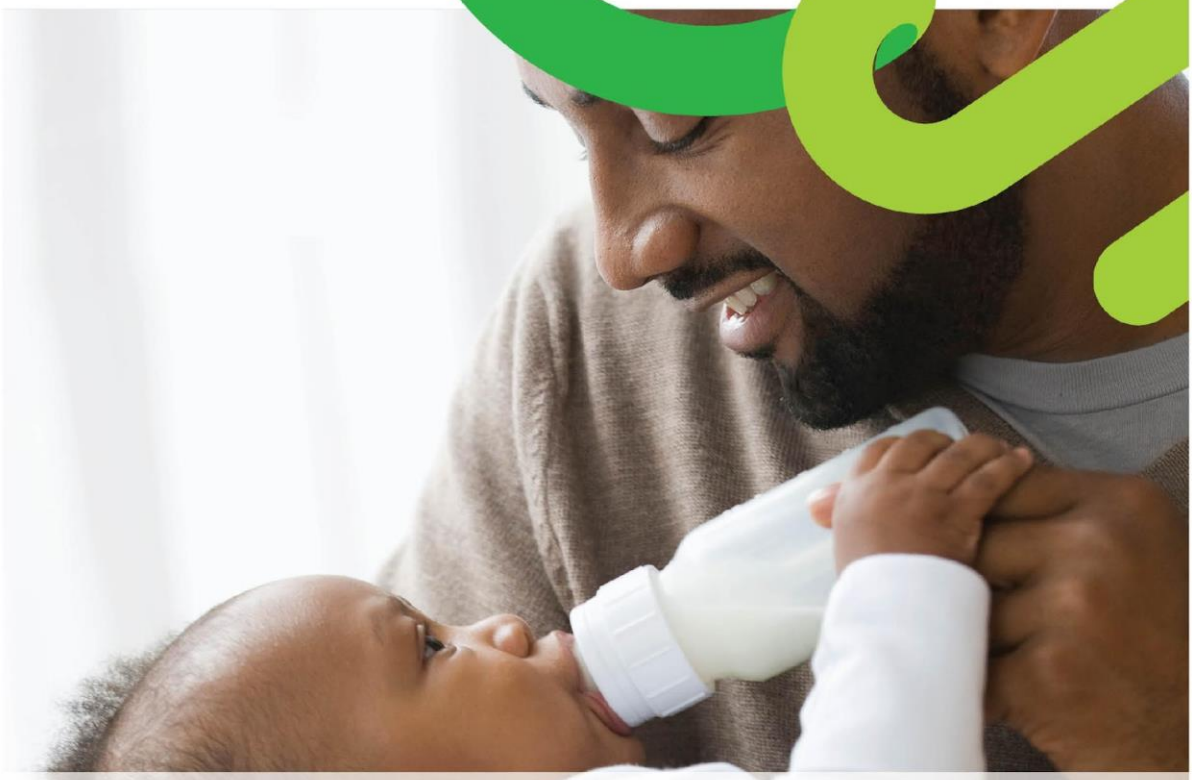
LEVEL 2

WIC Certification Program



Infant Nutrition Module

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IOWA WIC

STATE OF IOWA DEPARTMENT OF
Health AND Human
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Table of Contents

Infant Nutrition Module – Objectives

After completing this module, the learner will be able to:

1. Identify the types of milk that are appropriate to feed a baby during the first year of life.
2. Explain why breast milk is the best milk for babies in their first year of life and identify the benefits of breastfeeding.
3. Identify the brand names of standard infant formulas that are made from cow's milk and the brand names of infant formulas that are made from soybeans.
4. Identify how to dilute or mix the following forms of infant formula: powdered, concentrated, and ready-to-feed.
5. Identify the only reasons to issue ready-to-feed formula.
6. Explain why it is important that powdered and concentrated infant formulas be mixed with the proper amounts of water.
7. Explain to a participant why sterilization and sanitation methods used during bottle preparation are important.
8. Identify how long prepared formula can be safely stored in the refrigerator.
9. Identify how to warm expressed breast milk or formula and check for the correct temperature.
10. List the only three items that should be fed from a bottle.
11. State the importance of burping a baby during and after feedings.
12. Recognize babies' hunger and fullness cues.
13. Identify why cow's milk is not recommended for babies during the first year of life.
14. Recognize appropriate and inappropriate feeding practices for babies.
15. Identify the foods that supply iron for a baby and explain how iron absorption can be increased.
16. Answer a participant's basic questions about responsive feeding of newborn babies--birth to 6 months old.
17. State when solid foods should be introduced in a baby's diet, and recognize the signs of developmental readiness for introduction of solid foods.
18. Identify when appropriate to refer to health care providers before highly allergenic foods are introduced.
19. Identify appropriate foods to feed a 6 to 8 month old baby.
20. Identify appropriate foods to feed a 9 to 12 month old baby.
21. Name foods that should be avoided because they can cause a baby to choke. State how to modify foods to appropriate consistency.
22. State how to prepare homemade baby foods.
23. Identify why commercially prepared baby foods should not be fed directly from the jar.
24. List three suggestions for caregivers to help an older baby self-feed.
25. Explain to a participant the process of weaning a baby from the breast or bottle to a cup.
26. Define "Early Childhood Caries" and list its causes.
27. List appropriate advice for caregivers of babies with constipation, diarrhea, spitting up and colic.
28. Identify and know how to respond to feeding and diet-related Nutrition Risk Factors for babies.
29. Identify risk factors and know how to respond to caregiver's concerns about a baby's growth.

Introduction

Growth during the first year of life is faster than at any other time. A baby's birth weight will usually double by five months of age and triple by the first birthday. Good nutrition during this period of rapid growth is important to make sure the baby develops physically and mentally to the fullest potential.

The age recommendations made throughout this module on infant nutrition include the recommended age for a given practice–whether it's introducing solid foods, finger foods, or weaning from a bottle to a cup. All babies progress at their own rate and differences in developmental rates are to be expected. A baby who does not fall within the average age range for readiness to move to the next feeding method can still be considered normal. If in doubt about a specific behavior or practice, consult the WIC Licensed Dietitian.

The caregivers of babies enrolled in WIC receive nutritional assessment and follow up care. Some caregivers will need special nutrition counseling because of certain factors related to their baby's health and diet. It is important that you understand the nutritional risks of infancy and how to identify them. This module reviews educational points to discuss with caregivers and highlights infant-related nutrition risk factors.

Section I: Feeding The Infant From Birth To Twelve Months Of Age

Nutrition for the Newborn: Birth to Six Months of Age

The goal of this section is to provide information about feeding babies during the first months of life. During the early months, most of the time spent between parents and caregivers and the baby is in feeding. For the baby who is growing well, it is important that caregivers trust their baby and feed the baby on **cue** (as known as "on demand") by letting them eat as much or as little as they want. During these early months, nutritional needs can be completely met with breast milk or iron-fortified infant formula. Breast milk is normal human nutrition that also contains disease fighting substances and thus is the preferred milk for babies.

If breastfeeding is not chosen and donor (other mother's) breast milk is not available, iron-fortified infant formula is the recommended alternative. When infant formula is used, proper preparation and handling is important.

Introduction of solid foods should occur when the child is developmentally ready which happens between 4 to six months of age when babies display all the developmental signs of readiness. [1] Some signs that a child is developmentally ready is when they can hold their head up, open their mouth when food comes their way and after they have doubled in birth weight. Solid foods introduced too early are of little benefit to the baby and may even be harmful due to the possibility of choking, or causing a baby to drink less than the needed amount of breast milk or infant formula. Introducing solid foods too late may cause a baby to develop nutritional deficiencies and/or miss the period of developmental readiness.

Note: Even after solid foods have been introduced, as of 2022, the American Academy of Pediatrics in addition to other major medical organizations ***strongly*** recommend that babies continue to breastfeed until two years or beyond, as mutually desired by mom and baby.

Breastfeeding Is Best

Breast milk is the best milk and provides the right nutrition for babies in their first year of life and thereafter, as long as mutually desired. Breast milk is perfectly suited to the nutritional and developmental needs of the baby, which makes it far superior to infant formula. While breastfeeding is the desired form of nutrition, some mothers may not choose to, or be able to, breastfeed and it is important to make sure to support these participants and their choice when promoting breastfeeding.

Benefits of Breastfeeding

The following is a shortened list of benefits provided to the baby and mom when breastfeeding (refer to the *Breastfeeding Module* for a complete list):

- The nutrient composition of breast milk is ideal:
    - Breast milk is perfect for baby, it contains nutrients, enzymes, growth factors, antibodies, and hormones not found in formula and changes as the baby's needs change. Breast milk is easily digested and nutrients are easily absorbed.
    - Constipation is rare among breastfed babies.
    - Breast milk contains the appropriate amount of cholesterol, more than in cow's milk and infant formula. Cholesterol is a necessary piece in the creation of myelin, the covering of the nerve and brain cells. This covering is necessary for the development of muscle coordination of the baby during the first year of life.
    - Breast milk contains high levels of fatty acids that promote optimal brain development and may improve IQ.
    - Breast milk contains factors that help with the absorption of iron and zinc.
    - Breastfed babies have fewer illnesses than formula-fed babies. Breast milk is rich in antibodies that protect the baby against infection. Breastfed babies have fewer respiratory illnesses, ear infections, and stomach/intestinal illnesses.
    - Colostrum (the first milk) provides baby's first antibodies ("baby's first immunization") and is a gentle laxative that helps to clear baby's intestines, decreasing the risk of jaundice.
    - Breastfeeding protects babies from SIDS (Sudden Infant Death Syndrome) and reduces the risk of developing childhood obesity, allergies, some chronic diseases, and some childhood cancers.
    - Sucking at the breast enhances the development of baby's oral muscles, facial bones, and aids in optimal dental development.
    - The benefits of breastfeeding last far beyond when baby is weaned.
- Breastfeeding is easier to manage than bottle feeding:
    - There is no mixing, measuring, or sterilizing involved with breastfeeding.
    - Breast milk is always clean and at the correct temperature for the baby.
    - Breast milk is always ready when it is needed.
- Overfeeding the baby when breastfeeding is less likely. The mom cannot tell how much the baby has eaten during a feeding and therefore, cannot encourage the baby to "finish the bottle." This relates to one of the reasons why formula fed babies are at greater risk for becoming overweight.
- Underfeeding the baby when breastfeeding is also less likely. Make sure the mom is allowing the infant to nurse until they show signs of fullness/stopping. If the mother voices concerns over proper latching or poor milk supply it is important to gather more information or make a referral to someone who has received breastfeeding training to assist them with the concern.
- There is less likelihood of developing allergies. Breast milk promotes maturation of the gastrointestinal tract to prevent allergens from entering the body. Cow's milk proteins are highly allergenic and early exposure can result in allergic symptoms later in life.

- Breast milk saves money. There is no need for expensive formulas and fewer trips are made to the health care provider's office with a sick baby – saving the mom time and money.
- Breastfeeding benefits the health of moms by:
    - Increasing levels of oxytocin that stimulate uterine contractions, minimize blood loss after birth, and help the uterus return to shape and tone.
    - Increasing the rate of weight loss and may help moms return to a healthy weight; and reducing the risks of moms developing type 2 diabetes, ovarian and breast cancers, and hypertension.

Support of Breastfeeding

Breastfeeding is recognized by health care professionals as the best feeding choice for babies. The Academy of Nutrition and Dietetics, The American Medical Association, The American Public Health Association, The American Academy of Pediatrics, and The American Congress of Obstetricians and Gynecologists developed statements supporting the promotion and support of breastfeeding. In order for breastfeeding to be successful, there must be a strong emotional support system for the mom. This support system includes you, as part of the WIC team, family and friends, employers, health care providers, child care providers, and other moms who are supportive. The mother needs breastfeeding information before she starts, ideally during pregnancy, and continued information and support while breastfeeding.

