

Feeding Infants

The Infant Meal Pattern

The infant meal pattern chart, located on page 11 of this section, shows the types and amounts of foods that must be served to infants. The first year of life, from birth until the baby's first birthday, is divided into three age groups, each consisting of 4 months.

There are ranges given for each food portion in the meal pattern to allow for flexibility in how much food is served to the baby, based on his or her appetite and development. The amounts listed are the minimum portions required to meet the meal pattern requirements. Some babies may need more than these amounts. Babies can be served larger portions or additional foods.

In the 4 through 7 month age group, the portions for solid foods are listed as 0 to 3 tablespoons. Solid foods are optional for this age group. Solid foods should not be fed to children who are not developmentally ready for them.

Food served should always be of appropriate texture and consistency. Solid food can be introduced gradually to infants, who are four months of age or older. The decision to introduce solid foods should always be made in consultation with the parents.



Babies may have small appetites. They may not be able to eat a complete meal at one time. Foods may be served over a period of time, rather than at one time. For example, the food items required for lunch can be served at two or more feedings when proper food safety precautions are followed.

Breast Milk

Breast milk may be served as part of the infant meal pattern. Infants, mothers and child care providers benefit when infants are breast-fed. Some advantages of using breast milk include:

- Breast milk is the best food for a baby because it provides energy and all the right vitamins and minerals in appropriate amounts.
- Breast milk contains antibodies which protect the infant's digestive tract from infection. These antibodies are not present in infant formula or cow's milk.
- Breast milk is easy for the infant to digest. At birth, the infant's digestive system is not fully developed, making it difficult to digest cow's milk protein, casein. Breast milk protein forms an easy-to-digest curd, unlike casein, which forms a tough curd in the infant's stomach.

- Breast milk is ready-to-feed and does not cost anything.
- Allergic reactions to breast milk are minimal. Breast-fed babies do not get sick as often as formula-fed babies.
- Breast-fed babies have constipation and diarrhea less often.
- Breast-feeding provides the mother and child a great opportunity to form a close bond.

Many mothers wish to continue breast feeding after they return to work. Providers can help mothers continue to breast-feed by letting them know that Breast-feeding is a good idea and that they are happy to feed their babies breast milk.

The publication, Feeding Infants A Guide for Use in the Child Nutrition Programs (FNS-258), is an excellent resource, available online at:

http://www.fns.usda.gov/tn/Resources/feeding_infants.pdf.

Iron-Fortified Infant Formula

Iron-fortified infant formula is the best food for the baby when the baby is not being breast-fed or when a supplement to Breast-feeding is needed.

Infant formula means any iron-fortified formula intended for dietary use solely as a food for normal, healthy infants; excluding those formulas specifically formulated for infants with inborn errors of metabolism or digestive or absorption problems. Infant formula, as served, must be in liquid state at recommended dilution.

The formula label must state “with iron” or “iron-fortified.” Formula labels which say “low iron” do not meet the meal pattern requirements. Low-iron or other formulas may be served only as a dietary substitute when a note from a medical doctor or other recognized medical authority, requiring its use, is on file.

Milk

Whole cow’s milk may not be served to infants less than 12 months of age. All reimbursable infant meals must include either breast milk or iron-fortified infant formula. The American Academy of Pediatrics does not recommend serving cow’s milk to children under one. Contact your State agency or sponsor for information.

Sanitation, Food Preparation and Safe Food Handling

Babies are more susceptible to bacteria than older children. Unsanitary food conditions can cause serious illness or death. Take extra care when handling babies’ food, bottles and utensils

to make sure they are safe and clean. Thoroughly wash hands with warm soapy water before handling any food or bottles.

Proper hand washing can help prevent the spread of illness in child care settings. Hands should be washed after changing each baby's diaper and clothing. Diapers can be a major source of contamination and the spread of disease.

It is important to keep cold foods cold and hot foods hot. When foods are out of a safe temperature zone, bacteria are more likely to grow and multiply. Contact your local health department for safe food storage temperatures.

Bottle Feeding

Purchasing Formula

- Select ready-to-feed formula, because it is the most convenient and sanitary.
- Use either milk-based or soy-based formulas.
- Do not purchase cans of infant formula that have dents, bulges or rust spots.
- Check the expiration date on the formula lid or label to make sure the product is not too old.

