

Infant Formula: What you need to know



Using this resource

Families may feed their babies formula for medical reasons or for personal reasons. Some may choose to offer formula occasionally and some may choose to feed their babies formula exclusively. This resource is intended to provide families and care providers with information on how to safely prepare and store formula and to help you to make an informed feeding decision.

The term formula will be used within this resource. Other terms for formula may include artificial baby milk, breastmilk substitutes, non-human milk amongst others.

Table of Contents

Deciding how to feed your baby	3
Supplementing a Breastfed Baby	4
Choosing infant formula	5
How to safely prepare and store formula	7
Cleaning bottles and feeding equipment	7
Choosing water to prepare formula	9
Preparing ready-to-feed formula	10
Preparing liquid concentrate formula	11
Preparing powdered formula	12
Automatic formula machines	13
How to safely store formula	14
Preparing formula while away from home	15
Feeding your baby	17
How much formula to prepare	17
Warming formula	18
How to Bottle feed	19
Feeding Cues	20
Burping	21
Additional resources	22

Deciding How to Feed Your Baby

It is recommended by the World Health Organization, Health Canada, and the Canadian Pediatric Society that babies are exclusively fed breastmilk for the first 6 months with continued breastfeeding up to 2 years or longer along with the addition of other foods. Any amount of breastmilk for any length of time will benefit the you and your baby. The longer breastmilk is provided, the greater the health benefits to both the breastfeeding parent and child.

Deciding how you will feed your baby is a personal choice that depends on many things, including your beliefs. Having a support system around you can also impact your decision on how to feed your baby. Your feeding decision can also change depending on your own specific needs and circumstances and your baby's needs at different stages.

Families may choose to give formula for a variety of different reasons. Some may feed their baby only formula while others may give both formula and breastmilk. For some, formula may not have been their first choice but was medically necessary.

It is important to note, breastmilk and formula are not the same. Breastmilk has many additives not in formula that help maintain babies overall health. If you decide to feed formula to your baby, it's important you have all the information you need to feel confident and comfortable in your feeding plan. If you are considering feeding your baby formula, the following can help you to make an informed decision:

Effect on Health

- It can be challenging to return to breastfeeding after switching to formula feeding
- Offering formula to a baby that is breastfed can decrease a mother's milk supply and can have impacts on breastfeeding success
- Breastfed babies often have lower risk of ear infections, respiratory infections, diarrhea and SIDS compared to those not breastfed
- Mothers who breastfeed also benefit by having lower risk of various health issues including postpartum bleeding, breast and ovarian cancers and type 2 diabetes compared to mothers who do not breastfeed



Financial Cost

Cost of formula varies depending on brand and type. One can (900g) of powdered cow's milk formula costs approximately \$45 and makes approximately 29 bottles of 237 mL (8oz). The chart below outlines approximated costs of different formula types for a baby on this type of formula for an 8-month duration. This is based on the average expected intake range for age. Costs outlined below is for formula alone and does not include all feeding equipment such as bottle and nipples.

Formula Type	Approximate Cost for 8 months
Ready to Feed	\$2833-\$5841
Liquid Concentrate	\$1230-\$2536
Powdered Formula	\$ 928-\$1901

Quality & Safety of Formula

Factories that make formula can sometimes have things go wrong. Sometimes, formula can be contaminated with bacteria or can have missing ingredients. All infant formulas sold in Canada must meet certain safety requirements and nutritional standards.

Health Canada lists all safety concerns and recall alerts for any formula sold in Canada <https://recalls-rappels.canada.ca/en>.

Supplementing a Breastfed Baby

If you need to supplement your baby, the best option is to supplement with your own breastmilk. You can express breastmilk by hand and/or using a pump. Giving formula to a breastfed baby can decrease milk supply or confuse baby and may lead to ending the breastfeeding relationship earlier than had been planned.