There are very few conditions where breastfeeding is not recommended. Per CDC recommendations breastfeeding is not recommended if a woman has tested positive for HIV (the virus that causes AIDS), has galactosemia, is infected with human T-cell lymphotropic virus type I or II, using street drugs, or has suspected or confirmed Ebola virus disease. Mothers that have active untreated tuberculosis or varicella are recommended to temporarily not breastfeed but can still express breast milk. [2] If you or the participant have any concerns about additional medical concerns, always refer to their doctor for follow-up and if they should not breastfeed.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

The following begins a series of Self-Checks that occur throughout this module. The answers are located at the end of the Self-Check.

1. List two reasons why it is not recommended to start solid foods before an infant is developmentally ready.

    a.

    b.

2. Which of the following are reasons why breast milk is the best milk for babies?

    a. It is perfectly suited to the nutritional needs of a baby.

    b. Breast milk has special substances that protect a baby against infections.

c. Breast milk is ready to feed on demand.

3. True (T) or False (F)?

___ a. Breast milk is easily digested and nutrients are easily absorbed.

___ b. Constipation is common among breastfed babies.

___ c. Breast milk is always at the correct temperature.

___d. Breast milk is rich in antibodies that protect the baby against infection and serious illness.

ANSWERS

1. a. Introductions to foods could cause the baby to drink less breastmilk or formula and lead to nutritional deficiencies and/or cause them to miss the periods of developmental readiness
   b. Babies are at higher risk of choking.

2. a, b, c

3. a. T c. T
   b. F d. T

Formula Feeding

Although breast milk is normal nutrition and ideal for a baby, iron-fortified infant formula is the recommended alternative. It is important for the first year of life the formula be iron-fortified to prevent iron deficiency anemia. Low iron formula puts the baby at risk for more illness, delays in mental and motor development, and impaired energy metabolism.

Infant formulas are formulated to be nutritionally similar to breast milk to promote adequate infant growth.

Types of Infant Formulas

There are several different types of infant formulas:

- Cow's milk-based formulas such as Enfamil Infant, Similac Advance, and Gerber Good Start Gentle are made from cow's milk. Most babies do well on formulas made from cow's milk.

- Soy milk based formulas such as Similac Soy Isomil, Enfamil ProSobee, and Gerber Good Start Soy are made from soybeans. These formulas were developed for babies who are unable to tolerate cow's milk formulas or families that choose to avoid animal products.

Several kinds of special or exempt formulas are produced for babies who have specific problems such as prematurity, certain diseases, or physical disabilities. These formulas are usually more expensive, and must be prescribed by health care providers for a specific period of time. WIC approved formulas can be found on the WIC web portal under Resources>Formula. If a special formula is needed and is not found on the Iowa WIC Program Formula Product Guide, an Iowa WIC Formula Application can be filled out and sent to your State WIC Consultant for review.

Formula Packaging

The milk-based and soy-based formulas are available in powdered, concentrated, or ready-to-feed (RTF) forms.

Powdered formula is usually mixed with water in a ratio of one scoop formula to two ounces of water (the scoop is included in the can). The formula label gives exact mixing directions. When mixing powdered formula, fill the bottle with warm water first, and then add the formula to the water. Educate caregivers not to pack formula tightly in the scoop. Powdered formula comes in different size cans. **Powdered formula is suggested for breastfed babies who receive formula supplements because, once opened, the can of powdered formula can be stored up to one month.**

Concentrated liquid formula requires dilution with water in a one-to-one ratio; that is, one can of concentrated formula is mixed with one can of water. The can size is 13 ounces.

An easy way to tell caregivers how to mix concentrated formula with water is to pour the contents of a 13-ounce can of concentrated formula into a clean container. Fill the can with water and pour this water into the container with the concentrated formula. Mix well. With this method the caregiver doesn't have to worry about the "exactness" of the ounce-for-ounce mixing but must be used over the next 48 hours.

The final mixture is 26 ounces of prepared formula (13 ounces of concentrated formula plus the 13 ounces of water). Pour the mixture into clean bottles. This is similar to the method used to prepare frozen orange juice, where the empty can becomes the measuring device.

Ready-to-feed formula requires no mixing or diluting with water and is available in bottles and cans of various sizes. Ready-to-feed formula is generally the most expensive. A WIC CPA may approve ready-to-feed formula only under the following special circumstances and the reasons for issuance must be documented in Focus:

- The person caring for the participant may have difficulty correctly diluting concentrated or powder formula

- The household has an unsanitary or restricted water supply or poor refrigeration
- The prescribed formula is only available in ready-to-feed.

Formula Preparation

When preparing formulas for feeding, it is very important that caregivers follow the dilution directions on the label to correctly mix the formula and to handle it carefully to avoid contamination.

It is very important for you to determine if the formula is mixed or prepared according to the health care provider and label instructions. During the nutrition assessment, ask caregivers to describe how they prepare bottles. Review this information with the caregiver. **You should not recommend caregivers change the formula dilution unless it has been discussed with the health care provider.**

The World Health Organization (WHO) and Center for Disease Control and Prevention (CDC) have released new recommendations for preparing powdered infant formula. Because all powdered infant formulas cannot be sterilized during manufacturing, they can be contaminated with Cronobacter (formerly called *Enterobacter sakazakii*) bacteria or other harmful bacteria (during manufacturing or after opening) that can cause illness, such as severe blood infections and meningitis, and possibly even death.

Ready-to-use and liquid concentrate formulas are sterile before opening, meaning they do not contain disease causing bacteria. Babies born prematurely and those with weakened immune systems are at an increased risk for serious infection. Ready-to-use and liquid concentrate formulas are a better choice for these fragile babies. Once ready-to-feed or liquid concentrate formula is opened or prepared, it should be covered and refrigerated and use over the next 48 hours.

Breastfeeding is the best way to protect against bacterial contamination and Cronobacter infection. If breastfeeding is not an option here are some guidelines when preparing powdered infant formulas to help protect against Cronobacter

- Make sure the formula is not expired and the container is in good condition
- Follow manufacturer's mixing instructions.
- If the baby is less than 2 months old, was born prematurely, or has a weakened immune system, you may want to take the following extra steps to protect against Cronobacter.
    - Boil water and let it cool to no less than 158°F/70°C before pouring it into a clean and sterilized feeding cup with a lid, or bottle. Water should cool to this temperature within 30 minutes after boiling.
    - Add the exact amount of formula listed on the container and carefully shake the bottle rather than stirring the mixture.
    - Immediately cool the formula to body temperature to ensure it is not too hot before feeding your baby. Run the prepared, capped bottle under cool water or

place it into an ice bath. Do not let the cooling water get into the bottle or on the nipple.
    - Before feeding the baby, test the formula's temperature by shaking a few drops on your wrist to see if it's too hot.

  Note: Use formula within 2 hours of preparing it. If your baby does not finish the entire bottle of formula, throw away leftover formula. If you do not plan to use the prepared formula right away, refrigerate it immediately. Use refrigerated formula within 24 hours.

- Keeps hands clean! Always wash your hands carefully with soap and water during key times:
    - Before preparing and feeding bottles or foods to your baby.
    - Before touching your baby's mouth.
    - Before touching pacifiers or other things that go into your baby's mouth.
    - After using the toilet or changing diapers. [4]

Cleanliness during formula preparation and proper refrigeration of bottles is very important through the first year of life because these measures help prevent gastrointestinal problems and illness caused by bacteria. Once powdered formula is prepared, it can be safely fed to a baby if refrigerated up to 24 hours. Once a can of powdered formula is opened, it should be covered and stored in a cool, dry place for no longer than one month.

Cleaning and sterilizing the bottles: Babies 2 months of age and younger are more likely to contract illnesses from micro-organisms in bottles and nipples that are improperly cleaned, cleaned in contaminated water, or filled with contaminated water.

When cleaning infant feeding items in the dishwasher (if dishwasher safe) follow these steps:

1. **Take apart.** Separate all bottle parts (for example, bottles, nipples, caps, rings, valves).
2. **Rinse.** Rinse bottle parts and any other feeding items by holding them under running water. The water can be warm or cold, whatever you prefer.
3. **Wash.** Place bottle parts and other feeding items in the dishwasher. (Be sure to place small items into a closed-top basket or mesh laundry bag so they don't end up in the dishwasher filter.) **If possible, run the dishwasher using hot water and a heated drying cycle (or sanitizing setting); this can help kill more germs.**
4. **Remove from dishwasher.** Wash your hands with soap and water before removing and storing cleaned items.
    a. If items are not completely dry, place them on a clean, unused dish towel or paper towel to air-dry thoroughly before storing in an area free of dust or dirt. Do not use a dish towel to rub or pat items dry because doing so may transfer germs to the items.

When cleaning infant feeding items by hand follow these steps

1. **Wash hands.** Wash your hands well with soap and water for 20 seconds.
2. **Take apart.** Separate all bottle parts (for example, bottles, nipples, caps, rings, valves).

3. **Rinse.** Rinse bottle parts and any other feeding items by holding them under running water. Do not set them in the sink. The water can be warm or cold, whatever you prefer.
4. **Wash feeding items.**
    a. Place all items in a clean basin or container used only to clean infant feeding items. Do not wash directly in the sink because it may contain germs that could contaminate these items.
    b. Fill wash basin with hot water and add soap.
    c. Scrub items using a clean brush that is used only to clean infant feeding items.
    d. Squeeze water through nipple holes to be sure they get clean.
5. **Rinse again.** Rinse by holding items under running water, or by holding completely under fresh water, in a separate basin that is used only for cleaning infant feeding items.
6. **Allow to air-dry.** Place bottle parts, wash basin, and bottle brush on a clean, unused dish towel or paper towel in an area protected from dirt and dust. Allow to air dry thoroughly.
    a. Do not use a dish towel to rub or pat items dry because doing so may transfer germs to the items.
7. **Clean wash basin and bottle brush.** Rinse the wash basins and brush well and allow them to air-dry after each use. Wash them every few days, either in a dishwasher with hot water and a heated drying cycle (if they are dishwasher-safe), or by hand with soap and warm water. If your baby is less than 2 months old, was born prematurely, or has a weakened immune system due to illness (such as HIV) or medical treatment (such as chemotherapy for cancer), wash basin and bottle brush after every use.

Note: the AAP does not routinely recommend sterilizing bottles for healthy, term infants unless there is a concern for contamination.

Steps for cleaning were taken from the Centers for Disease Control and Prevention website for information on how to clean, sanitize, and store infant feeding items.

Preparing the water: Formula makers provide directions for mixing their products with water, but don't specify the water source or necessity of heating the water to kill potential bacteria contamination. In Iowa, tap water from a municipal system is considered safe to use. (To learn more about your public water supply you can check on the DNR's Website or you can check with your local DNR Field Office) As an added precaution for babies under 2 months of age, it's a good idea to use water that has been boiled for 1-5 minutes and added to powdered formula while still hot. Allow cold tap water to run for a short period of time (about two minutes) before collecting the water for boiling.

If the family is using water from their private well, encourage them to learn about the safety of their home's water. In Iowa, testing of private wells is the homeowner's responsibility but grants are available via local boards of health to help defray the costs of testing and fixing of private wells. For more information, visit the IDPH Bureau of Environmental Health Services website on grants to local counties. There they can look into getting assistance if they need to have their water tested for bacteria, nitrates, and heavy metals (for example, lead) contamination. Nitrates in drinking water at levels above 10 ppm is a health risk for infants of

less than six months of age. Boiling water will not free the water of nitrates or heavy metals, and because of the evaporation of the steam, the nitrates or metals will actually be concentrated in the remaining water. If the quality of the water is unsafe, the family should use store-bought bottled water.

