

2026

BREASTFEEDING AND DONOR HUMAN MILK

Position Statement of the Italian Society
of Neonatology, the Italian Society of Pediatrics,
and the Italian Association of Donor Human Milk Bank



Position Statement of the Italian Society of Neonatology, the Italian Society of Pediatrics, and the Italian Association of Donor Human Milk Bank on **BREASTFEEDING AND DONOR HUMAN MILK**

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This joint Position Statement by the Italian Society of Neonatology (SIN), the Italian Society of Pediatrics (SIP), and the Italian Association of Donor Human Milk Bank (AIBLUD) is an update of the 2015 Statement. It was made possible thanks to support from Massimo Agosti, president of SIN, and the SIN Executive Committee, and from Rino Agostiniani, president of SIP, and the SIP Executive Committee. The Statement was curated by Riccardo Davanzo, president of the Section Breastfeeding and Donor Human Milk (COMASIN), and edited by members of COMASIN, the Tavolo Allattamento della Società Italiana di Pediatria (TASIP), presided by Guglielmo Salvatori, and external collaborators. The Position Statement was approved by the SIN, SIP, and AIBLUD Executive Committees respectively in February, April, and June 2026.

Executive Summary

In response to the suboptimal breastfeeding rates in Italy, the Società Italiana di Neonatologia (SIN), the Società Italiana di Pediatria (SIP), and the Associazione Italiana per le Banche del Latte Umano Donato (AIBLUD) have addressed joint indications to neonatologists and pediatricians on the effective promotion of breastfeeding. Pediatricians and neonatologists are ethically and professionally committed to promoting breastfeeding in line with the principles of empowerment and empathetic healthcare for mothers and also with the principles of advocacy in the organization of healthcare services and in public opinion.

SIN, SIP, and AIBLUD recommend exclusive breastfeeding in infants up to 6 months of age, then its integration with food in young children up to age 2 years or more, as desired. The following indications are considered key to promoting and sustaining breastfeeding:

- Coherent with this position statement, the recommended clinical procedures and protocols on breastfeeding and related issues are based on currently available scientific evidence and/or best practices. These indications are to be shared among healthcare professionals, who then provide the child's mother, parents, and family with accurate consistent information about the breastfeeding options relevant to their personal circumstances. To do this, accredited continuing medical education curricula and courses are needed.
- Families need to be appropriately informed about the benefits of breastfeeding during prenatal visits and during post-delivery hospital stay, as well as about postnatal practices that can promote breastfeeding and a positive mother-child relationship (e.g., early and continuing skin-to-skin contact, rooming-in, frequent feedings) and about infant monitoring and safety. Family interaction, including nontraditional families (nonbinary couples, surrogate pregnancies) require solid preparation and appropriate verbal and nonverbal communication skills.
- Maternal milk is an optimal source of nutrition for normal and for healthy infants at risk of hypoglycemia or jaundice, and for infants with special needs (premature, birthweight <1500 g, surgical patients, heart congenital malformations, neurological deficits, cleft lip/palate, etc.). Taking part in the care of their infant in the neonatal intensive care unit engages parents in family-centered integrated care and zero separation to strengthen mother-infant bonding, kangaroo care, breastfeeding, and cognitive development.
- The breastfeeding mother should be shown how to express and store milk, which are basic to beginning and continuing milk production when nursing at the breast is not possible or sucking is insufficient or during postnatal hospital stay of the mother or the child or when the mother works or studies.
- The scientific literature states that there are few true contraindications to breastfeeding and that they should not be confused with barriers to breastfeeding. While maternal milk can be contaminated with pollutants due to environmental exposure throughout life and during pregnancy (body burden), the benefits of breastfeeding on neurocognitive development outweigh the potential risk of damage. Oral contraceptives containing progestin are the birth control pills of first choice for breastfeeding mothers. There is consensus that estrogen-progestin contraceptives (COCs) may be safely used after the postpartum period. Furthermore, emergency progestin contraception does not necessitate suspension of breastfeeding.
- Breastfeeding protection is based on policies supporting motherhood, such as Italian legislation and the WHO International Code of Marketing of Breast-Milk Substitutes. Neonatologists and pediatricians should prescribe commercial milk formula only when necessary and never for exclusively breastfed children. Digital marketing has spread misinformation about breast milk substitutes. In this context, neonatologists and pediatricians have an ethical duty to embrace advocacy as either individuals or professional groups.

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1. Benefits of Breastfeeding and Human Milk

The many benefits of breastfeeding are amply documented for nutrition, maternal empowerment (*Heidari et al., 2017*), cost savings for the family and society, and environmental sustainability (*Cos-Busquets et al., 2026*). The medical literature has focused mainly on infant health (*Patnode et al., 2025*) (**Table 1**) and the health of children with special needs (e.g., premature infants), besides that of the nursing mother (*Ip et al., 2007*) (**Table 2**).

Table 1. Outcomes in Breastfed Children (adapted from *Patnode et al., 2025*). The Lower Values Refer to Breastfed Versus Non-Breastfed Children. The Upper Values Refer to Children Exclusively Breastfed versus Breastfed for Longer Periods.

Reduced risk of disease	Percentage	Level of scientific evidence
Otitis media (especially <2 years)	33 – 43%	Moderate
Asthma (2-12 years)	7 – 31%	
Obesity (2-12 years)	15 – 34%	
Leukemia	10 – 23%	
Severe respiratory infection (<2 years)	Potential risk reduction	Low
Diarrhea and moderate-severe GI infection (<6 months)		
Allergic rhinitis		
Malocclusion		
Type 1 diabetes mellitus (≤ 18 years)		
Chronic inflammatory bowel disease		
Rapid weight gain and growth		
Systolic hypertension		
Death before age 1 year, including sudden unexpected infant death (SUID)		

Table 2. Benefits for the Breastfeeding Mother According to the American College of Obstetricians and Gynecologists (ACOG) and the U.S. Centers for Disease Control and Prevention (CDC).

	ACOG 2020	CDC 2024
Lower risk of developing type 2 diabetes mellitus and hypertension	+	+
Lower risk of developing breast cancer (<i>Virassamy et al., 2025</i>) and ovarian cancer	+	+
Lower risk of postpartum hemorrhage due to the effect of oxytocin on uterine contraction	+	NR
Regain of pre-pregnancy weight	+	NR

+ denotes documented risk reduction, NR not reported.

Yet, the information has often been contradictory. Available studies have presented discrepant findings about the protective effect of breastfeeding on the development of allergies, celiac disease, obesity, neurocognitive development (Lovecevic, 2023) and emotional behavior in the child (Vargas-Pérez et al., 2025) and postpartum depression in the mother (McNestry et al., 2026). As the body of evidence has grown, this inconsistency has been reduced in part by systematic literature reviews. What has never been disputed, however, is the overall benefit of breastfeeding and the dose effect between the duration of breastfeeding and the degree of its life-long benefit (Rollins et al., 2016; Victora et al., 2016; Meek et al., 2022; Goulding et al., 2025).

2. Chemical Contaminants in Human Milk

Human milk is exposed to environmental pollution. Of particular concern are poorly biodegradable lipophilic contaminants that persist in the environment like persistent organic pollutants (POPs), heavy metals (e.g., lead, cadmium, mercury) (Gridneva et al., 2022; Napolini et al., 2024), and microplastics (Caba-Flores et al., 2023). These organic micromolecules can be ingested with the diet, for instance, the POPs in milk and dairy products or the heavy metals in predatory fish, by inhalation of ultrafine particulate or by skin contact. The body burden of contaminants that accumulate in adipose and bone tissue has a long turnover and is transmitted via the placenta and maternal milk. Women with known exposure to environmental pollutants are advised against weight-loss dieting, as it would lead to their release from adipose tissues which supply the lipid content of maternal milk. The risk that maternal milk contaminated with environmental pollutants could have a detrimental effect on a child's neurological development should be weighed against the cognitive benefit of breastfeeding. Use of formula is not part of the equation.

Quantifying the level of pollutants in maternal milk may be useful for monitoring total environmental contamination and designing regulations to protect public health. Contamination of maternal milk should be monitored via pooled samples collected from the milk of primiparous mothers residing in different areas, according to the Stockholm Convention on POPs (Fiedler et al., 2019), the United Nations Environment Program (UNEP), and the World Health Organization (WHO).

3. Epidemiology of Breastfeeding

To date there is no national monitoring plan in place for breastfeeding in Italy. Previous studies give a fairly reliable idea of the situation, nonetheless. A study involving 97 self-selected birth centers participating in the Progetto Policy Aziendale sull'Allattamento (Davanzo et al., 2024) and a sample of 33,000 healthy term infants (birthweight ≥ 2500 g) showed that 71.3% of those discharged from the maternity ward were exclusively breastfed (Davanzo et al., 2026), according to the WHO definitions on infant feeding (WHO 1991). This rate is considered suboptimal, given that these newborns presented with no potential problems for initiating nursing. Furthermore, a 2025 surveillance study conducted by the Italian Istituto Superiore di Sanità (ISS) reported that 48.2% of infants aged 2-3 months were exclusively breastfed; this rate fell to 39.3% in infants aged 4-5 months (Pizzi et al., 2026). These rates fall short of the 50% of infants aged 6 months by 2025, as envisaged by the WHO in 2014 (WHO 2014). The WHO set an even higher target of 70% exclusive breastfeeding by 2030 (WHO 2022).

4. Reasons for Breastfeeding and the Role of Neonatologists and Pediatricians

Myriad factors determine the initiation and duration of breastfeeding (*Liu et al., 2023; Minarini et al., 2025; Nieto et al., 2026*) (**Table 3**). Neonatologists and pediatricians can play a pivotal role in this complex situation by supporting and protecting breastfeeding via a multidisciplinary approach together with other healthcare operators (*Fewtrell et al., 2023*). The Percorso Nascita (Maternity Care) program has been mandated to provide information on the benefits and methods of breastfeeding in prenatal education, facilitate the initiation of breastfeeding, and foster the formation of support services for mothers after leaving the maternity ward. Breastfeeding policies, guidelines, and procedures are to be shared by healthcare providers in mother-child care. Such information should be personalized for the mother's needs and clear in content.

Empathetic interaction should be conducted with mothers, especially primiparous women or those with mental health or social issues (i.e. minors, women with psychological vulnerability or socially isolated or low-income earners), in view of the major transition to motherhood during the first weeks after delivery, encouraging a positive maternal identity. What should be avoided are feelings of embarrassment, shame or disapproval by healthcare providers (*Taylor & Wallace, 2012; Leeming et al., 2021; UNICEF UK, 2025*). In this context, the mother should also be allowed and supported to opt out of breastfeeding.

