



# Perinatal Manual of Southwestern Ontario

Southwestern Ontario Maternal, Newborn, Child & Youth Network (MNCYN)

Perinatal Outreach Program

## Chapter 2

### BOTTLEFEEDING

#### Introduction

Breast milk is best as it is species specific and provides passive immunity as well as delaying / preventing the onset of allergy related conditions.

However, we recognize that some women will choose to bottle feed their babies. They should not be made to feel guilty or a failure if this method of feeding is chosen. Rather, they should be supported in their choice and instructed fully in formula preparation.

Properly prepared formula or expressed breast milk fed by bottle are safe alternatives to breastfeeding. If a woman chooses to feed her infant by a combination of breastfeeding and bottle, it is recommended that the introduction of bottle feeds be delayed until successful breastfeeding is established (2-3 weeks).<sup>1</sup>

In the non-breastfeeding infant, continue commercial, iron fortified formulas for the first 12 months prior to introducing cow's milk.<sup>2</sup> Formula must be prepared according to the instructions on the formula container **exactly**.

The goal is to promote a positive emotional environment around infant feeding. The support of a woman's partner and family is essential for success.

#### Recommendations for choosing formula

Cow milk based formula is recommended for most babies who get formula. Most formulas have a cow milk base with added nutrients.

Soy based formulas are NOT recommended except for babies with a particular medical condition. Sometimes parents decide to use soy for personal, cultural or religious reasons.

**Do NOT use homemade formulas** and do NOT use regular cow's milk or other animal milks. These do not have the right amount of nutrients and may be harmful to the baby.

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<sup>1</sup> Linda Cronenwett et al., Single Daily Bottle use in the Early Weeks Postpartum, and breastfeeding outcomes, *Pediatrics*, 90:5, 1992, pp760-766.

<sup>2</sup> Nutrition for Healthy Term Infants, birth – 6 months: An overview CPS- Apr 2, 2013.

[www.cps.ca/english/publications/Nutrition.htm](http://www.cps.ca/english/publications/Nutrition.htm)

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Formulas sold as organic, made with pre-biotics, pro-biotics, added DHA fats, or made with “partially broken down” proteins are NOT needed. Research has not proven these to be helpful.

Parents who use formula to feed their babies should be advised that the baby will need to stay on commercial formula until 9-12 months of age. “Follow-up” formula is NOT needed.

**There are three types of formulas:**

Ready to feed – no water needed

Liquid concentrate – needs to be mixed with sterilized water

Powder – needs to be mixed with sterilized water

Ready to feed and liquid concentrate formulas are sterile until the can is opened. Powdered formula is not sterile and may carry harmful bacteria therefore babies who have the greatest chance of infections should have sterile liquid formula. The cost of liquid concentrate, bought by the case, and the cost of powdered formula are very similar once mixed.

**Babies who are at the greatest risk of infections from powdered infant formula are those who:**

Are premature

Low birth weight and are less than two months of age

Have a weakened immune system

**Formula Preparation**

For concentrated liquid and powdered formulas it is safe to use sterilized tap water sterilized bottled water, as well as well water that has been tested regularly. This water must have safe bacteria levels and proper nitrate levels below 45mg/L. If water is high in nitrates, boiling it will increase the amount of nitrates even more. High levels of nitrates are very dangerous for babies under 6 months of age. Do not use carbonated, mineral water, water in areas that have high levels of fluoride (greater than 1.5 mg/L), or softened water which is high in sodium to make formula. Distilled water is not recommended. Put cold tap water in a pot on the stovetop and let it boil hard and bubble for 2 minutes to get rid of germs. Do not use kettles that shut off before the water has boiled for 2 minutes. Sterilized water can be stored in a covered pot at room temperature for 24 hours or covered in the fridge for 2-3 days. Always use sterilized water when preparing formula, even for the older baby. Water must be cooled to a temperature not less than 70 degrees C, and then added to the powder. It is safest to feed

powdered infant formula immediately after preparing it once it has cooled to body temperature. Prepared powdered formula can be kept refrigerated for 24 hours. Ready to feed formula does not require the addition of water and can be poured into a sterilized container to feed.

