

FACT SHEET: INDICATIONS, CONTRAINDICATIONS AND RECOMMENDATIONS

An assessment of baby's latch and breastfeeding positioning should always be prioritised to prevent and identify feeding challenges.

Lactation products should only be used under the guidance of a skilled breastfeeding professional. The HSE does not endorse any breastfeeding product, aid or device, or brand. For further information, refer to the [staff guide for working within the Code](#)

Nipple shapes

- Nipple shape and size is not a determinant of successful latch. Promoting instinctive newborn behaviours is crucial to enable breastfeeding to get established.
- If a pregnant woman has concerns about nipple shape and size, a review with an infant feeding specialist should be facilitated.
- The infant feeding specialist may recommend temporary use of a nipple everter product.
- Mother should be made aware that baby can latch to areola irrespective of shape and size of nipple.
- A full feeding assessment should be carried out if a mother continues to use products after 10-14 days.
- Do not use milk collected in any nipple everter product (product not suitable for sterilisation).

Topical treatments

- Use mother's own milk topically as a first line treatment to prevent nipple damage and soreness.
- Olive and coconut oils are also effective in reducing nipple crack formation and pain.
- There is no evidence to recommend the use of nipple creams/compresses and balms.
- Anything other than breast milk masks the smell of colostrum/breast milk, which may negatively impact babies' natural attachment behaviours and rooting at the breast.
- If using these products - use only a pea size amount or thin film on the nipple.

Silver cups/caps/pad

- Due to poor quality evidence for their efficacy, silver nipple cups/caps/pads are not recommended.
- If the mother chooses to use silver cups, use for less than 20 minutes to avoid over-hydration of the nipple-areolar complex.
- Use for no more than 2 weeks. If painful feeding persists beyond the first week, a feeding assessment should be carried out to identify the cause.
- Pressure on nipples (from silver cups/caps/pads) can cause mis-shaping of the nipple and blocked ducts.

Rental grade breast pumps

- When there is maternal/infant separation or pumping more than twice a day to establish or maintain breast milk supply, a rental grade pump is indicated.
- Choose a suitable pump to match mother's feeding goals (e.g. adjustable suction/pressure, flange size, collection, storing and use of stored milk).
- It is most effective to pump at your maximum comfort suction which varies for each person.
- Mothers should be advised to use fresh breast milk first as much as possible. Frozen milk may have an odour different from fresh milk. Colour of expressed milk may vary due to maternal food.

Nipple shields

- Evidence of effectiveness of nipple shields is inconclusive. Discuss benefits and possible risks with mothers.
- Use of nipple shields on their own will not resolve a poor latch or low milk production.
- Follow principles of breastfeeding management (Safe skin to skin, feed the baby - protect the supply - resolve the issue).
- Skilled lactation support is essential to assess if nipple shield use is indicated, importance of correct application and how to wean from its use.

Others

- No high-quality evidence available on the safety and efficiency of breast milk collectors, wearable breast pumps, massagers and breastmilk intake monitoring or measuring devices.
- Use of medicines as galactagogues is outside of the license, and women looking to use these medicines to increase their milk supply should do so under the supervision of their doctor.
- Non-pharmacological strategies such as correct positioning and latching, increasing the frequency of breastfeeds and pumping sessions are usually sufficient to increase a woman's milk supply.

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Optimum infant feeding practices are outlined within the following HSE standards, policies and guidelines:

- National Standards for Infant Feeding in Maternity Services and aligns with the principles of the Baby Friendly Hospital Initiative
- Infant Feeding Policy for Maternity and Neonatal Services
- National Infant Feeding Policy for Primary Care Teams and Community Health Organisations
- HSE policy on the marketing of breastmilk substitutes
- HSE Breastfeeding Policy for Staff working in the Public Health Service
- Guideline on the Observation of Breastfeed and Use of the Breastfeeding Observation Assessment Tool (BOAT) Resource

Recommendations are derived from review of current evidence gathered with the support of the HSE library service, (Appendix 2).

An assessment of baby's latch and breastfeeding positioning should be prioritised to prevent and identify any feeding challenge. Staff should ensure that optimum infant feeding practices are supported and mothers are encouraged to seek support from their healthcare professional if they have any feeding difficulties.

This fact sheet provides guidance:

1. to promote natural newborn instinctive behaviours and optimal infant feeding practices
2. on the indications and correct use of products to prevent harm
3. on the effectiveness of various products
4. in line with the [HSE's policy on the marketing of breastmilk substitutes](#)

1. Nipple shapes

Nipple shape is not static. It changes during pregnancy and post-partum. Anatomical variations of nipples include long or large nipples or varying degrees of flat or inverted nipples. Milk ducts are elastic and run into the back of the nipple. In some women these milk ducts can be very short, causing varying degrees of inversion.

Other reasons for anatomical variations in nipple shape (not nipple inversion):

- Excessive weight gain, generalised oedema during pregnancy or large breasts can flatten a previously protruding nipple
- Engorgement, excessive I.V. fluids received during labour or caesarean section may cause tissue swelling that flattens previously protruding nipples
- Constant use of padded, tight bra.

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A woman with flat or inverted nipples can do the following to minimise breastfeeding difficulties:

- ✓ This video shows a baby's breast crawl and latching onto a breast with an inverted nipple (@6.30 minutes) <https://globalhealthmedia.org/video/breastfeeding-in-the-first-hours-after-birth/>
- ✓ If wearing a bra, use a non-padded well-fitting bra. Wearing a bra too tight for long periods can lead to misinterpretation of nipple inversion being present
- ✓ Practice safe skin to skin contact immediately after birth and continue post-natally
- ✓ Hand expressing and reverse pressure softening will help with moving swelling away from areola
- ✓ Recommend using a laid-back feeding position and use hands-off approach to allow baby to self-attach
- ✓ Nipple rolling (between the thumb and the index or middle finger for a minute or two) and sandwich hold (to shape breast and areola) may be helpful
- ✓ If possible, avoid artificial nipples (nipple shields/bottle teats/soothers) during early weeks, while baby is learning to breastfeed¹
- ✓ Suggest feeding on side that is easiest while continuing expressing and latching attempts from the difficult side
- ✓ After feeding or pumping, allow nipple to air dry and keep it clean.

Considerations for health care professionals

Use encouraging language with mothers in relation to nipple anatomy. If a woman expresses concern about their nipple shape, provide reassurance on nipple anatomy and that it can take time and practice to get breastfeeding established. If breastfeeding mothers are told their nipple anatomy is to blame, this can be incredibly demoralising, and mothers may think their nipple anatomy is 'defective'^{2,3}. Advise mothers with inverted/flat nipples that with the mechanics of breastfeeding/pumping the tissues causing the inversion may become released².

During antenatal discussion, if a mother expresses any concerns about the size and shape of nipple and breast, they should have an opportunity to have a consultation with an infant feeding specialist.

A thorough feeding history and assessment, respecting mothers feeding goals, feeding preferences and follow up plans, should be supported. The infant feeding specialist may recommend temporary use of a nipple everter product. Mother should be made aware that baby can latch to areola irrespective of shape and size of nipple. Inverted/flat nipples can result in successful latching once managed appropriately.

¹ Wilson-Clay & Hoover, 2017, *Breastfeeding atlas*, p 47

² doi.org/10.1186/s13006-022-00452-1

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If a mother has severe shortened milk ducts, it may take longer to directly breastfeed. Infant feeding specialists may discuss and support expressing as a temporary solution to promote milk supply and support mother to feed her baby³.

Latch Assist/nipple formers/breast shells are products available that mothers may use that exert gentle pressure on the areola to help draw out nipples and may be used without causing trauma to the nipple^{4,5}. Some of these products can result in inadvertently increasing the milk supply.