Reasons caregivers incorrectly mix formula

There are a variety of reasons why a caregiver may not follow the instructions for proper mixing. Some reasons caregivers **over-dilute** formulas (formula mixed with too much water) are because they believe:

- It will help a baby with constipation, spitting up, or diarrhea
- It will help control the baby's weight
- It will reduce the amount of iron to the baby
- It will make the formula last longer

Some reasons caregivers **over-concentrate** formula (formula mixed with too little water) are due to the belief that:

- It will help the baby sleep through the night
- It will help the baby grow faster
- It will thicken the formula to fill the baby up

Also some caregivers have difficulty measuring the formula, and therefore, over-concentrate it.

Storing the formula

It is best to keep the formula in its original container and fill bottles as needed.
Bottles of concentrate or ready-to-feed formula should be refrigerated and used within 48 hours from when they were prepared. Bottles prepared from powdered formula should be refrigerated and used within 24 hours. Formula can be kept up to 2 hours without refrigeration.

Unused Formula

Formula left in the bottle after a feeding must be thrown away because it has the baby's saliva mixed in with it, and this provides an ideal breeding ground for bacteria. If formula is offered to a baby and the baby drinks it but doesn't finish, it should be thrown away after one hour if the baby doesn't continue to drink. Also, a dropped bottle whose nipple has come into contact with the floor or another unsanitary source should not be given to the baby before cleaning the nipple.

When not at home and on the go, it is important that proper care is taken with the baby's bottles packed in the diaper bag. If the caregiver will not have access to refrigeration for a very long time, it is a good idea to use powdered formula, mixed at the time of feeding. If the formula is prepared before leaving home, it is important that the formula in the bottles should start out very cold. The bottles should be insulated (wrapped in a thick cloth) to keep them cold.

Proper Feeding Temperature of Formula

Babies can be fed formula that is room temperature, slightly cooler, or slightly warmer. If a baby prefers a warm bottle, special care must be given not to warm the formula beyond body temperature. The best way to warm a bottle of previously prepared or ready-to-feed infant formula is to set it in a pan or bowl of warm water for a few minutes or shake it under warm tap water.

A few drops of formula on the wrist are a good test of temperature: if it feels slightly warm on the wrist, it is the correct temperature for the baby.

DO NOT use microwaves to warm breast milk or formula!

The following risks are too great and outweigh the convenience of using microwaves for heating expressed breast milk or infant formula:

- After microwaving, glass or plastic bottles can remain cool to the touch while the breast milk or formula inside them can be scalding hot. Microwaving also heats liquids unevenly. The breast milk or formula may feel lukewarm to touch and will have scalding hot spots.

- After microwaving, breast milk or formula in bottles with disposable plastic liners can become so hot that the plastic liners may burst.

- The heat of the microwave can destroy antibodies in breast milk. The correct way to warm breast milk is to take the milk out of the refrigerator just before using. Gradually, over 5 to 10 minutes, warm the milk to room temperature in a container of warm water. To use frozen breast milk, thaw the milk either in the refrigerator, where it can remain up to 24 hours, or in water just before feeding, gradually increasing the temperature from cool to warm. Do not defrost the milk in a microwave or over the stove.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. Circle the infant formulas that are made from cow's milk. Underline the ones that are made from soybean milk.

Enfamil Infant	Similac Advance
Gerber Good Start Soy	Enfamil ProSobee
Gerber Good Start Gentle	Similac Soy Isomil

2. Cow's milk-based formula and soy-based formula are packaged in three different forms: concentrated, powdered, and ready-to-feed. Briefly describe how to mix each one.

   Concentrated:

Powdered:

Ready-To-Feed:

Complete the sentences to make accurate statements in questions 3, 4 and 5.

3. Improper dilution of infant formula can result in:
   _____
   _____
   _____
   _____

4. Using clean bottles and water (for babies 2 months of age and younger) and overall cleanliness during formula preparation are necessary in order to _____.

5. Liquid formula (RTF or prepared from concentrate) may be stored in the refrigerator up to _____ hours after the formula can has been opened. Formula prepared from powder may be stored in the refrigerator up to _____hours after being mixed.

ANSWERS

1. Cow's milk: Enfamil Infant, Similac Advance, Gerber Good Start Gentle
   Soy milk: Enfamil ProSobee, Similac Soy Isomil, Gerber Good Start Soy

2. **Concentrated:** Requires dilution with water in a one-to-one ratio. Mix equal amounts of formula and water.

   Powdered: Mixed with water in a ratio of one scoop formula to two ounces of water. The directions on the formula can will give the exact dilution requirements.

   Ready-To-Feed: Requires no preparation; no mixing, no diluting.

3. Improper dilution of infant formula can result in very serious health problems for the baby. Formula mixed with too little water might be too concentrated for a baby to digest easily. Formula mixed with too much water might not supply calories needed for proper growth and may provide an overload of water that can be dangerous to the baby.

4. Using clean bottles and water (for babies 2 months of age and younger) and overall cleanliness during formula preparation are necessary in order to prevent illness.

5. Liquid formula (RTF or prepared from concentrate) may be stored in the refrigerator up to 48 hours after the formula can has been opened. Formula prepared from powder may be stored in the refrigerator up to 24 hours after being mixed.

Cow's Milk During the First Year

Fresh or powdered milk (whole, 2%, 1%, and fat-free), evaporated milk, sweetened condensed milk, soy milk, almond milk, goat's milk and other non-dairy milks are not recommended for babies during the first year of life. WIC and the American Academy of Pediatrics strongly recommend that babies continue to be breastfed or receive iron-fortified formula through the first year of life.

Some of the reasons cow's milk (whole, 2%, 1% fat-free, powdered) is not acceptable for babies before age one are:

- Cow's milk has a higher level of protein and minerals than breast milk or iron-fortified infant formulas. The high levels of protein and minerals in cow's milk place stress on the kidneys of the young baby.

- The immature digestive system of the young baby is not able to adequately break down cow's milk.

- In the early months, the feeding of cow's milk has been associated with gastrointestinal blood loss, which puts the baby at risk for the development of iron-deficiency anemia.

- Fresh or powdered cow's milk, evaporated milk, sweetened condensed milk, goat's milk and other non-dairy milks (for example, soy milk) are poor sources of iron. Prolonged use in early infancy may result in iron-deficiency anemia. These types of milk do not contain many essential nutrients such as vitamin C, some B vitamins, folate, and some minerals that are needed for growth and development of the baby.

Beyond 12 months of age, breast milk continues to be appropriate as long as mutually desired by mother and baby. Whole milk is recommended for most children between 12 to 24 months of age. However, the American Academy of Pediatrics recommends the use of reduced-fat milk for children who are overweight or obese or have a family history of obesity, dyslipidemia (high cholesterol or fat in the blood), or cardiovascular disease (condition that involves narrowed or blocked blood vessels that can lead to a heart attack, chest pain or stroke.). For information on when low fat and fat free milk can be provided between the ages of 1 and 2 refer to the Children 1-4 Years Food Package policy. After age two, 1% or fat-free milk is encouraged for all healthy children who are growing well.

Training Activity

- Video Training
    - Ellyn Satter's Feeding with Love and Good Sense II Feeding Vignettes

Feeding the Newborn

The close physical contact during feeding creates healthy social and emotional development. Caregivers gain a sense of responsibility by caring for their baby, and quickly become experts

at communicating, soothing, and handling their baby. However, when it comes to feeding their babies, caregivers may experience frustration when they cannot easily understand their babies' cues, and often have a lot of questions.

Newborn babies, whether breast or bottle-fed, need to eat small amounts of breast milk or infant formula often throughout the day and night because their stomachs cannot hold a large amount. A baby's digestive system is not designed to go a long amount of time without food. Babies need the important nutrition that night feedings can provide for growth and development. Night feedings are also important for the breastfeeding mother because they help maintain a healthy milk supply and prevent the mother's breasts from becoming too full.

Hunger and Fullness Cues

Newborn babies should be fed when they are hungry and eat until they are full. This is called feeding "on cue" or feeding on demand. Babies give cues to "tell" caregivers what they need. Common questions caregivers may have are:

- "How much or how often should I feed my baby?"
- "How can I tell when my baby's ready to eat?"
- "How long does a feeding last?"
- "How can I tell if my baby's eating enough?"

While there are general guidelines that address these questions, the truth is, babies are usually excellent at communicating when they are hungry and when they are full. Babies use both obvious and subtle cues to communicate these needs. That means caregivers need to be aware of these cues and should avoid strict feeding schedules.

Feeding on cue helps the baby connect feelings of hunger and fullness with the beginning and end of a feeding and helps the baby learn to eat based on his appetite. Most babies will feed every 2 to 3 hours (8 to 12 times in a 24-hour period) during the early weeks of life. Sleepy babies may need to be awakened to feed. The amount of time between feedings typically increases as the baby grows older. Newborn feedings can be expected to last 20-30 minutes. Babies may feed more during growth spurts, usually around 2-3 weeks, 6 weeks, 3 months, and 6 months old. While these are typically times not all babies are the same and they can vary. Growth spurts generally last 2-3 days.

Caregivers play a key role in helping babies feel comfortable and safe by learning to recognize and respond to their babies' needs. It's important that caregivers recognize when a baby is full. Trying to force a baby to take extra formula or breast milk can lead to a negative feeding relationship. By ending a feeding when the baby shows signs of fullness, a caregiver reinforces the baby's natural ability to stop eating when they are satisfied and prevents overfeeding.

Recognizing Hunger Cues

When babies are hungry, they will do everything they can to communicate it. Hunger cues include:

- Clenched fingers
- Fists over their chest and tummy
- Bringing hands to their face
- Flexed arms and legs
- Mouthing, rooting (looking for the nipple)
- Fast breathing and sucking noises or motions

Some caregivers may think that crying and waking are hunger cues, but these behaviors on their own without any of the other cues aren't signs of hunger. Caregivers may need help learning to recognize hunger cues so they understand when they see hunger cues, they should feed their babies. When caregivers respond to these early hunger cues, they can reduce crying. Late hunger cues include furrowing the brow, moving the head frantically from side to side and crying.

It's important for caregivers to learn the difference between hunger cues and other cues. A hungry baby may cry, but he will also show other cues first. Encourage caregivers to be flexible and responsive to their baby's signs of hunger before he reaches the late stage of crying. Suggest caregivers talk with their health care provider if they have concerns about growth or persistent crying (inconsolable crying, crying that continues in spite of soothing, changes in environment, or other interventions).

Recognizing Fullness Cues

Similar to hunger cues, multiple cues are commonly used together to show fullness/satisfaction. Signs of satiety and fullness are when the baby:

- Ends the feeding by releasing the breast
- Turns away from breast or bottle
- Sucks slower or stops sucking
- Pushes away
- Seals the lips together
- Seems content and calm
- Falls asleep
- Hands, toes, legs, and arms open and become relaxed

Note: The educational handout "Understanding your Baby's Cues" is a resource that can accompany education given over this and is located on the Iowa WIC Public Website under Resources>Educational Materials.

Sleeping Through the Night

A big milestone that many caregivers look forward to celebrating is when their baby sleeps through the night. Caregivers may share their sleep stories and tips for getting babies to sleep

through the night at an early age. New caregivers receive a lot of conflicting information about what is normal. It is commonly thought that feeding infant cereal at a very early age will help the baby sleep through the night. Research studies have failed to find truth in this common belief and it should be discouraged as adding cereal to the baby's bottle could increase the risk of choking.

