Breast pump and breast milk storage

Open- System Pumps – available for purchase

Many of the pumps that women are able to purchase operate on what is called an 'open system'. What this means is that the motor of the pump is open to contact with the breast milk during pumping. Milk particles can travel from the breast shield into the tubing and on to the pump diaphragm. This pump part is unable to be removed for sterilization which means it is unable to be cleaned properly between users. This could result in one women's breast milk being pushed into another woman's milk by the suction process of the pump. There is a small possibility of cross-infection when multiple women use the same open-system pump. Open-system pumps should be considered just for personal, one user only usage.

Closed-System Pumps – some are available to purchase and some are available for rental

There are some breast pumps available that are closed system pumps which women can purchase. It is always a good idea to check the pump type before buying, either in a pharmacy, baby product outlet, or on-line, particularly if the mother is planning on re-selling a pump later, or in situations where a breast pump is planning to be shared between women. There are also larger closed system pumps, often referred to as 'hospital grade pumps' and these are the bigger electric models. All closed systems pumps do not allow breast milk to travel into the motor parts of the pump and therefore they are safe for multiple users who purchase their own personal kits. The 'hospital grade' pumps are very expensive to buy (over $2,500) so users will generally will have to find a rental outlet if they require one of these pumps.

Reasons for using a breast pump

The majority of women do not need to use a breast pump although many women think that a pump is part of 'normal' breastfeeding. Using a breast pump without a clinical reason during breastfeeding establishment, particularly in the first six to eight weeks following the birth, may interfere with the milk supply/milk removal/responsive feeding system of breastfeeding.

If a breastfeeding mother and baby are separated for any reason then milk will need to be expressed from the breast to protect the milk supply. Removal of milk from the breast is crucial to milk supply, so in the absence of a baby breastfeeding, milk must be removed either by hand expression or by pump. Hand expression is best for at least the first two days following birth as colostrum is not extracted effectively with a vacuum pump. Some women also find that hand expression works well for them as a longer term strategy when milk removal is necessary.

Types of breast pump

The reason for using a pump will determine which pump to use and how often to use it. There are many variables between breastfeeding women and milk supplies so women can ask a midwife, well child nurse, lactation consultant, La Leche League Leader, or a breastfeeding peer counsellor for information. Going along to a breastfeeding group gives women the chance to find out what has worked for other mums in these situations.

Intensive and long term usage

If the baby is not feeding from the breast at all:
For example

- When the baby is low birth weight and in a special care or neonatal intensive care unit
- If a full term baby is not feeding at the breast, and if this is likely to be a long term issue
- When a baby has a long term feeding challenge – for example a baby who has a cleft palate.
- If the mother and baby are likely to be separated for long periods.

What is often called a 'hospital grade' electric pump may be ideal for this long-term more intensive usage. These pumps cost over $2500 for the basic model so purchasing these models is cost-prohibitive, but they may be rented from different sources. These are closed system pumps and individual users will usually need to purchase a personal kit when hiring this type of pump. Pumps should be cleaned by the rental service between users. Some smaller electric pumps may

be useful for long term use and there are a range of pumps available for purchase.

Less intensive long term usage

The baby may be breastfeeding well but is separated from the mother at some time during the day – for example when a woman goes back to paid work. In these situations women usually prefer to use electric pumps, although a good hand pump, or hand expressing, may work well also. A breast pump may be useful for some breastfeeding challenges, such as when the well baby is still working out how to latch at the breast and milk needs to be expressed to maintain milk supply. There are open-system, single user models available for purchase and also some closed system pumps available for purchase. Occasionally a mother may require a larger electric pump but this will be determined by how well lactation is establishing and the number of times a day that a baby is breastfeeding at the breast. The baby has to be removing milk effectively from the breast to maintain a mother's milk supply so it's important to ensure the latch is working well.

Short term or occasional usage

For a short term breastfeeding challenge, or for women with babies who are breastfeeding well, but who are separated occasionally from the baby, a hand pump can work well. Hand expressing is also a good option.

Breast pumps are available to buy or to hire.

There are many different breast pumps on the market and it has been reported that Ameda Egnell, Avent, Medela, and UNIMOM brands are reliable.

