Feeding Your Baby

Bulletin #4061

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There are many opinions about the best way to feed your baby. When there's a new baby in the family, everyone becomes an expert and will want to tell you what they believe. In reality, infant feeding is a complex subject. What is right for one baby may not be right for yours. Guidelines for feeding babies change as nutritional research uncovers new knowledge.

An infant's birth weight usually doubles in four to six months and triples at one year. You need to provide your baby with food for her to grow and develop.

Visits to the doctor's office for check-ups are essential in a baby's first 12 months of life. At these visits, you and your doctor or health care provider can discuss what to feed your baby. The first year of your baby's life is a time of very rapid growth. An infant's birth weight usually doubles in four to six months, and triples at one year. You need to provide your baby with food for her to grow and develop.

Best Start for Baby

Breastfeeding has been identified as the ideal method of feeding and nurturing infants. The new policy statement from the American Academy of Pediatrics states, "Exclusive breastfeeding is ideal nutrition…for the first 6 months after birth… It is recommended that breastfeeding continue for at least 12 months, and thereafter for as long as mutually desired." Infants weaned before 12 months of age should not receive cow's milk feedings but should be fed iron-fortified infant formula.

Only after he is a year old, can baby have whole cow's milk as part of his diet. Researchers recommend not giving your baby skim or lowfat milk until after age 2.

Begin feeding your baby with breast milk. It is strongly encouraged even if you can only breastfeed

Q: How much water does my baby need?

A: The amount of water needed by infants to replace water loss and to grow is available in human milk or formula. Healthy infants don't need any extra water, except in hot weather. When solid foods replace some of the breast milk or formula in the baby's diet, baby may need extra fluids.

for a few weeks or months. Some mothers find that they face barriers to breastfeeding. They are not able to continue breastfeeding for as long as they want to. Choosing to feed the baby commercial formula when nursing stops is a fine alternative.

Additional Vitamin and Mineral Supplements

Newborn infants, under a doctor's care, may need extra vitamins and minerals to stay healthy. All newborns receive vitamin K soon after birth. After that, supplements depend on the living environment. Babies that have limited exposure to sunlight may be given vitamin D daily. When the household drinking water supply is low in fluoride, fluoride may be supplemented. When the baby is 6 months old, foods rich in iron or a low-dose oral iron supplement may be recommended.

Feeding Your Baby for the First Year

Babies grow quickly during the first year of life and make many changes in the types of foods and textures of foods they are able to eat. As babies grow and develop, watch for the following signs that will tell you when they are ready for a new food.

Age and Stage	When Babies	Serve
Birth through 5 months	Can only suck and swallow Use tongue thrust reflex Have poor control of head, neck, trunk	**Liquids Only:** Breast milk Infant formula with iron
4 months through 6 months	Draw in lower lip as spoon is removed from mouth Move tongue up and down Sit up with support Swallow spoonful of pureed or strained foods without choking Control the position of food in mouth Open the mouth when they see food	**Add Strained Foods:** Infant cereal with iron Cooked, pureed or strained potato, squash, green beans, sweet potato Cooked, pureed or strained peaches, applesauce or pears Pureed bananas
5 months through 9 months	Mimic up and down munching movement Begin to sit alone Begin to use thumb and forefinger to pick up objects	**Add Semisolid Foods:** Mashed or diced fruit, such as bananas or applesauce Mashed or soft-cooked vegetables, broccoli, peas, cauliflower or potatoes Cooked and strained meat/poultry, fish, dried beans and lentils, egg yolk and tofu
8 months through 11 months	Move tongue from side to side Begin spoon feeding themselves with help Begin to chew and have some teeth Begin to hold food and use their fingers to feed themselves Drink from a cup with help	**Add Modified Table Foods:** Mashed cooked egg yolk Finger foods, such as: soft cheese cubes, sliced bread, pears, peaches, kiwi, plums, melons, soft-cooked vegetables, toast, crackers, cooked pasta, cereal Juice in a cup Mashed beans and lentils
10 months through 11 months	Use rotary chewing (grinding) Begin to put spoon in mouth Begin to hold cup	**Add Table Food:** Chopped food and small pieces of soft, cooked table food

Thawing and Warming Baby's Food

Frozen food can be thawed in the refrigerator or in the microwave oven on the defrost setting. But remember, food that has been thawed should never be refrozen. Here are some other suggestions on thawing and warming baby's food.