**Breastfeeding is not simply a meal, but a
dynamic, bidirectional, biological dialogue.**

Tonse N. K. Raju, Breastfeeding Medicine 2011

Table 3. *Factors that Negatively Influence Breastfeeding.*

Personal
▪ Mother's age (adolescent girls and women >35 years less likely to breastfeed) ▪ Education level (low level strongly associated with use of commercial formula) ▪ Type of delivery (instrumental delivery, cesarean section without adequate support to breastfeed) ▪ Parity (inexperienced primiparous mothers) ▪ Past negative experience with breastfeeding ▪ Change in mother's health (chronic illness, pregnancy disorders, anxiety, depression, etc.) (<i>Henshaw et al., 2023</i>) ▪ Past psychological trauma (<i>Purkiewicz et al., 2026</i>) ▪ Early return to work
Child's health
▪ Premature birth (<36 weeks), low birthweight (<2500 g) ▪ Metabolic disease (hypoglycemia, hypocalcemia) or infection ▪ Congenital malformation ▪ Admission to neonatal intensive care unit (NICU) ▪ Changes in child's health
Family
▪ Cultural models, personal values, and beliefs against breastfeeding ▪ Religion (e.g., Muslim women may have trouble with skin-to-skin contact and breastfeeding in public) ▪ Low socioeconomic status ▪ Past negative experience as related by grandmother or aunts ▪ Lack of familial support
Social
▪ Legislation unsupportive of promoting, sustaining, and protecting breastfeeding ▪ Marketing of commercial milk formula
Health care
▪ Organization of women's hospitals and public health centers not based on scientific evidence or best practices ▪ Vague, unhelpful medical advice ▪ Lack of post-discharge support integrated between hospital and public health center

5. Infant Feeding Recommendations

In alignment with WHO recommendations (*WHO 2023c*), the SIN, the SIP, and the AIBLUD confirm their opinion stated in the previous Position Statement (*Davanzo et al., 2015*), in that exclusive breastfeeding should be continued up to age 6 months, at which time appropriate supplementation can be introduced while breastfeeding is continued up to age 2 years or older, as desired by the mother and child.

6. Training of Healthcare Providers, Neonatologists, and Pediatricians

Knowledge about breastfeeding and how to provide empathetic support to nursing mothers can be acquired via pre- and postgraduate training courses, as well as through in-service continuing education. Learning material is furnished in standardized modules explaining the biology and physiology of breastfeeding and the clinical management of common problems (TAS *et al.*, 2020; Mulcahy *et al.*, 2022; Hookway & Brown, 2023; Davanzo *et al.*, 2025b). Regular courses for operators in maternal care should be obligatory, just like other training considered necessary for professional education. Current legislation leaves it to the discretion of medical schools to set their course curricula (Law 15/05/1997, n. 127; [## 7. Interaction with Nontraditional Families](https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:1997-05-15;127!vig=)

Interaction with nontraditional families (e.g., nonbinary couples, surrogate mothers, LGBTQ+ families) about breastfeeding may present challenges that require specific preparation and communication skills (MacDonald *et al.*, 2016). Transgender men (males with 46, XX karyotype assigned female at birth [AFAB]) and transgender women (females with 46, XY karyotype assigned male at birth [AMAB]) while under gender-affirming hormone therapy (GAHT) for individuals transitioning to male or female, respectively, can choose to breastfeed and can produce milk without having given birth. Nevertheless, among the many factors entering the equation is previous breast surgery.

One of the protocols for producing milk for adopted children is the Newman-Goldfarb protocol of the Canadian Breastfeeding Foundation; https://www.canadianbreastfeedingfoundation.org/induced/regular_protocol.shtml, under which hormone therapy is combined with breast stimulation with the use of a milk pump and administration of domperidone at the suggested dosage >30 mg/die, is currently considered to carry an increased risk of arrhythmia and sudden death (Drugs and Lactation Database, 2026).

While GAHT with testosterone in transgender men has no undesired effect on milk (Oberhelman-Eaton *et al.*, 2022), it can interfere with prolactin production according to a survey by Tahir (2025). Transgender women rarely produce milk and are unable to breastfeed. Furthermore, breastfeeding has a symbolic value in families that have initiated gender affirmation treatment (Tahir *et al.*, 2025). Use of language that does not respect a person's gender identity may evoke/worsen gender dysphoria; for example, "parent" is preferable to "mother" or "father". Similarly, use of the word "breast", associated with binary identity, should be replaced with the accepted term "chestfeeding".

8. The Mother-Child Dyad and the Management of Hospital Care

Perinatal care should be organized so that it promotes breastfeeding through the implementation of postnatal care personalized to the needs of the mother-child dyad: skin-to-skin contact, rooming-in, and early, exclusive, and on demand breastfeeding (*Gosdin et al., 2025*). Central to the application of good practices is proper staff training and family education.

8.1. Skin-to-skin contact and sudden unexpected postnatal collapse

Skin-to-skin contact between mother and child is recommended after vaginal and cesarean delivery (*Pérez-Jiménez et al., 2025; Martínez-Hortelano et al., 2025*). Contact should be initiated within the first 2 hours of life and continue until the end of the first breastfeeding session. In fact, this promotes mother and child bonding, facilitates the initiation (*Jaafar et al., 2016 et al., Karimi et al., 2019*) and duration (*Karimi et al., 2019; Moore et al., 2025*) of breastfeeding, reduces baby crying and stress, stabilizes glycemia levels, improves body heat control and cardiorespiratory stability, and stimulates oxytocin release. Skin-to-skin contact should be encouraged while in the delivery room and on the ward, while checking to prevent sudden unexpected postnatal collapse (SUPC) (*Task Force SUPC, 2023*). While the causes of SUPC are unclear, measures can be taken to avert known risk factors. During pregnancy and post-partum, families should be educated about the importance of practicing skin-to-skin contact safely: the likelihood of smothering the infant, distraction while on a cellphone, and co-sleeping. After breastfeeding, the baby should be placed supine and watched while co-bedding. Family participation is key to ensure safe sleeping conditions: continuous surveillance, use of SIN observation charts in the delivery room and while rooming-in (*Task Force SUPC, 2023*). The baby should be watched during the first 10-15 minutes of life to determine whether it's safe to continue skin-to-skin contact. Continuous surveillance during the first 2 hours of life, appropriate for the circumstances, should focus on the mother and the baby's position on her chest (*Task Force SUPC, 2023*). Should the mother's condition or the organizational circumstances not allow safe skin-to-skin contact, it should be interrupted and the baby laid supine in a crib next to the mother's bed or another caregiver called to monitor the situation. All neonates, including those separated from the mother should be evaluated during the first 2 hours of life. Moreover, support of the mother-child dyad should continue during rooming-in and length of hospital stay. Absent particular clinical indications, hospital staff should look in on mother and baby at least twice between the third and the twelfth hour of life, when the newborn is in a transition from the intra- to the extra-uterine life and parents are particularly tired, and at least once every 8 hours until discharge and monitor infant vital signs (skin color, respiratory rate, reactivity) (*Task Force SUPC, 2023*). If the mother is unable to perform skin-to-skin contact in the delivery room, the father or another caregiver substitute for the mother with the same benefit for the newborn and with less neonatal stress (*Kuo et al., 2022*).

8.2. Rooming-in

Under normal or low-risk conditions, rooming-in is a part of standard care and appropriate for most mothers and their babies (*Ministero della Salute* 2024) (**Table 4**). Rooming-in promotes the initiation of early breastfeeding, though not necessarily its duration, frequent latching to the breast (≥ 8 -10 times/day) in response to early signs of hunger, colonization of the baby's gut with the same microorganisms residing in the mother's gut, and, more in general, fosters the mother-child relationship and bonding consistent with the zero-separation objective (*Bergman, 2019*). Rooming-in lets mothers practice caring for their baby with staff support and supervision, encourages autonomy, and promotes an awareness of her parenting skills (empowerment). It also helps hospital staff quickly identify the mother's difficulties in managing her baby, and thus ensures a safer hospital discharge.

Rooming-in should be backed by clinical support and empathy. A caregiver can help boost the mother's confidence in handling her baby. For some women, however, rooming-in may feel overwhelming due to physical and emotional fatigue. Hospital staff should individualize care, assess needs, and adjust rooming-in accordingly.



Table 4. Correct Practices and Procedures for Safe Rooming-in.

Healthcare provider training
▪ Conduct training courses on the management of rooming-in and active family involvement in neonatal care
Inform, support, and accommodate parents/family/caregivers
▪ During prenatal encounters, delivery, postpartum stay, and outpatient visits, information should be given about how rooming-in is organized, the expected staff support, hospital routine, neonatal care, importance of skin-to-skin contact and breastfeeding, infant positioning while nursing so that the airway remains free, safe sleeping positioning of the infant ▪ Create educational material, print or digital, and hang posters in all patient rooms and common areas in wards with perinatal services, on safe care, and risk prevention of Sudden Unexpected Postnatal Collapse (SUPC), accidental falls, bedsharing, and surface sharing ▪ Offer the choice of placing the newborn in the neonatal nursery or the special care nursery if the mother is tired or rooming-in is not an option ▪ Let the mother choose a caregiver, who will have free access to the ward and can provide continuous physical and emotional support day and night ▪ Provide for a hospital aid during the first day postpartum and into the first night, particularly for primiparous mothers with little family support or those who had a cesarean (CS) or difficult delivery or show signs of stress or difficulty managing their baby
Provide for quality sleep for mother and baby
▪ Maximize comfort and promote good sleep hygiene (comfortable bed, adjustable lighting, comfortable ambient temperature, noise reduction, limit sleep interruptions by visitors, exams and procedures that can't be delayed)
Protect newborn safety with measures to keep the environment uncluttered and define care pathways
▪ Reduce environmental risk (e.g., fall protection) according to hospital or ward protocols ▪ Follow the recommendations for preventing SUPC according to SIN Task Force ad hoc guidelines and the protocol for monitoring the newborn during the first 2 hours of life and then during rooming-in ▪ Before considering rooming-in, evaluate the mother's and infant's clinical conditions ▪ Define care pathways for mothers at psychosocial risk (e.g., mothers with known substance abuse or mental health disorder) ▪ Record and analyze adverse events to improve quality of care

While co-bedding during rooming-in is a practical solution that can foster breastfeeding and contact with the baby, co-sleeping in the same bed is not advised; instead, the baby should be laid supine in a crib next to the mother's bed (*Task Force SUPC, 2023*). At home, if mother and child share the same bed, despite warnings against co-sleeping, families should be educated about the risk of SUPC and sudden infant death syndrome (SIDS) associated with co-sleeping (*Jullien, 2021*), such as the cuddle curl, in which the baby lies supine next to the parent curled around them (*Wiessinger et al., 2014*).

