Breast feeding Guide

What are the benefits of breast feeding for the infant?

Breast milk is best for infants. Considerable advances have occurred in recent years in the scientific knowledge of the benefits of breast milk and in understanding the mechanisms underlying these benefits.[1]

Breast feeding is the biological norm for infant feeding and is a traditional practice in most cultures. It is the unequalled way of providing ideal food for the healthy growth and development of infants and toddlers. Breast milk is safe and clean and contains many functional components, including live cells and antibodies, which help to protect the infant against many common childhood illnesses.

Breast feeding forms a unique biological and emotional basis for the health of both mother and child and plays an important and central role in protecting the health of the infant and promoting physical, neurological and emotional development in the short and long term.[2,3] These long-term protective effects appear to be related to the duration and type of breast feeding.[4]

There are numerous benefits of breast milk and breast feeding some of which include:

- Breast feeding provides the optimal nutrition for an infant and contains all the nutrients an infant needs.
- Breast feeding protects the infant from illness and infection.
- Research in developed countries provides strong evidence that breast milk decreases the incidence and/or severity of a wide range of infectious diseases including bacterial meningitis, bacteremia, diarrhoea, respiratory tract infection, necrotizing enterocolitis, and urinary tract infection.[1]
- It is completely natural, is always at the right temperature and is readily available.
- It is readily digested and absorbed.[5]
- It provides immunity factors and helps activate an infant's developing immune system (both passive and active immunity).[5]
- Breast milk varies in composition over the lactation period and during a single feed to meet an infant's individual and varying appetite and thirst.[6]

Breast milk provides the optimal nutrition for infants in their first 6 months of life

What are the benefits of breast feeding for the mother?

Important health benefits of breast feeding and lactation have been described for mothers, these include:

- Decreases postpartum bleeding.[1]
- Encourages contraction of the uterus after birth.[6]
- Breast feeding may help the mother to return to her pre-pregnancy weight.[1]

- Breast feeding is associated with a reduced risk of developing pre-menopausal breast cancer and ovarian cancer.[1]
- Breast feeding may reduce the risk of osteoporosis and hip fracture later in life.[1]
- A baby sucks at a mother's breast for comfort and, of course, for milk. Milk "let-down" is a reflex response to the suckling and kneading of the nipple (and sometimes in response to the sight, smell, and sound of the baby). It is ultimately affected by the secretion of oxytocin, a hormone secreted by the pituitary gland.[7]
- Breast milk is readily available at the exact temperature and does not need time to prepare.
- History of lactation is associated with a reduced risk of type 2 diabetes.[8,9]

Breast milk provides the optimal nutrition for infants in their first 6 months of life and in addition to complementary foods thereafter.

What are important nutritional considerations for mothers during breast feeding?[10]

It has been demonstrated that mothers can produce adequate breast milk for their babies, even under sub-optimal conditions. However, breast feeding mothers do have a slightly increased requirement for most nutrients compared to mothers who do not breast feed as many vitamins and minerals in a breast feeding mother's diet are transferred into the breast milk. Therefore, it is important for the mother to be encouraged to eat adequately to meet her own nutritional needs and to provide nutrition to the infant.

A breast feeding mother should eat regular nutritious meals and snacks to meet the extra energy requirement (approximately 500 calories/day or 2000–2100kJ/day). Consuming a variety of foods each day is important in meeting both the mother's and infant's nutritional needs.

It is important a breast feeding mother consumes a wide variety of nutritious food, such as:[11]

- Vegetables, legumes and fruits.
- Cereals (including breads, rice, pasta and noodles), preferably wholegrain.
- Lean meat, fish, poultry and/or alternatives.
- Milks, yoghurts, cheeses and/or alternatives. Reduced fat varieties should be chosen where possible.
- Fluids, especially water.

It is also recommended when following a healthy balanced diet to:[11]

- Limit saturated fat intake, choose lean meat and unsaturated fat spreads, such as olive/safflower/sunflower oil-based spreads.

- Choose unsaturated fats that are found in foods such as avocado, nuts and seeds, and olive and sunflower oils.
- Limit high salt foods, such as processed meats, potato chips and adding salt to meals.
- Avoid alcohol consumption, particularly in the first month after the infant is born until breast feeding is well-established.
- Limit intake of sugars and foods containing added sugars, such as high sugar breakfast cereals, lollies or sweets, cakes, biscuits and fizzy drinks.