Nipple everter products should be kept clean (not suitable for sterilising) and kept to single user only. Guidance on how to use these products is included in Appendix 1.

2. Topical treatments

There are limited high quality studies available on the effectiveness of topical treatments for the prevention and relief of nipple pain. Moisturisation interventions can show promise for treating nipple trauma and pain, but high moisturisation needs cautious use due to few rigorous trials and the presence of reported risks^{10,15}.

2.1. Breastmilk

- Breastmilk has been shown to be effective in healing and preventing damage and nipple pain^{6,7,8}.
- The high concentration of Immunoglobulin A antibodies in breast milk creates an antimicrobial protective layer, reducing infection risk. Antioxidants, epidermal growth factors, stem cells and erythropoietin in breastmilk contribute to healing, promoting growth and repair of skin cells.
- A good, deep attachment while feeding and use of their own breast milk is the first line treatment to prevent sore nipples.
- Hand expressing and applying a few drops of breastmilk before each feed helps to moisturise the nipple and areola. Hand expressing before a feed also helps to soften the areola enabling a deeper latch.
- After the feed, allowing breast milk to dry on the nipple and areola can be protective.
- Breast milk is a natural agent, having no side effects and is always available and can be used without social and economic barriers.

³ Genna, C.W. Selecting and using breastfeeding tools (2009): improving care and outcomes. ISBN:978-0-9823379-1-2

⁴ Boucher-Horwitz, J. (2016). The use of nipple shields for flat, retracting and inverted nipples. *Clinical lactation*, 2(3), 30-33.

⁵ DOI: 10.1016/j.pedn.2023.07.024

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2.2. Compresses/hydrogel/lanolin/nipple creams/nipple balm

- Topical applications to the nipple for pain during lactation should be avoided unless indicated and recommended by an infant feeding specialist/registered prescriber, including anti-fungal treatments, mupirocin antibiotic cream, hydrogel discs, lanolin, vitamin A and E and Vaseline. These have been shown ineffective for nipple pain and damage and risk epithelial over hydration and Moisture Associated Skin Damage (MASD)⁸ and may contain potentially allergenic ingredients such as lanolin and petroleum.
- Some mothers may find these products are comforting and moisturise the nipple.
- Compresses/hydrogels/barrier creams/oils/balms can mask or suppress the natural smell of the mother's colostrum or breast milk. The mother's colostrum smell stimulates the baby's olfactory senses and instinctive behaviours in finding the breast.
- If breastfeeding is not comfortable after the first week, seek support from midwife, PHN or infant feeding specialist.
- If the mother chooses to use these products, observe and advise:
 - Not to overuse the cream (use pea-sized amount/thin film and wipe off excess before next feed. When the cream is repeatedly topped up without wiping it off, this can cause epithelial over hydration and MASD to the nipple).
 - Advise mother to have daily showers, clean bra if wearing and change breast pads if using regularly. The nipple should have some natural air exposure time for a few minutes after each feed (free from topical treatments). Advise good hand hygiene practice.

2.3. Natural oils - coconut oil, tea tree oil, olive oil

- Coconut oil and tea tree oil were determined to reduce nipple crack formation and nipple pain during the post-partum period^{12,6,7}.
- Olive oil has been shown to have effects on nipple pain and soreness similar to breast milk. In addition, most breastfeeding mothers provided positive feedback on using olive oil⁸.
- Olive oil has been shown to reduce nipple damage at 7 days follow up⁹.
- In some cultures (e.g. Asian, African or Middle East) as part of pregnancy and post-natal care, the use of natural oils and massage is normal practice.

⁶ doi: 10.1089/bfm.2022.0260.

⁷ doi: 10.1089/bfm.2022.0120.

⁸ doi: 10.1089/bfm.2023.0081.

⁹ doi: 10.1080/07399332.2020.1840570.

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2.4. APNO (All Purpose Nipple Ointment)

APNO has been shown ineffective for nipple pain and damage and there is risk of epithelial over hydration and MASD¹⁰. In one study, the effects of APNO (mupirocin 2% w/w, miconazole 2% w/w, and betamethasone 0.1% w/w) and lanolin were examined on treating nipple fissure and pain. The results of this study suggested that there is no superiority between APNO, and lanolin treated groups in the prevention of nipple fissure and pain; both groups showed considerable nipple burning and itching¹¹.

APNO cream is not a licensed product for use in Ireland. HSE does not recommend its use.

2.5. Aloe Vera/herbal medications

The HSE does not recommend the use of aloe vera/herbal medications due to the limited studies available¹².

Suspected candida/thrush

- The presence of burning or shooting pain alone is not enough to confirm that thrush infection is the cause of pain. A combination of symptoms is more reliable²³
- Symptoms of thrush should be considered alongside a combination of factors:
 - Thorough breastfeeding assessment
 - Mother's and baby's history
 - Recurring thrush infections and antibiotic use
 - Using devices that need repeated cleaning/sterilisations e.g. prolonged pumping/ nipple shields/soothers
 - Poor hygiene
 - Presence of constant moisture e.g. prolonged use of silver cups, soaked breast pads, nipples not being left exposed to dry.
- HSE advice in treatment of sore nipples is advised [here](#)
- If either the mother or baby has diagnosed thrush, a topical treatment should be prescribed for both mother and baby. The HSE antimicrobial guidelines for topical treatments can be accessed [here](#).

¹⁰ doi: 10.1177/17455057221087865

¹¹ doi.org/10.1089/bfm.2011.0121

¹² doi.org/10.1016/j.aimed.2021.07.001

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3. Silver cups/caps/pads

Washable and re-usable silver nipple cups/caps/pads are marketed as a temporary soothing relief for nipple pain and trauma. While some evidence exists on the effectiveness of nipple cups/caps/pads^{13, 14, 15, 16} the quality of this evidence is poor. Due to poor quality evidence for their efficacy, nipple cups/caps/pads are not recommended.

Continuous use of silver cups/caps/pads with no professional input can lead to over hydration of the nipple-areolar complex with resultant delayed wound healing and chronic wound formation or gangrenous tissue formation on the nipple, which may delay healing process and negatively impacts on establishing breastfeeding¹⁰.

If a mother chooses to use silver cups/caps/pads, observe and advise on the following:

- Do not use with other creams/compresses. Wearing Silver cups/caps/pads for long periods leaves the nipple in a moist environment, preventing oxygenation of the nipple tissue.
- Avoid wearing inside a tight bra as it can push the nipple back and a ring of pressure may lead to a plugged duct. Do not wear it for more than 30 minutes at a time.
- A mother should be able to stop using silver cups/caps/pads after one week. If painful feeding continues beyond first week, a feeding assessment should be carried out.
- Silver cups/caps/pads should be kept clean.

4. Breast milk collection devices (breast pumps and other collection devices)

When parents express the desire to regularly or exclusively pump, offer help and support to meet their feeding goals. It is important to give emotional support where a mother is “triple feeding” (Breastfeed, bottle feed & pump). The decision to express and bottle feed breastmilk may be due to many reasons; anxiety due to connection with prior traumatic experiences either birth related or other^{17, 18, 19}. Mothers may also triple feed due to actual or perceived concerns about whether baby is getting enough breastmilk while breastfeeding is being established.

Considerations for supporting mothers with pumping

- Detailed history, physical assessment, choosing correct flange size and fitting, pumping observation, education and ongoing follow up is essential for mothers expressing exclusively or partially.