Another problem is the baby falling out of bed, risking head fracture and intracranial hematoma. Scant literature reports good prognosis; however, appropriate prevention protocols should be applied in hospital and at home to discourage co-sleeping and encourage use of a crib or sidecar bassinet. Additionally, the family should be provided with written information. While in hospital recovering from CS or sedation, the mother should be checked regularly, particularly at night (*The Joint Commission, 2018*).

8.3. Neonatal Jaundice and Breastfeeding

An important distinction is made between physiologic jaundice, jaundice due to low breast milk intake and resulting dehydration usually during the first weeks of life, and breastfeeding-associated jaundice in thriving babies (Flaherman & Maisels. 2017). **Table 5** presents indications for promoting exclusive breastfeeding in babies with jaundice (Davanzo 2025c). Continuous phototherapy may have adverse effects on the baby, necessitating the separation of mother and child. Therefore, cyclic phototherapy is the preferred choice of treatment. Recent studies have shown cyclic phototherapy to be more effective than continuous (Arnold et al., 2020; Dani et al., 2024), thus facilitating breastfeeding and contact between mother and child between phototherapy sessions (Davanzo et al., 2025a; 2025b).

Table 5. *Management of Breastfeeding in Newborns with Jaundice.*

- Phototherapy should be performed whenever possible in the mother’s hospital room to avoid separation between mother and infant
- The infant should be put in an incubator if temperature cannot otherwise be maintained, according to ambient temperature and strength of the phototherapy lamp
- Continuous phototherapy can be substituted with cyclical/intermittent phototherapy when total serum bilirubin (TSB) levels are more than 2 mg/dl lower than the threshold for blood exchange transfusion
- Newborns with hemolytic jaundice, which usually requires therapy initiated on the first day of life, should not receive cyclical phototherapy, nor should newborns with gestational age <35 weeks
- On a cyclic 3-hour schedule, phototherapy should be suspended for 1 hour every 2 hours of phototherapy
- Cycle suspension should take into account for when the newborn shows signs of hunger
- If the newborn continues sleeping and does not wake spontaneously for feeding, phototherapy can be suspended after 2 hours to create a stimulus for the newborn to latch to the breast
- During suspension of phototherapy:
 - The newborn is taken from the incubator
 - Eye protection is removed to facilitate eye contact with the mother
 - Latching to the breast is promoted
 - Skin-to-skin contact between mother and child will stimulate milk production
- Newborns with jaundice breastfed at least 8 times/day and adequately hydrated should not receive routine formula supplementation
- Insufficient intake of maternal milk is suggested if <8 breastfeeding/day or weight loss (>8–10% of birthweight) with hypernatremia (>145 mEq/l), which can lead to hyperbilirubinemia. In such cases the number of feedings should be increased or supplemented with the mother’s expressed milk and/or with formula to reduce TSB

8.4. Baby Friendly Hospital Initiative and the Progetto Politica Aziendale sull'Allattamento

The Baby Friendly Hospital Initiative (BFHI, UNICEF – WHO) adopted by many hospitals worldwide serves as the global standard for organizing and delivering neonatal care services to promote, support, and protect breastfeeding. Alongside the BFHI, the Progetto Policy Aziendale sull'Allattamento [PAA, *Hospital Policy on Breastfeeding Project*] was designed to foster good practices supporting breastfeeding and apply them in the delivery of neonatal care services in Italy. The PAA project is conducted by healthcare providers with a focus on drawing up evidence-based organizational protocols.

8.4.1. Baby-Friendly Hospital Initiative

Promoted jointly by the World Health Organization (WHO) and UNICEF, the BFHI is intended to make hospitals more effective in promoting, protecting, and supporting breastfeeding. It is based on the 10 Steps (2018 revision) and good hospital practice necessary for achieving them (WHO & UNICEF, 2018). BFHI requires a cultural change in the healthcare organization to reach a target of at least 80% of mothers exclusively breastfeeding, which is considered the gold standard of care. Since its international launch in 1991, nearly 30 hospitals in Italy have been accredited by UNICEF following an external evaluation.

8.4.2. Progetto Politica Aziendale sull'Allattamento

A survey conducted by the Technical Board on Breastfeeding of the Ministry of Health (TAS 2014) reported that exclusive breastfeeding at hospital discharge from maternity hospitals ranged between 20 and 97%. Given this statistic and the few BFHIs in Italy to date, SIN, SIP, jointly with other scientific societies (SINUPE, AOGOI, SIGO, SIPINF, SININF), professional associations (FNOPO, FNOPI), and parent organizations (Vivere Onlus) launched the PAA project 2023 (Davanzo *et al.*, 2024a; 2025d). It is currently implemented in about 30% of maternity hospitals across the country. Drawing on the principles of BFHI, albeit simplified, the PAA project requests hospitals aim for higher breastfeeding rates. The project has demonstrated its effectiveness by raising the exclusive breastfeeding rate at hospital discharge (Davanzo *et al.*, 2026) and by expanding the number of hospitals offering a standardized neonatal breastfeeding care service to 57 within 2 years. The project does not include site visits for supervision or external evaluation of its objectives for promoting breastfeeding. Instead, self-evaluation was considered sufficient for the project's purposes (Araújo *et al.*, 2019).

9. Breastfeeding in Infants with Special Needs

9.1. Neonatal intensive care unit

Early separation of mother and child is harmful for both the child (whether healthy or with special needs) and the parents because it alters the biological and emotional bond that develops in the mother-child dyad during pregnancy. Separation can impact the mental and physical health of the baby and family by interfering with breastfeeding, development, and attachment. All neonatal intensive care units (NICUs) should allow parental access 24/7 to ensure that a baby with special needs receives the short- and long-term benefits of parental presence (**Table 6**). In addition, recreational space should be provided to accommodate parents and families of assisted babies.

Owing to its nutritive, bioactive, and functional properties, digestibility, enzyme content, growth factors, and staminal cells, maternal milk should be considered the gold standard nutrition for all newborns, especially the preterm (*Parker et al., 2021*) and low birthweight (<2500 g), and those with sepsis, surgical conditions or congenital heart disease (*Elgersma et al., 2022*).

NICUs should develop breastfeeding support programs to ensure for optimal growth and development of all babies (*Davanzo et al., 2017*). To this end, multidisciplinary training and family-centered care is key. For example, to foster bonding, the WHO recommends that all premature or LBWI receive continuous skin-to-skin contact and prolonged kangaroo care over 24 hours (ideally for at least 8 out of 24 hours), starting immediately after birth or as soon as possible (*WHO 2025*). The kangaroo care microenvironment is optimal for the newborn and an excellent method of care.

Table 6. Benefits of parental free access to the NICU and their involvement in caring for their infant.

Short-term benefits
▪ Increased involvement of parents in the care of their child improves the parent-infant bond ▪ Less stress for the newborn and parents ▪ Increased neurovegetative stability in the newborn ▪ Longer duration of skin-to-skin contact ▪ Increased breastfeeding rate ▪ Better nutritional intake and newborn growth ▪ Lower neonatal morbidity ▪ Shorter hospital stay
Long-term benefits
▪ Better neurobehavioral development ▪ Better parent-infant interaction after hospital discharge ▪ Better mental well-being of the parents ▪ Lower NICU costs ▪ Lower rate of hospital readmission

Kangaroo sessions should last at least 90 minutes (*Artese et al., 2023*) and continue intermittently (*Davanzo et al., 2013*) during the NICU stay and in the sub-intensive care unit (*Tham et al., 2026*). Kangaroo care strongly influences breastfeeding: increasing breast access to the baby and the duration of exclusive breastfeeding (*Want et al., 2021*), reducing anxiety and postpartum depression in the mother (*Pathak et al., 2023*), and acting as a potent galactagogue. A previous study reported that only 62% of NICUs in Italy allowed 24/7 parental visiting hours and that kangaroo care, though available in 94% of hospitals, had restricted visiting hours and not all permitted the baby's father unlimited access (*Artese et al., 2021*). Having kangaroo care listed on the clinical charts could help increase its availability.

There is ample evidence for the transition of babies from kangaroo care to direct breastfeeding (*EFCNI, 2022; Perugi et al., 2024; WHO 2025a*). Direct breastfeeding is an important objective during hospital stay and should follow on from giving expressed milk (*Davanzo et al., 2009*). Mothers who achieve proper correct latching are more likely to breastfeed successfully and for longer.

9.2. Donor Human Milk and Donor Human Milk Banking

When the mother cannot provide milk, the use of human milk from the donor human milk bank is especially important for vulnerable newborns (*Arslanoglu et al., 2023*). Donor human milk undergoes pasteurization, which reduces the activity of its biological and immunological components. Nonetheless, it maintains its protective properties, albeit diminished, making it an advantageous alternative for vulnerable newborns (*Meier et al., 2017*), as documented by the reduced incidence of necrotizing enterocolitis in preterm babies fed donor human milk compared with those fed commercial formula.

Moreover, donor human milk is better tolerated than commercial formula. Enteral feeding can start earlier and increased more rapidly, thus shortening the duration of parenteral nutrition and central venous line. Besides the lower incidence of infection, these benefits are associated with shorten hospital stay and lower hospital costs. Donor human milk is also a viable choice for newborns undergoing surgery or those with congenital heart disease. The State-Regional Conference approved and published in the Gazzetta Ufficiale della Repubblica Italiana on 26 February the document entitled "Disponibilità del latte umano donato in Italia" [Availability of Donor Human Milk in Italy] drawn up by an ad hoc group of representatives mandated by the AIBLUD, TAS, SIN, and Vivere Onlus. The document details the optimization and regionalization of human milk banks across the country (https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2025-02-26&atto.codiceRedazionale=25A01192&elenco30giorni=false).

Voluntary wet nursing or breastmilk sharing between female family members and acquaintances is considered by the WHO as an option during health emergencies or human interventions (*Victoria et al., 2025; USAID et al., 2025; Coutsoudis et al., 2026*) when neither the mother's milk nor donor human milk is available. Apart from these circumstances, breastmilk sharing is not recommended or supported, particularly in hospital settings, due to the risk of HIV transmission. This risk exists even when a donor tests HIV seronegative, as she may be in the "window period" after exposure, during which the virus is not yet detectable in the blood (*Humphrey et al., 2010*).



