



Infant milks:

A simple guide
to infant formula,
follow-on formula
and other
infant milks



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ISBN (e-book): 978-1-908924-35-3

Published by First Steps Nutrition Trust, 2014

A PDF of this resource is available on the First Steps Nutrition Trust website

www.firststepsnutrition.org

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This resource is provided for information only and individual advice on infant feeding should always be sought from appropriate health professionals.

This simple guide to infant formula, follow-on formula and other infant milks provides information about these breast milk substitutes to ensure simple, clear, evidence-based information is available to all.

First Steps Nutrition Trust fully supports public health recommendations that mothers should exclusively breastfeed for the first six months wherever possible, and continue to breastfeed alongside complementary foods in the second six months of life and for as long after that as the mother wishes to do so.

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First Steps Nutrition Trust is a charity which provides clear, evidence-based and independent information and support for good nutrition from pre-conception to five years of age. For more information, see our website www.firststepsnutrition.org

Acknowledgements

This resource was written by Dr Helen Crawley.

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What is in this guide?

This guide provides simple advice on the infant milks to choose in the first two years of life if parents are not breastfeeding. The reasons for these recommendations are summarised in the frequently asked questions on page 4. The guide also provides information on the amount of milk that current recommendations suggest an infant and young child needs, and on how to make up powdered formula milk safely.

If you want support or further information on bottle-feeding, talk to your midwife or health visitor. If you have any concerns about your baby's health, talk to your GP or another health professional.

Types of infant milks

In the UK there are a variety of infant milks for sale. These are marketed as:

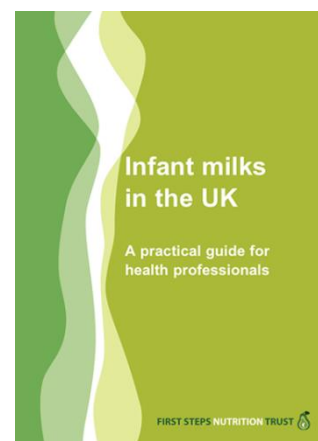
- **infant formula** – milks which are the sole food for infants from birth
- **follow-on formula** – milks to be used after 6 months of age
- milks which are **specialist formula**, and
- **milks for children over the age of 1 year**.

There are clear regulations that govern the composition, safety and marketing of infant formula and follow-on formula in all areas of the UK. There are different regulations for some of the specialist formula (which should in theory only be available under medical supervision). There are currently no regulations for milks marketed for children over 1 year of age.

A safe, nutritionally adequate infant formula is needed where parents cannot, or choose not to, breastfeed their infants. However, there is little evidence for many of the claims made for ingredients used in milks marketed for infants and young children. It is therefore important that everyone has access to independent, simple and evidence-based information about which milks to choose in the first years of life.

First, we give a simple guide to which infant milks are suitable at what age. Then, in the *Frequently asked questions* section on page 4, we give some explanations about this guidance.

All of the evidence for the information given is explained and referenced in the comprehensive guide *Infant milks in the UK: A practical guide for health professionals*, which you can download from www.firststepsnutritiontrust.org



You may see lots of adverts and information on company websites about different milks and why they are useful and what they can offer. Remember that infant milk manufacturers use their marketing budgets to provide information on infant feeding to parents and that the information on their websites can be misleading or biased, and may not reflect current health policy in the UK.

A simple guide to choosing milks for infants and toddlers

✓ = Safe to give.

X = Do not give this milk.

	Infants 0-6 months	Infants 6 months – 1 year	Toddlers 1 year – 2 years
Breast milk	✓	✓	✓
Whole cows' milk (or goats' milk, sheep's milk or unsweetened fortified soya milk, oat milk or coconut milk) as main milk drink	X	X	✓
Infant formula suitable from birth (cows' or goats' milk based)	✓	✓	Only needed if recommended by a health professional
Infant formula marketed for hungrier babies, suitable from birth (cows' milk based)	Not recommended	Not recommended	Not needed
Specialist formula available over the counter: anti-reflux, lactose-free, partially hydrolysed, and comfort milks	Only use under medical supervision	Only use under medical supervision	Not needed
Soya protein based infant formula suitable from birth	Only use under medical supervision	Only use under medical supervision	Not needed
Follow-on formula suitable from 6 months of age (cows' or goats' milk based)	X	Not recommended	Not needed
Goodnight milk	X	Not recommended	Not needed
Growing-up milks and toddler milks suitable from around 1 year of age (cows' milk, goats' milk or soya milk based)	X	X	Not needed
PaediaSure Shake for fussy eaters	X	X	X
Rice milk – Do not give to any children under 5 years of age.	X	X	X