Pumps for rental and purchase – many of the hire outlets below also sell pumps

1. **Marcia Annandale Lactation Consultant (IBCLC) (03) 3237124**
   Ameda Egnell Elite rental (LMC verification required) No deposit or personal kit purchase necessary

2. **Life Pharmacy Northlands, Papanui (03) 3527805**
   Medela Symphony and Lactina rental.
3. **Baby Factory Papanui, (03) 3544032**
   Medela Symphony rental
4. **St George's Hospital Pharmacy (03) 3562790**
   Medela Lactina rental
5. **Baby Factory, Colombo Street, (03) 3744162**
   Medela Symphony rental
6. **Radius Pharmacy, Addington, Tower Junction, (03) 3485544**
   Medela Lactina rental
7. **Life Pharmacy, The Palms, Shirley (03) 3852725**
   Medela Lactina rental
8. **Baby City, Addington. Tower Junction, (03) 3485940**
   Medela Lactina and Symphony rental
9. **Wilsons Barrington Pharmacy (03) 3323156**
   Medela Lactina rental
10. **DME Durable Medical Equipment 0800363123** rental@dme.co.nz
    Ameda Egnell Elite rental
11. **Breast Mates Online shopping** http://www.breastmates.co.nz/shop-management/categories/breast-pumps.aspx **(07) 8278235**
    Medela Lactina and Symphony rental
12. **UNIMOM** South Island stockists http://www.unimom.co.nz/south-island-stockists/
13. **Julia Daly – Lactation Consultant (IBCLC) 022 06066 557**
    lactationchristchurch@gmail.com
    https://www.morethanmilk.co.nz/
    UNIMOM Forte – double pump $255 – pick up Halswell, or free courier nationwide
14. **The Stork Network** – **Medela Symphony (rental only)**
    https://www.thestorknetworkstore.net/collections/medela/products/symphony-breastpump-rental-only
    Hire fee is $140 per month plus a $100 bond
    thestorknetwork@gmail.com or call 0274925434

15. **Catherine Rietveld – Midwife**

UNIMOM Forte (Hospital grade) breast pumps available. Personal pumping kit needs to be purchased.

Hire fees $45.45 for the first week (which includes the pumping kit) and then $17.50 per week thereafter. Pick up Marshlands Road.

Call 0272286747 or email rietveld560@gmail.com

Rental

Costs of rental vary. Most, but not all, pumps may be hired on a monthly basis. Personal kits usually need to be purchased on top of the hire charge, and prices vary. Most rental outlets also require a deposit to be paid which is refundable on return of the pump. St George's does not charge a deposit but hold credit card details which need to be given at the time of hire.

Breast shields

Another important issue is the diameter of the breast shield. A correctly fitting shield avoids unnecessary compression of the milk ducts (behind the dark area around the nipple), which are superficial and easily compressible, and it also avoids friction around the nipple area which can cause nipple damage.

The nipple should be centred carefully in the opening of the breast shield tunnel prior to switching the pump on. During pumping the nipple should move freely in the shield tunnel, rhythmic movements should be noted during the pump cycle and pumping should feel comfortable and pain free. If the nipple is not moving and appears squashed into the tunnel then a larger breast shield is necessary. If the nipple and a large amount of areola are being pulled into the shield tunnel during pumping a smaller shield may be necessary. There are five different sizes of breast shield available from Medela. Ameda Egnell has four sizes available from medium to XXLarge.

A comfort breast shield, soft fit breast shields, or soft fit kits are also available for use with some brands to increase comfort during pumping.

Notes on expressing breast milk

When a baby is not breastfeeding at the breast at all this represents a risk factor for low milk supply as there is an interference with the normal physiology and synthesis of breast milk production. A breast pump does not remove all the available milk in the breast and for women who are attempting to establish and maintain a milk supply without the baby breastfeeding, other measures added to the pumping may be necessary.

It is always good practice to start a pumping episode with some breast stimulation/massage and hand expressing to the point when milk begins to flow. Then the pump may be used. This eliminates the 'dry pumping' period before a let-down, and the oxytocin hormone response required for a let down reflex of milk also works better with tactile stimulation massage/hand expression.

For women establishing a milk supply for a baby in NICU who is not breastfeeding, breast compression during the pumping period can also increase milk supply. A combination of hand expression, breast compression and pumping results in a higher milk yield. It may be useful to watch the excellent video made by Dr Jane Morton and Stanford University which is called Maximizing Milk Production.
http://newborns.stanford.edu/Breastfeeding/MaxProduction.html
This combination method may also be very useful for women who are working on increasing their milk supply.