¹³ doi: 10.1089/bfm.2014.0177

¹⁴ doi.org/10.4236/ojn.2023.1310045

¹⁵ doi: 10.1177/08903344251342564

¹⁶ doi: 10.1177/08903344241301401

¹⁷ doi: 10.1177/0890334415590782

¹⁸ doi: 10.1089/bfm.2012.0024

¹⁹ doi: 10.1089/jwh.2020.8697

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- Use comfortable flange size (visualise estimated size and observe a brief pumping session and evaluate). There are currently no standardised recommendations for fitting a flange. Some companies provide a flange fit guide for choosing the correct flange size.
- Support the mother to set the most comfortable pump vacuum setting, which varies from person to person^{20,21}. Too high pump suction can cause pain and inhibit milk ejection, and so the goal is to use the highest suction setting that is truly comfortable²².
- Exclusively pumping mothers should consult their PHN, or lactation consultant for support with transitioning to breastfeeding or for safe weaning from pumping, and access peer support from their local breastfeeding support group.
- Exclusive pumping is linked to shorter duration of lactation compared to those who either combined fed or those who directly breastfed²³

General safety information for milk collection devices

- Do not use any of these products while sleeping, bathing or showering, overly drowsy, or driving to avoid danger of electrocution.
- Use and store breast pumps safely when around children.
- Keep breast pumps dry and never immerse in water or other liquids.
- Never modify the device or use a damaged device. Never operate an electrical device if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or dropped into water.
- Follow recommended [washing and sterilising](#) of pump parts. Newborns are developing their immune system and exposure to pathogens increases the risk of infection²³.

How to choose the correct pump

There is no single recommended breast pump. Mothers respond differently to the same pumping patterns²¹. There is limited impartial evidence to support standardised settings for breast pumps, so manufacturers provide a range of cycling and vacuum settings²⁴.

If parents ask for help in choosing a breast pump^{25,23,26}

- Ask about their feeding history and how often they plan to pump

²⁰ doi: 10.1177/089033402237908

²¹ doi: 10.1089/bfm.2007.0028

²² doi: 10.1089/bfm.2018.0186

²³ [Community Infection Prevention and Control Manual: A practical guide to implementing Standard and Transmission-Based Precautions in Community Health and Social Care Settings](#)

²⁴ <https://doi.org/10.1038/jp.2016.14>

²⁵ Mohrbacher. N, Breastfeeding Answers: A guide for helping families (2nd Edn.) 2020

²⁶ DOI: 10.1891/CL-2023-0023

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- Provide advice and support based on feeding assessment and mother's own feeding goals
- Support mothers to recognise when baby is getting enough breast milk
- Do not recommend a particular brand/company.

Situation	Manual pump	Mini electric (single/double) or wearable pump	Rental grade double electric pump
Established breastfeeding - occasional pumping (max 1 to 2 times/day) or missed a feed	√	√	
Pumping at least twice daily, more than 5 days/week		√	√
Pre-term or full-term baby not breastfeeding - yet to establish full milk supply			√
Pre-term or full-term baby not breastfeeding - full supply established, want to maintain full supply			√
Maternal illness/separation from her baby for longer than 24 hours			√

4.1. Rental grade breast pumps

There is no standardised definition for rental grade [breast pumps](#). This is not regulated and varies by manufacturers. Mothers should be advised to discuss their needs with a skilled breastfeeding professional (PHN, Midwife, Lactation Nurse/Midwife) before choosing a breast pump.

Key features of rental grade pumps are the feasibility of multiuser design:

- Closed system (prevents milk leakage into the motor)
- Specific pump features for individual needs (e.g. adjustable suction/pressure, flange size)
- Double pumping (pumping both sides at once) yields greater milk supply²⁷ and saves time
- Long term use by multiple users.

Rental grade pumps can be helpful for:

- Establishing, protecting and increasing milk supply
- Supporting mothers with premature or ill babies
- Overcoming breastfeeding challenges, such as a latching issue or a baby who isn't latching or adequately draining breasts or mother with low supply

²⁷ doi: 10.1136/archdischild-2015-308321

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- Mothers who choose to feed their baby expressed breast milk²⁵. Exclusive pumping may be a more positive experience if parents learn about it in pregnancy²⁵.
- Maintaining supply while on treatments/medications.

Rental grade pumps are available in maternity, NICU, paediatric, PHN and general acute services. Contact your infant feeding/lactation nurse/midwife or PHN for details of how mothers can access a suitable pump within your service based on local criteria.

The following resources provides guidance on the use and care of rental grade electric breast pumps:

- [Breastfeeding and expressing for premature or sick baby](#)
- [HSEmychild parent information on care and use of breast pump](#)

4.2. Breastmilk storage containers/bags

Mothers should be advised to use fresh breast milk first as much as possible. Freshly expressed milk is highest in antibodies, antioxidants, vitamins, protein, fat, and probiotic bacteria compared to refrigerated or frozen milk. Fresh breastmilk also has the greatest immunologic activity compared to refrigerated or frozen milk.

Refrigerated and frozen human milk may have an odour and colour difference from fresh breast milk, due to oxidation of fatty acids,^{28, 29} and maternal food or medication. This lipolysis process during refrigeration/freezing helps prevent the growth of micro-organisms in milk³⁰. Most babies will drink refrigerated/thawed frozen milk regardless of the odour difference.

Where a baby receives mostly expressed breastmilk (EBM), a suitable storage container should be used. Use of tempered glass containers has been shown to better preserve antibody content compared to the use of polyethylene containers/bags^{31, 32}. Research has evidenced that despite challenges, including a lack of support from healthcare providers and a lack of acknowledgement as breastfeeding mothers, exclusive expression offered participants a method to continue breast milk feeding in a way that they found to be satisfying³³.

Recommendations for hospital use:

- Mothers should only use EBM containers provided by the hospital/staff for [harvesting colostrum](#)/collecting EBM.

²⁸ doi: 10.1016/j.clnu.2013.01.015

²⁹ doi: 10.1016/j.foodchem.2011.07.013

³⁰ doi: 10.1038/jp.2014.113

³¹ doi: 10.1097/MPG.0b013e31824f7889

³²doi: 10.1089/bfm.2017.29047.aje

³³ doi.org/10.1186/s12884-022-04388-6

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- Use of milk storage bags has been found to have a significant reduction in antibodies (60%)²⁸.
- Urine and other body fluid specimen cups should not be used as they may contain harmful chemicals that could be absorbed into breastmilk³⁴.
- Transport frozen/refrigerated colostrum or EBM in insulated cooler bag/box with deep frozen ice-packs.



Sterile syringe and cap



Sterile EBM container

Recommendations for home use:

- Any storage container/bag should be composed of food grade material, glass, or BPA and BPS free plastic, with a tight fitting solid lid. BPA and BPS are oestrogen disruptors, and can leak into the milk.
- Steel containers are not recommended due to marked decline in cell count and cell viability³³.
- Plastic sandwich bags are not recommended, as they are thin and tear easily.
- To avoid wasting or discarding unused milk, mothers may consider storing milk in a variety of quantities such as 15, 30, or 60mls.

For more information parents should be referred for advice on:

- [Colostrum](#) harvesting
- [Storing expressed breast milk](#)
- [Heating expressed breast milk](#)

4.3 Mini electric breast pump (single or double)

Mini electric breast pumps are a single user product suitable for occasional use. Many mini pumps have an open system (risk of milk leakage into the motor). Use by more than one person may lead to cross contamination between users and is discouraged. Traces of breast milk and bacteria can be trapped within the body of the pump and its parts even after cleaning and may create a breeding ground for pathogens. It is difficult to ensure complete sterilisations, even with thorough cleaning^{27, 35}. Manufacturers' cleaning and sterilising guidelines should be followed. The operating life of a mini electric breast pump varies (approximately 150 hours).

4.4 Hand/manual breast pump

Hand/manual pumps require squeezing or pushing a handle to generate suction to draw milk from breasts.