Energy requirements[6]

The energy needs of a breast feeding mother are increased because of milk production. The energy requirements for breast feeding mothers are an additional 500 calories/day or 2.0–2.1 MJ/day assuming full breast feeding in the first 6 months and partial breast feeding after that.[10]

While it is normal (and expected) that mothers put on weight while pregnant, it is not recommended that mothers follow a weight loss diet while breast feeding. Breast feeding naturally allows for gradual weight loss. If a mother gains weight after birth, it is most likely she is eating too much food, or choosing foods that are excessively high in energy (kilojoules/calories).

The energy and nutrient needs of a breast feeding mother are increased because of milk production.

Other nutrients of particular concern during breast feeding are:

Protein

A breast feeding mother requires additional dietary protein to ensure there is adequate amount of protein in her breast milk. While the mean protein intakes in both Australia and New Zealand demonstrate that protein intake in childbearing women appears

The energy & nutrient needs of a breast feeding mother are increased because of milk production.

sufficient to meet the additional requirements of pregnancy and breast feeding,[11] evaluation of protein requirements should be made on an individual basis.

Protein is vital for the growth, maintenance and repair of cells. The Recommended Daily Intake (RDI) for protein for breast feeding mothers is 67g/day (1.1g/kg of body weight).[10]

Protein is found in a wide range of foods such as meat (including fish and poultry), eggs, dairy, legumes (such as beans, pulses and soy products) and nuts. Smaller amounts of protein are found in grain-based foods such as bread and pasta.

Folate

Folate is a B vitamin needed for healthy growth and development.

The RDI for folate for breast feeding mothers is 500µg/day.[10]

Folate can be found in leafy vegetables, wholegrains, peas, nuts, avocado and yeast extract spreads (e.g. Promite,® Vegemite,® Marmite®).

Iodine

Iodine is an essential mineral needed for the production of the thyroid hormone which helps in brain and nervous system development.

The RDI for iodine for breast feeding mothers is 270µg/day.[10]

The NHMRC Australia[12] and the New Zealand MOH[13] both recommend all healthy pregnant and breast feeding mothers take an iodine supplement of 150µg each day.

Iodine can be found in seafood, milk, iodised salt and vegetables.

Supplements containing seaweed or kelp are not recommended for breast feeding women due to the variability in iodine content and quality.

Zinc

Zinc is a component of various enzymes that help maintain structural integrity of proteins and help regulate gene expression.

The RDI for zinc for breast feeding mothers is 12mg/day.[10]

Zinc can be found in lean meat, wholegrain cereals, milk, seafood, legumes and nuts.

Vitamin A/Beta-carotene

Vitamin A is vital for normal growth. Vitamin A helps provide resistance to infections.[14]

The RDI for Vitamin A for breast feeding mothers is 1,100µg/day.[10]

Vitamin A can be found in milk, cheese, eggs, fatty fish, and organ meats.

Beta-carotene, which enables the body to manufacture vitamin A, can be found in yellow-orange vegetables such as carrots and pumpkin, fruits such as mangoes and apricots and in other vegetables such as spinach and broccoli.

Vitamin B6

Vitamin B6 is important for the metabolism of protein and the formation of red blood cells.

The RDI for breast feeding mothers is 2mg/day.[10]

Vitamin B6 can be found in meat, poultry, fish, whole grains, brussel sprouts, green peas and beans.

Omega-3

Long-Chain Polyunsaturated Fatty Acids (LCPUFAs) consumed and accumulated in early pregnancy by the breast feeding mother provide a significant addition of LCPUFAs in the breast milk and subsequently the breast feeding babies diet.

The recommendation for Omega-3 for breast feeding is 145mg/day.[10]

Foods rich in Omega-3 are oily fish, green leafy vegetables, nuts and seeds and some plant oils (soybean, canola, flaxseed and walnut oils).

Water/Fluids

Breast feeding mothers should drink an average of 9 cups of fluid daily[10] with the majority coming from water. Fluid intake can be a combination of water, milk, juice and other drinks.

It may be helpful for the breast feeding mother to drink after each breast feed, as well as drinking regularly throughout other times of the day.

