

# Storing Human Milk

HUMAN MILK IS A FRESH, LIVING SUBSTANCE—not just a ready-to-use food. When you make the effort to provide expressed milk for your baby, if he or she cannot nurse directly, you are ensuring that your baby continues to receive ideal nourishment and protection against many diseases.

Before you begin to express your milk, wash your hands with hot, soapy water and have your storage containers ready. How you store your milk will affect how well its nutritional and anti-infective qualities are preserved.

Human milk's anti-bacterial properties actually help it stay fresh. The live cells and antibodies in the milk that discourage the growth of bad bacteria in your baby's intestines also guard against bacterial growth when the milk is stored in a container. The interpretation of research on human milk storage varies widely. The following guidelines are adapted from La Leche League International's pamphlet, which was created with the assistance of members of the LLLI Health Advisory Council and Anne Eglash, MD, FAAP, FABM.

They provide evidence-based ranges for the storage of milk for full-term, healthy babies.



## How Long to Store Human Milk

Whenever possible, babies separated from their mothers should get milk that has been refrigerated, not frozen. Some of the anti-infective properties are

lost when milk is frozen—though frozen milk still helps protect babies from many diseases and is much better for your baby than commercial infant formula. How long you can store milk depends on the temperature. A mother's expressed milk can be safely stored at room temperature for 4-6 hours, in a refrigerator for 3-8 days, and for 6-12 months in a standard home freezer. (See "Milk Storage Guidelines" on the reverse side for details)

If cold milk is warmed but untouched, it can be returned to the fridge for a later feeding. It is not clear how long it is safe to keep milk after the baby drinks from the container. Some mothers keep the leftover milk at room temperature to use within an hour if the baby appears hungry after a short sleep. Others refrigerate and reheat the milk left from a previous feeding. However, there is no research on the safety of either of these practices. Avoid wasting precious milk by offering small amounts at a feeding.

Frozen milk which has been thawed can be kept in the refrigerator for up to 24 hours. While there is some evidence that milk thawed for a few hours may be refrozen, this results in further breakdown of milk components and loss of antimicrobial activity. It is best not to refreeze thawed milk. Remember that refrigerated milk will stay fresher than milk that was once frozen.

Expressed human milk can be kept in a common refrigerator at a workplace or day care center. Check that the refrigerator temperature is 4°C or less. Health authorities agree that human milk is not among the body fluids that require special handling or storage in a separate refrigerator. To keep expressed milk cool when a refrigerator is not available, place it in an insulated container with an ice pack. This also helps when transporting milk home from the workplace or to the babysitter, especially on warm days.

## Containers for Storage

- The best options for storing human milk are glass or hard-sided plastic containers with well-fitting tops. Be sure they do not contain the controversial chemical bisphenol A (BPA). Containers should be washed in hot, soapy water, rinsed well, and allowed to air-dry before use. Containers may also be washed and dried in a dishwasher. If you are using these containers for freezing your milk, do not fill them up to the top—leave an inch of space to allow the milk to expand as it freezes.
- If you plan to store your milk in bags, choose thick plastic bags that are designed for storing human milk rather than bottle liners. Care must be used to avoid contamination during handling and storage of bags as they are less durable than glass containers. Double-bagging can help prevent leakage accidents. Squeeze out the air at the top before sealing and allow about an inch for the milk to expand if it is to be frozen. Stand the bags in a rigid container at the back of the refrigerator shelf or in the back of the freezer, where the temperature consistently remains the coldest.
- Put only 60 to 120 ml (two to four ounces) of milk in the container—the amount your baby is likely to eat in a single feeding. This avoids waste. Small quantities are also easier to thaw.
- If a mother expresses a small amount of milk in one session, it is fine to add fresh milk to chilled milk. The newly expressed milk should be cooled in the refrigerator for 30 to 60 minutes before being added to the stored milk. This method can be used for frozen milk, although this practice is questioned by some researchers. The volume of fresh milk should be less than what is already in the frozen container.



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Be sure to label every container of milk with the date it was expressed; if milk expressed on different days is combined, then the earlier date should be used. If the milk will be given to your baby in a day care setting, also put your baby's name on the label.

## Using Stored Milk

- Human milk may separate into a milk layer and a cream layer when it is stored. This is normal. Swirl it gently to redistribute the cream before giving it to the baby.
- The milk only needs to be lukewarm, not hot. Some babies accept milk right from the refrigerator.
- Do not use a microwave oven to heat human milk. Because microwaves do not heat liquids evenly, there may be hot spots in the container of milk, and this can be dangerous for infants.
- High temperatures can affect many of the beneficial properties of milk. Warm milk gradually and with care.
- If milk is frozen, containers should be thawed in the refrigerator overnight or under cool running water.
- Cold milk can be gently warmed under warm running water for several minutes. Or immerse the container in a pan of water that was warmed on the stove. Do not heat the milk in a pan directly on the stove.
- If thrush or yeast infections are affecting you or your baby, continue to breastfeed during the outbreak and treatment. While being treated, you can continue to express your milk and give it to your baby. It is unknown if milk expressed and stored during a fungal infection could cause a recurrence. If you are concerned, after treatment is finished, already stored milk could be boiled and cooled to kill any yeast before use.
- Occasionally, breastmilk that has been frozen and thawed may smell or taste soapy; sometimes it may even smell rancid ('off'). This is due to the breakdown of milk fats. The milk is safe and most babies will still drink it. In the future, you may want to scald your expressed milk by heating it just until bubbles form at the edges. This deactivates the lipase enzyme, which breaks down milk fats. The scalded milk should then be quickly cooled and frozen normally. Scalded milk is still a healthier choice than commercial infant formula.

## Making It Work for You and Your Baby

This information can help you decide how to store your milk to best meet your needs. Breastmilk is remarkably resilient and stores well because of its antibacterial properties.

However, it is always preferable to store milk for as short a time as possible. This will minimize the loss of antibodies and nutrients, and keep bacterial growth to a minimum. The fresher your milk, the better.

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## For breastfeeding support contact:

Milk Storage Guidelines		
Where	Temperature	Time
At room temperature (fresh milk)	19° to 26°C	4 hours (ideal); up to 6 hours (acceptable)* (some sources use 8 hours)
In a refrigerator	<4°C	72 hours (ideal); up to 8 days (acceptable)**
In a freezer (standard home freezer)	-18° to -20°C	6 months (ideal); up to 12 months (acceptable)

\*The preference is to refrigerate or chill milk right after it is expressed.

\*\*Eight days is acceptable if collected in a very clean, careful way.



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