10. Nutrition during Breastfeeding

10.1. Diet

Diet during breastfeeding is often presented in restrictive or prescriptive terms in the belief, scientifically unfounded, that some foods induce milk production while others inhibit or may be more pleasing and healthy for the nursing infant. Both the fetus and the nursing infant experience a variety of gustatory and olfactory stimulation on a sensory continuum. In fact, through the amniotic fluid the fetus “tastes” and “memorizes” the food the mother has eaten during pregnancy and will encounter anew in the mother’s milk. A nursing mother will know how to nurse her baby without needing to follow a special diet or take dietary supplements, which may simply have a placebo effect. The extra daily caloric needs of a breastfeeding mother compared to a non-breastfeeding woman matched for age and body-mass index (BMI) is 330-500 kcal (*EFSA 2010; SINU 2024*). Hydration, too, should not be exaggerated: an additional 700 ml/day is usually sufficient (*EFSA 2010; SINU 2024*).

Iron supplementation, absent previous anemia, is unnecessary since the need for added dietary iron during breastfeeding is a mere 9 mg/day, due to lactational amenorrhea, versus 18 mg/day in women of reproductive age not breastfeeding and 27 mg/day during pregnancy (*CDC 2025*).

Breastmilk from women following a well-balanced vegan or vegetarian diet has a sufficient composition of nutrients (*CDC 2025*). When a balanced diet cannot be maintained, vitamin B12 supplementation for vegan mothers is often recommended, which may benefit vegetarians who do not consume dairy products or eggs (*Melina et al., 2016*).

An adequate intake of docosahexaenoic acid (DHA) is achieved with the consumption of at least two portions per week of fatty fish (mackerel, salmon, eel, large eel, herring) or semi-fatty fish (mullet, surmullet, carp, sardines) (*Fondazione Confalonieri Ragonese, 2018*).

10.2. Alcohol Consumption

Alcohol passes rapidly from a mother’s bloodstream to her breastmilk; owing to its neuro-depressive effect, alcohol consumption is not advised in breastfeeding women. Fetal damage due to alcohol consumption during pregnancy (fetal-alcohol syndrome) is well documented, however, few studies on alcohol consumption and breastfeeding have been published to date (*Wilson et al., 2017*). The general effects of alcohol are well known: poor sleep, cognitive disturbances in speaking, writing, and reading comprehension (*Gibson & Porter, 2020*). Data are scarce on its effects when consumed in moderation or occasionally (*Haastруп et al., 2014*).

The CDC indicates limiting intake to one glass of wine (125 ml) or beer (330 ml) or a shot of spirits (40 ml) over 24 hours. The CDC also recommends waiting 2 hours before the next breastfeeding session, allowing the alcohol level in the breastmilk to fall (*CDC 2025*). These recommendations are given to help a nursing woman decide about drinking safely. In brief, all alcoholic beverages should be avoided during breastfeeding.

10.3. Caffeine

A nursing infant receives about 1.5% of caffeine from breastmilk; caffeine peaks about 30-120 minutes after intake by the mother. Excessive doses can cause irritability, agitation, and poor sleep in the baby. Total caffeine intake during breastfeeding should not exceed 200 mg/day, equal to about 2-3 cups of espresso coffee (each cup contains about 80 mg) (EFSA 2015; Purkiewicz *et al.*, 2022; ANDOS *et al.*, 2023). By comparison, a caffeinated beverage (330 ml) contains about 35 mg, 100 g milk chocolate 20 mg, 100 g dark chocolate 60-80 mg, and a teabag 35 mg.

11. Insufficient Maternal Milk Production

Nursing mothers often worry they may not produce enough milk. Low breastmilk production should be confirmed by objective findings, such as slow growth or diuresis (Table 7).

Table 7. Criteria for Determining Low Milk Supply.

- Weight loss (>10%) during the first days of life with hypernatremia
- Weight at 3 weeks still below birthweight (regain usually within the first 2 weeks)
- Poor growth according to the 2006 WHO growth charts
- Low urine output: <5–6 wet diapers/day starting from the fourth day of life

Low milk production is often due to inadequate breast emptying caused by incorrect or infrequent latching and ineffective use of the milk pump. Staff should check for correct latching during breastfeeding sessions, starting from the first hours of life through to lactation over the following days and observations noted on the mother's breastfeeding chart (Jensen *et al.*, 1994; Tornese *et al.*, 2012). Since anxiety and stress can interfere with milk production, it is important that staff employ empathy when encouraging and educating the mother about the physiology of lactation. When milk production is low, it is often helpful to reset a breastfeeding routine that feels best in duration and frequency, besides providing the mother with practical advice and psychological support. There is insufficient scientific evidence for the use of breastmilk galactagogues.

A common concern about low milk supply arises during a lactation crisis when the infant suddenly seems unsatisfied with feeding. A simple approach is to increase the frequency and duration of breastfeeding, while reassuring the mother and minimizing anxiety (Pérez-Escamilla *et al.*, 2023). The crisis is often wrongly interpreted as a growth spurt, for which there is no biological basis during the first 6 months of life (Davanzo & Baldassarre, 2024b).

12. Exclusive Breastfeeding and Complementary Feeding

Complementary feeding while breastfeeding follows the child's progression toward self-feeding. A complementary feeding milestone is 6 months according to WHO recommendations for the general population (*WHO 2023a; 2026*). Scientific society guidelines on childhood nutrition suggest introducing semi- and solid foods during the so-called tolerance period at 4-6 months of life (*Fewtrell et al., 2017; ESPGHAN 2024*); it is not universally accepted, however, nor is it recognized by all scientific societies (*Caroli et al., 2022*). Complementary feeding should be started when mother and child feel it appropriate, the child is curious to taste food, is able to sit upright while being aided, is able to move food in the mouth, chew and swallow, and the tongue thrust reflex has disappeared at about the same time.

13. Safe Sleeping and Sudden Infant Death Syndrome

Breastfeeding, even when not exclusive, reduces the risk of SIDS (*Hauck et al., 2011*). To further reduce the risk and facilitate nighttime feedings, mother and child should share the same bedroom. For the first 6 months of life, the infant should be laid to sleep supine in a separate crib (*Jullien, 2021; Moon et al., 2022; Tappin et al., 2023*). Before hospital discharge the mother should be provided with information about safe nighttime breastfeeding sessions. For the mother it may be comfortable to lie down on her side for breastfeeding, then lay the infant supine in the crib emptied of pillows or other objects.

14. Post-discharge Breastfeeding Support

After hospital discharge, mother and child may need support in learning the best ways to breastfeed. To do this, integrated maternal and child health services will involve the neonatologist/pediatrician, midwife, and pediatric nurse, family pediatrician, outpatient clinic staff, and association volunteers in the community. A healthcare plan should be developed for mothers and children with special needs who will require added support for their particular healthcare needs (e.g., prematurity, maternal or neonatal illness) or their sociocultural circumstances with the aid of cultural mediators as necessary.

The organization of outpatient clinics, community health services and family pediatricians should be given time and space for breastfeeding to foster a sense of community, comparison and help between equals, evaluation of breastfeeding sessions and the support thereof. Home visiting (*Cheng et al., 2019*) and telemedicine technologies can further enhance professional support during follow up.

15. Telesupport and Breastfeeding

Telemedicine provides for support via video connection. It can be part of follow-up after NICU discharge or for mothers with healthy babies but still have questions. Telemedicine is particularly advantageous when traveling to a hospital is inconvenient or impossible. Furthermore, it serves as an intermediate mode of communication between a simple telephone call and a hospital visit. Telemedicine platforms should have adequate digital privacy systems in place.

Telemedicine, either in synchronous (videocalls, videoconferences) or asynchronous mode (SMS, app, online platforms) grew rapidly during the SARS-CoV-2 pandemic (*Chuo et al., 2022*). Remote consultation, especially in complex situations or difficult access to services, has proven efficacious in increasing the prevalence and duration of breastfeeding (*Hubschman-Shahar, 2022; Gavine et al., 2022*) and has gained acceptance by parents and healthcare providers alike.

National guidelines for the delivery of telemedicine services (Conferenza Stato Regioni 2020, Decreti del Ministero della Salute, 21 September and 30 September 2022) indicate the requirements, the healthcare providers involved (e.g., physicians, nurses, midwives, psychologists), the skills set, and the training program objectives for their operation. For telemedicine support, SIN has focused on key elements such as organizing video consultations, training healthcare staff, defining visit structure and durations, ensuring privacy protections, establishing follow-up and/or specialist referral (e.g., breast specialist), and distinguishing cases suitable for telemedicine from those requiring in-person care (*Davanzo et al., 2024*).



16. Hospital Readmission

Hospital readmission of the mother or the baby may mean that the two will be separated and that breastfeeding will be interrupted (*Bartick et al., 2021; TAS 2021*). For babies hospitalized in an infant ward or a NICU, care protocols and policies should be in place that protect the mother's and the infant's rights to be near one another and to breastfeed, as necessary. **Table 8** presents the common barriers to breastfeeding during an infant's hospital stay and the potential means to overcome them. Treatment for the infant's illness should be integrated with the support and maintenance of breastfeeding. If the infant cannot attach to the breast, protocols should indicate how to maintain milk production and how to express breastmilk. This implies proper staff training, educating the mother and providing for a sufficient number of pumps for milk extraction. Generally, two pumps per maternal/infant ward and one pump for every three newborns in the NICU should be available.

Potential transmission of infection by the mother should be considered realistically. Specific protocols should be in place that ensure mother and baby remain together and that breastfeeding can continue with the aid of a caregiver if needed (*TAS 2021*). This type of approach fosters psychological well-being in the mother and may help to avert feeling of anxiety and depression during hospitalization (*TAS 2023*).

Table 8. *Barriers to Breastfeeding of Hospitalized Children.*

Difficulty	Strategies/solutions/comments
Mother has limited access to ward Separation of mother and child	Children's wards should have a policy in place that protects a mother's right to be with her child.
Mother does not know how to express milk	A protocol on milk expression to stimulate milk production should be applied when a baby cannot nurse at the breast. The protocol should describe how to express, store, and give milk.
No milk pump available	Ensure adequate supply of milk pumps.
Stress and mother's worries about her baby's health inhibit release of milk, leading to breast engorgement and low milk supply	Staff should provide emotional, motivational, and practical support to maintain the mother-child bond and breastfeeding so that common problems can be managed.
Breast refusal, difficulty latching and sucking due to dyspnea, fever, vomiting, diarrhea, pain	Give the baby expressed milk using a clinically appropriate method (syringe, spoon, cup, nasogastric tube, bottle) to ensure adequate oral/enteral nutrition.
Fasting or strict feeding times when the baby undergoes instrumental exams or surgery as part of treatment	Collaboration with parents helps manage this situation in the ward. Breastfeeding or giving expressed milk or commercial formula should be done as needed, while attentive to early signs of hunger. Duration of fasting before procedures or surgery should be set within internationally accepted minimum limits endorsed by the SIP (Salvatori et al. 2024): 3 h or 4 h before anesthesia or surgery or gastrointestinal tract exam in nursing babies and babies given commercial formula, respectively.