Dr Jack Newman also has useful information and a description of how to manage breast compression
http://www.drjacknewman.com/help/Breast-compression.asp

Double or single pumping – or both?

Breast pumping may be done using one breast at a time (single) or both breasts together (double) which is why there are two types of personal kits available to purchase. If a double kit is purchased this may also be used as a single option.

It is still a good idea to stimulate the breast/s before the pumping starts and for women who are double pumping it is also a good idea to switch to the single

pumping of one breast when the milk flow stops, or slows significantly in one breast. This enables pumping to continue on the breast where milk is still flowing and it also makes breast compression possible as a free hand becomes available. After the milk flow has stopped in the second breast the woman may then return to pumping the first breast using single pumping and breast compression.

Breastfeeding an adopted baby or restarting your lactation

Women who have never been pregnant may achieve enough breast milk to breastfeed an adopted or surrogate baby. This requires a lot of work, good support and access to good information. Mothers may also decide to restart breastfeeding again and this is called relactation. A breast pump will usually be required to achieve lactation in these situations. Talking to a midwife, well child nurse, lactation consultant, La Leche League Leader, or a breastfeeding peer counsellor for more information is a good idea. A useful resource about relactation and induced lactation is available from the Association of Breastfeeding Mothers (ABM)
https://abm.me.uk/wp-content/uploads/2012/10/Relactation-webtext.pdf

Pump mythology

1. **Every woman needs a pump to breastfeed successfully**
   No, they do not but manufacturers give the impression that this is necessary through inappropriate marketing and what is termed 'manufactured demand'. This style of marketing results in an increase in pump sales but may complicate breastfeeding for many women at the same time. It has been estimated that there are three breast pumps sold for every baby born in the U.S. which is indicative of marketing success and not breastfeeding support as the U.S has very low breastfeeding rates.
2. **Pumping and bottle feeding helps you breastfeed for longer**
   In some situations pumping may assist a mother to increase her milk supply if pumping is done in addition to breastfeeding and this may help with continuation of breastfeeding. In some situations pumping can interfere with breastfeeding and may not assist with continuation of breastfeeding as

pumping, breastfeeding and bottle-feeding is a massive workload for most women and it can become too difficult. Pumping and bottle-feeding may result in a continuation of pumping and bottle-feeding rather than breastfeeding, and if a mother wishes to breastfeed this may be frustrating. It is generally useful for women to seek help, support and information with breastfeeding challenges. Talking to a midwife, well child nurse, lactation consultant, La Leche League Leader, or a breastfeeding peer counsellor for more information is a good idea. They can support women to meet their own goals for breastfeeding.

3. **Pumping is the same as breastfeeding**

   Pumping does not have the same effects as a breastfeeding baby in regards to milk supply for many women, and there are other significant factors associated with actual breastfeeding that are missing. Women who breastfeed will generally enjoy a period of lactational amenorrhoea (no periods or ovulation) for six months or longer but women who pump will usually ovulate within the first six weeks post-birth. Hormonal responses are more robust with actual breastfeeding.

4. **Babies with teeth cannot be breastfed, and breastfeeding should be avoided**

   Babies with teeth will be unable to bite the breast if the nipple is in the correct place. The majority of babies will never bite the mother's breast and if this happens there are many ways to deal with this so that it does not occur again. Some manufacturers of pumps supply information that makes biting appear to be a major issue and suggest pumping to eliminate the issue. This is another example of misleading marketing.

5. **Supplementary feeds need to be given only with a bottle**

   In some situations (around 5% of women approx) where a mother's milk supply needs to be increased and/or the baby requires extra feeds a mother can be supported to use a supplementary feeding system so that the baby sucks on the breast and receives the supplement via a tube in her/his mouth at the same time. This assists with increasing milk supply and is a technique that can be managed with good support. This may be preferable to pumping for some women, or it may be used as well as pumping as a combination strategy to increase supply, or as a way of

keeping the baby at the breast while giving a needed supplement. Some women may prefer to use bottle-feeds, but women can talk to a midwife, well child nurse, lactation consultant, La Leche League Leader, or a breastfeeding peer counsellor if more information about options is needed.

Helpful tips for expressing

As previously mentioned, a combination of hand expression, breast compression and pumping will usually maintain milk supply and increase milk supply in most women. This combination strategy is particularly useful when babies are not feeding from the breast at all and a mother is relying on expressing milk.