If you are thinking about using formula, or need to give formula consider:

- Offering as much breastmilk to baby as you are able
- Getting support from a qualified healthcare provider to help navigate feeding challenges and to help maintain milk supply
- Supplement without the use of a bottle

If you need to supplement here is a list of supplement options in the order of what to try first:

1. Your own expressed milk
2. Pasteurized donor human milk from a certified milk bank
3. Infant formula. Most babies do best on cow's milk-based formulas. Specialized formulas should only be used if your health care provider recommends them.

Many families may choose to give a supplement their baby with a bottle, but this is not always the best option for a baby that is breastfed. Breastfed babies that are fed with a bottle may find it harder to feed at the breast.

There are other methods to feed your baby a supplement including:

- Spoon (often best for a small amount of milk) or cup (for larger amount of milk)
- Lactation aid which uses a tube at your breast allowing baby to receive a supplement while still latched at the breast
- Finger feeding with a tube attached to a clean finger
- Other specialized devices

Choosing an Infant Formula

When deciding what formula to feed, choose one that meets your baby's needs. Cow milk-based formula is recommended for most babies who are fed formula until they are 9-12 months of age. Infant formula contains all the nutrients, including iron, needed to help your baby grow and develop. **Only use soy protein or other specialized formulas, including lactose-free or hypo-allergenic, if your healthcare provider recommends this to you.**

Any infant formula sold in Canada must meet Health Canada's safety and nutrition standards. European or other international formulas are not any better for infants than formulas available here in Canada. European formulas may be marketed as more natural and healthier option for your baby, but similar products that are nutritionally complete are available on the Canadian market.

It is not recommended to purchase formula from stores outside of Canada or over the internet.

This formula may not be safe and may not have the right nutrition for your baby. There is also no system in place to report safety recalls for formulas that are sold outside of Canada.

DO NOT use homemade formula or use regular cow milk or other animal milks. These do not provide the proper nutrition and can be harmful to your baby.

Types of Formula:

- Ready-to-feed
- Liquid concentrate
- Powder

Liquid concentrate or ready-to-feed formulas are the safest types as they are sterile until the product is opened. Powdered formula is not sterile and has an increased risk of bacterial contamination. However, powder formula can be used for healthy babies if all appropriate steps are taken to ensure it is prepared and handled properly.

It is best for those babies at greatest risk of infections to have sterile liquid formula such as ready-to-feed or liquid concentrate. **Babies at the greatest risk of infections from powdered formula are:**

- *Premature babies*
- *Babies that are low in birth weight and are less than 2 months of age*
- *Babies that have a weakened immune system*

Before using infant formula:

- Check the expiry date on the can
- Check the label on the can carefully to make sure it is the type of formula you want to use and of the appropriate concentration (ready-to-feed or liquid concentrate)
- Review and follow instructions for preparation on the formula can
- Ensure you are adding the correct amount of water to powdered or liquid concentrate so that your baby gets the right nutrition

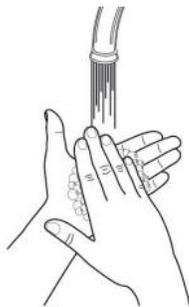
How to Safely Prepare Formula

Cleaning Feeding Equipment

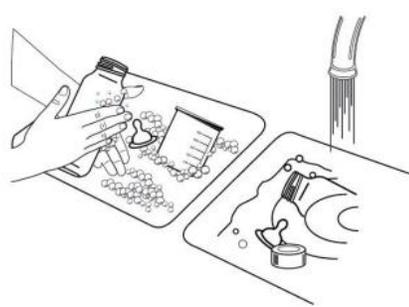
Always clean all supplies you'll use including bottles and nipples and all other feeding equipment such as tongs and measuring cups. Feeding equipment should be sterilized for babies under 4 months of age. Use either Bisphenol-A (BPA)-free bottles or glass bottles. Inspect feeding equipment regularly for any cracks, any discoloring or any parts that may be loose and could break off and discard.