17. Expressing Breastmilk

Mother and child wards should have milk expression protocols in place. Milk can be expressed either by hand - and taught the mother within the first 36 hours postdelivery or before lactation onset to ensure she can self-manage as necessary – or by an electric breast pump, which is usually preferable over manual expression whenever it is not sporadic but ongoing (*Eglash et al., 2017*). Safe milk expression involves correct hygiene and a quiet place and preparation: stimulating let-down by gently massaging the breasts in a circular motion with the fingertips toward the nipple to stimulate the milk ejection reflex. Indications for expressing milk are listed in **Table 9**.

Table 9. *Indications for Expressing Human Milk.*

- Initiation/maintenance or increase of milk production when the baby is unable to stimulate or adequately drain the breast, for instance, in preterm babies (LBWI) or those with very low birthweight (VLBW), hypotonic baby, NICU admission
- Stimulation of lactation to compensate for the lack of/reduced suction at the breast by a baby with difficulty latching, while waiting for the problem to resolve (e.g., baby with broken collarbone, pain while breastfeeding in certain positions, ankyloglossia, cervicofacial asymmetry, congenital torticollis)
- Drainage of an overfull or engorged breast
- Nipple pain on latching to the breast (not otherwise manageable) due to painful cracks or other nipple disorders or sequelae of mammoplasty or radiotherapy. Manual milk expression is preferable in such cases.
- Temporary suspension of breastfeeding (assumption of medications or undergoing scintigraphy with radionuclides incompatible with breastfeeding) to prevent breast engorgement or reduced milk production
- Separation of mother and baby for whatever reason, such as mother or baby hospitalized for treatment and unable to breastfeed
- Store milk until mother returns from work or drain the breast due to breast tension (during separation of mother and baby)
- Pasteurize mother’s milk when dictated by medical concerns
- Donation of expressed milk to a milk bank
- Milk expression during the final trimester of pregnancy may be indicated for mothers with diabetes in order to have a supply of colostrum if needed to treat neonatal hypoglycemia [*Forster et al., 2017*] and for overweight or obese mothers (BMI≥25) to manage the common delay in lactation [*Johnsen et al., 2021; Demirci et al., 2023; Estafanous et al., 2023; Cuffe et al., 2024*]. Women at low risk of premature delivery can express milk using the press/compress/relax technique: 3–5 min/session, 2–3 times/day, starting from week 36 or 37 gestation. The milk is collected into 1-3 cc syringes (equipped with a cap) placed in a plastic bag and stored in a freezer

A detailed explanation of how to express milk by hand or by pump is given in the TAS documents (TAS 2019; 2021) and demonstrated in explainer videos:

- <https://www.youtube.com/watch?v=0CJBHXiJ1OQ>
- www.illitalia.org/risorse/video
- <https://med.stanford.edu/newborns/professional-education/breastfeeding/hand-expressing-milk.html>.

For newborns with special needs, such as preterm births or other situations, milk should be expressed within 3 to 6 hours after delivery. During the stay in the infant ward, milk should be expressed for 100-120 minutes over 24 hours divided into eight sessions (at least six) (Parker et al., 2020; Ru et al. 2020), preferably within a period of 18-19 hours to allow the mother a night's rest. Each session should be extended for 1 to 2 minutes after the last drops have been expressed to make sure that the breast has been sufficiently drained and to reduce the concentration of feedback inhibitor of lactation (FIL). Expression with an electric pump can be deemed effective if ≥ 20 ml are obtained per session for three consecutive sessions and if following a full-term delivery ≥ 600 ml/day can be collected by day 7 postdelivery or if following preterm delivery ≥ 500 ml can be collected by day 14 postdelivery (Fewtrell et al., 2016; Hoban et al., 2021).

An electric breast pump that comes with a kit for extracting milk from both breasts simultaneously is a more convenient model because it saves time and promotes milk production (Prime et al., 2012). In addition, models that reproduce the newborn's multiphase suction pattern are more efficient. To prevent pain during extraction, the cup size should provide the right fit to the breast and the vacuum should be set to a comfortable level (Meier et al., 2012; 2016).

Expression is easier in situations that help release oxytocin: skin-to-skin contact, having the newborn close by or simply looking at the baby's photo. If the newborn is in the NICU, milk expression should be done near the incubator/cradle. Expressed milk that appears discolored (greenish, pinkish, brownish) is due to small amounts of blood present and is not harmful for the newborn.

18. Storing and Administering Expressed Milk

Methods for milk storage and use must be described in hospital protocols for safe hygiene (**Table 10**).

Table 10. *Storage of Maternal Milk.*

- Milk amounts expressed over 24 h should be kept in separate containers and refrigerated
- The refrigerated milk collected during the day should be poured into small containers for freezing
- Before freezing, the containers can be filled to about 2 cm from the rim to allow for expansion of milk during freezing
- Containers should be labeled by date and hour by first in-first out order for consumption
- In the hospital, the milk containers should be so labeled as to correctly identify the mother, thus avoiding errors
- Refrigerated milk can be warmed in a double boiler or a bottle heater before use; microwaving is not recommended because of the risk of scalding the baby and the reduced immuno-biological value
- Warmed milk that has not been used should be disposed of and not reused
- Frozen maternal milk should be thawed slowly in the refrigerator (+4° C) or under warm water or in a double boiler. The container lid should be kept closed
- Once thawed, the milk should not be refrozen
- Thawing may change the smell or color of the milk but does not alter its properties nor require bacterial testing
- Warmed milk can be given to the baby with a cup, a syringe, a feeding bottle or a nasogastric tube, depending on the baby's condition and the organization of the maternity ward

Staff should check that mothers have been correctly informed and have received printed instructions. Expressed milk should be kept in glass or food-grade bisphenol-free plastic containers and stored according to the times listed in **Table 11**. If needed, fresh or thawed milk can be stored in thermal bags containing ice packs for up to 24 hours (*Parker et al., 2021; TASIP 2023*). Milk can be kept at room temperature ($\leq 25^{\circ}\text{C}$) for up to 4 hours.

Table 11. *Storage of Human Milk [Parker 2026, adapted].*

	Fresh milk	Frozen milk
Room temperature ($<25^{\circ}\text{C}$)	4 h	
Insulated bag (with ice packs)	24 h	
Refrigerator ($0-4^{\circ}\text{C}$)	96 h	48 h
Freezer (-18°C)	12 months	Not recommended

19. Contraindications to Breastfeeding

Factual contraindications to breastfeeding are rare and are weighed only after careful evaluation of the risks and benefits based on available scientific evidence (**Table 12**) (WHO and UNICEF 2009; Davanzo 2018).

Table 12. Contraindications to Breastfeeding.

Condition	Comment
Classical neonatal galactosemia (galactose-1-phosphate uridylyltransferase, GALT deficit)	-
Maple syrup urine disease	-
Phenylketonuria	A small amount of mother's milk is allowed under a doctor's supervision because of its positive effect on neural development.
Drug therapy with medications incompatible with breastfeeding based on risk assessment according to the LactMed database and e-Lactancia.org. Most are substances used in chemotherapy or radioisotopes, plus a few others	For the length of time a drug is taken or based on radioisotope decay.
Alcohol consumption	While total abstinence may be preferable, occasional consumption in moderation does not appear to have an effect on the baby [Haastrup et al., 2014].
Psychoactive drugs, especially cocaine, also when combined with others, amphetamines, and heroin	The effects of marijuana on breastfeeding are unclear [Ryan et al., 2018].
Certain maternal infections	See section on breastfeeding and maternal infection.

20. Breastfeeding and New Pregnancy

A new pregnancy during breastfeeding may lead to concerns about its potential effects on the health of the mother or the developing embryo/fetus. During pregnancy breast milk changes in composition, becoming colostrum during the third trimester. Nonetheless, its nutritional and immunobiological value as part of complementary diet remains basically unvaried. According to the Italian Ministry of Health (TAS) and the Società Italiana di Medicina Perinatale (SIMP, Italian Society of Perinatal Medicine), a healthy mother can continue breastfeeding during a new pregnancy without worrying about changes in the nutritional value of breast milk or an effect on the unborn child (Cetin et al., 2014).

Moreover, the oxytocin released by suckling during breastfeeding does not induce prematurity; however, it may be advisable to discontinue breastfeeding during the third trimester if fetal growth has slowed or preterm labor is imminent or it is a twin pregnancy (Cetin et al., 2014) (**Table 12**).

21. Contraception during Breastfeeding

The choice of birth control method will take into account its potential health effects on the mother and the child, as well as on lactation (ACOG 2019; CDC 2024; WHO 2025). The lactational amenorrhea method (LAM) is based on the natural effect of breastfeeding on fertility, i.e., elevated prolactin levels block ovulation. As such, it is a temporary family-planning method for women who do not want to use mechanical or hormonal contraception methods. It is 98% effective against a new pregnancy after unprotected sex in amenorrheic mothers (no bleeding for >2 days in the first 56 days since the last birth) fully breastfeeding (every 4 hours during the day and every 6 hours during the night) their baby (<6 months of age) (Kennedy *et al.*, 1989; Pérez *et al.*, 1992).

Nonhormonal birth control methods (e.g., copper spiral intrauterine device [CU-IUD]) and use of physical barriers (e.g., condom, diaphragm) may be the preferred option during puerperium, after breast surgery, multiple or pre-term births, when insufficient milk production is expected. Among hormonal contraceptives, progestin-only pills may be a viable option since they do not interfere with milk production. Within this category are progesterone-only pills (POPs) containing desogestrel or drospirenone, subdermal etanogestrel implants, and medroxyprogesterone acetate (DMPA-IM) injection, which is administered off label as a contraceptive in Italy.

Combined oral contraceptives (COC) containing estrogen and progestin are available in a variety of formulations (oral, vaginal ring, transdermal patches) but should not be used during puerperium because of the risk of thrombosis and because, unlike the progestin contraceptives, of their inhibitory effect on milk production (Goulding *et al.*, 2018; WHO 2025b). The use of progestin pills or COCs has no adverse effect on nursing babies (Melka *et al.*, 2020). Emergency hormonal contraception pills containing levonorgestrel (LNG) and ulipristal acetate (UPA) are considered safe in nursing mothers. LNG is administered in a single 1.5 mg dose (Polakow-Farkash *et al.*, 2013). UPA is a selective progesterone receptor modulator (SPRM) that is effective up to 5 days after unprotected sex. Its oral bioavailability and passage into maternal milk is scarce, making it safe during breastfeeding (Rudzinski *et al.*, 2023). While the Italian Medicines Agency (AIFA) recommends suspending breastfeeding for 1 week after administration, the US FDA mentions no interruption.