Stove Method: To warm food, place it directly in a saucepan and slowly warm over low heat, stirring often. Stir and test temperature of food before feeding it to your baby.

Microwave Method: Microwave ovens heat foods unevenly and cause hot spots. There may be hot spots even if the food feels cool to you. It is important to stir food well to prevent burns to you or your baby.

Be cautious about using the microwave to heat bottles. Glass bottles can explode, and plastic bottles or liner inserts may disintegrate. Liquids heat unevenly, so milk or formula can be much hotter than it feels. Breast milk has substances that are protective to the baby. Over-heating the breast milk will destroy these, and heating in the microwave can overheat the breast milk.

Storing Breast Milk or Formula, Step-by-Step

1. Wash hands with hot water and soap. Rinse thoroughly.
2. Wash bottles, caps, nipples and rings in soapy water. Rinse thoroughly.
3. Squeeze water through nipple holes to be sure that they are open.
4. Put bottles, nipples, caps, and rings in a pot with water to cover. Put pot over heat and boil for five minutes.*
5. Wash top of formula can before opening.
6. Pour the amount of breast milk or ready-to-feed formula for one feeding into each clean bottle.
7. For formula that needs to be diluted (according to the package instructions) always heat tap water to a boil before using it in your baby's formula.
8. Put a clean nipple upside down on each bottle, and cover it with a cap and screw-on ring.
9. Refrigerate until feeding time. Formula can be stored in the refrigerator for up to 24 hours.
10. Pumped breast milk may be stored in the refrigerator or freezer in either sterilized bottles or disposable plastic nursing bags.
11. Pumped breast milk will keep in the refrigerator for up to 48 hours or in the freezer for up to 2 weeks after the time it was collected. Once the milk is thawed, don't refreeze it.
12. Unused portions of formula or breast milk left in the bottle after feeding should be discarded.

**If you have a dishwasher, use it and run for complete cycle instead of steps 1 through 4.*

Tips for Safe Heating in the Microwave

- Cover dish with a microwave-safe cover, not plastic wrap.
- Stir food and turn the dish often during the heating process.
- Allow food to sit for a few minutes; stir well and test temperature before feeding your baby.
- It is not recommended to heat pureed meats in the microwave. Hot spots in the meat could seriously burn your baby.
- For other foods, heat food in a microwave-safe dish or an opened baby-food jar.

Questions and Answers about Feeding Babies

Q: Is breast milk better for my baby?

A: Yes. It is agreed that breast milk is the nutritional standard for infants. Each species of mammals makes milk especially designed for the needs of its offspring. Human milk is uniquely superior for human infants.

In humans, colostrum, the first milk, has less fat and more protein, fat-soluble vitamins, minerals and immunoglobulins than mature milk. The ratio of polyunsaturated to saturated fats is good. Many health-promoting enzymes, including lipases, are present. Breast milk has high lactose content. Sugar is an important fuel for the brain.

Human milk is uniquely superior for human infants. Breast milk also has the advantage of needing no mixing or preparation. Even with all breast milk's attributes, there may be instances when other sources of nutrition must be considered. Your doctor and you should make this decision together.

Q: Why is breast milk such an excellent source of food for the infant?

A: Breast milk has many components that add to its immunological, in other words, protective, properties. Your baby will get the maximum immunological protection and nutritional benefits if you breastfeed exclusively (rather than partial breastfeeding). Breastfed infants have five times fewer gastrointestinal illnesses, three times fewer respiratory illnesses and half as many bouts with ear infections. Breastfeeding also protects against food allergy and eczema. According to National Institutes of Health studies, breastfed babies are likely to do a little better in school than bottle-fed babies.

Q: Are there other advantages to breastfeeding my baby?