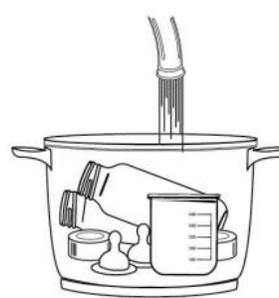
Cleaning feeding equipment: For babies under 4 months of age



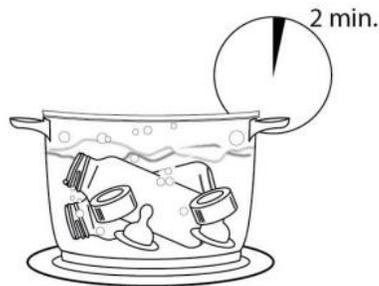
- ① Wash your hands with soap and water for at least 20 seconds.



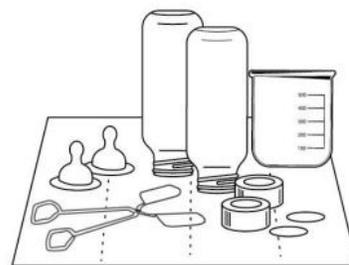
- ② Clean the feeding equipment and working area with hot soapy water. Then rinse in clean water.



- ③ Put all the feeding equipment in a large pot. Cover the items with water.

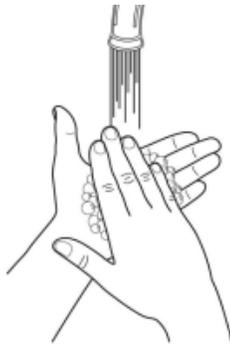


- ④ Bring to a continuous rolling boil, in an uncovered pot, for **2 minutes**.



- ⑤ Remove the feeding equipment with tongs that have been boiled. Put the items on a clean towel or paper towel. Let cool.

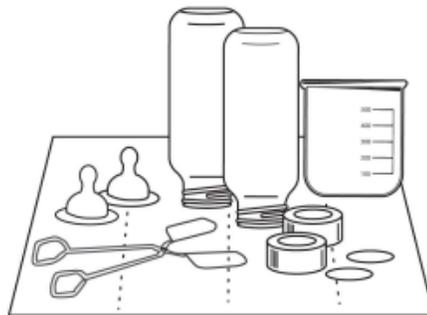
Cleaning feeding equipment: For babies 4 months and older



- ① Wash your hands with soap and water for at least 20 seconds.



- ② Clean the feeding equipment and working area with hot soapy water. Then rinse in clean water.



- ③ Put the items on a clean towel or paper towel. Let dry.

Cleaning by dishwasher or steam sanitizer

A dishwasher with the National Sanitation Foundation (NSF) symbol can be used to clean feeding equipment if the sanitization cycle is used. If you are unsure if your dishwasher is NSF certified, you can check online.



You can also use electric or microwave steam sanitizers to sterilize your equipment. Follow the instructions provided by the sanitizer you use.

Choosing Water to Prepare Formula

When preparing powdered or concentrated liquid formula, all water, including bottled water, used for a baby **under 4 months** of age must be boiled to make it safe. For a baby **over 4 months** of age, water does not have to be boiled.

Safe water options to use after you have sterilized them:

- *Cold tap water* - If the tap has not been used in over 6 hours it is best to let the water run for 2-3 minutes before using it. Hot tap water may contain more contaminants, including lead and copper, from the pipes.
- *Bottled water* - Be sure to boil before using it to ensure that it does not have any disease-causing organisms in it. This includes distilled water. Distilled water is not sterilized water.
- *Well water* - Ensure that it has been tested regularly.

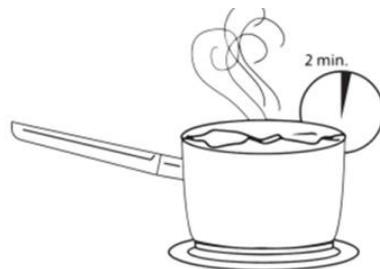


Water that should **not** be used to prepare infant formula:

- Mineral water
- Vitamin water
- Carbonated water
- Flavored water

If you do not have a safe water source, use ready-to-feed liquid formula. Consider being ready for an emergency by having enough ready-to-feed formula for a 72-hour duration where you may be unable to safely sterilize water.