Another misconception is the belief that breastfed babies sleep differently than formula-fed babies. Although there are a few differences, studies show minimal difference in *maternal* sleep among mothers who exclusively breastfeed, combo feed, or formula-feed their babies. Babies differ in the age they are ready to sleep through the night without feedings. By six months, babies may be able to sleep up to six hours in one stretch of time. This number is only a guide, every baby is different. Babies, who begin sleeping through the night, may resume night feedings during periods of rapid growth or teething. This is normal baby behavior. Starting solid foods before a baby is developmentally ready, or offering "extra" breast milk or formula will not make a baby any more likely to sleep through the night. You can help caregivers understand that it is normal to get less sleep with a baby and that sleep patterns will change as the baby gets older. Work with caregivers to help them find ways to function despite the sleep deprivation that comes with the need to care for their babies during the night. Introducing solids too early can be harmful. The American Academy of Pediatrics recommends starting solids around 6 months of age. For more information, refer to the "Healthy Sleep for you and your Baby" handout located under education materials on the Iowa WIC Public Website.

Positive Caregiver- Baby Interactions

Over time, caregivers become more skilled at understanding their baby's cues. As they feed their baby, caregivers learn how their actions comfort and satisfy.

A healthy feeding relationship involves a **division of responsibility** between the caregiver and the baby. The caregiver sets an appropriate, safe, and nurturing feeding environment and provides appropriate, healthy foods. The baby decides when and how much to eat. In a healthy baby-caregiver feeding relationship, responsive caregiving involves:

- Responding early and appropriately to hunger and fullness cues
- Recognizing the baby's developmental abilities and feeding skills
- Balancing the baby's need for assistance with encouragement of self-feeding
- Allowing the baby to start and guide feeding interactions

Successful interaction between a caregiver and baby involves three steps:

1. Look
2. Recognize
3. Respond

The purpose of this 3-step assessment is to describe how to help a caregiver understand what his or her baby is trying to communicate. Refer to Level II module 8, *Caregiver- Infant Interactions*, of the WIC Works "Baby Behavior Basics" online course for more detailed information on positive interactions.

Typical Breast Milk and Formula Intake

The frequency of breastfeeding or quantity of formula a baby consumes in 24 hours varies depending on the baby's age, size, and level of activity. Babies should be fed as they need it, "on cue"; using the babies early hunger cues as a guide. Offer the caregiver special instructions to watch for the first signs of fullness (decrease in sucking, lack of interest in the feeding, etc.) to prevent overfeeding. Encourage caregivers to let the baby decide how much to eat. Throw away any breast milk or formula remaining in the bottle if not used within 1 hour after the feeding. Do not encourage or force the baby to finish the bottle.

Babies do not always get hungry on a schedule and do not always take the same amount at a feeding. Let the baby decide how much to eat.

Signs of Adequate Intake

Babies who are fed on cue usually consume the amount they need to grow well. Growth of exclusively breastfed babies during the first 6 months may exceed that of other babies, but formula-fed babies may gain more rapidly during the remainder of the first year.

Caregivers may have concerns whether their baby is gaining enough weight or growing well. Monitoring a baby's growth over time is the best indicator that a baby is getting enough breast milk or formula. While it is important to find out the number of wet diapers, frequency of nursing, and/or actual amount of formula that the baby is consuming when you complete the nutrition interview, checking the baby's growth is the only sure way to know if a baby is getting the right amount of calories to meet his/her energy needs. Refer to the Level 1: Screening Module for more information on growth and measurement.

During the first few days of life, wet and dirty diapers gradually increase. Breastfed and formula-fed babies should have at least 6 wet diapers a day by the fifth day of life. The urine should be clear. Breastfed babies should have 4 or more dirty diapers whereas formula-fed babies may not stool as frequent or as soft. After about 6 weeks of age, the older baby may poop less frequently.

Understanding Crying

Babies use crying to communicate many different things, not just hunger. All babies cry, and it's normal and healthy for them to do so when they need something. When babies are hungry, they give several cues at once. Teach caregivers to watch for early hunger cues. For example, a baby may suck on his hand, root, and make sucking noises all at once. Watching and responding to early hunger cues can help prevent some crying. If a baby displays hunger cues and all other needs are met, the baby is most likely hungry. Feeding "on cue" will not spoil the baby.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. Circle the types of milk that are good to feed a baby during the first year of life:

Breast milk	Iron-fortified infant formula
Sweetened condensed milk	Fresh whole cow's milk
Goat's milk	2%, 1%, cow's or fat-free milk

2. True (T) or False (F)?

___a. Feeding "on cue" will spoil a baby.

___b. To prevent overfeeding, a caregiver should look for signs of fullness, such as a decrease in sucking and lack of interest in the feeding.

___c. Babies are ready to sleep through the night without feedings at different ages.

___d. Fresh and powdered milk (whole, 2%, 1%, or fat-free) are good sources of iron for older babies.

___e. Crying is always a sign of hunger.

___f. Babies may feed more during growth spurts, typically at 2-3 weeks, 6 weeks, 3 and 6 months.

___g. Moms who formula feed will get more sleep than moms who breastfed.

ANSWERS

1. Iron-fortified infant formula
   Breast milk

2. a. F
   b. T
   c. T
   d. F
   e. F
   f. T
   g. F

Feeding with a Bottle

Bottles are appropriate for feeding babies who are not developmentally ready to drink from a cup. However, bottles must be used properly.

Types of bottles to use

In 2012, the use of BPA in baby bottles and sippy cups was banned by the US Food & Drug Administration. BPA or Bisphenol A is industrial chemical used to make hard, clear plastic, which is used in many consumer products. Although the scientific evidence varies, it is recommended to avoid using BPA containing plastic wear, or BPA containing infant feeding products when feeding babies. This includes not heating up human breastmilk or infant formula in BPA containing plastics. If your participant voices they are using older bottles from a family member/friend or purchased them at a thrift store or garage sale it is advised to check and see if the bottles are BPA-free.

Plastic items containing BPA are generally marked with a 7 on the bottom for recycling purposes. Although not all number 7 plastic contains BPA.

What–and What Not–to Put into a Bottle

Only three items should be fed from a bottle:

- Expressed breastmilk (removed from the breast by hand techniques or by use of a breast pump).
- Infant formula.
- Water, only if directed by their health care provider. Breastmilk and properly prepared infant formula provide babies with enough water. Supplemental water generally is not recommended for healthy babies who are not eating solid foods. It can also fill the baby's stomach and cause a feeling of fullness which can decrease a baby's desire to feed. Discourage caregivers from giving water to babies less than 6 months of age. Babies with diarrhea or vomiting should be referred to their health care provider.

There are many items that should **never** be fed from a bottle:

- **Cereals and pureed foods:** Solid foods should not be fed until the baby is developmentally ready to take these foods from a spoon (usually occurs at about six months of age). Feeding solids from a bottle will not help the baby sleep through the night and may lead to overfeeding. Also, feeding infant cereal in a bottle or food from an "infant feeder" can cause choking.
- **Juices:** Juice can be introduced when the baby is 12 months old, and it should be served in a cup. Drinking juice from a bottle may lead to tooth decay and too much juice consumed. When offering juice use a cup without a lid. Discourage caregivers from allowing babies or toddlers to carry cups, especially cups with lids designed to prevent

spilling, around with them. This practice can lead to excessive consumption of juice. Once the child is 12 months old, limit juice to, at most, 4 ounces a day.

- **Sweeteners:** Adding sweeteners of any kind including honey, agave nectar, syrup, sugar, Kool-Aid, sports drinks, powdered or liquid drink mixes, or "gelatin water" to the bottle can result in excessive caloric intake and tooth decay.

In addition, honey may contain botulinum spores that are responsible for the very serious food poisoning botulism. Botulism can cause severe illness and death in babies. Thus, honey or any foods containing honey should not be given to a baby under one year of age.

Making Baby Comfortable When Bottle feeding

There are proper ways to hold a bottle while feeding a baby. To make bottle-feeding safe and comfortable for babies, encourage caregivers to do the following:

- Hold the baby during feedings in the cradle of the arms or lap. This helps the baby feel secure, as the baby is able to look at the caregiver's face and the caregiver is able to read and respond to the baby's cues. When in this position, the baby's head should be a little higher than the rest of the body; this prevents choking and milk from backing up in the inner ear and causing an ear infection.
- The bottle should be tilted so that the neck and nipple are always filled with breast milk or formula. This will help prevent the baby from swallowing air. Swallowed air can lead to a decrease in intake because the baby will feel full early in the feeding. It also can cause discomfort for the baby. Burp the baby at any natural break or at the end of a feeding to remove swallowed air. There is no need to burp a baby after a certain amount of time or after every couple of ounces because this can be disruptive to the feeding. Burp a baby by gently patting or rubbing the baby's back while he or she is held against the front of the caregiver's shoulder and chest or held and supported in a sitting position in the caregiver's lap.

Crying or fussiness is not always a sign of hunger. Help caregivers understand that breastfeeding or bottle-feeding should not be used as a substitute for attending to a baby's other needs. Holding and rocking the baby, changing the baby's diaper, or offering a pacifier when the caregiver is certain the baby isn't hungry are often adequate to soothe a baby. Breastfeeding moms should avoid using pacifiers until the baby is about 4 weeks old to make sure the mom has established her milk supply and to avoid nipple confusion.

Propped Bottles Lead to Problems

A baby who is bottle-fed should always be held during feeding while they are too young to hold their own bottle. Holding, touching, and establishing good eye contact increases bonding between the caregiver and baby and allows the caregiver to learn their baby's hunger and fullness cues.

Strongly discourage the practice of propping the bottle with a pillow or blanket. "Bottle propping" is not a safe practice. The baby may choke on the liquid and the fluid can get into

the lungs. Furthermore, health care professionals believe that babies who are fed while lying back without their heads being raised a little have a greater incidence of middle ear infections. Caregivers are not engaged with their baby when they prop the bottle and therefore cannot respond to their baby's needs, for example, if the baby wants to stop feeding or if they are choking. The baby is not able to regulate his/her feeding; thus the baby may be overfed. Babies need to be held as part of their development, and feeding time is a good time for holding.

Feeding Solids Too Early

There is no advantage to introducing solid foods (for example, infant cereal, jarred, or home prepared baby foods) before about six months of age. The baby's nutrition needs can be entirely met by breast milk or iron-fortified infant formula from birth to about six months of age.

In fact, some negative effects are associated with the early introduction of solid foods (that is before about four to six months of age). Early introduction of solids may result in over-feeding or gastrointestinal problems, such as constipation and diarrhea, for these babies. A young baby who gets solid foods in place of breast milk or formula might get too many calories, gain too much weight (which can carry over to early childhood), and not get enough nutrients to grow and develop properly. This is because infant cereal and other baby foods do not provide the same level of calories and nutrients as breast milk and formula. Young babies who are not developmentally ready for solid foods may choke on solids, which can force these food particles into their lungs. This aspiration (drawing of food or foreign matter into the lungs with the breath) of food particles can result in pneumonia, or even death, in young babies.

Many caregivers have heard that feeding solid foods will help babies sleep through the night; however, research doesn't support this idea. Most babies start sleeping for longer stretches at a time as they get older. The longest stretch can happen during the day or at night. Caregivers may mistakenly associate early introduction of solid foods with improved sleep versus the age of the baby. You can help support caregivers to understand that they will get less sleep at first, but as the baby gets older their sleep patterns will change and babies may sleep for longer stretches of time. "Sleeping through the night" may not be permanent since many babies resume night feedings during growth spurts or teething. It is commonly thought that feeding infant cereal at a very early age will help the baby sleep through the night. Research studies have failed to find truth in this common belief. It seems that the end of the night feeding is a developmental stage which is reached at any time from the newborn period to 15 months of age.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. Name the three items that are appropriate to put in a baby's bottle.

   a.

   b.

   c.

2. Name three items that should not be put in a baby's bottle.

   a.

   b.

   c.