Some State licensing agencies allow powdered formula to be used. In other States, only ready-to-feed liquid formulas can be served. If powdered or liquid concentrate is used, the formula must be mixed very carefully according to the directions on the container. Under-diluted formula (containing too little water) puts an excessive burden on the baby's kidneys and digestive system and may lead to dehydration. Over-diluted formula (containing too much water) may interfere with the baby's proper growth because it does not contain adequate calories and nutrients.



Preparing Formula

Follow the steps below when preparing formula for infants.

1. Wash hands with soap and water.
2. Wash all equipment (nipples, bottles, rings and caps) in hot soapy water and scrub with a brush.

3. Rinse all equipment thoroughly in hot water.
4. Put nipples, bottles, rings and caps in a pot with enough water to cover them.
5. Boil for five minutes.
6. Wash hands with soap and water.
7. Wash the top of the formula can, then open.
8. Pour formula for one feeding into each clean bottle.
9. Put clean nipple on bottle and cover with a snap-on cap.

It is preferable that cold tap water or bottled water be used in the preparation of infant formula. Using hot tap water in the preparation of formula may lead to a high risk of lead exposure. Severe lead exposure can cause coma, convulsions and even death in children. Lower levels of lead exposure can cause adverse effects on a child's central nervous system and kidney. Lower levels of lead exposure also have been associated with decreased intelligence, growth, stature, hearing and a difficulty in maintaining a steady posture.

Storing Formula and Breast Milk

- Refrigerate prepared bottles of formula for up to 24 hours.
- Open cans of formula should be covered, refrigerated and used within 48 hours.
- Expressed breast milk may be stored in the refrigerator or freezer in either sterilized bottles or disposable plastic nursing bags.
- Expressed 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. Be sure the milk is protected in an air-tight container while in the freezer. Once the milk is thawed, do not refreeze.
- Portions of breast milk or formula remaining in the bottle after a feeding should be discarded.

Warming Bottles

For babies who prefer a warm bottle, warm bottles of breast milk, formula or whole milk immediately before serving.

To thaw frozen breast milk, hold bottle under cool to warm water. Shake bottle gently to mix. Do not refreeze breast milk.

Bottles may be warmed by setting them in a bowl of warm water or by holding under warm tap water. Test the temperature of milk or formula on the inner wrist before feeding to infants. If milk is too hot, wait a few minutes and repeat this test. Do not serve milk to an infant that is too hot.

Never use a microwave to warm bottles. This practice is potentially dangerous for several reasons. Liquid in the bottle may become very hot when microwaved and get hotter after removing from the microwave even though the bottle feels cool. The hot liquid could seriously burn babies. Also, microwaving can destroy some of the nutrients in breast milk. Covered bottles may explode when heated in a microwave.

Baby Foods

Purchasing Commercially Prepared Baby Foods

For babies 6 to 12 months of age, choose baby foods that increase in thickness and consistency, to challenge the baby to learn new mouth skills.

To meet the meal pattern requirements, avoid combination foods or dinners because it is difficult to determine the amount of each component in combination foods. Also, they generally have less nutritional value by weight than single-ingredient foods and cost more than items purchased separately.

Commercial baby food fruits and vegetables which contain single or multiple fruits or vegetables and list fruit or vegetable as the first ingredient in the ingredient listing on the label are reimbursable as a meal component in the fruit or vegetable category in the Infant Meal Pattern. Commercial plain strained baby food meats (including those with beef, chicken, turkey, lamb, veal, and ham) are reimbursable as a meal component in the meat/meat alternate category in the Infant Meal Pattern. Note that baby food meat products (i.e., Beef and Beef Gravy, Chicken and Chicken Gravy, Ham and Ham Gravy, Lamb and Lamb Gravy, Turkey and Turkey Gravy, and Veal and Veal Gravy) are reimbursable even if they do contain additional ingredients, such as corn starch and, in some cases, lemon juice concentrate.

Read the ingredient list on the food label carefully. Avoid those with added fat, salt, sugar, modified corn starch or modified tapioca starch.

Desserts, such as baby puddings, custards, cobblers and fruit desserts, should be avoided because they are high in sugar. Babies do not need added sugar. They should be given the opportunity to eat naturally sweet foods, such as fruit.

Fruit juices containing 100% juice are creditable at snacks only for infants eight through eleven months old. No other juices or juice drinks are creditable. It is recommended that only pasteurized juice be served. Look for juice that contains vitamin C, as this promotes the absorption of iron from food into the body.

Iron-fortified infant cereals with at least 45% of the Daily Value for iron (from the nutrition facts label) must be provided until the infant turns one year of age. Other cereals, including non-infant cereals, can be served as additional foods.

