

## BREAST MILK HANDLING AND STORAGE

### Supporting information

This guideline has been prepared with reference to the following:

Paediatric Group of the British Dietetic Association. Guidelines for the Preparation and Handling of Expressed and Donor Breast Milk and Special Feeds for Infants and Children in Neonatal and Paediatric Health Care Settings. 2019

<https://www.bda.uk.com/uploads/assets/913a1f78-c805-42c1-8d85e37ca75e0fc0/2019sfuguidelines.pdf>

University Hospitals of North Midlands. Hindmilk Policy. 2015

#### **What is the optimum temperature at which to store frozen breast milk, in order to preserve its antioxidant content?**

A study (Silvestre, 2010) that compared the effects of 2 temperatures (-20 degrees C and -80 degrees C) and different storage times (15, 30, and 60 days) found that freezing induced losses in the antioxidant properties of breast milk and that such losses increased with the duration of storage and differed in intensity according to the temperature. The authors concluded that to maximally preserve the antioxidant properties of breast milk, it was advisable to store the latter at -80 degrees C for a period of less than 30 days, rather than for shorter time periods at the usual temperature of -20 degrees C.

Silvestre D, Miranda M, Muriach M, et al. Frozen breast milk at -20 degrees C and -80 degrees C: a longitudinal study of glutathione peroxidase activity and malondialdehyde concentration. *J Hum Lactat* 2010;26:35-41

#### **Evidence Level: IV**

#### **Breast milk can be stored in the fridge for 48 hr and in the freezer for up to 3 months?**

A 2008 NICE guideline advises mothers that expressed milk can be stored for:

- up to 5 days in the main part of a fridge, at 4°C or lower
- up to 2 weeks in the freezer compartment of a fridge
- up to 6 months in a domestic freezer, at minus 18°C or lower.

Since the publication of the NICE guidelines, two studies have concluded that breast milk can be safely refrigerated for up to 4 days.

A laboratory study (Slutzah, 2010) of fresh breast milk samples (n = 36) were divided and stored at 4°C for 0, 24, 48, 72, and 96 hours. There were no significant changes for osmolality, total and Gram-negative bacterial colony counts or concentrations of sIgA, lactoferrin, and fat. Gram-positive colony counts (2.9 to 1.6 x 10<sup>5</sup> colony-forming units per mL), pH (7.21 to 6.68), white blood cell counts (2.31 to 1.85 x 10<sup>6</sup> cells per mL), and total protein (17.5 to 16.7 g/L) declined, and free fatty acid concentrations increased (0.35 to 1.28 g/L) as storage duration increased, P < .001. Changes were minimal and the overall integrity of milk during refrigerator storage was preserved. A similar study by Bertino et al (2013) concluded that infants who receive expressed milk stored for up to 96 hours receive essentially the same supply of fatty acids and active lipases as do infants fed directly at the breast.

An earlier study by Silvestre et al. (2006) came to a different conclusion than Bertino, concluding that breast milk should not be refrigerated for a period in excess of 48 hours due to the bactericidal activity observed in their study of 19 samples.

In terms of freezing breast milk, a study by Garcia-Lane et al. (2012) concludes that "after 3 months from freezing at -20 °C, an important decrease in fat and caloric content is observed".

Bertino E, Giribaldi M, Baro C et al. Effect of prolonged refrigeration on the lipid profile, lipase activity, and oxidative status of human milk. *J Pediatr Gastroenterol Nutr.* 2013;56:390-6

García-Lara NR, Escuder-Vieco D, García-Algar O et al. Effect of freezing time on macronutrients and energy content of breastmilk. *Breastfeed Med.* 2012 Aug;7:295-301  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3411345/>

NICE. Maternal and child nutrition. 2008. NICE  
<https://www.nice.org.uk/guidance/ph11>

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Silvestre D, López MC, March L et al. Bactericidal activity of human milk: stability during storage. Br J Biomed Sci. 2006;63:59-62.

Slutzah M, Codipilly CN, Potak D et al. Refrigerator storage of expressed human milk in the neonatal intensive care unit. J Pediatr. 2010;156:26-8

**Evidence Level: III**

**Last amended May 2021**  
**Last reviewed: December 2021**