22. Medicines and Breastfeeding

Patient information leaflets are a poor source of information about breastfeeding-compatible medications; owing to the lack of scientific studies on drug effects, the inserts give vague information that leaves users uncertain (Arguello *et al.*, 2015).

Nearly 80% of the adverse effects reported in nursing babies refers to drugs acting on the central nervous system or the cardiovascular system which mothers have taken during the first 2 months of the infant's life (Soussan *et al.*, 2014; Anderson *et al.*, 2016).

Drug compatibility with breastfeeding needs to be evaluated via a validated method (TAS/TASF 2018; Davanzo *et al.*, 2017). Accredited online information sources are the LactMed (Drugs and Lactation Database) (<https://www.ncbi.nlm.nih.gov/books/NBK501922/>) or e-Lactancia (<https://e-lactancia.org/>) or the toll-free number of ENTIS-CAV, Ospedale Papa Giovanni XXIII, Bergamo. The final decision resides with the mother, who may decide not to breastfeed although informed of a drug's safety profile. The recent decision by the European Medicines Agency (EMA) to include pregnant or breastfeeding women (ICH-EMA 2025) is expected to generate data for a drug's risk profile during lactation.

23. Radiological Contrast Agents and Breastfeeding

According to a position paper issued by SIRM, SIP, SIN, and TAS (Cova *et al.*, 2014; *Documento Intersocietario 2020*); breastfeeding need not be suspended after IV administration of an iodine- or gadolinium-based contrast agent, whatever the age of the nursing infant (Knipe, 2026).

Differently, if the mother is administered a radionuclide, breastfeeding should be suspended for a period of five times the tracer's half-life, as indicated by the nuclear medicine physician.

24. Tobacco Use and Breastfeeding

Smokers produce less milk and breastfeed less frequently than nonsmokers and are at increased risk of mastitis (Vlachou *et al.*, 2024). Nicotine levels in maternal milk reach three times that in the mother's plasma (Napierala *et al.*, 2016). While this has no apparent effect on the nursing baby, exposure to second-hand smoke has relevant effects on health: increased risk of SIDS and respiratory infection. Women who use e-cigarettes breastfeed longer than women who smoke tobacco but shorter than nonsmokers (McBride & Haile, 2021). Studies on the health effect of e-cigarettes are lacking; however, one study reported neonatal abstinence syndrome in an infant exposed to e-cigarettes during gestation (Bolumen-Lopez *et al.*, 2025). The use of e-cigarettes during breastfeeding is generally disadvised (InfantRisk Center 2025).

25. Substance Abuse

Substance abuse and the legal use of mind-altering drugs prescribed in medical therapy in women of reproductive age raises numerous concerns (Reece-Stremtan & Marinelli, 2015). Data from the UK report that compared with the general population fewer women breastfeed who have a history of drug abuse or opioid maintenance therapy (methadone or buprenorphine) during pregnancy, irrespective of the amount of professional support received and probably due to the characteristics of this category (Goel *et al.*, 2011).

Abuse of mind-altering agents puts the baby at increased risk of neurodevelopmental disorders. Co-existing factors are: low economic status, although substance abuse cuts across socioeconomic levels, low educational level, poor diet, limited access to prenatal care, and use of tobacco and alcohol. Substance abuse places not only women at higher risk of mental health issues and risk of retrovirus infection (HIV, HTLV) and liver disease (HBV, HCV) but also their babies because of mother-to-child transmission of infection.

25.1 Methadone

The babies of breastfeeding mothers in methadone therapy have a lower incidence of neonatal abstinence syndrome (NAS) and less need of drugs for treatment (Welle-Strand *et al.*, 2013). The current approach to NAS comprises drug therapy and attention to the mother-child relationship and the setting where they are treated (Harris *et al.*, 2023). An infant's agitation and restlessness can be managed by arranging for rooming-in and a pleasant and welcoming environment conducive to breastfeeding and the baby's needs (Hodgson & Abrahams, 2012).

The risk of methadone-induced respiratory depression is limited to the assumption of high doses (>100 mg/day) by the mother or in combination with other substances (Anderson *et al.*, 2023). Encouraging the mother to breastfeed in such circumstances is a challenge. Healthcare operators need to know how to deal with the mother's claim

to want to breastfeed, her ability to follow methadone treatment strictly, and her ability to stay away from heroin, amphetamines, and cocaine. Safe breastfeeding needs to be closely monitored, weighing the benefits of breastfeeding and the risks to the infant.

25.2 Opioids

There are various risks associated with the use of opioids (heroin, codeine, fentanyl) and breastfeeding: sedation of the baby's parents, reduced response to the baby's behavior, and increased risk of SIDS.

25.3 Marijuana

Cannabis products contain two primary active compounds: tetrahydrocannabinol (THC) and cannabidiol. THC is the main active psychoactive component, is liposoluble, and rapidly distributes into adipose and brain tissues. Due to its lipophilic nature and the high fat content in human milk, THC concentrations in breast milk can exceed those found in maternal plasma. THC can be detected in human milk within an hour after assumption; it has a half-life of 12-39 hours and a clearance of up to 6 months. Marijuana consumption is generally disadvised during breastfeeding, though data about its effects on nursing babies is lacking [Drugs and Lactation Database 2026]. Like tobacco smoke, exposure to second-hand marijuana smoke increases the risk of SIDS and respiratory disease in babies.

26. Maternal Infections

Tables 13,14, and 15 present an overview of safe breastfeeding and maternal infection (Lawrence & Lawrence, 2021; CDC 2025).

Human immunodeficiency virus (HIV). Breastfeeding by an HIV+ mother is generally discouraged (Ranzani et al., 2025), however, current guidelines differ across industrialized countries (Keane et al., 2025). HIV+ mothers should receive evidence-based, patient-centered counseling (Van Der Wekken-Pas L et al., 2026). Women on antiretroviral therapy (ART) presenting viral suppression and babies receiving postnatal antiretroviral (ARV) prophylaxis to prevent mother-to-child transmission (MTCT) will have a low risk of infection (0.3-1.0%). Mothers informed of the risk of transmission should be supported in their choice to breastfeed (Powell et al., 2023, Abuogi et al., 2024; Bajwas et al., 2026). They should also be screened for substance abuse or mental health disorders (e.g., depression) which may reduce compliance and diminish outcome. In any case, a medical release form must be signed by the mother or family (Appendix).

Tuberculosis. Breastfeeding can be initiated at 2 weeks into drug treatment (CDC 2025), or alternatively, until the Mycobacterium tuberculosis sputum culture is negative (Di Comite, et al., 2016). While mother and baby have been separated, the expressed milk can be given, except in cases of known multidrug-resistant tuberculosis (MDR-TB) or if the mother does not have tubercular mastitis. Older tuberculosis drugs pass poorly with maternal milk and are generally considered safe, whereas data on newer drugs are scarce.

Brucellosis. Vertical transmission is estimated to occur in 15 to 20% of cases, irrespective of the mode of transmission (pregnancy, delivery, breastfeeding) (Huy, 2024). Transmission via maternal milk is repeatedly reported (Dadar et al., 2021; Loftus et al., 2025). Breastfeeding by mothers with untreated brucellosis is unsafe. Current guidelines recommend avoiding breastfeeding until the mother has received effective antibiotic therapy for at

least 48-96 hours (*Evans et al., 2020*). Greater caution is warranted in preterm or immunocompromised babies. Breastfeeding can be discontinued until the mother's infection has been brought under control.

Group B Streptococcus (SGB). Breast milk has a known protective effect against late onset sepsis (LOS) due to staphylococcus infection in preterm babies (*El Manouni El Hassani et al., 2019*), whereas the link between breastfeeding and SGB LOS is less clear. Breastfeeding does not increase the risk of SGB infection (*Ching et al., 2021*), though SGB sepsis or meningitis has been rarely reported in breastfed babies, especially if preterm, by mothers with or without mastitis (*Berardi et al., 2023; Filleron et al., 2014; Miselli et al., 2022*). SGB is isolated in 0.8 to 3.5% of milk samples from asymptomatic mothers with healthy babies (*Kubin et al., 1987; Burianova et al., 2013*). Routine SGB culture in breast milk is unnecessary, as is culture at the first episode of SGB sepsis (*Ching et al., 2021*); instead, culture should be performed in recurrent SGB infection or mastitis caused by SGB.

Table 13. *Infections and Breastfeeding.*

Infection	Opinion	Comment
HIV	Contraindicated in women from industrialized countries (AAP/CDC/ISS)	Women in low-income countries on antiretroviral therapy (ART) are encouraged to breastfeed, whenever the use of commercial formula does not fall under the criteria for being AFASS (<i>Acceptable, Feasible, Affordable, Sustainable, Safe</i>) (WHO 2023b). In industrialized countries, HIV-positive mothers on ART with low-level viremia (<50 copies/ml) can be supported if they want to breastfeed.
HTLV-1 and HTLV-2	Contraindicated	-
HBV (hepatitis B)	Safe if correct prophylaxis is performed	The risk of mother-to-infant transmission via breastfeeding is negligible if the baby has been vaccinated. Delaying initiation of breastfeeding until after vaccination and HBV immune globulin (HBIG) injection is not recommended. Babies should be vaccinated within the first 12 h of life [CDC 2025].
HAV (hepatitis A)	Safe (virus not transmitted with maternal milk)	If maternal infection is recent (<15 days), the baby should be vaccinated or received immunoglobulin (IG) injection.
HCV (hepatitis C)	5% risk of mother-to-child transmission [Ragusa et al., 2020], regardless the type of feeding	While breastfeeding is not a risk factor for mother-to-child transmission [Quek et al., 2024], breastfeeding should be temporarily discontinued if nipples are bleeding or blood is found in the milk [CDC 2025].
CMV	Compatible in term or premature deliveries. Controversially contraindicated in preterm deliveries ≤32 weeks gestation and/or birthweight ≤1.5 kg [Davanzo 2018; Osterholm & Schleiss, 2020]	In babies with birthweight >1.5 kg and/or >32 weeks gestation, CMV infection may be asymptomatic or mildly symptomatic. The decision whether to use fresh maternal milk in preterm babies <32 weeks gestation and/or birthweight <1.5 kg should be based on the protocol operated by the NICU. Many NICUs prefer fresh maternal milk to strengthen protection against infection and reduce risk of necrotizing enterocolitis [Parker et al., 2021], rather than run the risk of postnatal CMV infection and anomalous neurocognitive development. CMV can be eliminated from milk by Holder pasteurization (if available) or freezing the milk to -20° C (less effective). In babies born at term (preterm) by CMV-positive mothers and with congenital combined immunodeficiency (SCID), some studies suggest discontinuing breastfeeding because of the effect a severe CMV infection transmitted via maternal milk could have [Bustamante Ogando JC et al., 2019; Mongkonsritragoon W et al., 2023; Allenspach EJ et al., 2025]. This indication is limited to highly rare cases with a confirmed diagnosis and remains a point of controversy until new studies have clarified the risk/benefit ratio of breastfeeding in such babies [Kelty et al 2019; Walter et al. 2019]. The use of pasteurized or frozen maternal milk is preferable, while the latter is less recommended because it's less effective in eliminating CMV.