What are the characteristics of breast milk?

During pregnancy the level of prolactin, a hormone primarily associated with lactation, increases steadily in the bloodstream to prime the body for milk production. High concentrations of circulating

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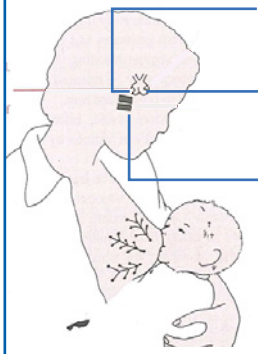
progesterone and estrogen during this time will inhibit its action on milk production until after birth when these hormone levels decline rapidly.

Prolactin, released from the anterior pituitary gland, stimulates milk production.

Oxytocin, from the posterior pituitary gland, is released by the sucking stimulus of a baby on the breast. This causes the cells near the milk gland to contract, therefore allowing the release of milk.[15] This is commonly termed the 'let down reflex' and may also be stimulated by seeing or hearing an infant (particularly a mother's own infant).



Posterior pituitary gland. When stimulated it releases oxytocin and causes the let down of milk.

- Prolactin from the anterior pituitary gland stimulates milk production.
- If mother is anxious or unsure, sore or tired, the oxytocin let down can be interrupted by the release of norepinephrine (adrenalin). This hormone is produced by the adrenal gland which is stimulated by the hypothalamus and is closely associated to the posterior pituitary gland.

Colostrum

This is the first milk produced by the breasts which is a thick consistency and yellow in colour. Colostrum is produced during the first few days following birth. Colostrum is extremely rich in nutrients, as well as antibodies, immunoglobulins and lymphocytes to protect newborn babies as they are building up their own immune system. Colostrum acts as a laxative and assists an infant to pass meconium (the blackish-green bowel motion an infant first passes).

In addition to the changes from colostrum to mature milk that mirror the needs of the developing neonate, variation exists within a given breast feeding session. The milk first ingested by the infant (fore milk) has a lower fat content. As the infant continues to breast feed over the next several minutes, the fat content increases. This hind milk is thought to facilitate satiety in the infant. Finally, the diurnal variations in breast milk reflect maternal diet and daily hormonal fluctuations.[16,17]

Foremilk

This is pearly white with a bluish tinge. It is the milk the infant receives at the beginning of the feed. The foremilk is higher in water and lower in fat. Foremilk, with higher lactose content, may be most plentiful first thing in the morning when storage of milk volume may be highest.[16,17]

Hind milk

This is high in fat and energy and follows the foremilk as the feed continues. It is creamy and satisfies an infant's hunger.

How long and how often should an infant be breast fed?

Newborn infants need short frequent feeds and will typically feed every 2 to 3 hours (8–12 times per 24 hours) in the early stages. This is because breast milk is easily digested to meet a baby's continuous demands for brain and body growth and the newborn infant's stomach is small.

An infant will be getting enough milk if they:

- Have 6–8 wet cloth nappies or 5–6 disposable nappies per 24 hours.
- Have soft bowel motions.
- Generally settle after most feeds.
- Have bright eyes and good skin tone.
- Are gaining weight appropriate to age.

If an infant sleeps for long periods in the day it is important to wake them to feed.

All infants have individual needs and a mother's breast milk adjusts to an infant's needs.

As breast feeding research continues breast feeding practices may change. The current recommendation is to feed a baby from one breast completely first and then offer the second breast. However, some babies will always take both breasts, some will sometimes take both, and others will only take one breast per feed. This is all normal in breast feeding and may in part be due to the individual storage capacity and production of the mother child dyad/bonding.[18]

Are there ways to increase milk supply?

It is common practice for a mother to cease breast feeding due to the perception that the infant is not getting enough milk. In most cases the fears are unfounded and the mother can produce adequate milk.

In a small number of cases, if milk supply is reduced it is normally temporary.

Ways to increase breast milk supply include:

- Increase the supply by breast feeding more frequently.
- Ensure the mother is having enough rest.