³⁴ doi.org/10.17269/cjph.105.4369

³⁵ doi: 10.1136/archdischild-2015-308321

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Do not use:

- For frequent and exclusive pumping and for mothers with large breasts due to inadequate suction
- For relieving engorgement (use hand expressing instead)
- Using hand pumps may exacerbate areolar edema

4.5 Breast milk collectors

Some mothers use milk collectors to catch leaking milk from the other side when breastfeeding. Wearing milk collectors during or between feeds can cause overstimulation/oversupply, beyond baby's requirements. This can lead to unresolved engorgement and mastitis. Milk collectors can also result in poor stimulation of the breasts, resulting in poor milk supply.

Advise mothers to observe for signs of overstimulation, if using these products. Stop using it and seek help where necessary.



4.6 Wearable mini breast pump

These are new products and evidence regarding effectiveness is limited. They are battery (rechargeable) operated pumps that sit inside the bra. They may be suitable for occasional use, when a mother is unable to accommodate a pumping session.

Mothers with a bigger breast and/or nipple shape may not find these products suitable. Mothers should be advised that they may not build and maintain an adequate supply by using a wearable pump alone.

Consistent pressure on the breast tissue leaving obvious red rings can increase the risk of mastitis due to inadequate milk removal and overstimulation of the breasts.



4.7 Cup feeding

Cup feeding may be used for occasional EBM or formula top ups while resolving a breastfeeding issue whilst in hospital. It should not be part of a regular feeding regime at home. A systematic review demonstrated no difference in weight gain or gestational age at discharge, but those fed by cup were more likely to be exclusively breastfeeding at discharge compared to premature babies fed by bottle³⁶.

Baby needs to be able to lap from cup to be able to cup feed.



How to cup feed:

- Do not pour milk into baby's mouth – it may cause choking.
- Tap the lower lip with milk/edge of cup to stimulate feeding cues.

³⁶ Doi: 10.1002/14651858.CD005092

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- Gently tip the cup to allow milk to touch the lower lip.
- Allow baby to lap up the milk with their tongue.
- Stop if milk is dripping through sides; it is too fast. Allow for burping every 10-15mls.
- Do not force additional milk if baby shows signs that they are full or had enough.
- It should be pleasant for both baby and mother and not take more than 30 minutes.
- This [video](#) shows the technique of cup feeding safely.

5. Nipple shields

A nipple shield is a thin, flexible, silicone nipple-shaped shield placed over mother's nipple and areola, with holes at the tip allowing milk to flow. The use of nipple shields is controversial in lactation, partly due to paucity of studies focusing on their effectiveness and effects on breastfeeding. Available research indicates an increased risk of reduction in milk transfer, milk yields over time while using nipple shields for exclusive breastfeeding with full term and preterm babies, whilst others have reported some successful breastfeeding outcomes following the use of nipple shields²⁵.

There are maternal self-reported benefits to using nipple shields, with some evidence on the effectiveness of shields in the following situations:

- Nipple pain, nipple trauma, inverted/flat nipples (See page 2 on nipple inversion).
- To help compensate for immature feeding behaviours with some premature infants^{37, 38}.
- Short term solution to help a preterm baby latch to an engorged breast and to help establish the breastfeeding relationship^{37,39}. The first line management of an [engorged breast](#) is [hand expressing](#) and [reverse pressure softening](#).
- To assist weaning a preterm infant from bottle feeding back to full breastfeeding.
- To maintain breastfeeding, providing mother with a sense of accomplishment contributing to overall mother-infant health and to help parents who need a simple and discrete feeding plan.

However, there are widespread negative attitudes towards nipple shields due to the following concerns:

- Risk of reduction in exclusive breastfeeding rates for healthy newborns ^{40,37} and with preterm infants⁴¹.

³⁷ [doi.org/https://doi.org/10.1111/mcn.12251](https://doi.org/10.1111/mcn.12251)

³⁸ https://www.infantjournal.co.uk/pdf/inf_015_pnn.pdf

³⁹ [doi: 10.1089/bfm.2016.29031.egb](https://doi.org/10.1089/bfm.2016.29031.egb)

⁴⁰ [doi.org/https://doi.org/10.1016/j.midw.2023.103873](https://doi.org/10.1016/j.midw.2023.103873)

⁴¹ [doi: 10.1371/journal.pone.0222811](https://doi.org/10.1371/journal.pone.0222811). PMID: 31539900; PMCID: PMC6754237

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- Risk of reduction of milk transfer between mothers and babies ^{42, 43}, and risk of weight gain concerns.
- Nipple shields may potentially lead to decreased milk yield over time, causing unplanned weaning^{37, 44}. Conversely, some older studies found no difference in breastfeeding rates.
- Nipple shields are not necessarily a supportive solution to an inexperienced mother with a preterm baby who needs extra support in the early process of learning to breastfeed³⁷.
- Occasionally the infant prefers the nipple shield rather than directly latching on to the breast, making it difficult to wean from use.
- Use of nipple shields on their own will not resolve a poor latch or low milk production.
- Creation of a physical barrier between the mother's breast and infant^{41, 45}.
- Supporting an industry that makes breastfeeding unnatural⁴².

Always follow the principles of breastfeeding management:

- Encourage frequent skin to skin contact.
- Encourage hand expression and try feeding baby with drops of expressed breast milk to energise baby.
- Support mother and baby to find a suitable position e.g. try laid back position.
- Remember – feed the baby - protect the supply - resolve the issue while nourishing baby.

Fitting nipple shields:

- The infant feeding/lactation midwife/PHN should advise on choosing the correct size and type for the mother. Consider both the circumference of the base of the nipple along with the actual size/length of the nipple.
- Some mothers need different nipple shield sizes for each breast due to difference in nipple sizes.
- Nipple shields may not be available for very large nipples. Trying to fit a large nipple into an ill-fitting nipple shield can cause further trauma.
- Hand expressing for a few minutes at the start (and may be helpful to express into the nipple shield also) will help to get the flow started and encourage baby to continue feeding. This also helps to prevent baby vigorously sucking on the nipple to encourage let-down which some mothers find very painful.
- If using nipple shields in the **hospital**, wash the nipple shield thoroughly in hot soapy water and sterilise it before each use.
- If using in the **home** (healthy, full-term baby), cleaning with hot soapy water or washing in a dishwasher on a hot cycle will be sufficient.

⁴² doi: 10.1177/089033440001600205. PMID: 11153341.

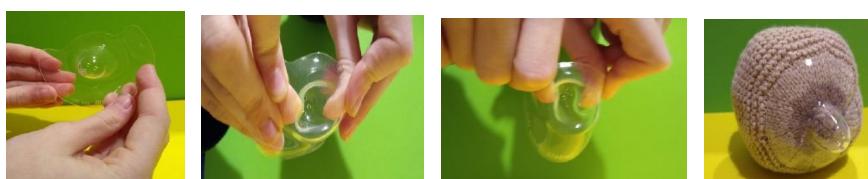
⁴³ doi.org/10.1186/s12884-020-03191-5

⁴⁴ doi: 10.3389/fpubh.2015.00236. PMID: 26528467; PMCID: PMC4607874

⁴⁵ doi.org/10.1186/s12884-016-1183-6

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- Hold the nipple shield between thumb and forefinger of each hand, and stretch the nipple shield almost inside out before applying, which helps draw the nipple in. This stretching allows some suction to occur once the base of the shield is applied closely to the base of the nipple. After applying the base of the shield to the base of the nipple, smoothen the edges of the nipple shield on to the breast. While the suction created with correct application keeps the shield in place, moistening may help keep the “wings” or “rim” of the shield in place. Moistening the nipple shield or warming with hot water helps to keep the nipple shields in place.
- Shields should be dried thoroughly before use and stored in a clean, sealed container or bag.



(Pictures used with permission from Children's Health Ireland)

What to observe

- If using the shield for nipple soreness, assess whether the mother's pain has ceased or reduced and that the use of nipple shield is not exacerbating the pain.
- Observe for the development of lump(s) especially around areola. Inadequate milk removal can lead to milk stasis and result in mastitis, abscess or low milk supply in the long run. Areas that aren't being drained well may appear swollen, sore or red. Treat early signs of localised engorgement to avoid a plugged duct or mastitis.
- Do NOT cut a silicone shield as this could leave sharp edges that would hurt mother and baby.