Serving Commercially Prepared Baby Food

- Be sure the vacuum seal has not been broken before using. The jar should “pop” when opened.
- Do not use the baby food jar as a serving dish. Remove the amount of food needed to feed the baby from the jar and put it in a dish for serving.
- Place strained meats or egg yolks in a microwave-safe dish before heating in the microwave. These foods can become very hot and splatter or explode if overheated in the original jar. Most other foods can be safely warmed in the microwave if the label directions are followed. Baby foods should be warmed to body temperature, not made hot, by heating only a few seconds at reduced power. Be sure to stir the food well after heating.
- Throw away any leftover food. Do not put it back into the jar, because it could cause contamination.
- Once the jar is opened, store it in the refrigerator. Food should be used as soon as possible, but at least within two to three days.

Preparing Baby Food at Home



Preparing homemade baby food has several advantages. It is more economical and the provider can ensure the quality of the food.

Commercial baby foods may lack enough texture for the older baby. The texture can be modified when homemade baby food is prepared.

Care should be taken to ensure food is washed, cooked and properly handled. Due to the possibility of contracting botulism from spores in the ground, it is recommended that root vegetables, such as beets, carrots and potatoes not be fed to infants less than 6 or 8 months of age.

When preparing homemade baby food, follow these steps.

- Make sure hands, utensils, work space and the food are all very clean.
- Begin with good quality food. Use fresh food whenever possible.

- Remove skins, pits and seeds from fruits and vegetables. Cut away all fat, gristle, skin and bones from meat, poultry and fish.
- Cook foods until they are soft and tender. To minimize vitamin loss, steam fruits and vegetables. Roast, simmer or braise meat.
- Modify the texture by mashing food with a fork, grinding with a food grinder or by pureeing in a blender.

Foods That Cannot Be Credited

Foods that cannot be credited toward the infant meal pattern include:

- foods with water listed as the first ingredient
- combination foods or dinners
- baby desserts
- fruit juice and juice drinks other than 100% fruit juice
- vegetable juice
- jarred cereals with or without fruit
- iron-fortified dry infant cereals containing fruit
- “adult” cereals

Refer to Infant Foods in the Crediting Foods section for other foods that are not creditable.

Foods to Avoid or Limit

Some foods which commonly cause allergic reactions in infants should not be served during their first year. These include cow’s milk, nuts, seeds and nut and/or seed butters, chocolate, citrus fruits, egg whites, and shell fish.

Honey should never be served to infants because it may contain botulism spores. The spores can cause severe food poisoning. After digestive systems mature, honey can be tolerated.

Sugar, salt, and butter or margarine should not be added to infant foods to provide flavor. It is best for children to develop a liking for the natural flavors of foods.

Foods to Avoid That Can Cause Choking

Some foods are hard to control in the mouth, and they can slip into the airway before being chewed properly. Do not feed babies or young children foods or pieces of food that are the size or shape of a marble. Foods this size can be swallowed whole and could become lodged in a child's throat and cause choking.

The following foods are **not** recommended for babies or young children because they can cause choking:

- Tough meat or large chunks of meat,
- Peanuts or other nuts and seeds (such as pumpkin or sunflower),
- Peanut butter or other nut or seed butters,
- Candy (e.g., hard candy, jelly beans, caramels, chewing gum),
- Popcorn,
- Hot dogs, sausages, or toddler hot dogs (even when cut into round slices),
- Potato and corn chips and similar snack foods,
- Pretzels,
- Chunks of cheese,
- Cooked or raw whole kernel corn,
- Plain wheat germ,
- Fish with bones,
- Marshmallows,
- Whole uncut grapes, berries, cherries, melon balls, or cherry or grape tomatoes,
- Raisins and other dried fruit,
- Whole beans,
- Hard pieces of raw fruit,
- Whole grain kernels,



- Raw vegetable pieces (e.g., carrots, green peas, string beans, celery, etc.) or hard pieces of partially cooked vegetables,
- Whole pieces of canned fruit (cut up instead).

Acceptable Finger Foods

Examples of finger foods that are safer and present a lower risk of choking include:

- Small pieces of ripe soft peeled bananas, peach or pear,
- Small strips of toast or bread,
- Cooked macaroni,
- Thin slices of mild cheese,
- Soft cooked chopped vegetables such as string beans or potatoes,
- Teething biscuits, and
- Soft moist finely chopped meats.