Bring water to a rolling boil on the stove in a pot. Boil for 2 minutes. If using a kettle, use a kettle that does not automatically shut off before the water has boiled for 2 minutes. Mixing of water with formula varies depending on the formula type you are using. Follow the directions outlined on the following pages for the formula type you are using.



Fill a pot with cold tap water. Bring to a rolling boil. Boil for 2 minutes.



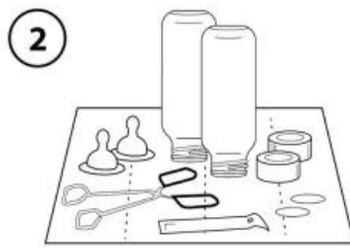
Preparing Formula by Formula Type

Ready-to-Feed

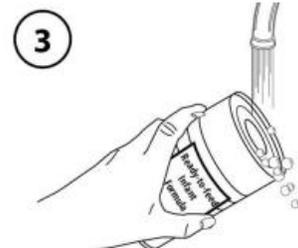
You do not need to add water to ready-to-feed formula. Prepare the bottle as outlined in the steps below.



1 Wash your hands with soap and water for at least 20 seconds.



2 Clean the work area with hot soapy water. Use sanitized feeding equipment.



3 Wash the top of the new formula can, tetra-pak or nursette with hot soapy water. Rinse with clean water that is safe to drink.



4 Shake the formula.



5 If in a nursette, open and cover with a sanitized lid or nipple. **DO NOT ADD WATER.**



6 If in a can, open the can with a sanitized can opener, or open the tetra-pak.



6b Pour the formula into the sanitized bottle and cover with sanitized lid or nipple. **DO NOT ADD WATER.**



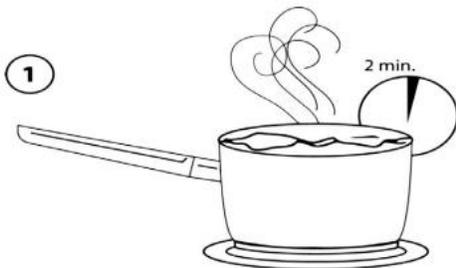
7 Use the formula right away or store in the fridge.

Liquid Concentrate

You must add water to liquid concentrate formula. Follow the directions on the can for the correct amount of formula and water to use. Prepare the bottle by using the steps below.

Boil the Water

Bring water to a rolling boil on the stove in a pot. Boil for 2 minutes. If using a kettle, use a kettle that does not automatically shut off before the water has boiled for 2 minutes. Once boiled, cool the water and then mix with measured amount of liquid concentrate. You can consider storing previously boiled water in a sterilized, tightly closed container.

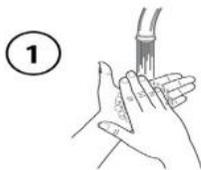


1 Fill a pot with cold tap water. Bring to a rolling boil, uncovered, for two minutes. Remove from heat. Let cool.

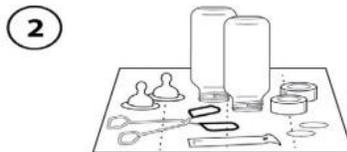


2 Pour the cooled water into a sanitized container and close tightly. Place container in fridge. Boiled water can be stored in the fridge for 2-3 days at 4°C or 40°F or for 24 hours at room temperature.

Prepare the Formula



1 Wash your hands with soap and water for at least 20 seconds.



2 Clean the work area with hot soapy water. Use sanitized feeding equipment.



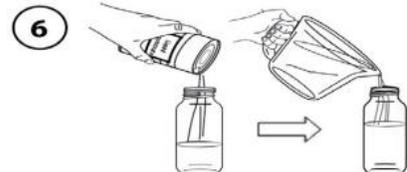
3 If formula is in a can, wash the top of formula can with hot soapy water. Rinse with clean water that is safe to drink.