Frequently asked questions

The following questions are answered on the next few pages:

- Where can parents get advice to help them continue breastfeeding if they are having difficulties or are thinking about introducing formula milk?
- Is there a formula milk that is closest to breast milk?
- Is there any evidence that a hungry baby formula will help babies to sleep better?
- Is formula based on goats' milk less allergenic than formula made from cows' milk?
- If a baby is bringing up milk after feeds, do they need a special formula to prevent reflux?
- My baby is unsettled in the evenings and cries a lot. Will a comfort milk help settle her stomach?
- My baby has diarrhoea and I think he may be in pain after feeds. Could he need a lactose-free formula?
- Is soya-based formula a good option if there are allergies in the family?
- We are vegetarians. Which milk should we use if we want a vegetarian formula for our baby?
- We are vegans. Is there a suitable infant formula if we want to bring our baby up as a vegan?
- Are infant formula halal?
- Are ready-to-feed milks different to powdered milks?
- Can a partially hydrolysed formula prevent eczema in infants?
- Do babies need follow-on formula after 6 months of age?
- At what age can I use cows' milk as the main drink?
- What alternatives to cows' milk are suitable from 1 year of age?
- How do toddler milks and growing-up milks differ from whole animal milk?
- Is a formula milk for 'fussy eaters' useful?

Q. Where can parents get advice to help them continue breastfeeding if they are having difficulties or are thinking about introducing formula milk?

A. There are a number of national helplines and organisations that can offer support to women who are breastfeeding. Many women regret giving up breastfeeding and really value the opportunity to get support to continue, and most health professionals agree that, once formula milk is introduced, breastfeeding continuation is compromised.

Breastfeeding helplines

National Breastfeeding Helpline
0300 100 0212

Association of Breastfeeding Mothers
08444 122 949

Breastfeeding Network
0300 100 0210
Bengali / Sylheti:
0300 456 2421
Tamil, Telegu and Hindi :
07501 466 817

La Leche League Helpline
0845 120 2918

NCT Breastfeeding Helpline
0300 330 0771

Q. Is there a formula milk that is closest to breast milk?

A. No. It is impossible to recreate breast milk. Breast milk is not only nutritionally uniquely suited to the human infant. It also contains hundreds of unique components and living cells to protect infants from infection and to aid development. These components cannot be made in a laboratory. All formula milks have to be of a similar composition to comply with EU compositional requirements and they are nutritionally adequate for infants. If a substance was found that was definitely beneficial for infant health that could be added to formula milks, it would be in all formula by law.

Q. Is there any evidence that a hungry baby formula will help babies to sleep better?

A. No. There is no evidence that milks marketed for hungry babies offer any advantage, and it is recommended that first milks are used throughout the first year of life if babies are not being breastfed. Hungry baby milks have more 'casein' than 'whey' in the protein mix, and casein is harder for babies to digest. An infant has a tiny tummy and needs to eat little and often, day and night, in the first few weeks and months. First infant milk will provide the best alternative if babies are not being breastfed (or are not receiving milk from a milk bank).

Q. Is formula based on goats' milk less allergenic than formula made from cows' milk?

A. No. Infant formula can have either cows' milk or goats' milk protein as the main protein source. They are equivalent in terms of allergenicity and safety.

