

## Storing Human Milk



The milk you express for your baby is a precious fluid, far superior to any commercial infant formula. It combines the best possible nutrition with antibodies, live cells, and other substances that protect babies from infection and help them grow and develop. When you make the effort to provide expressed milk for your baby for the times you can't be there for breastfeedings, you ensure that your baby continues to receive ideal nourishment and protection against many diseases.

You'll want to take good care of the milk you pump or hand-express. Human milk is a fresh, living substance—not just a food, so wash your hands with hot, soapy water before you begin. 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 longer. The live cells and antibodies in the milk that discourage the growth of bacteria in your baby's intestines also guard against bacterial growth when the milk is stored in a container.

The amount, techniques, and interpretation of the existing research on human milk storage vary widely. After a careful review of the literature with the assistance of members of the La Leche League International Health Advisory Council and Anne Eglash, MD, FAAFP, FABM, the guidelines that follow provide evidence-based ranges for the storage of milk that will be given to full-term, healthy babies.

### 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. Don't fill them up to the top—leave an inch of space to allow the milk to expand as it freezes.

When storing milk in plastic bags, the risk of contamination is greater. Bags are less durable and tend to leak, and some types of plastic may destroy nutrients in milk. If you plan to use bags, select thick plastic bags that are designed specifically for storing human milk. Double-bagging can help prevent accidents. Squeeze out the air at the top before sealing, and allow about an inch for the milk to expand when frozen. Stand the bags in another container at the back of the refrigerator shelf or in the back of freezer where the temperature will remain the most consistently cold.

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. Many mothers who can express only a small amount of milk in one session add fresh milk to chilled or frozen milk that has been previously expressed, although this practice is questioned by some researchers. The fresh milk should be a smaller amount than what is already in the container, and cooled in the refrigerator for 30 to 60 minutes before being added to the refrigerated or frozen milk that was expressed in a different session.

Be sure to label every container of milk with the date it was expressed. If the milk will be given to your baby in a day care setting, also put your baby's name on the label.

Milk Storage Guidelines		
Where	Temperature	Time
At room temperature (fresh milk)	66° to 78°F (19° to 26°C)	4 hours (ideal) up to 6 hours (acceptable)* (Some sources use 8 hours)
In a refrigerator	<39°F (<4°C)	72 hours (ideal) up to 8 days (acceptable)**
In a freezer	-0.4° to -4°F (-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 acceptable if collected in a very clean, careful way.

## 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 (see “Milk Storage Guidelines” on the reverse side).

Previously frozen milk that has been thawed can be kept in the refrigerator for up to 24 hours. While there is limited evidence to date that milk thawed for a few hours may be refrozen, this results in further breakdown of milk components and loss of antimicrobial activity. At this time, the accepted practice is not to refreeze thawed milk. While some mothers and caregivers reheat expressed milk that was leftover and refrigerated after a previous feeding, there is no research on the safety of this practice. There is also no research about whether freshly expressed milk left unfinished at room temperature should be discarded, or can be saved for a short time (perhaps up to one hour as reported by some mothers and caregivers) to finish the feeding if the baby awakens from having fallen asleep or still appears hungry.

Expressed human milk can be kept in a common refrigerator at the workplace or at a day care center. Check that the refrigerator temperature is 39°F (4°C) or less. Both the US Centers for Disease Control and the US Occupational Safety and Health Administration 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. It's a good idea to use ice packs and an insulated container when transporting milk home from the workplace or to the babysitter's, especially on warm days.

## 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 baby.
- Human milk should be thawed and heated gradually with care. Just as freezing destroys some of the immune properties of the milk, high temperatures can also affect many of the beneficial properties of the milk.
- Frozen milk: Containers should be thawed in the refrigerator overnight or under cool running water. Gradually increase the temperature of the water to heat the milk to feeding temperature. Or immerse the container in a pan of water that has been heated on the stove. Take the milk out and rewarm the water if necessary. The milk itself should not be heated directly on the stove.
- Refrigerated milk: Warm the milk under warm running water for several minutes. Or immerse the container in a pan of water that has been heated on the stove. Do not heat the milk directly on the stove. Some babies accept milk right from the refrigerator.
- Do not use a microwave oven to heat human milk. If the milk gets too hot, many of its beneficial properties will be lost.

Because microwaves do not heat liquids evenly, there may be hot spots in the container of milk, and this can be dangerous for infants.

- Sometimes thawed milk may smell or taste soapy. This is due to the breakdown of milk fats. The milk is safe and most babies will still drink it. If there is a rancid smell from high lipase (enzyme that breaks down milk fats) activity when the milk has been chilled or frozen, the milk can be heated to scalding (bubbles around the edges, not boiling) after expression, then quickly cooled and frozen. This deactivates the lipase enzyme. Scalded milk is still a healthier choice than commercial infant formula.
- If you or your baby has a thrush or yeast/fungus infection, continue to breastfeed during the outbreak and treatment. While being treated, you can continue to express your milk and give it to your baby. Be aware that refrigerating or freezing milk does not kill yeast. After treatment is finished, any leftover milk that was expressed during the infection should be discarded.

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