4 Shake the liquid concentrate.



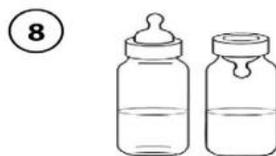
5 If in a can, open the can with a sanitized can opener.



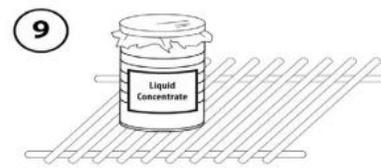
6 Follow the recipe for your baby. Pour the exact amounts of liquid formula concentrate and previously boiled water that has been cooled to room, body or fridge ($\leq 4^{\circ}\text{C}$) temperature into the bottle.



7 Screw lid on bottle. Shake well.



8 Use the formula right away or store in the fridge.



9 Tightly cover the open can. Refrigerate and use within the time recommended on the can.

Powdered Formula

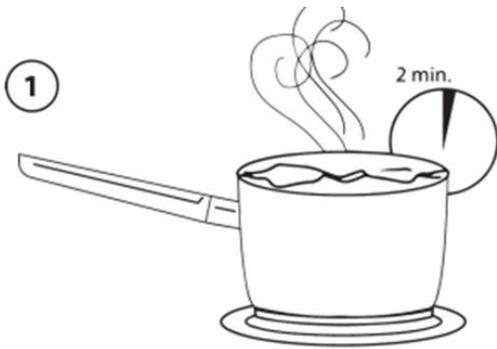
Powdered formula is **not sterile** and has made some babies sick. Preparing powdered infant formula correctly can help to lower the risk of your baby getting sick.

You must add water to powdered formula. Follow the directions on the can for the correct amount of formula and water to use. Prepare the bottle by using the steps below.

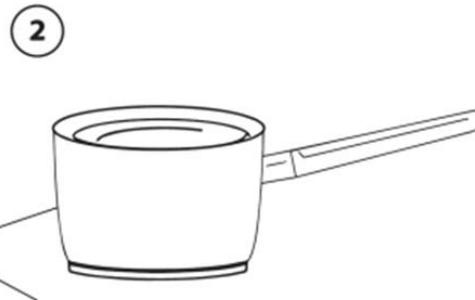
Boil the Water

Bring water to a rolling boil for 2 minutes. Mix it with formula when the water is at least 70°C (usually this is within 30 minutes of boiling). Having water at this temperature when mixing with the powder can help to kill off harmful bacteria that could be found in the formula. Cool the mixed formula quickly before feeding your baby. This is especially important for babies at greater risk of infection.

For healthy, full term babies at low risk for infection, it you could consider mixing powdered formula with previously sterilized, cooled water that has been stored in a sterile container. **This must be fed to baby right away after being mixed.**



Fill a pot with cold tap water. Bring to a rolling boil. Boil for 2 minutes.



If your baby is at greater risk of infection, turn off the heat and allow water to cool to 70°C. Mixing powdered formula with water at least 70°C will help to kill off potential harmful bacteria.

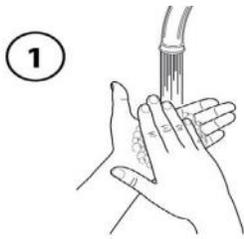


Pour needed amount of sterilized water into a sterilized measuring cup.

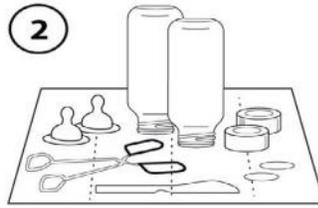


If your baby is full term and healthy, you may consider storing previously boiled and cooled water in a tightly closed container for 2-3 days in the fridge or for 24 hours at room temperature.

Prepare the Formula



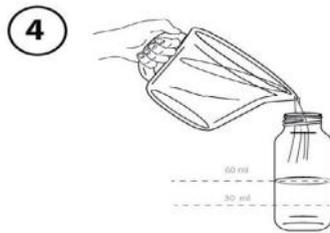
1 Wash your hands with soap and water for at least 20 seconds.