A: Breastfeeding is thought to lower mothers' risk of breast cancer and osteoporosis and promote mother-infant bonding. The close physical contact provides a special relationship. Breastfeeding also costs less than formula feeding. In addition, breast milk is a convenient and readily available food supply for middle-of-the-night feedings, travel or for natural disasters, in which access to formula or sanitation may be an issue.

Q: Where can I learn more about breastfeeding?

A: All health care professionals have a responsibility to help teach mothers who choose to breastfeed. Most hospitals have lactation consultants to support new mothers. Other resources include the La Leche League International and local breastfeeding task forces. La Leche League meeting announcements are usually listed in the local papers. Nurses (public and in prenatal practices) and dietitians (in obstetric practices and WIC clinics) have a responsibility to educate women to make decisions about feeding methods.

Q: Is homemade infant formula a good source of nourishment for infants?

A: No. Homemade formulas made from cow's milk don't meet an infant's entire vitamin and mineral needs and should not be used. The high protein content of cow's milk makes it difficult for an infant to digest and may even put a strain on a baby's immature kidneys. An evaporated milk formula is easier to digest, but is still poor nutritionally. If you choose to bottle-feed your baby, use a commercial formula. The Food and Drug Administration regulates commercially prepared formulas, so you can be sure that they are healthy.

Q: What temperature should the pumped breast milk or formula be when I feed my baby?

A: Pumped breast milk or formula needs to be handled right to makes sure that it is sanitary. Refrigerate bottles after they are prepared until you're ready to use them. Never leave pumped breast milk or formula at room temperature. For babies who prefer a warm bottle, warm the bottle right before feeding. Test the temperature to make sure that it is not too hot or too cold. Shake the bottle before testing. Pumped breast milk may separate when stored. Shaking the milk will mix it together before you feed it to your baby.

Discard any unused breast milk or formula left in a bottle and rinse the bottle in cool water to remove breast milk or formula.

Q: When are additional vitamins and minerals given to babies?

A: Breast milk or iron-fortified infant formula alone can meet the nutritional needs of most infants until 4 to 6 months of age. Your doctor may recommend a vitamin D supplement if baby isn't getting enough sunlight. From 6 months to 3 years of age, both breastfed and formula-fed babies need a fluoride supplement if the main water supply is very low in fluoride. When babies are anemic or have low iron stores, supplements may also be recommended.

Q: When should I start feeding solid foods?

A: Infants are not ready for solid or supplemental foods until they are between 4 and 6 months old. Starting supplemental foods before may cause health and feeding problems, and is not recommended. Studies show that:

- supplemental foods won't help the baby sleep through the night;
- there is no nutritional advantage to feeding supplemental foods before the age of 4 to 6 months;
- an infant less than 4 to 6 months of age may lack the motor development necessary to eat supplemental foods —
  - general control of the tongue is not developed,
  - ability to swallow nonliquid foods in not well developed, and
  - sitting and holding the neck and head for feeding is not voluntary.
- Allergic reactions may occur if foods are introduced too early.

Q: Which solid foods should I start first?

A: According to the American Academy of Pediatrics iron-fortified, single-grain baby cereals, particularly rice, are well tolerated and a good choice for a first food. The dry cereal is mixed with breast milk or infant formula.

Other supplemental foods include vegetables, fruits and meats. The order you introduce them is not critical. However, a new food should be given to your baby gradually. Don't offer the new food in mixtures. Wait a week to see if the food is tolerated before offering another new food. After baby tolerates each food, you can give her food mixtures. Some foods won't be eaten when first offered. With repeated tastes and no pressure, babies will often accept foods that they didn't eat at first.

Fruit juices can be introduced when the baby is able to hold a cup and drink from a cup. Avoid feeding juice in a bottle so the bottle won't be used as a pacifier. Tooth decay, extra calories, and replacing foods that offer nutritional variety may result if beverages are offered in the bottle. Begin to offer infant formula or breast milk from a cup. Babies will drink less formula or breast milk from the bottle as they eat more solids and drink more from a cup. Soon, they will lose interest in the after-the-meal bottle, and it can be discontinued.