3. True (T) or False (F)?

   ___a. Feeding honey to a baby less than one year of age can cause botulism poisoning.

   ___b. "Bottle propping" is a good way to feed a baby because it frees up the caregiver to do other things.

   ___c. Only bottle-fed babies need to be burped during feedings.

   ___d. Young babies who are not developmentally ready for solid foods may choke, which can force food particles into the lungs.

ANSWERS

1. a. Breast milk
   b. Infant formula
   c. Water

2. a. Cereal and pureed foods
   b. Juice
   c. Sweeteners

3. a. T
   b. F
   c. F
   d. T

Nutrition for the Infant: 6 to 8 Months of Age

Developmental Readiness for Solid Foods

Physical growth, development and nutrition needs vary greatly in each stage of infancy. By six months of age, most babies are ready to begin eating solid foods with a soft consistency. Breast milk or infant formula alone are no longer enough to meet all the nutrient needs of the baby. During this time, a baby's oral-motor skills and digestive system are more developed and mature. All of these changes set the stage for starting solid foods.

Determining the best time to introduce a baby to solid foods can be difficult. The key is to know when a baby has reached developmental readiness. Some signs of developmental readiness include:

- Sits up alone or with support.
- Holds head steady and straight.
- Opens mouth when sees food coming.
- Keeps the tongue low and flat to receive the spoon.
- Closes lips over spoon and pulls food off the spoon.
- Tongue thrust reflex diminishes, keeps food in the mouth and swallows it rather than pushing it back out onto the chin.

About 6 months, the following physical changes occur:

- The baby's immune defense system has matured so that the risk of allergic reactions to solid foods is reduced.
- The baby's kidneys develop so that the body can excrete waste products from high protein foods such as meat.
- The baby's rooting reflex, tongue thrust, suck/swallow reflex, and the gag reflex begin to diminish.

There is a critical time in the development of a baby (about 6 months) when he or she is ready to eat solid foods.

The jaw and muscle development that occurs when a baby eats complementary foods at the appropriate age contributes to later speech development. In WIC, issuance of infant cereal and baby foods can begin when the baby is 6 months old.

Introducing solid foods later than 6 months of age for babies who are *NOT* developmentally delayed may cause negative effects. The baby may then have difficulty developing skills to eat independently. It may also interfere with the baby consuming an adequate variety and amount of food to meet their nutritional needs. Iron levels will start to drop if a baby does not get enough iron in the diet at between four to six months of age. This is due to newborns only being born with iron stores to last them the first 4 months of life. Breast milk or infant formula

alone do not provide an adequate concentration or balance of nutrients for the older baby and needs to be supplemented with iron rich foods around 6 months of age.

Therefore, solid foods serve an important purpose in the daily diet of babies who are developmentally ready for them.

Developmental Delays may Affect an Infant's Feeding Skills

A baby's development does not always match his or her chronological age. Babies may be developmentally delayed in their feeding skills due to:

- Prematurity
- Low-birth weight
- Multiple hospitalizations
- Failure to thrive
- Neuromuscular delay
- Abuse or neglect
- Cleft lip or cleft palate
- Inability to feed by mouth (for example, fed intravenously or via tube) for an extended period
- A medical condition (for example, Down's syndrome or cerebral palsy)

Babies with these conditions may not be developmentally ready for solid foods at similar chronological ages as full-term, healthy babies. A caregiver of a developmentally delayed baby will need instructions on feeding techniques from the baby's health care provider or a trained professional.

Foods Allergies

A food allergy is an unusual response to a food caused by the body's immune system. The reaction occurs soon after eating the food. The reaction can range from mild to severe. It is estimated that food allergies affect around 8% of children in the United States. Some of the most common foods that cause allergies are listed below, although any food can cause a reaction.

<u>Common Foods that Cause Allergies (potential allergenic foods):</u>

- Dairy, such as cow's milk, cheese, cream, yogurt, butter, sour cream, ice cream, and cottage cheese
- Eggs
- Peanuts
- Nuts from trees, such as cashew, walnut, hazel, etc.
- Fish
- Shellfish, such as shrimp and lobster
- Wheat
- Soy

Reactions to a food allergy can include the following symptoms:

- Hives (red spots that look like mosquito bites)
- Itchy skin rashes (eczema, also called atopic dermatitis)
- Breathing problems, sneezing, congestion, wheezing, or tight throat
- Nausea, vomiting, or diarrhea
- Pale skin, light-headedness, or drop in heart rate

If several areas of the body are affected, the reaction may be severe or even life threatening. This type of allergic reaction is called anaphylaxis and requires immediate medical attention.

Food intolerances or food sensitivities are not the same as food allergies because the immune system is not causing the problem. Lactose intolerance is an example of a food intolerance that is often confused with a food allergy. Those with lactose intolerance have trouble digesting milk sugar, called lactose, leading to stomachaches, bloating, and loose stools. Another negative reaction is skin irritation, which often can be caused by acids found in acidic foods, like berries, tomatoes, citrus fruits (including citrus juices), and vegetables. These do not usually result in allergic reactions; therefore these foods do not need to be delayed or avoided (however, juice is not recommended for babies).

What May Help Reduce the Likelihood of Food Allergies

Feeding choices can make a difference in a baby's likelihood of developing allergies and a baby's nutrition plays an important role in prevention. Breastfeeding is the best way to feed a baby, and research shows breastfed babies have fewer rates of allergies, asthma, respiratory illnesses, and eczema compared to formula-fed babies. Breast milk is least likely to trigger an allergic reaction; it is easy to digest and strengthens a baby's immune system.

Introducing Potential Allergenic Solid Foods

In the past, it was recommended that common allergenic foods like dairy products (for example, cheese or yogurt), whole eggs (egg white), peanuts, and fish not be introduced until after a baby's first birthday. More recently, evidence has shown that there is no reason to delay introduction of these potentially allergenic foods.

Potentially allergenic foods can be introduced at about 6 months of age, just as other solid foods are introduced. For example, this includes dairy products such as cheese or yogurt (not cow's milk to drink due to nutrition reasons not related to allergies); whole eggs; soy; wheat; peanut and tree nuts in a form of thinned butter or paste (not whole peanuts or tree nuts due to choking risk); and fish and shellfish.

Certain steps are encouraged when introducing potentially allergenic foods. Safe ways to instruct caregivers to do this include:

- Potentially allergenic foods should only be introduced once several other solid foods have been fed and tolerated.
- Introduce the first taste at home rather than at day care or a restaurant.

- Wait 3 to 5 days before introducing another potentially allergenic food.
- Introduce in appropriate ways, as to avoid choking. Dilute creamy smooth peanut or nut butters with breast milk or formula to a thin consistency or mix into prepared infant cereal and offer only a small amount at a time. Chunks of peanut or nut butters pose a choking risk.
- Introduce in safe way, to avoid food-borne illness (for example, fully cooked eggs and fish).
- If the baby is "at-risk", defined as those with pre-existing allergies or suspected allergies, sibling or first degree relative with an allergy, recommend they discuss introduction of these foods with a health care provider *before* introducing potentially allergenic foods.

Infants At-Risk of Food Allergy

There are certain situations that place a baby at higher risk of developing a negative reaction to food. Introducing potentially allergenic foods should first be discussed with the health care provider for a plan of how to introduce these foods to babies with a higher risk of developing an allergy. The following are recommendations on when to refer a family to their health care provider:

- If one or both parents or other siblings have an allergic disease, specifically a peanut allergy, the baby is more likely to develop a food allergy or eczema.
- If a baby has persistent moderate-to-severe eczema that is not well managed.
- Babies with one underlying food allergy or history of reacting immediately to a food.
- If the caregiver believes the baby has a food allergy and, thus, that caregiver is limiting the baby's diet.

For those babies considered not at-risk for the development of food allergies there are no restricted foods except for cow's milk and other "milks" (for example, soy, almond, and goat's milk, etc.) and honey until after one year of age.

Iron Needs During Infancy

Iron is an important mineral needed throughout life, but is especially important during infancy and childhood when growth is rapid. Iron is a part of red blood cells, and it carries oxygen to all parts of the body. Adequate oxygen is necessary for normal growth.

Healthy full-term babies are born with a supply of iron that will last for about 4 to 6 months. Breast milk contains a perfect form of iron that is well absorbed and used by babies. Iron-fortified infant formula is an excellent source of iron for babies. However, between 4 and 6 months of age the supply is used up and iron must come from iron containing foods or formula in the baby's diet. This is especially true for exclusively breastfed babies.

Iron levels will start to drop if a baby does not get enough iron in the diet at about 6 months of age. This can lead to iron-deficiency anemia.

Recommendations to prevent iron-deficiency anemia starting at about 6 months of age:

- Provide plain, iron-fortified infant cereal and/or pureed meat.
    - Pureed meat is especially beneficial for the mostly breastfed baby as it also provides an excellent source of zinc.
    - Just two or more servings a day can meet a baby's iron needs at this age. The suggested amount is approximately 1-2 oz. /day meat (or 1-2 small jars of commercially prepared meat/day) or 2 servings/day for cereal (2 tablespoons/servings).
- Even after other solids have been introduced, iron-fortified infant cereals and/or meats remain a good food source of iron for babies through their first year. Meats should be home prepared or commercially prepared plain and pureed (blended in a food processor or blender until a smooth consistency is obtained).
- The iron in meats is readily absorbed in the body. Iron in non-meat sources, such as cooked dry beans, is not as easily absorbed by the body. To enhance the absorption of iron from non-meat sources, offer a vitamin C- rich food during the same meal to improve iron absorption. For example, iron-fortified infant cereal and pureed broccoli or sweet potato.
- Delay low-iron milks (for example, cow's milk, goat's milk, soy milk) until the baby is at least 12 months old.
- For babies who were born early or small, refer to the health care provider, as iron supplements may be prescribed.
- If a baby can't get two or more servings per day of iron rich foods (such as pureed meats and/or iron-fortified cereal), refer to the health care provider, an iron supplement may be prescribed.

Other solid foods that supply iron for a baby over <u>6 months of age are</u>:

- Cooked dry beans and peas (for example, black-eyed peas, chickpeas)–pureed or mashed.
- Dark green leafy vegetables such as spinach- pureed with a little water or broth.
- Iron-fortified infant cereal.

Poor sources of iron:

- Fruits and vegetables provide very small amounts of iron.
- Cow, goat, and soy milk (which should not be fed to babies less than one year of age) are a poor source of iron and can prevent iron absorption.
- Coffee and tea can prevent iron absorption and should be discouraged.

Introducing Solid Foods

Solid foods include infant cereal, meat, vegetables, fruits, and other protein-rich foods modified to a texture appropriate for the baby's developmental readiness. Solid foods should be given, along breast milk or formula, in amounts, frequency, and consistency that include a variety of foods to meet the calorie and nutrient needs of the growing baby. Ideally, the choice of solid foods should "complement" or fill in the nutritional gaps that develop as a natural result of the babies growing needs.

First Foods

It is a commonly held belief that foods should be introduced in a certain order. For example, offering vegetables before fruits, because of the belief that babies prefer the sweet flavor of fruits over vegetables. There is no scientific evidence that supports offering foods in a certain order. In other words, a baby is not more likely to like a new food based on the order it was introduced. The order in which foods are introduced should be based on the nutritional needs of the baby.

Whatever the food choice, a baby's first food should be single-ingredient foods (not a combination of foods) that are nutritious and have a smooth texture and thin consistency. While every baby has their own taste preferences, food acceptance can be influenced. For this reason, caregivers should be encouraged to offer foods multiple times (8-12 exposures) to allow opportunities for babies to accept a new food. The pace at which babies accept new tastes and textures varies greatly. Caregivers should be encouraged to respect the pace their baby sets, and they should be reassured that babies who are otherwise healthy will eventually be able and willing to handle a wide variety of texture and tastes.