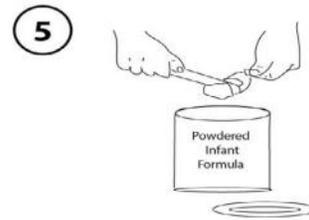
2 Clean the work area with hot soapy water. Use sanitized feeding equipment.



3 Wash the top of the new powdered infant formula can with hot soapy water. Rinse with clean water that is safe to drink. Open the can by pulling the foil tab. After use, put lid on can.



4 Follow the recipe for your baby. Pour the exact amount of previously boiled water that has been cooled to room, body, or fridge ($\leq 4^{\circ}\text{C}$) temperature into the bottle.



5 Fill the scoop from the can with powdered infant formula and level it with a sanitized knife. Add the right number of scoops of powdered infant formula to the bottle. Screw lid on bottle. Shake well.

Automatic Formula Machines

It is recommended to avoid use of automatic formula machines. Concerns related to the machines dispensing incorrect amounts of water-to-powder infant formula ratios have been raised. These errors can lead to inaccurate formula concentration which can be harmful to your baby.

For a baby under 4 months of age, automatic formula machines may not allow the water to be boiled for a 2-minute duration to be sterilized before mixing. Many manufacturers of these machines recommend using distilled water to decrease mineral buildup in the machines, but these waters are **not sterile**, and it is recommended for a baby under 4 months of age that water used to mix formula should be boiled first.

Settings for these machines may not be available for all formula types and brands and can only prepare standard formula concentrations.

Safety related to storage of formula and water in the machine is unknown and depending on frequency of use, formula and/or water may be stored in the machine longer than is recommended. Manufacturers recommend regular cleaning and maintenance to ensure proper functioning, but some do not recommend sanitization of parts. It is recommended as per current standards that all equipment used to prepare formula for babies under 4 months of age be sterilized.

If you choose to use an automatic formula machine, here are some steps to limit risks:

- Follow the manufacturer's instructions on how to assemble the machine and follow measurement guidelines for the specific brand of formula you are using
- Boil water before it is added to the machine if your baby is under 4 months of age. This water should be changed every 24 hours as water can only be stored for 24 hours at room temperature.
- Follow regular cleaning/maintenance guidelines as per manufacturer recommendations

How to Safely Store Formula

It is best to use formula immediately after preparing it.

Ready-to-feed and Liquid Concentrate:

- **Storing open containers**
 - Cover cans with plastic cap or plastic wrap
 - Store open cans of ready-to-feed or liquid concentrate in the fridge
 - Throw out open cans after 48 hours or as labelled on the can
- **Storing prepared bottles**
 - Store in fridge for no more than 24 hours. Discard after 24 hours.
 - Store bottles near the back of the fridge where it stays colder

Powdered Formula:

- Store prepared bottles for no more than 24 hours. Discard after 24 hours.
- Store open cans in a cool, dry place with the lid tightly closed. Do not store can in the fridge.
- Write date on the lid when you first open the can. Throw away any unused formula after 1 month.
- Do not freeze powdered formula. It may change the texture and may not mix well with water.

Once you have fed your baby, throw away any leftover prepared formula after 2 hours. After 2 hours, your baby's saliva in the leftover formula can create bacteria growth and can make your baby sick.

Preparing Formula While Being Away from Home

It is best to prepare formula for immediate use. Therefore, if you will be away from your home, it is best to prepare the formula at the time of feeding once you are at your destination or to use ready-to-feed formula.

Preparing Formula while Travelling

Mixing formula while travelling can be possible if necessary. Follow the steps below for whatever formula type you are using.

Liquid Concentrate Formula:

Bring a clean* bottle/nipple with the premeasured water** along with a washed, unopened can of formula. Before opening the can wipe the lid with a clean cloth. Mix the appropriate amount of concentrate formula into the bottle and serve immediately. The remaining liquid concentrate should be stored in the fridge and be used within 48 hours.