Q. If a baby is bringing up milk after feeds, do they need a special formula to prevent reflux?

A. Many babies will bring up small amounts of milk after feeds or if they burp, and this causes them no distress. Crying, vomiting milk after feeds and back-arching or being unsettled are not symptoms of reflux in most babies. Reflux is rare and should be properly diagnosed by a paediatrician. If your baby brings up milk after feeds, it may be that he needs smaller milk feeds more often, or may need more frequent winding during a feed. As long as your baby is growing adequately, many of these problems will disappear as he gets bigger. You can talk to your health visitor or GP for reassurance if you are worried. Thickened (anti-reflux) milks do not have to comply with infant formula regulations in the UK, as they should only be used under medical supervision. There are several reasons to be cautious about using these milks:

- 1) These formula contain cereal-based thickeners and it is recommended that infants are not given anything other than milk in the first few months of life.
 - 2) Manufacturers recommend that anti-reflux formula are made up at lower temperatures than the temperature currently recommended for safety, and it is important that this potential risk is considered by a medical practitioner. Powdered formula are not sterile, and making them up at lower temperatures will not kill any harmful bacteria that might be present.
 - 3) If your baby is taking certain medicines, it may not be advisable to give them an anti-reflux formula.
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Q. My baby is unsettled in the evenings and cries a lot. Will a comfort milk help settle her stomach?

A. It is not uncommon for young babies to be unsettled or fussy in the evenings and to cry more than they might at other times of the day. You may be surprised to know that the average amount a baby cries in the first 6 weeks of life is about 110 minutes a day, reducing to about 75 minutes a day at 10-12 weeks. All babies are different and many need more attention and soothing in the evenings, frequent small feeds and frequent winding (during and after feeds) in the first few months. There is no consistent evidence that comfort milks improve babies' wind, colic, constipation or fussiness, and these will pass as the baby gets older. Often small changes to the timing and quantity of feeds can be effective in managing periods of fussiness.

Q. My baby has diarrhoea and I think he may be in pain after feeds. Could he need a lactose-free formula?

A. Lactose intolerance is rare in babies and it is important not to self-diagnose lactose intolerance in case your baby has a cows' milk protein allergy which is serious, and needs to be treated very differently. Cows' milk protein allergy is also uncommon but, if your baby has sickness or diarrhoea and has signs of an immediate allergic reaction after a milk feed (a red itchy rash around his mouth, facial swelling, red lumps on the body, streaming nose), or symptoms of a delayed reaction such as eczema or poor growth, it is important to seek help as soon as you can for a proper diagnosis. If a baby ever has breathing problems or goes floppy after a feed, call an ambulance. Thankfully this is very rare. Diarrhoea may be a symptom of a gastro-intestinal infection rather than an intolerance and some babies might have a temporary lactose intolerance after a bout of gastrointestinal illness. If you think this might be the case, you should talk to your GP or health visitor. It is important to use lactose-free milks under medical supervision, as the source of carbohydrate in these milks is more likely to damage teeth and the risks of using specialist milk products should always be weighed up against any potential benefit.

Q. Is soya-based formula a good option if there are allergies in the family?

A. No. Soya-based formula is not recommended for use in infants under 6 months of age unless recommended by a medical practitioner. These milks are not recommended for use without medical supervision for a number of reasons:

- 1) Children are as likely to be allergic to soya as to cows' milk protein and this needs to be investigated.
- 2) Soya is rich source of phyto-oestrogens and these mimic sex hormones in the body. For older children and adults, some soya is not a problem, but for babies under 6 months who have soya protein based formula as their sole source of nutrition, current guidance in the UK is that the phyto-oestrogens in soya-based formula should be carefully considered as a risk.
- 3) The carbohydrate source of soya protein based formula is glucose, which is more likely to damage teeth.

If infants are allergic to cows' milk, they will be prescribed a suitable formula by their GP, and it is recommended that parents and carers should not use soya formula without taking professional medical advice.

Q. We are vegetarians. Which milk should we use if we want a vegetarian formula for our baby?

A. None of the first infant milks based on cows' milk currently on the market are suitable for vegetarians, as they contain fish oils and/or use the animal-derived enzyme rennet during the production process. Rennet is used to separate curds from whey and, although vegetarian alternatives are available, they are not used by all manufacturers. Currently the only vegetarian first infant milk available is NANNYcare goats' milk based formula. Although soya protein based infant formula are vegetarian and are advertised as suitable for vegetarians by manufacturers, these are not recommended for use for the reasons outlined on page 7. Many of those who choose a vegetarian diet will breastfeed their babies and will not require an infant milk in the first year of life. If babies are not breastfed, we would still recommend a first infant milk throughout the first year, and parents may have to consider the health and rights of their baby weighed up against their own beliefs. Parents may also wish to write to manufacturers and ask why vegetarian first infant milks are not commonly available.