In situations where a baby is not breastfeeding at all a mother will need to express milk from her breasts at least 8 times in 24 hours generally, although there are some exceptions. If the baby is feeding well at the breast, and a mother is trying to increase her milk supply then expression after all feeds, or some feeds can occur.

If the mother is expressing milk to be given to the baby during her absence, such as a work situation, but the baby is still breastfeeding normally at other times, she can express milk around 3-4 times a day. This will usually involve lactation breaks at work to express milk. There is legislation in New Zealand that supports women who are breastfeeding to continue when they return to the paid workforce. Each breastfeeding woman's individual situation is different and she may need to seek individual information to meet her own needs.

Storing expressed breast milk

Expressed breast milk can be stored in plastic or glass containers with airtight, sealed lids. Using BPA free[1] plastic wherever possible is a good idea. The date and time can be written on the bottle/container, or on a sticky label securely attached to the bottle/container. The baby's full name should be written on the bottle/container too if milk is being transported to another place such as the neonatal unit, children's ward at the hospital, or an early childhood education centre, for example. Milk should be stored in amounts from around 60mls to 200mls making sure there is a space free from milk at the top of the bottle, as the milk will expand when freezing and spill over the top.

If a woman is planning to express a few times in the day and getting small amounts at each expressing time the expressed milk may be placed at the back of the fridge. When next expressing, this second bottle of 'new' milk should also be placed in the fridge. When the second bottle of milk has cooled to fridge temperature the two bottles may be mixed. This can occur over a 24 hour period as long as the milk to be added is cooled first.

Warm milk should never be added to cold milk or to frozen milk as this can cause some thawing of part of the milk and may lead to bacterial contamination.

Expressed breast milk should be stored at the back of the fridge. Fridge doors tend to get opened a lot and the back of the fridge is cooler. If breast milk is unable to be stored in a fridge or a freezer straight away, the milk can be stored in a chilly bin with ice packs in contact with the bottles of milk for about 24 hours only.

[1] Some plastic feeding bottles are better for a baby's health than others. Avoid any clear, hard, plastic bottles or plastic containers without a number on the bottom of the bottle. Avoid containers with the numbers 3, 6 and 7. BPA free bottles are available.

Breast milk storage times for well and healthy full term babies at home[2] *

Storage conditions	Storage time	Handy hints
In a room (< 26°C)	4 hours	Cover the breast milk and keep in the coolest place possible
Fridge	48 hours	Store milk in the back of the fridge
Frozen • Freezer box in fridge • Separate fridge/freezer • Deep chest freezer	• 2 weeks • 3–6 months • 6 -12 months	Use the frozen breast milk to mix with your baby's food when you introduce this from six months

***These guidelines from the NZ MOH are conservative. The Academy of Breastfeeding Medicine clinicians, using the best available evidence, state that in a room below 26 degrees centigrade milk can be kept for 6-8 hours and for up to five days in a fridge.

Using stored breast milk

Frozen breast milk can be thawed in the fridge slowly, or by placing the bottle of milk in warm water if there is a need to thaw faster.

Microwaves should not used to thaw or heat breast milk as this causes uneven heating which can scald a baby's mouth and it also damages some of the important immune proteins in breast milk.

Warm the expressed breast milk in a jug of hot water. Test the temperature of the milk by shaking a few drops on to the inside of a wrist.

Do not re-warm breast milk that has been defrosted and previously heated.

[2] MOH NZ Storage of breast milk guidelines

A few more points

- Bottles and breast pump parts should be washed in hot soapy water and then rinsed carefully. If the baby is three months of age or younger, the containers and equipment also need to be sterilised by either boiling or using a sterilising solution.

- Breast milk can vary in colour and does not look like cow's milk or formula milk. It can be yellowish, bluish or quite pale and watery looking and this is normal. Sometimes the fat separates during storage and goes to the top of the milk. Shake the bottle gently before using the milk to mix the fat back in again.

- Colostrum is the first milk that mothers produce and it is packed with multiple immune proteins. All the milk expressed during the first two weeks should be given to the baby rather than staying in storage. Colostrum is present in the milk for about two weeks. Fresh milk is always best, but after all the colostrum has been used other milk stores from the oldest date may also be used when defrosting. If the baby is not breastfeeding at the breast at all, the colostrum should be given in the order it was produced, and after around four days it can be alternated with freshly expressed breast milk.