Weaning from nipple shields

- Where a nipple shield is enabling baby to breastfeed, it takes care, support and maternal patience to wean from the use of nipples shields. It is usually possible for a baby to learn to breastfeed without the shield.
- When weaning off, the advice is to start a feed with a nipple shield, take baby off after few minutes and then try immediately to latch on again without the shield.

6. Soothers

Soothers are not recommended for healthy full-term infants during the first month of breastfeeding (or until breastfeeding is established) as it is thought that soothers may reduce the length of breastfeeding time^{46, 47}. Well established breastfeeding is defined as having sufficient milk supply; consistent, comfortable, and effective latch for milk transfer; and appropriate infant weight gain. The time required to establish breastfeeding is variable.

⁴⁶ SIDS and other sleep related infant deaths: Updated 2016 recommendations for a safe infant sleeping environment. Paediatrics, 138(5)

⁴⁷ doi: 10.7150/ijms.89490. PMID: 38617004; PMCID: PMC11008475.

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A Cochrane review failed to demonstrate that soothers have either a positive or a detrimental effect on the risk of SIDS⁴⁸. Giving a soother at the start of every sleep may reduce the risk of SIDS. Giving the soother for some sleeps may not be as effective. Regular soother use is the best way to use a soother. Wait until breastfeeding is well established before introducing a soother. A soother should not be used to replace breastfeeding.

If a mother chooses to give baby a soother, enquire about their feeding history, as using a soother in cases of frequent waking/feedings may indicate a feeding or supply issue.

How to correctly use a soother:

- Offer it at the start of every sleep, both day and night
- Do not force babies to use a soother if they do not like it
- Do not worry if the soother falls out while baby is asleep
- Do not use clips or chains to attach the soother to baby's clothes, bedding, buggy or anything else - this is a choking and strangulation risk
- Keep soothers clean and never dip them in sugar, honey or other food and drinks⁴⁹.

7. Galactagogues/lactation supplements

- A nutritious balanced diet is recommended for breastfeeding mothers, with no restrictions on what they can eat. An exclusively breastfeeding mother needs to consume an extra 300 to 500 calories per day. Ensure iron levels are monitored if excessive blood loss at delivery, or mother is symptomatic.
- A galactagogue is any substance (drug, herb, food, drink) that is consumed to improve milk production.
- A thorough breastfeeding assessment to identify the underlying cause of low milk production is important. This should be carried out by a person qualified in lactation support before considering the use of medications.
- In many of these situations, non-pharmacological strategies such as optimising infant positioning and attachment at the breast for effective milk removal, increasing the frequency of breastfeeds and mechanical expression are usually sufficient to increase a woman's milk supply⁵⁰.
- Use of medicines such as galactagogues is outside of the license, and women looking to use these medicines to increase their milk supply should do so under the supervision of their doctor.

⁴⁸ doi: 10.1002/14651858.CD011147.pub2

⁴⁹ [Cot death](#) sudden infant death syndrome HSE, Mychild

⁵⁰ doi: 10.5694/mja14.00626. PMID: 25163368

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- Such medications are associated with other adverse effects, including QT prolongation (Domperidone), extrapyramidal side-effects and depression (Metoclopramide).
- Where a galactagogue is prescribed, Domperidone may be preferred over Metoclopramide since it does not cross the blood brain barrier and has fewer central side effects (fatigue, depression, extrapyramidal symptoms). There is also more evidence for its use to increase milk supply⁵².
- If prescribed, Domperidone should be reviewed after 7 days and if no effect is evident, should be discontinued. Maximal effect is likely to occur between 7-14 days. There is little evidence in relation to optimal duration.
- Domperidone should not be used for any women with cardiac risk factors or taking any medications that interact with Domperidone or increase QT interval. It is best avoided if the infant has any cardiac or liver disease or is prescribed any medication which interacts with Domperidone.
- Use of these medications as galactagogues is outside of the license and prescribers are required to take ultimate responsibility for their use.
- Consult with medical team/Pharmacy, National Medicines Information Centre (NMIC)⁵¹, before recommending medication during lactation.
- No standards exist for safe processing of the placenta (placental encapsulation) for human consumption that eradicate infectious pathogens.
- There is lack of regulation of preparations of herbal galactagogues and insufficient evidence of the efficacy and safety for both mother and baby. If parents choose to take herbal preparations, they should be cautioned about the possibility of drug-to-herb interactions if they are on other medications. Close follow up of both mother and infant is essential to monitor the status of lactation as well as any adverse effects of the drug(s)/products on the mother or infant⁵².

8. Other milk collection products

Supplemental nursing system (SNS)

Supplemental nursing systems (SNS) can support very a small number of mothers to reinforce direct breastfeeding²⁵. These devices deliver extra milk to the baby during breastfeeding through a thin tube.



It is most effective when baby can latch and suckle appropriately to draw milk up through the tube whilst latched to the breast well and can draw on breast to obtain milk. The use of SNS facilitates having all feeds occurring at the breast, keeping mother and baby close, stimulates the breast while baby feeds and avoids the use of feeding teats. SNS

⁵¹ <https://www.stjames.ie/services/nmic/nmicbulletins/2021/nmicbulletinvol27no4useofmedicinesinbreastfeedingwomen.html>

⁵² doi: 10.1089/bfm.2018.29092

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should only be used under the guidance of a skilled breastfeeding professional. Use only products that are designed for the purpose. SNS may be used to:

- Maintain breastfeeding when a mother has low supply or milk production is compromised, to supplement baby where weight gain is below the expected 28-30 gms/day²⁵, and during the first 3 months E.g. Insufficient Glandular Tissue (IGT), breast surgery, adoption or surrogacy.
- Stimulate more milk production by encouraging baby to continue sucking.
- Encourage a reluctant or weak feeder or baby with sucking.
- Promote a positive experience for mother and baby whilst dealing with feeding challenges.

Observe

- Ensure deep latching as constant flow from supplementer can lead to ineffective feeding.
- Baby may only suck on the tube and may not drain or stimulate breasts as baby does not need to actively suck to get milk.
- Too fast flow can overwhelm baby especially if baby is preterm, or has breathing or heart issues.

Do not use tubes and products out of scope (e.g. adapting a feeding tube).

9. Hot/cold packs

Encourage the mother to choose heat and/or cold depending on what feels most effective and soothing to the mother. In some cultures, using cold as a treatment after birth is considered inappropriate^{53, 54}.

Apply cold packs to reduce inflammation and relieve pain⁵⁵. Apply after a feed, or in between feeds, until some relief is gained. Apply for no more than 10 minutes, and, if needed, at recurring intervals of 30 minutes. Apply a layer of fabric between the ice/cold compress to avoid “freezer burn” to the skin⁵⁵.

Avoid excessive heat as this may cause inflammation and impede optimum milk flow. Gentle warmth (e.g. from a shower/warm face cloth) to the breast for a few minutes may provide comfort for some. Others may experience worsening symptoms when excessive heat is applied.

⁵³ doi: org/10.1089/bfm.2018.0032

⁵⁴ doi:10.1177/2156587215617106

⁵⁵ doi: 10.1002/14651858.CD006946.pub4.

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There is no robust evidence on the safety and efficiency of the following products. HSE does not recommend their use.

Wearable breast massager

The wearable rechargeable breast massager uses vibration and some of them have heating ability. These products do not replace the value of [therapeutic breast massage](#) and there is no evidence available around their effectiveness.

Do not:

- press hard on the chest to avoid injuring soft tissues
- continue to use if a mother feels pain or discomfort
- use on damaged breast skin or cracked nipples.