By tradition, rice cereal was usually introduced first based on the idea that it was less likely to cause an allergic reaction. Newer evidence no longer supports this practice. However, single-grain (rice, barley, oat, wheat) iron-fortified infant cereals are popular first options because they provide iron. Caregivers can adjust the consistency to match the baby's oral-motor skills. Babies, especially those who are mostly breastfed, will benefit from the early introduction of pureed meat. Meats contain sources of iron and zinc that are better absorbed and needed by about 6 months of age when a baby's prenatal iron stores are depleted. For mostly breastfed babies, after 6 months of age, a natural gap exists between the amounts of iron and zinc breast milk provides and the growing needs of the baby. The amount of iron and zinc in breast milk is not related to the diet of the mother. This need is one reason for starting solids. The food package for fully breast-fed babies provides commercial baby food meats to support the baby's need for iron and zinc (in a form with good absorption). If pureed meat is not introduced starting at about 6 months then commercially prepared infant cereal should be served 1 to 2 times daily to meet iron requirements. Although all commercially prepared infant cereal is fortified with iron, zinc fortification of infant cereals may vary and the zinc content of plant foods tends to be low and/or poorly absorbed.

Beyond suggestions that an adequate source of iron and zinc be introduced by 6 months of age, especially for the breast fed baby, The American Academy of Pediatrics recommends the progression of new foods from all the different food groups should continue within the first month of complementary feeding. That means a baby who began eating foods at 6 months could reasonably be eating a variety of foods from all food groups by 7 to 8 months of age.

The first feeding:

It is important for a baby to begin good habits early and get used to the process of eating - sitting up, taking food from a spoon, resting between bites, and stopping when full - using the baby's cues as a guide.

Suggestions for the first feeding:

- Offer the first solid food after feeding some breast milk or infant formula. This way, hunger is less of a factor and it is easier to judge the baby's readiness to accept a food. The baby will be less likely to get frustrated if he/she is not overly hungry.
- Start with a small amount (about 1- 2 teaspoons). Allow the baby to lead on how often and how fast to feed.
- Show a positive attitude when introducing food to a baby. If the baby becomes upset or refuses to eat, do not force it, but offer it again at another time. Babies are developing their sense of trust in the world and depend on the caregiver to read their reactions. Babies show their desire for food by drooling, opening their mouths, and leaning forward. On the other hand, they show lack of interest or fullness by leaning back, turning away, pushing the spoon or food away, or closing their mouths.
- Introduce single-ingredient foods one at a time. This will help the caregiver identify negative food reactions.
- If using infant cereal, mix dry infant cereal with breast milk or infant formula. Do not mix cereal with water; water does not contain any calories or nutrients. Start with a teaspoon of cereal mixed with the liquid in a small dish to form a very thin cereal. Offer the cereal by spoon one or two times a day. As the baby gets used to eating cereal, larger portions can be offered, and the cereal can be made thicker. Serve infant cereal plain, without added sugar or sweeteners.

Modifying Foods to Prevent Choking

Caregivers can greatly reduce the risk of choking by serving food that is the appropriate texture for the baby's development. Such as blending or pureeing food, mashing food with a fork until it is soft and small enough to swallow, or chopping food into bite-sized pieces using a food chopper, food processor, or knife. It is also important to moisten dry food. Suggestions to prevent choking include:

- Do not leave the baby alone while he/she is eating. Always sit the baby in an upright position. Encourage the baby to eat slowly.
- Avoid using teething pain relief medicine before mealtime since it may interfere with chewing and swallowing.

- For younger babies, prepare food so that it is soft and does not require much chewing.
- For the older baby, cut foods into small pieces or thin slices.
- Cut round foods such as cooked carrots into short strips rather than round or coin shaped pieces. Raw whole grapes, cherries, berries, melon balls, and grape or cherry tomatoes should be cut into quarters, with pits removed before feeding. Large pieces of food can become lodged in the throat and cause choking.
- Remove hard pits and seeds from vegetables and fruits.
- Substitute foods that may cause choking with a safe substitute:
    - Meat chopped up or mashed ground beef instead of chunks of meat, hot dogs, or pieces of tough meat.
    - Cheese shredded, cut into strips, or small slices instead of chunks of cheese.
    - Thin creamy peanut or nut butters with breast milk or formula; mix a small amount into prepared infant cereal or place a thin smear on toasted bread or crackers instead of chucks or smeared on soft bread. Too much peanut or nut butters at one time stick to the roof of a baby's mouth and make it difficult to swallow. Do not feed whole or chopped peanuts or other nuts.

Iron-fortified infant cereals:

Iron-fortified single-grain infant cereal is a good choice to include in the baby's daily diet since it provides a source of iron. Infant cereal has additional iron to meet the rapidly growing needs of the baby. It is important to note that the manufacturers of infant cereal add a form of iron to the infant cereals which is better absorbed by the baby's body. Thus, only infant cereals should be given. Iron-fortified cereals not specifically made for babies do not generally contain a form of iron that is easily absorbed by the body. In addition, infant cereals provide a smooth texture and can be varied in thickness to help the baby adjust to the new eating experience. Mixed-grain infant cereals and cereal and fruit combinations may be introduced after a baby has been introduced separately to each food in the mixture or combination.

Dry infant cereals may be less expensive than jars of prepared cereals and they are more nutritious. Jars of prepared cereals are usually mixed with fruit, which makes them higher in calories.

Note: WIC does not provide jarred infant cereals.

Homemade Cereals

Some caregivers may want to make their own homemade cereal versus buying pre-packaged commercially prepared infant cereal. The reason commercially prepared infant cereals are typically recommended is because they are fortified with iron and in some cases additional nutrients like zinc. Iron and zinc must be obtained from solid foods during late infancy, particularly for breastfed babies. Homemade infant cereal won't be fortified with iron or zinc. Considering that commercial infant cereals serve as the cornerstone of many infant diets, they go a long way towards preventing iron deficiency in babies who don't have the benefit of receiving other good sources of iron. They're also convenient and safe. They're stable to store

and easy to mix with breast milk or formula. Of course, if a caregiver chooses to prepare their own homemade cereal ensure the caregiver is aware that the baby needs other sources of iron, especially the mostly breastfed baby, such as pureed meats or beans 1-2 times daily.

Protein foods:

Chicken, turkey, lamb, and beef, are suggested meats to serve. When a new meat is given it should be a single meat, that is, pureed beef instead of a combination dinner that contains beef.

Eggs are also an excellent source of protein and may be offered to the baby. The egg may be hard cooked or scrambled. To prevent the risk of food-borne illness all eggs should be fully cooked.

After a variety of plain pureed or mashed meats, vegetables, and fruits have been introduced by 7 to 8 months of age, begin to add more textures with foods, such as minced meats, cooked vegetables, coarsely chopped fruits, shredded cheese, etc. using the baby as a guide to determine the appropriate texture based on their development. Use plain, unsalted table foods and modify the texture by hand chopping or using an infant food grinder.

Vegetables and fruits:

Commercially prepared (for baby) pureed carrots, peas, green beans, sweet potatoes, and squash are common vegetables for babies. While those are more common, encouraging a variety of vegetables early in life can help infants get used to the taste of them as they grow up. Look for no salt added canned vegetables if preparing it for babies. Regular canned vegetables not specifically made for babies should be avoided because of the high salt content, if they are used they should be rinsed first to remove excess salt. Vegetables should be served plain without added fat (margarine, lard, etc.), salt, or sauces. Remember that an adult's taste preferences are not the same as a baby's. Just because an adult likes salted vegetables doesn't mean that a baby does too!

When a new vegetable is given, it should be a single vegetable, for example, pureed carrots instead of pureed peas and carrots.

There is a wide variety of commercially prepared fruits available, such as pureed pears, applesauce, plums, apricots, and peaches, etc. Soft, ripe bananas or unsweetened applesauce are also good fruits for a baby.

Fruits packed in heavy syrup should be avoided because of higher sugar content. Encourage caregivers to looks for fruits packed in their own juice and rinsing fruits that are packed in a heavy syrup.

Commercially prepared baby desserts, such as chocolate pudding, peach cobbler, as well as other desserts, should be discouraged because of their high sugar content.

No Fruit Juice for Babies:

Fruit juice should not be introduced to babies before 1 year of age. Instead, caregivers can be encouraged to offer whole fruit that is pureed, mashed, or diced while continuing to offer breastmilk or formula to drink. Because juice is viewed as nutritious, caregivers may not think about waiting to introduce it. Inform caregivers early on that fruit juice offers no nutritional benefit for babies and it lacks fiber that whole fruit provides.

In addition to 100% fruit juice, fruit drinks, artificially colored and flavored drinks, sweetened drinks, sports drinks, tea, "gelatin water", and soda should also not be offered to babies.

After one year of age, fruit juice can be used as part of a meal or snack. Juice for children ages 1 to 3 should be limited to 4 ounces or ½ cup and should only come from 100% fruit juice. Juice should be offered in a cup, not a bottle and not at bedtime. It should not be sipped throughout the day - which commonly happens when a child is allowed to carry a bottle, sippy cup, open cup, or box of juice around. This can lead to tooth decay because the teeth are exposed to sugar for longer periods of time.

Some additional points to tell caregivers:

- The American Academy of Pediatrics has concluded that fruit juice offers no nutritional benefit over whole fruits. Therefore, whole fruits should be encouraged.
- For children older than 1 year, 100% fruit juice, in limited quantities, about 4 oz. a day, can be part of a well-balanced diet. Too much juice may give the toddler a feeling of fullness and, therefore, other important foods may not be eaten. Too much juice may also cause stomach upset, diarrhea, and tooth decay.
- Diluting juice with water does not necessarily decrease the risk of tooth decay.
- Citrus juices such as orange juice may cause a rash around the mouth. This is due to irritation from the acid in the food, not necessarily from an allergic reaction.
- Educate caregivers to select only pasteurized juice. Unpasteurized juices should never be given to babies or older children because there is a risk of the baby being exposed to pathogens such as *Escherichia coli* (E Coli), Salmonella, and Cryptosporidia organisms which can cause serious disease.
- Infant juices are expensive and not necessary. Thus, families can be encouraged to offer babies whole fruit that is pureed or mashed.
- Imported canned juices are not advised for babies or older children. It is possible that the seams of cans manufactured outside the United States may contain lead which can leach into the food. Cans manufactured in the United States do not contain lead seams.

Appropriate Infant Feeding Practices

Feeding practices influence a baby's health and lifelong eating habits. The following practices are recommended:

- It is best to feed babies in a high chair or propped in a safe chair. Another good position is to seat the baby upright on the caregiver's lap. This helps to make the baby feel secure about this new feeding experience. The caregiver and baby should have good eye contact so that they can readily see each other. Always check the baby to make sure the food is being swallowed easily.
- Feed solids from a spoon. Spoon-feeding is an important part of developing the ability to self-feed. It also promotes the proper development of tongue muscles that are important for speech and allows the baby to experience the taste and texture of foods. There are several inexpensive feeding utensils especially designed for infant feeding. Long-handled spoons with small shallow bowls and infant cups with handles make feeding easier for the baby and caregiver.
- Offer one new food at a time. This allows the baby to become accustomed to new foods. It will also provide an opportunity for caregivers to easily identify if any one food causes an adverse reaction such as rash, hives, vomiting, diarrhea, or respiratory problems. In the case of an adverse reaction, eliminate the food from the diet and discuss with a health care provider before reintroducing at a later time.
- Introduce new foods when the baby is in a good mood and hungry, but not overly hungry.
- Start new foods in small quantities—one to two teaspoons--and slowly increase to a tablespoon or more.
- Let babies set the pace for feeding. Wait for the baby to open their mouth before trying to feed. Feed as slowly or as fast as the baby wants. Let the baby touch the food.
- Jar lids should make a popping sound when opened. The popping indicates the product was safely processed and stored. If the "bubble" on the top of the jar has already popped up, the food in that jar should not be fed to the baby.
- Do not force new foods that are rejected by a baby, but rather offer them at another time. Babies will generally learn to accept most new foods if they are offered repeatedly. It may take 10-15 exposures to a new food before a baby will accept it. Caregivers can encourage acceptance of new foods by showing a positive attitude about them. Babies will not necessarily refuse foods that other family members do not like. Babies who are exposed to more foods are more likely to enjoy a greater variety of foods as an adult.
- It is not necessary for a baby to finish a bottle or food. The baby is usually the best judge of how much to eat. Pay attention to their signals. Babies show lack of interest or fullness by leaning back, turning away, pushing the spoon or food away, or closing their mouths. Overfeeding or forcing a baby to eat may lead to an overweight baby or to habits that may eventually cause obesity in childhood and as an adult.

