signs of possible difficulties:**

OVERALL IMPRESSION

Mother: Mother:

	Mother looks healthy		Mother looks sick or depressed
	Mother is relaxed and in a comfortable position		Mother is tense and in an a comfortable position
	Signs of closeness between the mother and the child		No eye contact between the mother and the child

Child: Child:

	Child looks healthy		Child looks sleepy or sick
	Child is calm and relaxed		Child is restless or crying
	Child seeks and squeezes the breast if hungry		Child does not seek the breast

BREASTS

	Breasts looks healthy		Breasts are red, swollen or sore
	No pain or discomfort		Sore breast or nipple
	Breasts are held well with fingers		Breasts are held on the areola without touching the nipple

THE CHILD'S POSITION

	Child's head and body aligned for breastfeeding		Head and body turned for breastfeeding
	Child close to the mother's body		Child not held tight and close
	Child's entire body supported		Head and neck only supported
	Child held close to the breast nose turned toward the nipple		Child held close to the breast, lower lip/chin turned toward the nipple

LATCHING ON TO THE BREAST

	More areola above the child's upper lip		More areola above lower lip
	Child's mouth wide open		Child's mouth not wide open
	Lower lip curled outward		Lips directed upward or turned inward
	Child's chin touches the breast		Child's chin does not touch the breast

SUCKLING

	Slow and deep suckling with pauses		Quick and short suckling
	Round cheeks		Sunken cheeks
	Child lets go of the breast when done		Mother separates the child from the breast
	Mother observes signs of oxytocin reflex		No signs of oxytocin reflex are observed

Adapted from Breastfeeding Counselling: a training course, WHO/CHD/93.4, UNICEF/NUT/93.2

ANNEX 13: CAUSES OF INSUFFICIENT MILK PRODUCTION

THE MOST COMMON CAUSES OF LOW MILK PRODUCTION

The most common causes of insufficient milk production are associated to causes that limit the amount of milk that the child receives from the breast. If the breast is not empties, less milk will be produced. These causes are usually related to:

Insufficiently frequent feedings

- the mother does not notice the child's cues indicating readiness for breastfeeding,
- the child is sleepy or "quiet" and does not ask to be fed,
- the mother is too busy and delays breastfeeding,
- the child does not sleep close to the mother, so the mother does not see or hear cues of readiness for breastfeeding,
- the child is given other drinks or food and is not asking to be breastfed,
- the child is given dummies,
- view that the child does not need night feedings,
- the mother has sore nipples or breasts that make her not want to breastfeed,
- breastfeeding according to a preset schedule: planning feedings at a certain time may not ensure adequate frequency of feedings; in addition, if the child cis left to cry until the planned feeding, it uses energy and may fall asleep from tiredness just at the time of the planned meal;

Short feedings (the child may not get enough milk if the mother stops feeding at a certain time or because she thinks that a break in suckling means that feeding is over);

Inadequate breast emptying (as a cause of inhibition of further milk secretion – autocrine regulation of lactation according to the supply and demand principle);

Ineffective suckling (a child who is weak or improperly placed on the breast cannot suckle the milk from the breast, so the breast is poorly emptied, causing reduced milk production);

Delayed initiation of breastfeeding (breastfeeding should be started as soon as possible after childbirth).

LESS COMMON REASONS FOR LOW MILK PRODUCTION

- Medications taken by the mother (contraceptives containing oestrogen and treatment with diuretics)
- Alcohol and smoking
- Breast surgery which cuts off the milk ducts in the breast
- If the mother becomes pregnant again

EXCEEDINGLY RARE REASONS FOR LOW MILK PRODUCTION

- Residual parts of the placenta inhibit the hormones needed for milk production.
- Underdevelopment of the breasts during pregnancy, causing the development of few or no milk-producing cells.
- Severe malnutrition – milk is produced from what the woman eats and from energy reserves in her body. If the woman uses up all her reserves, this can affect the amount of milk, However, in order for this situation to arise, the mother must suffer from severe and long-term malnutrition. Restricted fluid intake can also affect milk quantity.

ANNEX 14: TIPS FOR THE MOTHER THAT CAN FACILITATE WEANING

STOPPING BREASTFEEDING

While breastfeeding your baby, you must be wondering when the right time is to stop breastfeeding and what is the easiest possible way to do it. If you do it gradually and lovingly, weaning will be a positive experience for both of you. In our language, there is no special name for stopping breastfeeding, but the term "weaning off the breast" is used. It is important to bear in mind that, whenever possible, breastfeeding should not be stopped abruptly and that there are recommendations to make the process of stopping breastfeeding as easy as possible for the child and for you.