Breast milk intake measuring/monitoring devices (e.g. coroflo)

Health care providers should use approved observation and assessment tools for assessing breastfeeding, e.g. [BOAT](#) (Breastfeeding Observation and Assessment Tool). The HSE do not recommend products to measure the amount of breast milk a baby consumes or test weighing after feeds.

Signs of [effective feeding and baby's growth](#) and development should be monitored by:

- Wet/dirty nappies
- Regular feeding
- Weight gain patterns, (28-30 gms per day in the first 3-4 months)
- Baby is calm, relaxed while feeding and content after most feeds.

Parents should be advised to refer to the HSE's booklet [Breastfeeding: A good start in life](#)

Breastfeeding pillows/chairs/footrests

Health care providers should encourage natural breastfeeding positions without interfering with baby's natural breast seeking behaviours e.g. laid-back breastfeeding.

Parents may choose to use comfort measures like breastfeeding pillows, chairs, footrests etc. There is no available evidence to recommend the use of a particular type of product or brand.

FACT SHEET: INDICATIONS, CONTRAINDICATIONS AND RECOMMENDATIONS**10. Breastfeeding supports**

All staff caring for pregnant women and mothers and babies should be aware of breastfeeding supports provided within their region, for example:

- Breastfeeding preparation classes
- Antenatal referral for 1:1 breastfeeding support
- 1:1 Infant Feeding Specialist support services
- Colostrum harvesting protocol
- Post-natal 1:1 supports; including post-natal hub support
- Public Health Nurse, infant feeding specialist and volunteer led breastfeeding support groups
- Feeding rooms available
- How to source a breast pump if needed

Pregnant women and new mothers should be made aware of, and encouraged to seek out, local breastfeeding support groups during their pregnancy.

Visit mychild.ie for details of supports in your area.

The [HSE's online lactation support service](#) is available 7 days a week. Mothers and health care professionals can submit questions to an IBCLC and receive a response within 24 hours.

Live chat is available Monday- Friday from 10am-3pm.

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Appendix 1: Nipple everter products

Latch Assist

Latch assist products are designed to help draw out nipples and may be used without causing trauma to the nipple.

- In pregnancy to help stretch the tight fibrous tissue
 - Use 2/3 times a day during the last trimester
 - Use multiple times at each session (10-15 times each on the affected side). Can be left on for up to one minute, depending on comfort levels.
- After birth, to overcome early nursing challenges⁴. Along with hand expressing, therapeutic breast massage and reverse pressure softening, use latch assist product to soften the areola before each feed.

Nipple formers/breast shells

Nipple formers apply gentle pressure on the areola. These include a plastic dome shaped shell and a silicone membrane to fit at the back of the shell. Separate the breast shell parts for cleaning after each use. They can be used:

- During pregnancy to create gentle pressure on areola and may help to draw out the nipple. Wear for up to 1 hour per day initially and gradually increase wearing time based on comfort levels (up to 8 hours).
- After birth, wear in between feedings, for up to 20-30 minutes **only**. Can be used to protect clothes if leaking milk, to air dry nipples and avoid friction with breast pads or clothes.

Do not use:

- Use any milk collected in a latch assist or nipple former product (not sterile/milk can pool/difficult to clean bulb)
- If experiencing uterine contractions
- For longer than recommended duration
- While sleeping or at night to prevent tender spots/red rings developing on the breast, which can increase the risk of mastitis
- Products shared between mothers

Examples of products

Latch Assist	Latch assist with suction/nipplette	Nipple formers/ Shells
		

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Appendix 2: Fact sheet development process

A comprehensive literature review was undertaken with regard to all available lactation products including national and international publications (grey literature inclusive) with the help of HSE library service until June 2025. Industry led studies were excluded. The results from these searches were reviewed by the team as the review of the literature was carried out. The quality, validity and relevance of the evidence gathered were critically appraised by the fact sheet developers under the following headings:

- Independent of industry led studies
- Study design
- Relevance of primary and secondary outcomes
- Consistency of results across studies
- Magnitude of benefit versus magnitude of harm
- Applicability to practice context

Foot note Ref	References	Study design	Year published
Nipple shapes			
1	Wilson-Clay & Hoover, 2017, <i>Breastfeeding atlas</i> , p 47	Breastfeeding resource book	2017
2	Nabulsi, M., Ghanem, R., Smaili, H. <i>et al.</i> The inverted syringe technique for management of inverted nipples in breastfeeding women: a pilot randomized controlled trial. <i>Int Breastfeed J</i> 17, 9 (2022). doi.org/10.1186/s13006-022-00452-1	RCT of Grade 1 or 2 inverted nipples that used the inverted syringe technique N=54	2022
3	Genna, C.W. Selecting and using breastfeeding tools (2009): improving care and outcomes. ISBN:978-0-9823379-1-2	BF Resource book	2009
4	Boucher-Horwitz, J. (2011). The use of supple cups for flat, retracting and inverted nipples. <i>Clinical lactation</i> , 2(3), 30-33.	Observational study, N=12 used supple cups in pregnancy.	2016
5	Özge Kaya, Özge Karakaya Suzan, Faruk Kabul, Oğuz Koyuncu, Nursan Çınar. The effect of interventions on flat and inverted nipple on breastfeeding: A systematic review, Volume 74e1-e13 (2024). DOI: 10.1016/j.pedn.2023.07.024	Systematic review on the effects of flat and/or inverted nipple interventions on nipples and breastfeeding. N=9.	2024
Tropical treatments			
6	Şahin E, Yıldırım F, Büyükkayaci Duman N. Effect of Tea Tree Oil and Coconut Oil on Nipple Crack Formation in the Early Postpartum Period. <i>Breastfeed Med</i> . 2023 Mar; 18(3):226-232 doi: 10.1089/bfm.2022.0260. Epub 2023 Feb 10. PMID: 36763614.	RCTN=90 (30=coconut oil, 30=tea tree oil, 30=control group)	2023
7	Alikamali M, Emadi SF, Mahdizadeh M, Emami Z, Akbari H, Khodabandeh-Shahraki S. Comparing the Efficacy of Breast Milk and Coconut Oil on Nipple Fissure and Breast Pain Intensity in Primiparous Mothers: A Single-Blind Clinical Trial.	Single blind clinical trial. Efficacy of VCO and breast milk on nipple fissures, N=106	2023