Powdered Formula:

Bring a clean* bottle/nipple and premeasured water** along with a clean container* with premeasured amount of powdered formula. Mix the powdered formula into the bottle of water and serve immediately.



Transporting Prepared Formula

Although it is ideal to prepare formula as it is needed, prepared formula *can* be transported if necessary.

To transport prepared formula, it should be stored at a cold temp ($\leq 4^{\circ}\text{C}$) before and during transport. Just before leaving your home, place the cooled prepared formula from the fridge in a cooler bag with an ice pack. If you have arrived at your destination within 2 hours and prepared formula has been transported in a cooler bag, can either be fed to your baby or placed back in a fridge. If the prepared formula has not been transported in a cooler bag it must be fed to your baby within 2 hours from the time it was removed from the fridge at your home. If you are travelling for more than 2 hours and the feeds cannot be kept cold it is best to prepare feeds to be used right away when your baby needs them or to consider using ready-to-feed formula as unopened ready-to-feed can be stored at room temperature.

*If your baby is under 4 months bottle/nipples/containers to store formula should be sanitized

**If your baby is under 4 months water should be sterilized by boiling



Feeding your Baby

How Much Infant Formula to Prepare

All babies are different. Use the chart below as a guide on typical amounts a baby may drink per feed/day. Your baby may eat more or less than listed below. It is okay for your baby not to finish the whole bottle.

In the first few months your baby will likely eat at least 8 times in 24 hours. Your baby will let you know when they are hungry and when they are full. They will feed during the night. This is normal for babies to want to feed during the night for many months.

Baby's Age	Amount of formula per bottle	Number of bottles in 24 hours	Total Formula in 24 hours
Birth – 7 days	Watch for hunger and fullness cues. Baby will need to feed often and may eat small amounts at a time.		
1-2 weeks	2-3 ounces (60-90 mL)	6-10	14-26 ounces (420-780 mL)
3-8 weeks	3-5 ounces (90-50 mL)	5-8	17-35 ounces (510-1050 mL)
2-5 months	4-6 ounces (120-180 mL)	5-7	20-39 ounces (600-1170 mL)
Around 6 months of age, your baby will begin eating solid foods. As babies start to have more solid foods, the amount of formula they drink will be less.			
6-8 months	4-8 ounces (120-240 mL)	4-5	16-37 ounces (480-1110 mL)
9-12 months	<p>When your baby is 9-12 months old, you can begin replacing formula with 3.25% (homogenized) cow's milk long as your baby is eating a variety of iron-rich foods at most meals.</p> <p>As solid food intake increases, your baby will drink less formula/3.25% milk. By the time baby is 12 months old they need 16 ounces (500 mL) of 3.25% milk per day.</p> <p>Infant formulas are not needed for most healthy babies after 12 months of age.</p>		

Warming Formula

Many babies prefer formula to be warm. Ideally, babies should be fed formula right after preparation. To warm previously prepared formula safely:

- Remove formula from the fridge just before you need to feed your baby
- Place prepared bottle of formula in warm water no more than 15 minutes. Be sure not to cover lid or nipple with water when you are warming formula as this could contaminate the formula
- Gently shake the bottle to mix formula
- When testing temperature of the formula, place drops on the inside of your wrist to make sure it is not too warm for your baby.
- Do not put the bottle nipple in your mouth to check the temperature or to clean it. This can pass germs to your baby.
- **Do not microwave formula.** This can heat up formula unevenly and can create hot spots that can burn your baby's mouth.
- **Do not reheat formula during a feed.** Any warmed formula should be fed to your baby right away. Throw out any leftover formula after a feed.



Source Image from Pexels.com

How to Bottle Feed

When you feed your baby from a bottle:

- Hold your baby in an upright position, using skin-to-skin cuddling
- Change the arm you use to hold your baby at each feed. This can help with baby's head shape
- Let your baby seek the nipple - to do this put the bottle nipple just above the upper lip and wait for baby to open mouth. When baby does this, put the nipple deep enough into their mouth until they have a wide latch on the bottle. They should not gag.
- Tip the bottle just a little so that the liquid just fills the nipple. This will help your baby to manage the flow of milk
- A bottle feed should take about 15-30 minutes each feed. If your baby is drinking too fast, tip the bottle down to slow the feed or remove it.