Suggested Meal Pattern

Age	Baby's Abilities	Foods
At about 6 months of age	-Sits up alone or with help- Holds head steady & straight. -Opens mouth when sees food coming. -Opens mouth for spoon -Keeps tongue low and flat to receive the spoon. -Closes lips over spoon & pull food into mouth. -Keeps most food in the mouth rather than pushing it back out onto the chin. -Turns head away from food when full.	**Morning Snack:** 1-2 tablespoons plain pureed meat or single-grain infant cereal mixed with 4-5 tablespoons of breast milk or formula. **Afternoon Snack:** 1-2 tablespoons plain pureed meat or single-grain infant cereal mixed with 4-5 tablespoons of breast milk or formula. Start with one new food every day or two. Continue to offer new foods. By 7-8 months of age, a baby should be eating foods from all food groups (cereal, protein [pureed meat, mashed beans, egg, tofu], fruit, vegetable). Gradually thicken the consistency. Breastfed babies usually nurse six or more times a day. Formula-fed babies drink about 27 to 32 ounces a day.
7-8 months of age	- Sits without help. -Starts drinking from a cup with help, expect spills. -Moves food from front to back of mouth. -Starts to mash food with gums. -Clenches mouth shut, turns head away or pushes food away when full.	**Morning:** 2 tablespoons infant cereal mixed with breast milk or formula to desired thicker consistency and 1 tablespoon pureed or fork-mashed fruit. **Afternoon:** 2 tablespoons pureed or fork-mashed vegetables or fruit, 2 tablespoons yogurt. **Evening:** 2 tablespoons pureed or fork-mashed vegetables, 1-2 tablespoons plain pureed meat or other protein food (mashed beans, egg, tofu), and 2 tablespoons prepared infant cereal. Breastfed babies usually nurse six or more times a day. Formula-fed babies drink about 27 to 32 ounces a day. Vary the texture. . Like mashed cooked eggs, beans, tofu, shredded cheese, thinned peanut or nut butters added to cereal. Keep trying new foods and retrying the foods baby hasn't accepted well previously.

This is a guide for healthy babies. Every baby is different. Babies may consume more or less than these amounts. Its important caregivers understand and look for their baby's cues of hunger and fullness to guide how much to feed. Babies 6 – 8 months old still rely mostly on breast milk or formula to grow and develop.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. Fill in the blanks to complete the sentences.
   a. Most babies are ready to begin eating solid foods at about_____ months of age.
   b. A baby's nutritional needs can be entirely met by _____ or _____ from birth to 6 months of age.

2. Which of the following statements are signs of a 6-month-old baby's readiness to start solid foods? (Circle the letters.)
   a. Ability to sleep through the night.
   b. Ability to keep the tongue low and flat to receive the spoon.
   c. Ability of the baby to sit up alone or with support.
   d. The baby has at least 2 teeth.
   e. Ability to keep food in the mouth and swallow it rather than pushing it back out onto the chin.

3. Circle the foods that would be most appropriate for a 7-month-old baby.

Iron-fortified infant cereal	Pureed fruit	Pureed beef
Banana/apple dessert	Chunks of meat	Orange juice
Pureed vegetable	Egg	Chicken noodle dinner (from a jar)

4. Circle the items that are good sources of iron for the baby:

Iron-fortified formula	Fortified infant cereal
Breast milk	Pureed meats
Fresh whole milk	Mashed cooked dry beans
Pureed fruits	Tea

6. True (T) or False (F)?

   _____ a. Babies need juice to meet their nutritional needs.
   _____ b. Introduce new foods to babies when they aren't overly hungry and are in a good mood.
   _____ c. Forcing a baby to eat may lead to habits that may cause obesity later in life.

ANSWERS

1. a. 6 months of age.
   b. breast milk
   iron-fortified infant formula.

2. b, c, e

3. Iron-fortified infant cereal
   Pureed vegetable
   Pureed fruit
   Egg
   Pureed beef

4. Iron-fortified formula, breast milk, fortified infant cereal, pureed meats, mashed cooked dry beans.

6. a. False
   b. True
   c. True

Special Consideration for Preterm Infants

Term babies are born with large iron stores, related to gestational age (the age of the baby at birth), birth weight or size, which meet their needs until 4 – 6 months of age. Preterm and low birth weight babies are born with much less stored iron and experience rapid growth in the first few months of life. Thus, their iron stores are used up much sooner than the iron stores of term babies (often by 2 – 3 months of age). Likewise, due to rapid growth, preterm babies have a much greater zinc requirement than term babies. Babies born preterm, with low birth weight, facing rapid growth and those with some medical conditions may benefit from an added source of iron and zinc before 6 months of age. Encourage caregivers of medically fragile babies to discuss their baby's individual needs with their health care provider.

Oral Health for Children

The primary or "baby" teeth begin to form in the jaw before birth and continue to develop throughout the first years of life. All 20 primary teeth should be in the mouth between 2 1/2 and 3 years. Good nutrition during pregnancy and infancy helps to form teeth that are strong and healthy.
Breastfeeding also helps by promoting optimal jaw and tooth development. When a baby has a tongue or upper lip that is "tied": it can affect their ability to breastfeed, or even take a bottle or a pacifier. Babies who are tongue-tied may have problems affecting a secure latch to the breast. They can overcompensate by increased suction causing nipple damage and pain. This can also reduce the amount of milk a mom produces because of ineffective sucking. Tongues and lips are only considered "tied" if their movement is restricted, impairing mobility. It is important to note that many people have frenums which do not cause any problems at all. Each case needs to be assessed on an individual basis. Once identified it is easily treated by snipping the frenum with scissors or lasers.

Several nutrients are necessary for the development of healthy teeth, but the most important ones are protein, calcium, phosphorus, and fluoride. Many communities add fluoride to the water supply if it is not present naturally. The fluoride level of public water systems in Iowa is available on the CDC's My Water's Fluoride webpage. Kits are also available from the State Hygienic Laboratory in Ankeny to test well water. Kits can be obtained by calling 515-725-1600.

The American Dental Association (ADA) recommends that infant formula be reconstituted with optimally fluoridated tap water. Since the recommendation for Community Water Fluoridation is .7 PPM, there is very little risk of giving a baby enough fluoride to cause

fluorosis, a cosmetic problem of mild white spots, when reconstituting infant formula with fluoridated tap water. And for children at moderate to high risk for decay a small risk of a cosmetic problem, fluorosis, is better than the risk of dental disease, cavities.

If parents/guardians prefer to use bottled water to reconstitute formula, the level of fluoride in bottled water is unknown, unless it states the amount on the label. The best bottled water option for infant formula is nursery water, which has an added concentration of fluoride of up to 0.7 mg/L, and will specifically have 'Fluoride Added' on the label.

If tap water is not optimally fluoridated, parents/guardians should discuss options with the child's dentist and/or physician. The American Academy of Pediatrics and the American Dental Association recommend fluoride supplements for infants starting at 6 months of age if the water supply does not have adequate fluoride.

Early Childhood Caries (cavities)

Early childhood caries are caused by bacteria called *Streptococcus mutans* and are always associated with an improper use of sugars. Babies do not have the bacteria when they are born, but they can get it from parents, especially the mother. Parents (and care givers) should avoid saliva-sharing activities, such as sharing eating utensils or a toothbrush with a child, or licking/sucking on a child's hands, pacifier, or bottle or pre-chewing food. These practices should be discouraged.
The presence of this bacteria, combined with improper feeding practices such as allowing babies to be put to bed with a bottle of infant formula, milk, juice, or sweetened drink increases the chances that early childhood caries will occur.

Sugar is a natural ingredient in all milks including breast milk and infant formula. Juices, Kool-Aid, and other drinks also contain natural or added sugars. The sugar in these liquids, as well as any carbohydrate, is used by the bacteria in the baby's mouth and acid is formed. The acid attacks the teeth causing cavities. The upper front teeth are usually the most affected in babies and these sometimes need to be pulled or capped when decay is excessive. In severe cases the treatment must be performed in the hospital under general anesthesia.

Early childhood caries can progress quickly from white spot lesions to cavities. These cavities can be painful and cause problems with sleeping, eating, learning as well as speaking, and may also cause problems later on, such as crooked permanent teeth and speech problems, such as lisping.

Care of the Gums and Teeth

The primary teeth usually begin to appear near the age of six months and are at risk to decay from the time they first appear. Therefore, care of the gums and teeth should begin in the first months of life. The American Dental Association and the American Academy of Pediatric Dentistry recommend that children have their first visit within 6 months of the eruption of the first tooth or by age 1. It is less traumatic for the child and less costly to prevent disease early rather than repair it later!

Preventing Early Childhood Caries

- Clean the baby's gums with a clean cloth or gauze even before the teeth appear. Good dental health, including daily cleaning of the gums and teeth, should be started early in life. This removes residues from the mouth and gets babies used to having their mouth cleaned.
- Brush the baby's teeth as soon as they appear. Brush teeth thoroughly twice per day (morning and night) or as directed by a dentist or physician. Children need help brushing until they are 7 or 8. It is important that parents know to "Lift the Child's Lip" to better brush the four top teeth and look for early signs of cavities (white spots).
- Replace a toothbrush when it becomes worn, about every 3 months. Do not share toothbrushes among family members.
- Use only a smear of fluoridated toothpaste until the child is 3 years old. This should be no bigger than a grain of rice. Use a pea sized amount for children over 3 years old. If children swallow a very small amount of toothpaste this will not be harmful. But a whole tube of toothpaste can be harmful, which is why it is important to keep the tube out of the reach of children.
- Discourage the practice of caregivers chewing the food to give to the baby to prevent the transfer of *Streptococcus mutans* from the adult's mouth to the baby's.
- Never put a baby to bed with a bottle of infant formula, milk, juice, or sweet drink. Encourage caregivers to hold their babies when feeding them and to teach them to fall asleep without a bottle.
- Discourage parents from allowing toddlers to carry around a bottle, spill-proof cup, or open cup filled with a sugar-sweetened drink throughout the day. Only put water in cups between meals.
- Weaning from bottle to cup should begin near 7 months of age. Breastfed babies can be introduced to a cup at this time and may never need a bottle. Complete weaning from the

bottle near the time of the first birthday. As weaning occurs, formula or breast milk can be offered in the cup.

Never dip pacifiers in honey, sugar, or syrup. Most infants require some amount of additional sucking beyond that needed for nourishment. The SIDS foundation recommends pacifiers in the 10 top sleep habits. Pacifiers are easier to discontinue than finger habits and can be less harmful to the developing teeth.