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	Breastfeed Med. 2023 Jan; 18(1):30-36 doi: 10.1089/bfm.2022.0120. PMID: 36638195.		
8	Lin CX, Lu YY. Comparative Effectiveness of Olive Oil and Breast Milk on Nipple Soreness in Breastfeeding Mothers. Breastfeed Med. 2023 Oct; 18(10):779-784. doi:10.1089/bfm.2023.0081. Epub 2023 Oct 5. PMID: 37797219.	Quasi-randomized controlled trial, topical application of olive oil and breast milk, N= 80	2023
9	Sağlık DK, Kısacık ÖG. Comparison of the effects of olive oil and breast milk on the prevention of nipple problems in primiparous breastfeeding women: a randomized controlled trial. Health Care Women Int. 2021;42(4-6):877-894. doi: 10.1080/07399332.2020.1840570. Epub 2020 Dec 8. PMID: 33290192.	Intervention study on use of olive oil on nipple pain and crack, N=120	2021
10	Douglas, P., (2022) Re-Thinking Lactation related nipple pain and damage, Women's Health Volume 18: 1–29 doi: 10.1177/17455057221087865	Review paper on management of nipple pain and trauma.	2022
11	C.L. Dennis, N. Schottle, E. Hodnett, K. McQueen; An all-purpose nipple ointment versus lanolin in treating painful damaged nipples in breastfeeding women: a randomized controlled trial, Breast Med. 7 (6) (2012) 473–479. doi.org/10.1089/bfm.2011.0121	Double blind RCT, APNO cream Vs lanolin, N=151	2012
12	Azin Niazi, Vafa Baradaran Rahimi, Nafiseh Askari, Pouria Rahmanian-Devin, Vahid Reza Askari; Topical treatment for the prevention and relief of nipple fissure and pain in breastfeeding women: A systematic review; Advances in Integrative Medicine 8 (2021) 312–321. doi.org/10.1016/j.aimed.2021.07.001	Systematic review, 22 studies, in 12 studies people used breast milk to treat and prevent fissure and nipple pain.	2021
Silver cups/caps/pads			
13	Marrazzu A, Sanna MG, Dessole F, Capobianco G, Piga MD, Dessole S. Evaluation of the effectiveness of a silver-impregnated medical cap for topical treatment of nipple fissure of breastfeeding mothers. Breastfeed Med. 2015 Jun; 10(5):232-8. doi: 10.1089/bfm.2014.0177. Epub 2015 May 19. PMID: 25989381.	RCT on use of silver cups, N=40	2015
14	Pilloni, M., Zedda, PP., Orrù, C.C., Fassina, E.E., Carmelaa Forte, M., Mazzulla, R., Celestino, B., B. Francesca Marotto, M., Neri, M., Benedetto Melis, G. and Maria Paoletti, A. (2023) Evaluation of the Efficacy of 99.9% Pure Silver Trilaminare Cups in the Prevention and Treatment of Nipple Pain and Fissures. <i>Open Journal of Nursing</i> , 13 , 686-698.doi.org/10.4236/ojn.2023.1310045	Observational study, use of silver cups N=187, Purposive sampling	2023
15	Nakamura M, Sugimori H, Asaka Y, Ebina Y. Role of Silver Nipple Protectors in Treating Nipple Trauma: A Non-Randomized Comparative Trial. J Hum Lact. 2025 Aug;41(3):382-391. doi: 10.1177/08903344251342564. Epub 2025 Jun 19. PMID: 40536002.	Non-randomised comparative trial, N=97	2025
16	Nakamura M, Luo Y, Ebina Y. Systematic Review on the Efficacy of Moisturizing Therapy in Treating Nipple Trauma and Nipple Pain. <i>Journal of Human Lactation</i> . 2024;41(1):39-53. doi:10.1177/08903344241301401	Systematic review, N=24	2025

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Rental Grade breast pumps			
17	Coles J, Anderson A, Loxton D. Breastfeeding Duration after Childhood Sexual Abuse: An Australian Cohort Study. <i>J Hum Lact.</i> 2016; 32(3):NP28-35. doi: 10.1177/0890334415590782. PMID: 26076912.	Longitudinal study on Women's Health. N= 3778 women from the 1973-1978 cohort	2016
18	Kendall-Tackett K, Cong Z, Hale TW. Depression, Sleep Quality, and Maternal Well-Being in Postpartum Women with a History of Sexual Assault: A Comparison of Breastfeeding, Mixed-Feeding, and Formula-Feeding Mothers. <i>Breastfeeding Medicine.</i> 2013;8(1):16-22. doi:10.1089/bfm.2012.0024	Survey of 6410 mothers and 994 had history of sexual assault	2012
19	Watson C, Wei J, Varnado N, Rios N, Flanagan T, Alabaster A, Staunton M, Sterling SA, Gunderson EP, Young-Wolff KC. Adverse Childhood Experiences and Early and Continued Breastfeeding: Findings from an Integrated Health Care Delivery System. <i>J Women's Health (Larchmt).</i> 2021 Mar;30(3):367-376. doi: 10.1089/jwh.2020.8697. Epub 2021 Feb 4. PMID: 33538640; PMCID: PMC7957374.	Retrospective review of adverse childhood experiences, N=926	2021
20	Mitoulas LR, Lai CT, Gurrin LC, Larsson M, Hartmann PE. Effect of vacuum profile on breast milk expression using an electric breast pump. <i>J Hum Lact.</i> 2002 Nov;18(4):353-60. doi: 10.1177/089033402237908. PMID: 12449051.	Experimental study of vacuum patterns (N=5) and milk yield	2002
21	Kent JC, Mitoulas LR, Cregan MD, et al. Importance of Vacuum for Breastmilk Expression. <i>Breastfeeding Medicine.</i> 2008;3(1):11-19. doi:10.1089/bfm.2007.0028	Experimental study of mother's maximum comfortable vacuum settings, milk flow rate and milk yield, N=23	2008
22	BREASTFEEDING MEDICINE Volume 14, Number 3, 2019; Mary Ann Liebert, Inc. DOI: 10.1089/bfm.2018.0186	Experimental study of optimization of the amplitude and duration of the vacuum stimuli on breast pump efficacy, N=49	2019
23	<u>Community Infection Prevention and Control Manual: A practical guide to implementing Standard and Transmission-Based Precautions in Community Health and Social Care Settings</u>	HSE publication on infection prevention	2023
24	Meier, P. P., Patel, A. L., Hoban, R., & Engstrom, J. L. (2016). Which Breast Pump for Which Mother: An Evidenced-Based Approach to Individualizing Breast Pump Technology. <i>Journal of Perinatology: Official Journal of the California Perinatal Association</i> , 36(7), 493–499. https://doi.org/10.1038/jp.2016.14	Review article on evidence for categories of breast pump types for individualizing breast milk expression	2016
25	Mohrbacher. N, Breastfeeding Answers: A guide for helping families (2 nd Edn.) 2020	Breastfeeding resource book	2020
26	A. Williams, Are You Knowledgeable About Breast Pump Safety and Assessment? Knowledge and Skills for Clinical Practice <i>Clinical Lactation</i> , Vol 15 Issue 2, Aug 2024, DOI: 10.1891/CL-2023-0023	Review article on optimal pressures, cycling/speed of expressing, or flange fit	2024

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27	Fewtrell MS, Kennedy K, Ahluwalia JS, <i>et al</i> Predictors of expressed breast milk volume in mothers expressing milk for their preterm infant <i>Archives of Disease in Childhood - Fetal and Neonatal Edition</i> 2016; 101 : F502-F506. DOI: 10.1136/archdischild-2015-308321	RCT comparison of two breast pumps with mothers of preterm infants (< 34 weeks), N=64	2016
28	Monitoring aroma changes during human milk storage at +4 °C by sensory and quantification experiments, Spitzer, Johanna <i>et al</i> . <i>Clinical Nutrition</i> , Volume 32, Issue 6, 1036 – 1042. DOI: 10.1016/j.clnu.2013.01.015	Sensory quantification experiments of aroma changes during human milk storage at 4°C	2013
29	Stefanie Sandgruber, Daniela Much, Ulrike Amann-Gassner, Hans Hauner, Andrea Buettner, Sensory and molecular characterisation of the protective effect of storage at –80°C on the odour profiles of human milk, <i>Food Chemistry</i> , Volume 130, Issue 2, 2012, Pages 236-242, ISSN 0308-8146, DOI: 10.1016/j.foodchem.2011.07.013	Intervention study to investigate if storage at –80 °C prevents off odour formation.	2012
30	Handa, D., Ahrabi, A., Codipilly, C. <i>et al</i> . Do thawing and warming affect the integrity of human milk? <i>J Perinatol</i> 34 , 863–866 (2014). https://doi.org/10.1038/jp.2014.113	Analysis of fresh milk donated by Neonatal mothers, after storing for 7 days (-80° C and at -20° C) and thawed and heated.	2014
31	Takci S, Gulmez D, Yigit S, Dogan O, Dik K, Hascelik G. Effects of freezing on the bactericidal activity of human milk. <i>J Pediatr Gastroenterol Nutr</i> . 2012 Aug; 55 (2):146-9. doi: 10.1097/MPG.0b013e31824f7889. PMID: 22357119.	Analysis of 48 milk samples, divided into 10 aliquots analysed at 1 month & 3 months after freezing to (-80° C & at -20° C)	2012
32	Anders, L.A., Robinson, K., Ohlendorf, J.M. <i>et al</i> . Unseen, unheard: a qualitative analysis of women's experiences of exclusively expressing breast milk. <i>BMC Pregnancy Childbirth</i> 22 , 58 (2022). https://doi.org/10.1186/s12884-022-04388-6	Qualitative interviews with 21 women, exclusively expressing	2022
Breastmilk storage containers			
33	Eglash A, Simon L; Academy of Breastfeeding Medicine. ABM Clinical Protocol #8: Human Milk Storage Information for Home Use for Full-Term Infants, Revised 2017. <i>Breastfeed Med</i> . 2017 Sep; 12 (7):390-395. doi: 10.1089/bfm.2017.29047.aje. Epub 2017 Jun 29. Erratum in: <i>Breastfeed Med</i> . 2018 Jul/Aug; 13 (6):459. doi: 10.1089/bfm.2017.29047.aje.correx. PMID: 29624432.	ABM Clinical Protocol #8: Human Milk Storage Information for Home Use for Full-Term Infants	2017
34	Blouin, M., Coulombe, M. & Rhainds, M. Specimen plastic containers used to store expressed breast milk in neonatal care units: A case of precautionary principle. <i>Can J Public Health</i> 105 , e218–e220 (2014). https://doi.org/10.17269/cjph.105.4369	Statement on use of EBM containers from The Health Technology Assessment Unit (HTAU)	2014
35	Jones, F., (2019) <i>Best practice for expressing, storing, and handling human milk in hospitals, homes, and childcare settings</i> (4 th ed). Fort Worth, TX:	Best practice guidance, Human Milk Banking Association of North America	2019
Cup feeding			