- Encourage ways to minimise stress and promote well-being.
- Ensure the mother is having plenty of fluids, at least 9 cups per day.[6]
- Ensure the mother is eating a healthy, well balanced diet.
- Ensure the mother has the most effective positioning.
- Let babies determine length of the breast feed.
- Avoid using pacifiers particularly for extended periods of time.
- Avoid putting babies on scheduled feeds or stopping night feeding too early (before 6 months).
- Express breast milk to further stimulate supply.
- Use lactation aids to feed the baby when possible, rather than using a bottle for supplemental feeds (contact a lactation consultant for more information).
- Encourage skin-to-skin as much as possible.

What are the different ways to express breast milk?

Once breast feeding is well established (usually 4–6 weeks), there may be times where a mother may need or want to express breast milk.

Expressing milk by hand

Before expressing milk, the mother may find that softening her breasts beforehand will help with hand expression. This can be done by applying a warm face cloth, taking a shower or massaging them. The mother's hands must be cleaned, and a sterilised, wide rimmed bowl is required to collect the milk.

By supporting the breast with one hand then massage down from the top of the breast to the nipple. Work all round it including the underside. Then put gentle pressure on the area behind the areola (the dark skin around your nipples) with the thumb and forefinger.

By squeezing them together and pressing backwards milk should be released. It is important to be aware that the milk can spray in lots of directions.

Expressing milk by manual or electric pump

Using a pump can be quicker and less tiring than using hands. The mother may find that softening her breasts beforehand will help with hand expression. This can be done by applying a warm face cloth, taking a shower or massaging them. The pump should be thoroughly sterilised before expressing. Depending on the pump used, it should take 20–45 minutes and should not cause any pain. It is important to read and follow the manufacturer's instructions and ensure that the nipple is properly fitted, or expressing can be ineffective and cause damage.

Positions for breast feeding

Breast feeding is dependent on proper attachment and removal of milk from the breast.

This requires proper technique to latch an infant to the breast, and the successful milking action of a baby to stimulate and remove breast milk. Breast feeding is considered a learned skill for both mother and infant.

There are several different positions a mother could try. Positioning an infant correctly is important to help a baby latch on and develop a correct sucking action.

Underarm or football hold

Lying down

Cradle hold

Signs an infant is attached:[18]

- Mouth wide open and a big mouth full of breast.
- Chin touching the breast.
- Bottom lip curled back.
- More areola (the dark skin around the nipple) visible above top lip than the bottom.
- Sucking pattern changes from short sucks to long deep sucks with pauses.

Tips for successful breast feeding:

The following are some tips that may help with breast feeding:

- Make sure the mother is comfortable in a chair that supports her back.
- The infant is held close and their head, shoulders and body are in a straight line.
- The mother should aim to line up her baby's nose with her nipple and then give their mouth a little nudge with it.
- When the infant's mouth opens wide, the infant should be bought to the mother's breast (not the other way around).
- Try to avoid feeding a crying baby. Settle first and then attempt to feed.

What equipment is required for bottle feeding expressed breast milk?

- 4–6 feeding bottles with caps.
- 4–6 teats.
- Teats are available in a variety of shapes and flows
  - it is important to advise the parent or caregiver about the most appropriate one for their infant, or alternatively suggest they speak to their pharmacist.
  - the teats condition should be checked regularly. Teats will wear over time and may need replacing, particularly if an infant has teeth and bites. Discard any teats with cracked collars.
- Bottle brush for cleaning bottles.
- Sterilising equipment – this depends on the sterilising method chosen e.g. either by boiling, using a sterilising solution or microwave sterilising.
- A breast pump may be used to assist in expressing breast milk. Ensure all parts of any equipment used to assist in expressing milk can be effectively cleaned.
- Breast milk bags – sterile bags for storing breast milk in fridge or freezer.

Do not thaw or warm expressed breast milk in the microwave as this destroys the living cells in the milk.

What are the different methods to sterilise equipment used for expressing breast milk?

There are a number of safe ways to sterilise infant's feeding equipment. The bottles, teats and collars should always be cleaned first to ensure no traces of milk or milk residue remain.

Steam

Electric steamers sterilise bottles in 8–12 minutes. They leave no unpleasant smell or taste but are not suitable for all equipment (i.e. breast pumps). It is important to ensure the openings of the bottles and teats are facing downwards in the steriliser and that the manufacturer's instructions are followed.

Microwave

Steam sterilising units create steam in the microwave which sterilises bottles and teats in 8–10 minutes.