When supplemental foods are added to the baby's diet, he may need extra water. Avoid highly seasoned, salted or spiced foods with added sugar when feeding your baby. Infants don't need the added calories, and some of these ingredients may irritate the digestive track. Fat should not be restricted in the diets of children under the age of 2 years.

Q: Is commercial baby food nutritious?

A: Like foods that you eat, some foods packaged for babies are more nutritious than others. Labels show the nutritional value of the food. By law,

nutrition labeling is required for baby and toddler food (infants and children under age 4). Infants are growing so fast that they need an energy-dense diet. They need more calories from fat than do older children or adults. The column "Percent Daily Values" is not on these labels. Reference to the 2,000-calorie diet is also omitted. Baby food labels (for infants and children under 2) do not list the calories from fat, saturated fat, polyunsaturated fat, monounsaturated fat or cholesterol.

Q: How can I be assured that commercially prepared baby foods are "freshly" packed?

A: Baby food jars, cans and boxes are stamped with a "use by" date. This is different from the "date the product was packed." "Use by," means exactly what it says; that your baby should eat the food by the date stamped on the package. Sometimes, food from food pantries or banks has expired "use by" dates. Don't feed your infant food that has an expired "use by" date.

Another important sign of baby food purity is the "circle of safety" feature on jar caps. If the circle is depressed, you can be assured of a vacuum seal and a safe product. If the vacuum seal is broken, this circle will be pushed up. This is a sign that the jar should not be purchased or used. There should also be a "pop" as you open the jar and the vacuum is broken.

Q: Is it better to make your own baby food?

A: Baby food prepared at home from fresh ingredients can be economical and nutritious. Most commercial baby food companies today don't add salt, sugar and starch, a big change from the past. With nutrition labeling, you can be assured of what's in the food.

Commercial baby food companies package baby food for different stages, such as stage 1, 2 or 3, depending on the texture of the food. It is not necessary to buy commercially prepared infant food. You may be able to easily adapt food from the family table to suit the changing palate of a growing infant. (See "Making Your Own Baby Food," UMCE bulletin #4309.)

Foods That May Cause Choking

Some of the most popular foods with young children are often the ones that are known to cause choking. Be cautious when feeding your baby:

- Slippery, firm, smooth foods that slide down the throat before chewing, such as hotdogs, hard candy, peanuts and grapes.
- Dry, small or hard foods that are difficult to chew and easy to swallow whole, like popcorn, chips, nuts, seeds and pieces of raw carrots.
- Tough, or sticky foods that don't break apart readily and are hard to remove from the airways, such as peanut butter, tough meat and dried fruits, raisins or dates.

Q: Should I avoid certain foods if I make my own baby food?

A: High-nitrate vegetables, such as beets, carrots, collard greens, spinach and turnips, should not be fed to babies in large quantities. The naturally occurring nitrates in these vegetables can change to nitrites, which bind iron in the blood and make it difficult to carry oxygen. This can cause the skin

to become blue and make it hard to breathe. Limit the serving size of these vegetables to one to two tablespoons per feeding.

Q: What other foods should I avoid feeding my baby?

A: Except for ripe bananas, avoid giving raw fruit and vegetables to babies because these foods may cause choking and be difficult for them to digest. Do not give citrus fruits, egg white, shellfish, nuts and chocolate to a baby before 1 year of age. These foods may cause allergic reactions.

Never give honey, even in baked goods (such as honey graham crackers) to babies less than 1 year old. Honey sometimes has Clostridium botulinum spores. If a baby eats these spores, they can produce a toxin that can cause infant botulism.

Q: Why is it recommended not to give cow's milk to babies under 1 year?

A: Babies need balanced nutrition for proper growth and development during the first year of life. Cow's milk doesn't offer the same nutritional advantages to infants as human milk or infant formulas. Because of the risk of nutritional problems, particularly iron deficiency and increased intestinal tract blood loss in infants, the American Academy of Pediatrics recommends that cow's milk not be fed to infants during the first year of life.

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