The benefits of breastfeeding generally outweigh the risk of SGB transmission when hygiene is maintained and the mastitis, if present, is promptly treated (*Davanzo et al., 2013; Miselli et al., 2022*).

Table 14. *Infections and Breastfeeding.*

Infection	Opinion	Comment
Parotitis	Compatible	-
Rubella	Compatible	-
Measles	Compatible	Masking recommended to prevent spread of droplets, plus handwashing
Chicken pox (VZV)	Compatible, unless onset 2 days before and 5 days after delivery	Onset during peripartum period: 1) separation of mother and child until mother no longer contagious (5-6 days after rash appears) or scabs heal completely; 2) neonatal prophylaxis with varicella-zoster immune globulin (VZIG); 3) expressed milk [CDC 2025] after thorough handwashing and no scabs present on the skin area where the pump was applied
Herpes simplex virus (HSV)	Compatible, unless sores present on the breast	Breastfeeding not recommended from the affected side until breast sores have healed completely
Influenza/ respiratory syncytial virus (RSV)	Compatible	Masking and thorough handwashing during acute phase of infection
SARS-CoV2	Compatible	Separation of mother and baby only if the mother's condition is serious. Masking and thorough handwashing while nursing. Expressed milk can be given
West Nile virus (WNV)	Compatible	-
Ebola virus disease (EVD)	Contraindicated	Breastfeeding after mother has recovered
Marburg virus disease	Contraindicated	Breastfeeding after mother has recovered
Active tuberculosis	Contraindicated if cavitation is untreated	Nursing at the breast can be initiated 2 weeks after tuberculosis therapy has ended

Table 15. Infections and Breastfeeding.

Infection	Opinion	Comment
Brucellosis	Contraindicated only if mother's infection is left untreated [CDC 2025]	Resumption of breastfeeding 48– 96 hours after initiation of therapy.
Malaria	Compatible	Check for compatibility with antimalarials.
Syphilis	Compatible	If breast lesions are present, the milk should be expressed and disposed of. If no lesions are present, breastfeeding can proceed [NIH 2023].
Toxoplasmosis	Compatible	-
Mastitis	Compatible	If the mother wishes to continue breastfeeding, she should use the healthy breast. After antibiotic therapy has been initiated, both breasts can be used.
Breast abscess	Compatible	If the mother wishes to continue breastfeeding, she should use the healthy breast. After antibiotic therapy has been initiated, both breasts can be used.
Candidiasis of the nipple/areola	Compatible	Antimycotic therapy in both mother and baby is indicated.



27. Breast Disorders

27.1 Breastfeeding Pain

A common barrier to breastfeeding, pain should be approached with empathy (Berens et al., 2016). **Table 16** presents the most frequent causes of breastfeeding pain and their treatment. Most often, the pain arises from incorrect latching.

Table 16. Causes of Nipple Pain [ANDOS et al., 2024].

Cause	Symptoms	Therapy
Breast edema	▪ Pain when the milk comes in or subsequently ▪ Associated with milk stasis/engorgement/mastitis	▪ Cold packs (no direct contact with ice) after having drained the breast by frequent feedings or milk ▪ Ibuprofen to relieve inflammation and swelling ▪ Gentle lymph drainage toward the armpit ▪ Pressing on the areola, https://www2.hse.ie/babies-children/breastfeeding/tips-techniques/reverse-pressure-softening/
Nipple fissures	▪ Caused by incorrect latching or ankyloglossia [Dias et al., 2025]. ▪ First pain appears, then skin reddening and cracking, sometimes bleeding ▪ Cracks can become infected with <i>Staphylococcus aureus</i> (lesions with yellow discharge and crusts) or with <i>Candida albicans</i>	▪ Correct problems with latching and suction ▪ Keep nipples dry and fairly but not excessively clean ▪ Change latching position ▪ When session has finished, express a few drops of milk to soothe the nipples ▪ Specific treatment for certain conditions, like cervico-facial asymmetry, congenital neck sprain, tongue-tie. Frenulectomy does not always resolve problems [da Silva 2026] ▪ Stimulate oxytocin release before breastfeeding
<i>Candida</i> infection of the nipple	▪ Shiny, pinkish lesions, sometimes fissures ▪ Intense, burning pain irradiating to the back occurring also between sessions ▪ Often associated with vaginal candidiasis in the mother or oral candidiasis in the baby or diaper rash	▪ Topical miconazole or clotrimazole 4 times/day for 7–14 days ▪ If ineffective, then oral fluconazole ▪ Thorough handwashing and cleaning of the milk pump

Continued on next page

Table 16 *continued*.

Cause	Symptoms	Therapy
Eczema	▪ Skin reddening, crust and vesicle formation with progression to chronic squamous lichenification ▪ Intense burning pain around the nipple and areola ▪ Individual predisposition	▪ Avoid frequent washing with soap, creams containing irritant substances, contact with food residues in the baby's mouth ▪ Topical corticosteroids ▪ Mupirocin ointment if eczema is infected
Raynaud's phenomenon of the nipple	▪ Two- or three-phase change (white, blue, red) of the skin of the nipple due to alternating vasospasm and vasodilatation ▪ Intense burning local or irradiating pain can last over 30 min, sometime also between sessions ▪ Often mistaken for nipple candidiasis	▪ Avoid vasoconstrictors and nicotine ▪ Ibuprofen for pain relief ▪ Heating pads ▪ Vasodilators (nifedipine)

27.2 Breast Engorgement

Breast engorgement can affect either one breast or both due to milk stasis and accompanied by interstitial edema, increased volume, local inflammation (the breast appears warm, enlarged, painful, taut, shiny) with mild fever ($<38.5^{\circ}\text{C}$) lasting up to 24 hours (*Berens, 2015; Mitchell et al., 2022*). Differential diagnosis includes mastitis; treatment relies on relief of symptoms.

27.3 Acute Mastitis and Breast Abscess

Acute mastitis manifests with redness, edema, and pain to one area of the breast accompanied by systemic signs and symptoms including fever (inguinal temperature $>38.5^{\circ}\text{C}$, chills, and flu-like malaise for >24 hours (*Amir, 2014*). Antecedent conditions are cracked nipples and local milk stasis. Nipple piercing adds to the risk of progression to breast abscess (*Lee et al., 2018*).

Mastitis is often associated with *Staphylococcus aureus* infection and less frequently with *Streptococcus* (usually SGB) infection (*Rimoldi et al., 2020; Pileri et al., 2025*). Infection can spread across breast areas. Unless adequately treated, infection can lead to severe sepsis and frequent reinfection (*Mitchell et al., 2022*). Differential diagnosis includes breast engorgement and abscess. Treatment relies on symptom relief with nonsteroidal anti-inflammatory drugs (NSAIDs), application of cold packs, frequent breast drainage (massage, expression) (*Witt et al., 2016; Mitchell et al., 2022*), and antibiotic therapy (**Table 17**).

Table 17. Antibiotic Therapy for Mastitis. All Drugs listed are Compatible with Breastfeeding [*ANDOS et al., 2024*].

Clinical presentation	Ambulatory treatment	In-hospital treatment
Standard	Amoxicillin/Clavulanate 875 mg/125 mg × 3/day for 10-14 days, orally <i>or</i> Cefalexin 500 mg × 4/day for 10-14 days, orally <i>or</i> Dicloxacillin 500 mg × 4/day for 10-14 days, orally	Clindamycin 900 mg IV × 3/day in 10-60 min for 10-14 days <i>or</i> Oxacillin 2 g IV × 6/days in 30 min for 10-14 days. If clinical condition severe, then combination with gentamycin 5 mg/kg IV × 1/day
If allergies known	Clarithromycin 500 mg × 2/day for 10 – 14 days, orally	Clindamycin 900 mg IV × 3/day, In 10-60 min per 10-14 days. If clinical condition severe, then combination with gentamycin 5 mg/kg IV × 1/day
Suspected MRSA	Clindamycin 300 mg × 3/day for 10-14 days, orally <i>or</i> Trimetoprim sulfamethoxazol 800 mg/160 mg × 2/day for 10-14 days, orally (do not take if baby is preterm or with suspected/confirmed G6PD deficiency)	Clindamycin 900 mg IV × 3/day, in 10-60 min for 10-14 days combined with gentamycin 5 mg/kg IV × 1/day <i>or</i> Vancomycin 15 mg/kg IV × 2/die §
>2 mastitis episodes	Therapy based on antibiogram of milk culture	Therapy based on antibiogram of milk or blood culture
No improvement after 48 h of empirical treatment		
Septic state (suspected sepsis)	Hospitalization warranted	Consult protocols for maternal sepsis treatment

§ Vancomycin is suggested as second drug of choice to reduce antibiotic resistance.

When empirical therapy fails to bring relief within 48 hours or more than two episodes of mastitis occur during the course of breastfeeding, the following recommendations should be considered:

1. Perform milk culture to identify the pathogen and initiate targeted antibiotic therapy.
2. Change to antibiotic therapy against methicillin-resistant *Staphylococcus aureus* (MRSA).
3. Perform ultrasound to promptly diagnosis breast abscess, which may be more effectively treated with ultrasound-guided needle aspiration rather than surgical incision. Needle aspiration, also repeated procedures, is reported to be effective in more than 90% of cases, even in large abscesses (>5 cm in diameter, which is the usual limit for surgical incision) (Boakes *et al.*, 2018; Colin *et al.*, 2019; Pileri *et al.*, 2022; ANDOS *et al.*, 2024).
4. To continue breastfeeding successfully, the mother will need psychological support from her family and healthcare staff. As part treatment, the breast should be kept fully drained by manual expression as it is often better tolerated than pumping. There is no scientific evidence supporting the need to temporarily stop breastfeeding during episodes of mastitis or breast abscess. Nevertheless, breastfeeding may be discontinued for a variety of reasons, such as sepsis, breast pain, abscess drainage, fear of transmitting infection to the baby. Breastfeeding should be resumed as soon as the mother's condition has stabilized, she feels ready and can tolerate pain during milk expression.