You are best placed to assess when it is time to stop breastfeeding, because you know your child best. Whenever you decide to stop breastfeeding, focus on your child's needs and on your own needs. Don't compare your situation to other families you know and think again about the deadlines you set for yourself when you were pregnant tor after the birth of your child.

BENEFITS OF PROLONGED BREASTFEEDING

We will re-emphasize that the child gets everything it needs during the first six months from breast milk. Even when non-milk food is introduced, milk remains the main food until the end of the first year.

No matter how long you breastfeed, the child receives all the immunity benefits of breast milk during the periods of increased exposure to infections.

When the child is sick, it usually refuses other food and breastfeeding satisfies its needs.

When the child is afraid, agitated or restless, you have a quick and effortless way to soothe him/her.

Breast milk offers protection from allergies to children with congenital disposition.

Many of the long-term benefits of breastfeeding (e.g., lower risk of cancer for both the child and the mother) directly depend on the length of breastfeeding.

Breastfeeding provides closeness, security and stability to the child in the period of rapid growth and development.

NATURAL WAYS TO STOP BREASTFEEDING

Ideally, the child will stop breastfeeding when it outgrows this need (stopping breastfeeding guided by the child's needs). A change in the rhythm of breastfeeding occurs after non-milk foods are introduced. The child becomes more interested in other foods and, at the end of the first year, when it tries different foods and tastes and learns to during from a cup, it gradually stops suckling. Some children become less interested in breastfeeding in the second year because they don't have the patience to stay still during breastfeeding. When you leave the decision to stop breastfeeding to the child, you are spared the unpleasant task of weaning when the child is not ready yet!

WHEN THE MOM DECIDES ENOUGH IS ENOUGH

When the mom decides to stop breastfeeding, whether the reason is some extraordinary situation or the mother's feeling that it's time, stopping breastfeeding takes a lot of time and patience. Breastfeeding creates an intimate bond between the mother and the child, so the feelings about this decision may be mixed. Do not stop breastfeeding because those around you think it's time if you do not feel like it!

How weaning will proceed depends on the age of the child and on how it accepts change. If possible, concentrate on the weaning process for several weeks. If the baby does not show the signs of wanting to stop breastfeeding, it will not give up so easily after having suckled for a year or longer. There is no reason to feel guilty because you have breastfed your baby longer than most mothers. Keep calm and be persistent! Stopping breastfeeding does not mean breaking the special bond you established with your baby during breastfeeding!

TIPS THAT CAN MAKE WEANING EASIER

- Go slowly and, in the beginning, follow your baby's cues.
- Do not offer to breastfeed, but also do not reject it. Rejecting it may make the child even more focused on breastfeeding.
- Skip one feeding; gradually, over the course of several weeks, increase the number of feedings substituted by other types of meals. The production of milk will thus gradually decrease without the risk of inflammation and mastitis. The last evening feeding should be left for the end.
- Shorten the feeding duration; if the baby normally suckles for ten minutes, shorten the feeding to five minutes. After that, give the child other food (for example, apple purée or a cup of milk). Your will find it the most difficult to shorten the feeding before bedtime; it is usually the last feeding left in the end.
- Make sure the child gets all other meals and snacks on time, as well as enough fluids, to avoid feeling hungry or thirsty.
- Delay feedings and entertain the child if it is an older child who understands you. Explain that the feeding will be later and entertain him/her with some activity; explain that he/she will be breastfed at bedtime.
- Change the usual daily routines to avoid a situation in which the child will ask to be breastfed. You know that breastfeeding does not only provide the child with food, but also with physical contact, comfort and sleep.
- If the child asks for the breast because he/she is bored, entertain him/her in another way, give him/her a snack appropriate for his/her age or take him/her outside. If it is used to you lying next to him/her while he/she falls asleep, try reading a book or rocking him/her. Avoid the usual place and position for breastfeeding that the child is used to.
- If it wakes up during the night, have dad put him back to sleep; if it asks to be breastfed immediately after waking up, have dad get him/her out of bed and you should give him/her breakfast.
- The first feeding in the morning and bedtime feeding mean the most to the child; if you notice that the child is having a tough time accepting the absence of these feedings, continue for a few more weeks (if you are not in a hurry to stop breastfeeding for some particular reason).

During this period, the child still needs physical contact, hugs and comfort. During weaning, mothers tend to avoid holding the child in their arms; keep in mind the child's need for "skin-to-skin" contact and avoid only the usual breastfeeding positions that the child is used to.