Food Preparation Techniques to Lower Choking Risk

You can lower a baby's risk of choking on food by taking the proper precautions. While preparing food for babies, make sure it is in a form that does not require much chewing. The following preventative techniques are recommended:

- Cook foods until soft enough to easily pierce with a fork.
- Cut soft foods into small pieces (cubes of food no larger than $\frac{1}{4}$ inch) or thin slices that can easily be chewed.
- Cut soft round foods, such as soft cooked carrots, into short strips rather than round pieces.
- Substitute foods that may cause choking with a safe substitute, such as thinly sliced meat or hamburger instead of hot dogs.
- Remove all bones from poultry and meat and especially from fish.
- Cut grapes in quarters.

- Remove pits and seeds from very ripe fruit and cut the fruit into small pieces.
- Grind or mash and moisten food for young babies.
- Cook and finely grind or mash whole grain kernels of wheat, barley, rice, etc. before feeding to a baby. Do not feed babies raw or cooked whole grain kernels in the whole form.

Remember, choking can occur anywhere and anytime there is food. Avoid those foods known to be a risk or modify them to make them safer. Closely supervise mealtimes and encourage babies to eat their meals sitting quietly. Meals can continue to be both a happy time and a safe time.

For more information about techniques for preventing choking, contact your local chapter of the American Red Cross (national website: www.redcross.org), American Heart Association (national website: www.americanheart.org), or American Lung Association (national website: www.lungusa.org). Also, a pamphlet on first aid, choking, and CPR can be ordered from the American Academy of Pediatrics (national website: www.aap.org) or may be available from a pediatrician's office.

Baby Bottle Tooth Decay

Baby bottle tooth decay can occur when babies regularly fall asleep with bottles in their mouths. To prevent baby bottle tooth decay:

- Feed only breast milk, formula, milk or water from a bottle. Never put juice, soda pop or other sweetened drinks in a bottle. Serve juice in a cup.
- Offer the bottle only at feeding time, not at nap time. If a baby falls asleep during feeding, move the baby around a bit to stimulate swallowing before putting the baby down to sleep.
- Do not use a bottle of cold juice to soothe a teething baby's gums. Instead, use a clean favorite rattle or teething ring that has been cooled in the refrigerator or freezer.



Infant Meal Pattern

	Birth through 3 months	4 through 7 months	8 through 11 months
Breakfast	4-6 fluid ounces formula (1) or breast milk (2,3)	4-8 fluid ounces formula (1) or breast milk (2,3) and 0-3 Tbsp. Infant cereal (1,4)	6-8 fluid ounces formula (1) or breast milk (2,3) and 2-4 Tbsp. Infant cereal (1) and 1-4 Tbsp fruit and/or vegetable
Lunch or Supper	4-6 fluid ounces formula (1) or breast milk (2,3)	4-8 fluid ounces formula (1) or breast milk (2,3) and 0-3 Tbsp. Infant cereal (1,4) and 0-3 Tbsp. Fruit and/or vegetable or both (4)	6-8 fluid ounces formula (1) or breast milk (2,3) and 2-4 Tbsp. Infant cereal (1); and/or 1-4 Tbsp. Meat, fish, poultry, egg yolk, cooked dry beans or peas; or ½ - 2 ounces cheese; or 1- 4 Ounces (volume) Cottage cheese; 1-4 ounces (weight) cheese food or cheese spread; and 1-4 Tbsp. Fruit and/or vegetables or both.
Supplement (snack)	4-6 fluid ounces formula (1) or breast milk (2,3)	4-6 fluid ounces formula (1) or breast milk (2,3)	2-4 fluid ounces formula (1), breast milk (2,3), or fruit juice (5); and 0-2 bread (4,6) or 0-2 crackers (4,6)

- (1) Infant formula and dry infant cereal shall be iron-fortified.
- (2) Breast milk or formula, or portions of both may be served; however, it is recommended that breast milk be served in place of formula from birth through 11 months.
- (3) For some breast fed infants who regularly consume less than the minimum amount of breast milk per feeding, a serving of less than the minimum amount of breast milk may be offered, with additional breast milk offered if the infant is still hungry.
- (4) A serving of this component is required only when the infant is developmentally ready to accept it.
- (5) Fruit juice shall be full-strength.
- (6) A serving of this component must be made from whole-grain or enriched meal or flour.

For more information on feeding infants, access “Feeding Infants: A Guide for Use in the Child Nutrition Programs” available at http://www.fns.usda.gov/tn/Resources/feeding_infants.pdf.