Q. We are vegans. Is there a suitable infant formula if we want to bring our baby up as a vegan?

A. Currently there are no infant milks suitable for vegans on the UK market, since even those that do not contain a source of animal protein do all contain vitamin D sourced from sheep's wool. Those who choose a vegan diet for themselves and who breastfeed throughout the first year can move their child onto a non-animal milk at one year of age. Advice on this, and on how to ensure their breastfed baby gets all the nutrients he or she needs, can be found in the resource *Eating well for vegan infants and under 5s*, which can be downloaded from http://www.firststepsnutrition.org/pdfs/Eating_well_for_veg_infants_for_web.pdf

Q. Are infant formula halal?

A. Some but not all infant milks are halal approved, and it is important to check the label. Some brands have halal-approved powdered milks. However, the equivalent ready-to-feed formula of the same brand may not be halal-approved.

Q. Are ready-to-feed milks different to powdered milks?

A. There are some small compositional differences between powdered and ready-to-feed milks, but these are generally insignificant. There may be some changes to the composition of the milk since it is ultra heat treated, but this is not known, and so current evidence does not support anecdotal ideas that ready-to-feed milks are 'easier to digest'. Ready-to-feed milks are much more expensive than powdered milks. They also require considerably more packaging, which has an impact on the environment.

Q. Can a partially hydrolysed formula prevent eczema in infants?

A. One of the partially hydrolysed formulas sold in the UK – SMA HA – makes claims that, if used as the sole milk from birth, it can prevent eczema in babies from families at increased allergy risk. This claim is not made for the other partially hydrolysed milks available which are sold as comfort milks. Current UK policy says there is insufficient evidence that a partially hydrolysed formula can prevent allergies in infants. Breastfeeding is strongly recommended for infants from families who may have allergies.

Q. Do babies need follow-on formula after 6 months of age?

A. No. The Department of Health does not recommend that babies move on to follow-on formula at 6 months of age and this is why it is not possible to buy these milks with Healthy Start vouchers. The World Health Organization has recently made a clear statement that follow-on milks are not needed. Current advice suggests that parents and carers who use formula milk continue with a first infant milk throughout the first year, as this is closer in composition to breast milk than follow-on formula.

Follow-on milks were created by formula milk companies to allow them to advertise infant milk products, since advertising infant formula is not allowed in the UK. There is evidence that many parents are confused by the advertising of these products and a third of parents have been found to use follow-on milks for children under 6 months of age. There is no advantage to moving on to follow-on milks. The most important thing to remember in the second six months of life is that your baby needs the most suitable breast milk substitute (if they are not breastfed), alongside a good variety of foods.

Q. At what age can I use cows' milk as the main drink?

A. After 1 year of age, children should be consuming three meals and two snacks a day, and be eating a wide variety of nutrient-dense foods and avoiding salty and sugary foods. (Nutrient-dense foods are foods that contain lots of vitamins and minerals in a relatively small amount of the food.) They will also need to drink about 400ml of whole animal milk, or a suitable alternative, a day. If there are concerns about the quantity and quality of food consumed, health professionals may recommend continued use of first formula milk into the second year, but this is rare, and food should be the main source of nutrients for toddlers.

Q. What alternatives to cows' milk are suitable from 1 year?

A. Any whole animal milk is suitable as the main drink from 1 year – cows', goats' or sheep milk, as long as these are pasteurised. Alternatively, an unsweetened calcium-fortified soya milk, oat milk or coconut milk can be given. For information on non-dairy sources of calcium and milks to choose for children who avoid dairy products, see http://www.firststepsnutrition.org/pdfs/Eating_well_for_veg_infants_for_web.pdf

Q. How do toddler milks and growing-up milks differ from whole animal milk?

A. Toddler milks and growing-up milks contain more sugar than animal milk and less of some important nutrients such as riboflavin, calcium and iodine. Manufacturers add some nutrients to toddler milks – such as iron, vitamin D and omega 3 fatty acids – but they do not replace all the nutrients that may have been destroyed in processing. Experts across Europe have agreed that young children do not need fortified milks to obtain particular nutrients. Children who are eating well do not need additional nutrients from fortified milks in their second year and beyond, and there is some evidence that giving lots of extra nutrients in fortified drinks to children who don't need them may be bad for health in the longer term. Offering sweetened drinks to young children may also contribute to development of a sweet tooth and to overweight in childhood.