WHEN IS STOPPING BREASTFEEDING NOT RECOMMENDED?

Have you recently returned to work? The child may not yet be used to the change of routine, so stopping breastfeeding completely will be difficult for them. Depending on the child's age, consider stopping breastfeeding before returning to work or a combination of breastfeeding and feeding the child with your breast milk.

Is the child sick? Babies usually ask to be nursed more often when they are sick. This not only gives them comfort, but also provides them with enough fluids and energy during sickness, when they often refuse other foods.

Is your household going through a big change? Relocation or divorce can make quitting more difficult.

If it seems to you that your child finds it difficult to accept denial of breastfeeding and weaning becomes a struggle, maybe the time is not right! Postpone the decision for next month; maybe the child is just going through a new stage in development.

WHAT SHOULD BE GIVEN TO THE CHILD INSTEAD OF BREAST MILK?

If the child is under one year old, he/she needs formula milk enriched with iron. Children under one year should not be given cow's milk!

If you stop breastfeeding because you are returning to work or leaving home for a brief time, consider feeding your baby with your breast milk.

Milk can be given from a bottle with a pacifier or from a cup. A child aged 7-8 months can drink from a cup without any problems (with a little patience until it gets used to it). Keep in mind that if you give your child a bottle, you will have to wean him/her off the bottle at some point as well.

WHY IS ABRUPT STOPPING OF BREASTFEEDING NOT RECOMMENDED?

Avoid abrupt termination of breastfeeding whenever possible. Leaving home for the weekend in order to wean off your child is not a good idea!

Abrupt stopping can lead to breast problems, engorgement or even mastitis; it also leads to a sudden drop of breastfeeding hormones, which can cause depression, an issue to consider especially if the mother was already prone to depression.

Abrupt weaning can be very stressful for the baby and may cause emotional trauma. Breastfeeding is not only a source of food for the baby, but also of emotional security. There is no way to explain to your baby why it can't suckle anymore! Gradual weaning allows closeness during breastfeeding to be gradually replaced by other forms of physical and emotional closeness.

If you must stop breastfeeding for medical reasons, make sure there is no other solution. It is often possible to use another medicine that is safe for the child instead of the prescribed one. Specialists in various fields sometimes do not have enough knowledge about the use of medicines during breastfeeding and tend to advise to stop breastfeeding. Paediatricians and obstetricians usually have more knowledge and experience than, for example, dentists or anaesthesiologists, so they should be consulted before the final decision. The same applies for diagnostic procedures, such as dental imaging or mammography.

ANNEX 15: KEEPING AND STORING BREAST MILK

According to: Breastfeeding Medicine, Volume 12, Number 7, 2017: ABM Clinical Protocol #8: Human Milk Storage. Information for Home Use for Full-term Infants, Revised 2017.

You may find yourself in a situation where you are away from home for several hours and cannot breastfeed your baby. It will also happen that you need to work late, travel somewhere, go for some examinations or a medical intervention, that the older child gets sick, etc., and it is becoming increasingly frequent that the mother has to return to work very soon after childbirth. Here are some tips on what to do, without denying your baby the best food available.

You can save the milk and use it when needed. Milk keeping begins with the process of expression – manually or with a pump (manual or electric). Expression pumps are excellent as the milk is collected directly to a sterile bottle that comes with the pump, so there is no contamination from the external environment. Milk can be kept and stored in these bottles until the meal.

Always express your milk with clean hands! Milk storage containers should be washed with detergent in hot water, then rinsed well. Expression pump should be washed and disinfected according to the manufacturer's instructions.

Expressed milk can be frozen. After expression, pour the milk into a bag with the date of expression written on it. You can use the milk prepared in this way to make mashes when the time comes.

Proper milk storage is extremely important in order to preserve the nutritional and anti-infective properties of breast milk and to prevent contamination with bacteria from the external environment. Milk may be used only if safely stored!

FRESHLY PUMPED BREAST MILK

At room temperature: IDEALLY NOT LONGER THAN 3 HOURS. According to some authors, milk remains unchanged for 6 hours, especially if the temperature in the room is not too high. However, the amount of lipase (a fat-processing enzyme) varies between women and lipase may spoil the taste of milk, so there is no point in storing milk at room temperature if the baby is not going to eat for the next few hours. If the baby has not drunk all the milk offered, it is considered safest to put the milk in the refrigerator for a maximum of 2 hours until you offer it to the baby again. If there is still some milk left, it should be thrown away.