When using liquid concentrated formula, you must always add water before feeding to the baby. Use room temperature sterilized water (as directed above) to add to the concentrate and follow the preparation directions on the label.

### **Formula at Room Temperature:**

Formula should not be left at room temperature for longer than 2 hours. Once you begin feeding the baby, the formula needs to be used within 2 hours. All leftovers should be thrown out. Bacteria can grow in the used formula container and make the baby sick.

### **Warming Prepared Formula:**

The safest way to warm formula is to place the container in a dish of hot water. Never microwave plastic or glass containers, bags or nipples because the plastic could melt and leak into the formula or result in burns due to unevenly heated formula. Before feeding test the formula on the back of your hand, it should feel warm, not hot.

### **Safely storing Formula**

#### **Ready to Feed and Concentrated Liquid**

##### **Stored in containers:**

- Cover cans with plastic cap or plastic wrap
- Keep opened cans of concentrated and ready to use formula in the fridge
- Throw cans out after 48 hrs or as your label tells you on the can

##### **Stored in Bottles:**

- Keep bottles with formula in the fridge for 24 hours at the most
- Throw out prepared formula after 24 hours
- Store bottles near the back of the fridge where it stays cooler

### **Powdered Formula:**

- Keep bottles with formula in the fridge for 24 hours at the most
- Store open cans of powder with the lid tightly closed, in a cool, dry place (not the fridge)
- After a can is open, use the rest of the powdered formula within one month, and before expiry date

Never freeze formula to use later as this can change the texture and nutrition levels

### **Hospital Practice**

1. Place babies in uninterrupted skin-to-skin contact with their mothers immediately following birth for at least an hour or until completion of the first feeding or as long as the mother wishes: encourage mothers to recognize when their babies are ready to feed, offering help as needed.
2. The first feeding should be offered to the well infant within two hours of life. The bottle-fed baby is given full strength formula feedings on demand.
3. To assist the mother in assessing the well-being of her newborn, a flow-sheet is kept at the baby's bedside, which she completes indicating a wet or dirty diaper, frequency of feeding, and infant settling. The nurse will sign this sheet at least once per shift, indicating that it has been reviewed.
4. Facilitate 24 hour rooming in for all mother infant dyads: mothers and infants remain together.
5. Encourage baby-led or cue-based feeding by family.
6. Before discharge, parents are given careful instruction and pamphlets on formula preparation and sterilization of bottles and equipment in one to one sessions.

## Proper Positioning

1. Proper positioning and eye contact are crucial to bonding. The mother assumes a comfortable position, preferably sitting up with good back support. Use of pillows, rolls, cushions and other props are encouraged to provide support and prevent muscle straining
2. The mother will cradle the baby in a semi-upright position and support his/her head. Mom should not feed lying down as formula can flow into the middle ear, causing an infection. To prevent the baby from swallowing air as they suck, tilt the bottle so that the formula fills the neck of the bottle and covers the nipple
3. Teach the family to burp the baby frequently over the shoulder or sitting on mom or dads lap.

## Appendix A

Baby's age	Number of bottles each day	Amount in each bottle (1 ounce = 30 ml)	Total amount in 24 hours
Birth to 2 weeks	6-10	60-90 mL (2-3 oz)	360-900 mL (12-30 oz)
3-8 weeks	6-8	90-120 mL (3-4 oz)	540-960 mL (18-32 oz)
2-3 months	5-6	120-180 mL (4-6 oz)	600-1080 mL (20-36 oz)
4-5 months	5-6	150-180 mL (5-6 oz)	750-1080 mL (25-36 oz)
5-7 months	5-6	150-180 mL (5-6 oz)	750-1080 mL (25-36 oz)

## Appendix B

Age of newborn infant	Intake (mL/feed)
1st 24 hours	2-10 ml per feed
24-48 hours	5-15 ml per feed
48-72 hours	15-30 ml per feed
72-96 hours	30-60 ml per feed

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## References:

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