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36	Flint A, New K, Davies MW. Cup feeding versus other forms of supplemental enteral feeding for newborn infants unable to fully breastfeed. <i>Cochrane Database Syst Rev</i> . 2016 Aug 31;2016(8):CD005092. doi: 10.1002/14651858.CD005092.pub3. PMID: 27577968; PMCID: PMC6464444.	Review of randomised or quasi-randomised controlled trials, N=5 studies	2016
37	doi.org/10.1111/mcn.12251 doi: 10.1177/089033440001600205. PMID: 11153341. doi: 10.3389/fpubh.2015.00236. PMID: 26528467; PMCID: PMC4607874	4815 Danish mothers, Self-administered questionnaire	2016
Nipple shields			
38	Aloysius, A., Lozano, S. (2007) Provision of nipple shields to preterm infants on a neonatal unit: A survey of current practice. <i>Infant 3</i> (3): 96-99. www.infantjournal.co.uk/pdf/inf_015_pnn.pdf	Survey of mothers of 12 preterm infants, using nipple shields, over 12-month period	2007
39	Boies EG, Vaucher YE. ABM Clinical Protocol #10: Breastfeeding the Late Preterm (34-36 6/7 Weeks of Gestation) and Early Term Infants (37-38 6/7 Weeks of Gestation), Second Revision 2016. <i>Breastfeed Med</i> . 2016; 11:494-500. doi: 10.1089/bfm.2016.29031.egb. Epub 2016 Nov 10. PMID: 27830934.	ABM protocol#10 on managing breastfeeding the Late preterm infant	2016
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Oral thrush (mouth thrush)

Thrush is a fungal infection caused by a yeast called candida. Oral thrush means that the infection is in the mouth.

Monday to Friday: 8am to 8pm
Saturday: 9am to 5pm
Sunday: Closed
Bank holidays: Closed

Oral thrush can be treated with medicine you can buy without a prescription.

Freephone: [1800 700 700](#)

From outside Ireland: [00 353 1 240 8787](#)

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[HSE Instagram](#)
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- white patches or spots in your mouth that cannot be rubbed off
- a red patch that can bleed if you wipe off a white spot

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- spots that join together to form larger patches - these can become yellow
- a red or sore area under your dentures

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- a red and sore mouth without white spots, especially after taking antibiotics or steroids
- food does not taste the same

▶ [What oral thrush looks like](#)

Adults may have other symptoms including:

- cracks at the corners of your mouth
- an unpleasant taste in your mouth

- pain, such as a sore tongue or gums
- difficulty eating and drinking

Babies under 12 months

Not all babies with oral thrush have symptoms.

Signs of oral thrush in babies include:

- a white coating on their tongue that cannot be rubbed off
- white spots in their mouth
- not wanting to feed
- nappy rash
- dribbling more than usual - this may be because it hurts them to swallow

Oral thrush can spread through saliva from an infected child.

If you breastfeed when your baby has oral thrush, you can get a thrush infection of your nipple or areola (the circle around your nipple). This is called [nipple thrush](#).

► [What oral thrush looks like in babies](#)

Oral thrush can sometimes be diagnosed and treated by a pharmacist through the [Common Conditions Service](#). There is a fee for this service.

Treating oral thrush in babies and children

Contact your GP if you think your baby has oral thrush, and they are less than 1 month old.

Or contact your GP or pharmacist, if your child is over 1 month old.

They may treat your baby with:

- a liquid antifungal mouth gel (for babies age 4 months and older)
- an antifungal cream - if your baby also has nappy rash

If the infection does not clear after 7 days, your GP can prescribe other treatment.

If you are breastfeeding, your GP or pharmacist may recommend an antifungal cream for [nipple thrush](#).

Helping your child's oral thrush at home

There are things you can do to ease your child's symptoms and stop the spread of infection.

Do

offer regular milk feeds - you may need to offer feeds more often if they are not taking as much as usual

feed them bland foods - spicy or acidic foods could sting their mouth

keep their hands clean so that the infection does not spread

sterilise soothers, dummies and any toys they put in their mouth, such as teething rings, regularly

[sterilise any bottles and other feeding equipment regularly](#), especially the teats

wash your hands after changing nappies and before any feeds

Your child can still attend creche if they are well enough.

Treating oral thrush in adults

Adults can treat oral thrush at home with an antifungal mouth gel or liquid medicine. You can get some of these without a prescription.

Your pharmacist will tell you how to use it.

Treatment usually lasts at least 7 days. Always follow the packet instructions. Keep all medicines out of sight and reach of children.

Oral thrush in adults is not contagious, but you should treat it as soon as possible. The infection can spread to other parts of the body if it's not treated.

Contact your GP if you:

- do not see an improvement after 1 week of treatment with an antifungal mouth gel or liquid medicine

- have oral thrush and you have difficulty or pain swallowing

There are other conditions that can cause a [sore or white tongue](#). Some of these can be serious if not treated. If they do not get better after 2 weeks, contact your GP.

Causes of oral thrush

You or your child might get thrush if you're:

- taking antibiotics
- taking steroid inhalers for conditions such as asthma or [chronic obstructive pulmonary disease \(COPD\)](#)
- taking medicine that affects your immune system, such as [chemotherapy](#)
- diagnosed with a condition that weakens your immune system, such as certain types of cancer or HIV

Preventing oral thrush

There are some things you can do to help prevent oral thrush.

Do

- brush your teeth twice a day
- clean your dentures - [read about denture care on dentalhealth.ie](#)
- go for regular dental check-ups, even if you have dentures
- brush your gums, tongue and the roof of your mouth with a soft toothbrush if you have dentures
- rinse your mouth after eating or taking medicine
- rinse your mouth after using steroid inhalers - your GP, practice nurse or pharmacist can check your inhaler technique with you
- go to your check-ups if you have a long-term condition such as [diabetes](#)

Don't

do not wear dentures overnight

do not wear dentures that do not fit you properly

do not smoke - [sign up for a Quit plan](#)

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