In the refrigerator: 24 hours at the temperature of 2–4°C (some recommendations go even up to 72 hours, not in the door, but deeper in the refrigerator where the temperature is constant and does not exceed 5°C). If you plan to store the milk longer, it is best to freeze it.

Cold milk is heated in warm water (bath) or milk heater until it reaches a temperature suitable for consumption (37°C). Put hot water in a cup or small pan and then place the milk container in it. You can also use bottle warmer.

Expressed breast milk is not homogenized so it is normal that it separates into two parts – fatty and watery part. Before checking the temperature, shake the milk container in order to distribute the fat in the milk.

NEVER heat breast milk in a microwave or directly on the stove. High temperature destroys some valuable ingredients, and the child can be burned by unevenly heated milk from the microwave oven.

MILK FREEZING

Use containers made of unbreakable plastic or glass, with a tight lid, or bags specially designed for storing breast milk for freezing. Plastic containers are better than glass ones because leukocytes from the milk adhere to the class walls and lose their effectiveness.

If you use bags, keep them in a closed plastic dish so that the milk does not absorb the odours of other foods in the freezer.

It is not recommended to use disposable plastic bottles.

In order to avoid unnecessary waste of unused milk and make defrosting and heating of milk easier, store it in portions of 30 to 120 ml.

Record the milk collection date on the containers before storage.

Milk expressed several times during the day can be combined into one container.

Avoid adding freshly expressed milk to previously cooled or defrosted milk – the new milk should be cooled first and then added to the older milk.

STORING MILK IN THE FREEZER

- Refrigerator compartment: up to two weeks
- Vertical freezer with special doors: 3–4 months
- Freezer with constant deep freezing at -19°C: up to 6 months

DEFROSTING OF MILK

You can defrost milk slowly in the refrigerator (this takes about 12 hours; put it in the refrigerator the night before you plan to use it). Avoid leaving frozen milk at room temperature to thaw.

If you need faster defrosting, you can put the container with frozen milk under a stream of running water (first cold, then gradually let warmer water flow).

Defrosted milk can be stored in the refrigerator for up to 12 hours sati from complete thawing, or for up to 24 hours after thawing in the refrigerator. MILK MUST NOT BE KEPT ANY LONGER IF THE BABY TASTES IT AND REJECTS IT! Once defrosted, milk should not be frozen again.

The above recommendations refer to storing milk for a healthy term baby and for home use. If the baby is premature and/or hospitalized, you must consult a doctor on how to store milk in that case!

ANNEX 16: THE CODE AND OUR NATIONAL LEGISLATION

Compliance with and application of the Code is an obligation for all WHO member countries. Few countries that adopted the Code implement it as a whole, which is recommended. The provisions of the Code are incorporated in various laws and regulations. Our national regulations partially harmonized with the WHO Code include: the Law on Food Safety, the Law on Health Safety of Articles for General Use, the Law on Advertising, the Rulebook on the Labelling of Packaged Foods Intended for Nutrition of Infants and Young Children and the Rulebook on Dietary Product Safety.

LAW ON ADVERTISING

- Prohibits the advertising of milk, other food and beverages for infants up to the age of 6 months.
- Starter formulas cannot be advertised at the point of sale, by giving samples or using any other promotional methods to improve sales, such as special packaging, discounts, prizes, special sales, promotional sales or bundle sales.
- Manufacturers and distributors of infant starter formulas must not hand out their products, samples or promotional gifts to citizens, pregnant women, mothers or members of their families, free of charge or at a reduced price, either directly or indirectly through health institutions or healthcare practitioners.

RULEBOOK ON DIETARY PRODUCT SAFETY

- Advertising of infant starter formulas is limited to publications specialized in infant care and scientific publications.
- Such advertising must comply with the requirements specified in the Rulebook related to labelling and must contain only scientific information and data.
- This information must not create an impression that bottle feeding is equivalent to breastfeeding or better for the infant than breastfeeding.
- Donations of informative or training equipment by manufacturers and distributors of starter formulas may only take place following a request and written approval of the Ministry of Health or within the guidelines issued for that purpose.
- Donated equipment may bear the name or logo of the donor company, but not the brand of the starter or transitional infant formula and may only be distributed within the healthcare system.
- Infant starter formulas donated or sold at discount prices to institutions or organizations in which they are used or from which they are distributed may only be used for the purpose of nutrition of infants that must be fed with infant starter formulas and just so long as necessary.

XIV

LITERATURE AND ADDITIONAL RESOURCES

BASIC LITERATURE

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