Signs your baby is swallowing too fast:

- They are not taking breaths between swallows
- Their eyes are opened wider than usual
- Their nostrils are flaring
- Their arms and legs are stiff
- Milk is leaking from the sides of their mouth

Do not prop a bottle or leave your baby alone with a bottle as this can become a choking hazard.

Always hold your baby until they are finished feeding. Feeding is a special time and allows an opportunity for you to bond with your baby.

Feeding Cues

Your baby is born with the ability to regulate and eat the amount of food they need. Your role as the parent is to decide what to feed your baby and to follow their cues. Your baby's role is to let you know when they are hungry and when they are full.

Early Cues “I’m getting hungry”



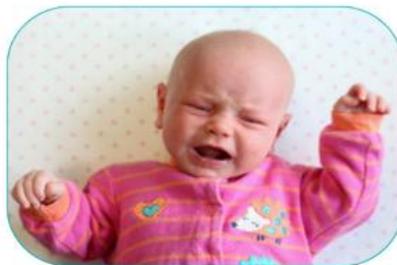
- Waking Up
- Small movements
- Mouth opening
- Turning head

Mid Cues “I’m really hungry”



- Stretching
- Increased movement
- Hand to mouth

Late Cues “Calm me then feed me”



- Crying
- Agitated movement
- Turning red

Signs of Fullness

- Slowing or stopping sucking and swallowing
- Letting go or turning their head away from the nipple
- Having relaxed arms, legs, hands
- Pushing or arching their back

- Falling asleep or no longer interested in feeding

Burping

A baby that is bottle fed has an increased likelihood of swallowing air. You can try to burp baby part way through feeds and after the feed. There are a few different positions to help your baby to burp. Some babies may prefer one position over another.



Over the shoulder –hold your baby upright over your shoulder. Gently pat with a cupped hand or rub their back.



Sitting on your lap –hold your baby in a sitting position and support their head with a hand supporting their jaw. Gently pat or rub their back



Laying on their tummy –Lay your baby over your legs on their tummy. Support the head as needed and gently pat or rub their back.

After the feeding

- Throw away any unused formula. Leftover formula may grow harmful bacteria after two hours.
- Rinse the bottle and parts right after feeding. You can wash them properly later.
- Clean your baby's gums with a clean, dampened cloth every day to keep their mouth healthy

Additional Resources

Other languages available for Preparing Liquid Concentrate Formula Handout:

العربية
(Arabic)



ਪੰਜਾਬੀ
(Punjabi)



Tagalog



Français
(French)



Español
(Spanish)



ትግርኛ
(Tigrinya)



繁體中文
(Traditional
Chinese)



Other languages available for Preparing Powdered Infant Formula Handout:

العربية
(Arabic)



ਪੰਜਾਬੀ
(Punjabi)



Tagalog



Français
(French)



Español
(Spanish)



ትግርኛ
(Tigrinya)



繁體中文
(Traditional
Chinese)



- For more information on making an informed decision about feeding your baby visit:
<https://www.healthyparentshealthychildren.ca/im-a-parent/feeding-your-baby/thinking-about-feeding-your-baby>
- For more information on infant feeding visit:
<https://www.healthyparentshealthychildren.ca/im-a-parent/feeding-your-baby>
- For information on infant formula from Health Canada visit:
<https://www.canada.ca/en/health-canada/services/infant-care/infant-formula.html>
- For information on formula shortages:
<https://www.albertahealthservices.ca/nutrition/Page18348.aspx>
- For a variety of handouts related to infant feeding visit:
<https://www.albertahealthservices.ca/nutrition/Page11115.aspx>

For any further questions regarding infant feeding contact your local

Public Health office at 780-791-6247