It is important to follow the manufacturer's instructions, especially concerning the correct amount of water to use.

This method is not suitable for glass bottles, as glass retains heat and can become extremely hot in the time it takes to sterilise.

Teats should be placed upright not laid flat, as this allows the steam to circulate to all areas of the teat.

Boiling

To sterilise a bottle by boiling, completely submerge all the feeding equipment in boiling water for 5 minutes.

The water should cool before taking the equipment out and then shake off excess water.

Cold water

Using an approved sterilisation tablet takes about 30 minutes and is highly safe and effective.

It is important to prepare the sterilising solution according to the manufacturer's instructions.

The solution should be made up in a large glass or plastic container.

It is important that the bottles and teats are fully submerged in the container (no air gaps).

The bottles can stay sterilised in the water for up to 24 hours.

Do not thaw or warm expressed breast milk in the microwave as this destroys the living cells in the milk.

How should expressed breast milk be safely thawed and warmed?

- Do not thaw or warm expressed breast milk in the microwave as this destroys the living cells in the milk.
- Frozen breast milk can be thawed in the refrigerator or alternatively in a bowl of warm water.[19]

  Sterilise the cup or bottle before decanting the thawed breast milk.
- Thawed breast milk should be used within 24 hours and should not be refrozen. If not used, it should be discarded.[19]

How should expressed breast milk be safely stored?

Expressed breast milk can be stored in the refrigerator or freezer. See the Guidelines below on the safe storage of breast milk. Once thawed or heated any unused milk must be thrown out.

Guidelines for storing breast milk for home use – New Zealand:[6]

STORAGE CONDITIONS	STORAGE TIME	COMMENTS
Room temperature (<26° C)	4 hours	Cover containers and keep as cool as possible (e.g. surround the closed container with a cool towel to help keep the milk cooler)
Refrigeration (2–4° C)	48 hours	Store milk in the back of the main body of the refrigerator.
Frozen • Freezer box in refrigerator • Separate door fridge/ freezer • Separate deep freezer	 2 weeks 3–6 months 6–12 months	Store milk towards the back of the freezer, where the temperature is most constant.

Guidelines for storing breast milk for home use – Australia:[11]

BREAST MILK STATUS	STORAGE AT ROOM TEMPERATURE (26°C OR LOWER)	STORAGE IN REFRIGERATOR (5°C OR LOWER)	STORAGE IN FREEZER
Freshly expressed into sterile container	6–8 hours If refrigeration is available store milk there	No more than 72 hours Store at back, where it is coldest	2 weeks in freezer compartment inside refrigerator (–15°C) 3 months in freezer section of refrigerator with separate door (–18°C) 6–12 months in deep freeze (–20°C)*
Previously frozen (thawed)	4 hours or less – that is, the next feeding	24 hours	Do not refreeze
Thawed outside refrigerator in warm water	For completion of feeding	4 hours or until next feeding	Do not refreeze
Infant has begun feeding.	Only for completion of feeding. Discard after feed.	Discard	Discard

* Chest or upright manual defrost deep freezer that is opened infrequently and maintains ideal temperature

Where can mothers access support for breast feeding?

For support with breast feeding, mothers can access the following:

- Their Lead Maternity Carer
- Midwife
- Plunket Nurse (NZ)
- Maternal and Child Health Nurse (Australia)
- Tressilian (Australia only)
- Karitane
- Local Community Health Centre
- Lactation Consultant
- Australian Breastfeeding Association, or visit: www.breastfeeding.asn.au
- General Practitioner
- Contact their local maternity unit for community breast feeding support services
- Danone Nutricia Advisory Team

For enquiries please contact the Danone Nutricia Advisory Team

AUSTRALIA 1800 060 057
www.danonenutriciaprofessional.com.au

NEW ZEALAND 0800 688 742
www.danonenutricia.co.nz

A resource for Healthcare Professionals

BREAST MILK IS BEST FOR BABIES: Professional advice should be followed before using an infant formula. Introducing partial bottle feeding could negatively affect breast feeding. Good maternal nutrition is important for breast feeding and reversing a decision not to breast feed may be difficult. Infant formula should be used as directed. Proper use of an infant formula is important to the health of the infant. Social and financial implications should be considered when selecting a method of feeding.

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