Q. Is a formula milk for 'fussy eaters' useful?

A. Periods of fussy eating are common in young children and in most cases resolve themselves if families continue to offer a range of foods, eat with their children and act as a good role model for eating a range of foods. Occasionally a child will have a more serious case of food refusal, and advice should be sought on how to manage this most effectively. Giving a fussy child a sweet milkshake drink is not likely to help them eat better in the long term, and we discourage the use of any fortified milks for this purpose.

How to bottle-feed

UNICEF makes the following recommendations about how to encourage responsiveness and discourage overfeeding when bottle-feeding:

- Hold the baby close and look into their eyes during feeds.
- Respond to cues that baby is hungry.
- Invite the baby to draw in the teat rather than forcing the teat into the mouth.
- Pace the feed so that the baby is not forced to feed more than they want to.
- Recognise the baby's cues that they have had enough milk.

NHS Choices makes the following suggestions about bottle-feeding infants.

Equipment

You will need a number of bottles and teats, as well as sterilising equipment. There is no evidence that one type of teat or bottle is better than any other. A simple, easy-to-clean bottle is probably best. Make sure your bottles and teats are sterilised.

Giving a feed

- Hold your baby fairly upright for feeds, with their head supported so that they can breathe and swallow comfortably.
- When feeding, keep the teat full of milk; otherwise your baby will take in air. If the teat becomes flattened while you're feeding, pull gently on the corner of your baby's mouth to release the vacuum. If the teat gets blocked, replace it with another sterile teat.
- Your baby may need short breaks during the feed and may need to burp sometimes. When your baby does not want any more feed, hold them upright and gently rub or pat their back to bring up any wind. This may be a very small amount.
- Check that the hole in your baby's teat is not too big – giving milk too quickly can cause sickness. Sitting your baby upright on your lap after a feed may help.
- Don't forget to throw away any unused formula or breast milk after the feed.
- Babies differ in how often they want to feed and how much milk they want to take. Feed your baby when they're hungry, and don't try to force them to finish a bottle.
- Never leave a baby alone to feed with a propped-up bottle, as they may choke on the milk.

Bringing up milk after feeds

Some babies bring up more milk than others during or just after a feed. This is sometimes called 'possetting' or 'regurgitation' or 'reflux'. It can be upsetting when this happens, and you may be worried that something is wrong. If it happens often, or if your baby is violently sick, appears to be in pain or you're worried for any other reason, talk to your health visitor or GP.

If your baby brings up a lot of milk, they may be hungry again quite quickly. Don't force them to take more milk than they want during a feed. Every baby is different. Some prefer to feed little and often.

How much milk do babies need, and how often should I offer milk feeds?

The guidance below is the guidance currently used by health professionals, but remember all babies are different and in the first few weeks and months some babies may need more, smaller feeds more frequently. Always be guided by your baby.

Age	Feeding guidance	Suggested intake per day
Up to 2 weeks	7-8 feeds per day 60-70ml per feed	420-560ml per day
2 - 8 weeks	6-7 feeds per day 75-105ml per feed	450-735ml per day
2 - 3 months (9 - 14 weeks)	5-6 feeds per day 105-180ml per feed	525-1,080ml per day
3 - 5 months (15 - 25 weeks)	5 feeds per day 180-210ml per feed	900-1,050ml per day
About 6 months (26 weeks)	4 feeds per day 210-240ml per feed	840-960ml per day
General guidance on feeding after 6 months		
7 - 9 months	Milk could be offered at breakfast (150ml), lunch (150ml), tea (150ml), and before bed (150ml).	About 600ml per day
10 - 12 months	Milk could be offered at breakfast (100ml), tea (100ml), and before bed (200ml).	About 400ml per day
1 - 2 years	Milk could be offered at snack times twice a day (100ml x 2), and as a drink before bed (200ml).	About 400ml per day of whole cows' milk or another suitable milk drink

Making up powdered milks safely

It is very important that powdered milks are made up carefully. Using too much powder, or too little, can both impact on an infant's health and well-being. Always follow the instructions on powdered formula milk tins carefully.

