

PREPARING FORMULA

Sharing Best Practices from Lactation University

The logo for Lactation University (LU) is displayed in white text on a red shield-shaped background. The letters 'L' and 'U' are stacked vertically.

Cronobacter is a germ that lives in dry places. It has been found in dry foods, like powdered baby formula. Cronobacter infections are often very serious for babies; they can die.

In babies, especially less than 2 months old, Cronobacter germs usually get in the blood or make the lining of the brain and spine swell (meningitis). Sickness from Cronobacter in babies will usually start with a fever and poor feeding, crying, or very low energy. Some babies may also have seizures. Babies with meningitis may develop serious, long-lasting problems in their brains. Up to 4 out of 10 babies with meningitis from Cronobacter can die.

When a source of a baby's Cronobacter infection has been found, nearly all have been associated with consumption of reconstituted powdered infant formula. Powdered infant formula is not sterile. Even though not all formula manufactures discuss the necessity of using high-temperature water, it is the best way to reduce the chances of Cronobacter infection. If you formula-feed, we encourage the preparation recommended by the World Health Organization (WHO) and the Center for Disease Control (CDC), which include making bottles using water that is 158°F/70°C.

HOW TO PREPARE INFANT FORMULA

1. Wash hands with soap and water and dry with a clean cloth or paper towel
2. Sterilize all bottles, nipples and caps before using them for the first time. After the first use, items do not need to be sterilized again, rather wash all feeding and preparation devices with hot, soapy water. Use a clean bottle brush to scrub the inside of the bottle and teat
3. Rinse equipment with clean water
4. Disinfect the area where the formula will be prepared
5. Use clean, safe water (if levels of lead or fluoride are concerns, purchase bottled water)
6. Heat water to 158°F/70°C (water boils at 212°F)
7. Read the can to check the expiration date, and then follow the directions on the can to determine the amount of water to add to the bottle for the amount of formula you wish to prepare
8. Pour the correct amount of heated water into the bottle
9. Add the correct amount of powder to the bottle. The powder should be a level scoop and not packed

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The CDC states:

"Your newborn baby's belly is tiny. He or she does not need a lot of infant formula with each feeding to be full.

You can start by offering your baby 1 to 2 ounces of infant formula every 2 to 3 hours in the first days of life if your baby is only getting infant formula and no breast milk. Give your baby more if he or she is showing signs of hunger. Most infant formula-fed newborns will feed 8 to 12 times in 24 hours."

This information was compiled from information found on the CDC website and the WHO Formula Preparation Guidelines, and is provided by Birthing, Bonding & Breastfeeding

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References

1. "Cronobacter." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 28 July 2017, www.cdc.gov/cronobacter/prevention.html.
2. FAO and WHO. Enterobacter sakazakii (Cronobacter spp.) in powdered formulae: Meeting report.[PDF - 121 pages] Microbiological Risk Assessment Series 15. 2008. ISBN 978-92-5-106119-0.
3. Himmelright I, Harris E, Lorch V, Anderson M. Enterobacter sakazakii infections associated with the use of powdered infant formula—Tennessee. JAMA. 2001;287:2204-5.

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HOW TO PREPARE INFANT FORMULA (Con't)

10. Mix the formula by gently shaking the bottle
11. Cool to feeding temperature by holding the bottle under cold running tap water or submerging the bottle in a container of ice water
12. Check the temperature by shaking a few drops on the inside of your wrist. It should be lukewarm
13. If you are making bottles for future use, label each bottle with the time and date and place it in the refrigerator. discard any remaining formula after 24 hours
14. Make certain the refrigerator temperature is 41°F or less to slow down or stop the growth of harmful bacteria
15. If you are preparing bottles to feed right away, feed the infant using Paced Bottle Feeding. It is also possible (and sometimes safer) to cup feed
16. Regardless of the feeding device, hold the baby for each feed. Never prop the bottle to allow baby to self-feed. Any leftovers from the feeding must be discarded within one hour after feeding the infant

Important Reminders:

- No powder formulas are sterile
- Wipe the top of the formula can before opening the can
- Never heat formula in a microwave
- keep cans of powder in a cool, dry place
- Only use the scoop provided with the formula to measure powder
- Do not add cereal or other foods to the bottle
- Do not enlarge the whole in the nipple so contents will flow faster
- Use the correct amount of water, never concentrate or dilute the formula
- Never force a baby to finish the entire bottle
- When possible, use sterile, ready-made infant formula for infants at high risk



THERE HAVE BEEN ALMOST NO CASES OF CRONOBACTER FOUND IN INFANTS WHO WERE EXCLUSIVELY BREASTFED

It is best to use glass or the flexible, milky-colored plastic (polyethylene or polypropylene). Avoid clear, hard plastic bottles marked with a 7 or "PC" (polycarbonate) on the bottom. Dispose of any old or cracked bottles.

DISASTER PREPAREDNESS

In emergency situation or after a disaster, it is recommended that infants be fed with a cup rather than a bottle since they will be more readily available and easier to clean effectively.

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