27.4 Breast Augmentation Surgery

Surgical breast augmentation is an esthetic choice some women make to enhance their self-esteem, while for others it entails reconstruction after mastectomy for breast cancer. Though wearing a breast prosthesis does not inhibit milk production, it is often a reason for not choosing to breastfeed (Ram *et al.*, 2022).

27.5 Breast Reduction Surgery

Breast reduction is usually performed to achieve a breast volume proportional to the woman's body. The type of surgical technique may influence the success of breastfeeding, particularly if the milk ducts have been cut or removed. Women who have undergone breast reduction can succeed in breastfeeding, though do so less often and for shorter duration, due to the smaller milk glandular volume and psychological reasons as well (Koussayer *et al.*, 2024).

27.6 Breastfeeding after Breast Cancer

Current knowledge and opinion agree that: 1) Many women who have undergone breast cancer surgery wish to have children and breastfeed them as an act of reproductive empowerment. This choice is reasonable and safe. 2) In cases of unilateral mastectomy, breastfeeding can be achieved, albeit not easily, with just one breast. 3) The secretory potential of the mammary gland after radiotherapy is reduced due to the damage to lactocytes. 4) A 2-year interruption of maintenance hormonal treatment to allow new pregnancy and breastfeeding does not worsen the prognosis of breast cancer. 5) Prophylactic mastectomy can be safely delayed. 6) Not all women who have undergone breast cancer surgery will want to or be able to breastfeed. About 60% do want to breastfeed mostly from the contralateral breast and will nurse their babies for 4,4 months on average (Peccatori *et al.*, 2025).

In brief, while breast surgery presents anatomical, medical, and psychological challenges to breastfeeding, it is not a contraindication per se (ANDOS *et al.*, 2024).

28. Breastfeeding after Organ Transplantation

While breastfeeding after organ transplantation (e.g., kidney, liver) is possible (*Thiagarajan et al., 2013; Costantinescu et al., 2014; Sarkar et al., 2018; Anderson, 2020*), it requires extensive medical evaluation, especially regarding the safety and compatibility of immunosuppressive agents. Tacrolimus, prednisone, cyclosporin, and azathioprine are considered compatible with breastfeeding.

29. Protection of Breastfeeding

Breastfeeding protection is envisaged by norms and ethics codes. Violations against national laws are legally punishable, whereas violations against ethic codes are not.

29.1 Italian legislation

The directives in the State-Regions Agreement (20 December 2007) under the National Guidelines on the Promotion, Protection, and Support of Breastfeeding and the National Prevention Plans (PNP)(latest edition 2026-2031) are consistent, albeit summarily, with WHO and UNICEF recommendations, <https://www.unicef.org/documents/baby-friendly-hospital-initiative>.

Since 1994 (DM n. 500/94, DL n. 241 del 19.3.1996; DM 16 Gennaio 2002; DM n. 46 del 22 Febbraio 2005; DM 82/2009), Italy has only partially integrated the International Code of Marketing of Breast Milk Substitutes (aka the Code)[*WHO 1981*] into law, though the Code in its entirety remains an essential reference for ethics.

Decree law (DL 82/2009, art. 14, paragraph 1, letter e) regarding discharge letters for neonates specifies that “no predefined space for the prescription of maternal milk substitutes need be set aside”; the intention is that women’s trust in their ability to breastfeed naturally shall not be undermined.

A later sanction decree law (Decreto Sanzionatorio D.L. 84/2011) allows anyone to report violations via a simple writing or special form (https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2011-06-14&atto.codiceRedazionale=011G0127).

29.2 International Code of Marketing of Breast Milk Substitutes

Article 24 of the 1989 UN Convention on the Rights of the Child, ratified in Italy (Law 176/191), states that a child has the right to better health, which is positively influenced by breastfeeding. The Code adopted by the World Health Assembly (WHA) in 1981 and subsequent WHA resolutions of similar scope are intended to support the promotion of breastfeeding, particularly in relation to marketing practices. The Code makes references any type of powder or liquid formula milk (starting, follow-on, growth or special milk formulas), and any other type of food or beverage presented as suitable for children under the age of 6 months, including baby bottles and teats (*WHO 2017*). The WHO also published a guide on the implementation of the Code in 2016 (*WHO 2016*).

The Code states: 1) Advertising maternal milk substitutes to children up to the age 3 years is prohibited, as is the advertising of complementary food products claimed suitable for infants under 6 months. 2) Companies are prohibited from creating conflicts of interest with the healthcare system by sponsoring training events, supplying milk substitutes or devices to hospitals, offering incentives to professionals, spreading advertising information. 3) Product labels shall not emphasize or claim untruthful benefits of milk substitutes.

29.3 Industry Marketing over the Internet and Social Media

Digital marketing has become the main channel baby food producers use to advertise maternal milk substitutes. A 2022 WHO report described the digital marketing strategies for influencing young families on how to feed their babies. Marketing agencies use apps, virtual support groups, social media influencers, promotions, and contests to collect or acquire personal data and send personalized promotional material to expectant and new mothers by inviting them to subscribe to feed threads. Such personalized content on social media, often not defined as advertising, poses considerable challenges to legislators (*WHO 2022*). Studies have shown that misleading advertising adds to the myths about breastfeeding and diminishes women's confidence in successfully breastfeeding (*Jones et al., 2022*). The WHO has issued guidelines on norms to regulate digital marketing of maternal milk substitutes (*WHO 2022*). New legislation in Italy is needed to limit the inappropriate use of digital marketing and other types of advertising promoting commercial milk substitutes (*Orfeo et al., 2022*). In addition, social media should be used to educate families about the proven benefits of breastfeeding.

30. Return to Work

30.1 Italian Legislation Protecting Breastfeeding

Italian legislation guarantees the right to breastfeed and to maintain a reasonable work-life balance; from a broader perspective, such policies should also be seen as a measure against the country's negative birth rate. In 2023-2024, 86,000 women left their job because of conflicts between work and family obligations (Source INL, Ispettorato Nazionale del Lavoro). Maternity leave is compulsory in Italy. Female employees must take up to 2 months off from work before their due date and 3 months off after the baby's birth (Law 53/2000). During this period, eligible employees receive 80% of average daily stipend (state compensation; Law 30 December 2024). The self-employed and those registered under the Separate Pension Scheme of the National Institute for Social Security (INPS, Istituto Nazionale Previdenza Sociale) are not eligible to receive state compensation. The SIN believes that the eligibility criteria should be widened and that the duration of postnatal maternal leave be extended to at least 6 months so that nursing mothers have sufficient time for exclusive breastfeeding (SIN Communication 2020, <https://blog.sin-neonatologia.it/wp-content/uploads/2020/06/CS-SIN-FAMILY-ACT-25-06-2020.pdf>).

30.2 Supporting Breastfeeding in the Workplace

The circumstances in which a breastfeeding mother returns to work or study merit special attention (**Table 18**) [*Schleiff et al. 2026*]. For instance, under the provisions of the U.S. Pump Act (Providing Urgent Maternal Protections), employers must provide their breastfeeding employees with a break during working hours and a separate, clean space - not the company washrooms - where they can express milk for their babies up to 1 year of age; <https://www.dol.gov/agencies/whd/pump-at-work>

In Italy, female employees have the right to 2 hours of paid leave per day to breastfeed or 1 hour if the work shift is less than 6 hours (D.L. 26 Marzo 2001, n. 151. T.U. concerning maternity and paternity Art. 39 and later: "Breastfeeding Breaks at Work"). This right is applicable for the child's first year of life.

Table 18. *Strategies the mother can adopt in the week before returning to work or study; <https://www.unicef.org/parenting/food-nutrition/breastfeeding-workplace>*

- Arrange with the employer the time for work breaks during which milk can be expressed in a clean, private space (not the workplace washroom) where milk can be expressed, stored, and the milk pump rinsed
- Buy/rent a milk pump, learn to use it, and clean it properly. Alternatively, learn to express milk by hand. Keep a supply of milk in the freezer. Have the baby get accustomed early to a person other than the mother offering a feeding bottle
- Learn how to store milk expressed at work in labeled bags or jars or hermetic BPA-free containers in the workplace refrigerator or in a thermal bag with ice packs
- Ask the nursery staff how they intend to handle the expressed milk
- Get support and advice from trusted institutional resources and peer-to-peer associations for breastfeeding mothers who have returned to work

31. Acknowledgements

The authors wish to thank Jacopo Angeletti (Civitanova Marche) for formatting the manuscript, Stefano Ghirardello (Pavia) for providing the patient information form for HIV-positive mothers wishing to breastfeed, and Silvia Ricci (Florence) for consultation on breastfeeding and Severe Combined Immunodeficiency (SCID).

32. Appendix

Waiver of Liability Form for HIV-positive Mothers Wishing to Breastfeed

Below is an example of the waiver of liability form in use at the IRCCS San Matteo, Pavia.

I (*mother's name and surname*) know my HIV-positive status and declare my wish to breastfeed my baby (*child's name*) born on (*birthdate*).

I understand the health risks associated with HIV transmission by breast milk and have been fully informed by healthcare providers about such risks. I understand that:

1. Despite antiretroviral therapy and appropriate precautions, there remains a 1% risk of HIV transmission via breastmilk from mothers with undetectable viremia
2. The transmission of HIV to my baby could have serious health consequences and that, therefore, national and international guidelines do not recommend breastfeeding
3. The hospital and the hospital staff discourage breastfeeding and are therefore not to be held liable for damages ensuing from the potential transmission of HIV to my baby

I realize that my decision is based on my personal circumstances and my understanding of the risk-benefit ratio for me and my baby.

By signing below, I agree to release the hospital (*name of hospital*) and its medical and nursing staff involved in my and my baby's care from liability for damages ensuing from HIV transmission to my baby during breastfeeding.

I agree to comply with all precautions the healthcare providers have advised me to take to reduce the risk of HIV transmission to my baby during breastfeeding and I agree to adhere to antiretroviral therapy.

It will be my own responsibility to undergo regular medical evaluations to monitor my and my baby's health and to ensure that I correctly administer my baby's antiretroviral prophylaxis according to the indications given me by the healthcare providers at hospital discharge.

Date

Signature

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GRAPHIC DESIGN

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