Powdered infant milks are **not** sterile and they may contain harmful bacteria. However, if milks are made up appropriately for infants, they should be safe. *Salmonella* and *Cronobacter sakazakii* are the organisms of greatest concern in infant formula. Bacteria multiply most rapidly at temperatures between 7°C and 65°C (and they like body temperature 37°C best of all). Even at 5°C – the temperature recommended for domestic fridges – multiplication will continue but at a much reduced rate. The guidelines for making up powdered infant milks are designed to reduce the holding time between reconstituting and using feeds, in order to minimise the amount of time during which bacteria can multiply. The guidelines also include recommendations for cleaning and sterilising all feeding equipment and for making up formula.

You can download a very useful leaflet, called *Guide to bottle feeding*, which shows all the information on how to make up bottles safely shown in the table below in picture form at: www.nhs.uk/start4life/documents/pdfs/start4life_guide_to_bottle_feeding.pdf



General recommendations	
Recommendation	Why?
Make up feeds one at a time as the baby needs them.	To reduce the holding time between reconstituting and using feeds, in order to minimise the amount of time during which bacteria can multiply.
Sterilise all bottles and equipment to be used.	The infant's immune system is not as well developed as an adult's. This recommendation minimises the risk of illness and infection.
Use water from the cold tap to make up feeds. Do not use bottled or artificially softened water or water that has been re-boiled.	Bottled water is not sterile and may contain too much sodium or sulphate. If you must use bottled water, check on the label that the sodium (Na) level is less than 200mg per litre and the sulphate (SO or SO ⁴) level is no higher than 250mg per litre. Re-boiled water is not recommended as it has concentrations of some minerals that might be harmful in large amounts.

Recommendations for making up a feed using formula milk powder

Recommendation	Why?
<p>Boil at least 1 litre of fresh water from the cold tap in a kettle. Do not use previously boiled water. Leave the water to cool for no more than 30 minutes.</p>	<p>This step should ensure that the water used to reconstitute the feed is at a temperature above 70°C, which will kill most of the pathogenic micro-organisms that may be present in powdered formula.</p>
<p>Clean and disinfect all equipment and work surfaces to be used, and wash your hands.</p> <p>Keep the teat and bottle cap on the up-turned lid of the steriliser. If using a cold-water steriliser, shake off excess solution and rinse bottles in cooled boiled water from the kettle. Do not use tap water.</p>	<p>To avoid contamination of bottles with bacteria from tap water or unclean work surfaces.</p>
<p>Pour the correct amount of cooled, boiled water into bottles and double-check the volume before adding the powder.</p> <p>Fill the scoop loosely with milk powder according to the manufacturer's instructions. Level off the scoop using the leveller provided or the back of a clean, dry knife. Always use the scoop provided with the powder you are using. Add the powder to the water in the bottle.</p>	<p>Scoop sizes differ between manufacturers and between different milk powders from the same manufacturer. Too much powder may result in constipation or dehydration.</p>
<p>Holding the edge of the teat, put it on the bottle and then secure the retaining ring and cap. Shake the bottle until the powder is dissolved.</p>	
<p>Cool the formula by holding the bottom of the bottle under cold running water. Do not allow the tap water to touch the bottle cap.</p> <p>Test the temperature of the milk by shaking a small amount onto the back of your wrist. It should be body temperature and feel warm or cool but not hot.</p>	
<p>Discard any of the feed that has not been used.</p>	

For more information

Guide to bottle-feeding

Produced by UNICEF, Start4Life and the Baby Friendly Initiative.

Booklet available from:

http://www.unicef.org.uk/Documents/Baby_Friendly/Leaflets/Formula_guide_for_parents.pdf

Bottle-feeding advice

From the NHS Choices website.

Available from:

<http://www.nhs.uk/Conditions/pregnancy-and-baby/Pages/bottle-feeding-advice.aspx>

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