I-Smile™ Dental Home Project

The I-Smile™ Dental Home Project was started after the legislative mandate was passed in 2005 that stated, "All Medicaid enrolled children birth to 12 would have a dental home". As part of this program, there is now a dental hygienist in each of the Title V MCH agencies covering all 99 counties in Iowa. I-Smile™ Coordinators serve as the prevention expert and are the liaison between dentists, physicians, public health, families, and other community programs – to ensure children access dental care.

Many I-Smile coordinators work in WIC to provide education, screens, and preventive services for children. Or there may be a direct service hygienist or nurses trained by the I-Smile™ Coordinator to provide screens, fluoride varnish applications and education. I-Smile™ Coordinators are also a great resource to assist families in finding a dentist or a payment source for dental care.

The ultimate goal of I-Smile is for all children, from the age of 1, receive early and regular preventive dental care, including treatment when needed.

The I-Smile™ Coordinator in your area can be found on the I-Smile™ website: https://ismile.idph.iowa.gov/

And for more information and additional links see the Iowa Department of Public Health Bureau of Oral and Health Delivery Systems webpage: https://idph.iowa.gov/ohds

Common Concerns in Infancy

Some babies will experience digestive problems like spitting up, colic, or a small bout of diarrhea or constipation. Some babies may have more serious digestive issues that require medical treatment. This section will cover common infant health issues. When counseling families about feeding their babies, you can help them understand normal baby behaviors and refer them to their health care provider for further assessment when necessary.

Constipation

Many caregivers become concerned if their babies do not have daily bowel movements. Although many babies have a daily stool, others may only have a stool every 2 to 3 days. The

older breastfed baby (over 2 months of age) as well as formula-fed baby may have infrequent stools. Frequency is not a good indicator of constipation.

Caregivers may also worry that straining is a sign of constipation, but this is normal for babies as their muscles and digestive tracts develop. Constipation in babies is better characterized by hard, dry stools that are difficult to pass.

Part of the difficulty in determining whether a baby is constipated is that each caregiver may have a different belief of how often a baby should have a bowel movement and whether a baby's stool is "too hard". Constipation is not very common among breastfed babies. Formula-fed babies tend to have firmer stools, but this does not necessarily mean the baby is constipated. Some caregivers believe iron causes their baby to be constipated, but studies have demonstrated no relationship between iron-fortified infant formula and constipation. Therefore, the amount of iron supplied by iron-fortified infant formula does not cause constipation.

Constipation can be caused by a variety of factors or conditions, including:

- Dietary influences, such as:
    - Inadequate amounts of human milk, infant formula, complementary foods, or fluid intake
    - Improper dilution of infant formula
    - Early introduction of complementary foods
- Abnormal anatomy or neurologic functioning of the digestive tract
- Use of certain medications
- Medical conditions and hormonal abnormalities
- Stool withholding due to rectal irritation from thermometers, vigorous wiping, etc.
- Excessive fluid losses due to vomiting or fever
- Lack of movement or activity

If a caregiver complains that the baby is constipated, refer the baby to a health care provider for medical evaluation. If the health care provider determines that the baby's diet is a factor contributing to the constipation, it is okay to assess the baby's diet, with particular focus on:

- Ensure adequate intake of breast milk or infant formula
- Ensure proper infant formula preparation and dilution if the infant is formula-fed
- Ensure that appropriate types and amounts of complementary foods are consumed

Infant Nutrition and Feeding; A Guide for Use in the Special supplemental Nutrition Program for Women, infants, and Children (WIC), USDA, FNS-826; revised April 2019.

Diarrhea

Diarrhea is defined as the passage of frequent, loose, unformed, or watery stools. Diarrhea is difficult to define, however, because each baby has his own pattern of bowel movements, and what is normal for one baby may not be normal for another.

For example, breastfed babies may normally have loose, frequent stools. This is not a concern. However, if the stools become green or black (after the first few days of life), explosive, and foul smelling, then there is cause for concern.

Persistent diarrhea can be dangerous. Babies with diarrhea should be referred to their health care provider for treatment to prevent dehydration and other serious complications in the baby. Use of sports drinks, such as Gatorade, is not recommended for hydrating babies.

Spitting Up

Spitting up is different from vomiting. Spitting up involves small amounts of milk that are spilled from the mouth, as opposed to forcefully ejected out of the mouth. This may occur several times a day during or shortly after feeding. It can occur with jostling, squeezing, or even just laying the baby down. Spitting up is harmless if the baby is growing well and content.

Occasionally, a change in feeding techniques may help the problem. Techniques to reduce excessive spitting up include the following:

- Burp the baby several times during a feeding. Burping is generally done during normal breaks in a feeding; it slows a feeding and can lessen the amount of air swallowed.
- After feeding, hold the baby in an upright position for about 15 to 30 minutes.
- Avoid excessive movement or play right after eating.
- Avoid forcing the baby to eat or drink when full and satisfied (encourage caregivers to watch for signs of fullness).

While contract formulas can be changed without documentation by a CPA in a WIC clinic it is recommended that you gather all the information before making a formula change. Discuss normal infant behaviors and feeding techniques with the caregiver as fussiness and spitting up are normal in infants. If the caregiver still wishes to change formula after your discussion, you can change the formula at that time.

Note: If the spitting up continues to be a concern refer the family to their health care provider as forceful and persistent vomiting may be a symptom of a more serious illness.

Colic

The cause of colic is unknown. Researchers have explored a number of possibilities, including allergies, lactose intolerance, maternal anxiety, changes in the digestive system, and differences in the way a baby is fed. Yet it's still unclear why some babies have colic and others don't. Colic usually develops between 2 to 6 weeks of age and may continue until the baby is 3 to 4 months old, sometimes lasting until 6 months of age. Babies with colic will frequently show discomfort and aggravated behavior such as screaming, drawing their legs onto the abdomens, passing gas, and inconsolable crying. It may occur at similar times every day, such as in the evening. Many babies, no matter whether they are formula-fed or breastfed, have fussy time, usually in the late afternoon or early evening.

Formula-fed babies seem to experience colic more than breastfed babies. Some evidence shows that colic in breastfed babies' is a sign of sensitivity to a food in the mother's diet. Mothers can try to eliminate milk products, caffeine, onions, cabbage, and any other potentially irritating foods from their diet. If food sensitivity is causing the discomfort, the colic should decrease within a few days of these changes. For formula fed babies, some benefit has been shown with the use of hypoallergenic infant formula. The psychological stress and harm to the caregiver-child relationship is of concern when a baby has colic. Caregivers need support and assurance throughout these difficult months. Helping caregivers develop skills to respond to their babies' needs may enhance a caregivers ability to care for their baby.

Concerns about colic should be investigated by a health care provider to rule out any medical conditions. There is no clearly effective treatment to manage colic. Once medical conditions have been ruled out, the following suggestions may provide some help:

- Burp the baby if needed.
- Change the diaper if needed.
- Soothe the baby by swaddling him in a blanket, rocking him to music.
- Carry him in a carrier.
- Lay him tummy down on the bed and pat his back until he has calmed down (it is not recommended that newborn babies be put to sleep on their stomachs).
- Use repetition to soothe (repeat the same action over and over again before trying something new).

If the baby cries excessively, encourage the caregiver to identify someone they can contact if they feel they may lose control. Empathize with caregivers to understand the frustration of not being able to soothe one's baby. Remind caregivers that it is okay when frustrated or overwhelmed to simply place the baby in a safe place, such as their crib, and walk away to calm down and to *never* shake a baby.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. Fill in the blanks:

a. The four most important nutrients for healthy teeth are:

_____ _____

_____ _____

b. The American Academy of Pediatrics and the American Dental Association recommend that a supplement of _____ be given to babies six months old and older if the water supply does not have adequate amounts of it.

c. Early childhood caries are caused by a bacteria called _____ _____

2. List one way the bacteria that causes dental caries is spread:

3. True (T) or False (F)?

a. _____ Babies put to bed with a bottle of formula, milk, or juice can develop tooth decay.
b. _____ Good dental health practices begin early in life, even before babies have teeth.
c. _____ It is acceptable to dilute formula for 2-3 days for babies with constipation.

4. List four feeding techniques to reduce excessive spitting up.

a.
b.
c.
d.

5. List three suggestions for a caregiver of a colicky baby.

a.
b.
c.

ANSWERS

1. a. Protein, Calcium, Phosphorous, Fluoride
   b. Fluoride
   c. *Streptococcus mutans*

2. Either of the following:
   Sharing eating utensils
   Putting objects in an adult's mouth then into the baby's mouth (pre-chewed foods, pacifier)

3. a. True
   b. True
   c. False; never dilute formula.

4. a. Burp the baby several times during a feeding
   b. After feeding hold the baby in an upright position for about 15 to 30 minutes

c. Avoid excessive movement or play right after eating
d. Avoid forcing the baby to eat or drink when full and satisfied

5. Any three of the following:
   a. Burp if needed
   b. Change diaper if needed
   c. Sooth by swaddling in a blanket
   d. Rocking
   e. Carry in a baby carrier
   f. Lay baby tummy down on the bed and pat his back
   g. Use repetition to soothe

Nutrition for the Older Infant: 8 to 12 Months of Age

Changing from pureed foods to foods with more texture is an important part of developing the skills to learn to eat independently. In WIC, issuance of fresh fruits and vegetables in lieu of some jarred baby food fruits and vegetables can be given as an option when the baby is 9 months old. This food package option should be discussed with the parent/guardian to determine if the baby is developmentally ready to consume foods of increased texture and consistency. Focus will not automatically change the food package.

Finger Foods

When the baby shows signs of being able to chew with up and down movements, and can move the tongue from side to side and swallow, **finger foods** should be offered. This is usually at 7 or 8 months of age.

Finger foods are small pieces of soft food that can be easily dissolved in the throat or dislodged if they become stuck. They are called finger foods because they allow babies to practice using their hands and fingers to feed themselves. Examples of good choices for finger foods include: soft, peeled fruit, cooked vegetables, mild cheese, toast pieces, tortillas, crackers, and small pieces of tender meat.

Food in small, round, or hard pieces that can become lodged in the baby's throat or that can "ball up" in the baby's throat should not be given. Examples of such foods are nuts, popcorn, raisins, raw vegetables, grapes, cherries, hot dogs, or meat sticks (whole or coined shaped cut pieces), and thick layers of peanut butter or peanut butter on soft bread.

Self-Feeding Skills

Many babies around 9 months prefer to feed themselves with their hands and fingers rather than with utensils. This is their way of experimenting with food. It is important that babies be allowed to take part in this activity, even though it is messy, because it is an important part of learning to feed themselves.

Near the age of one year, babies become interested in holding utensils and feeding themselves. They enjoy playing with spoons during meal- or play-time. This is a good way for them to begin to learn to use a spoon. Babies gradually learn to get food on the spoon and the spoon to their mouth, although food is often spilled before it gets into their mouth.

Some suggestions you can offer to caregivers of babies who are learning to feed themselves include:

- Make mealtime happy and calm. Smile and talk to the baby.
- Be patient with the baby during this learning period.
- Pick a time to allow the baby to “play” with his food.

- Cover the floor under the baby's chair with paper or an old shower curtain and dress the baby in clothing that will not be harmed by spilled food.
- Include foods which are fed to the baby, as well as items that the baby can feed him/herself at meals.
- Give the baby small portions of food.
- Avoid spicy foods. Babies also do not need added butter, salt, or sugar.
- Let the baby use a cup with all meals.
- Stay with the baby when he/she eats so that it is a social experience and to be there should he/she gag or choke.

Each baby develops at his own rate. Full-term babies should be trying to feed themselves finger foods by nine months of age. The process of learning to eat independently continues into the second year of life.

Meal Planning

A baby who is 8 months to 12 months of age should be eating many types of solid foods with a variety of textures and colors. Finger foods should be included at meals and snack time. Foods from all of the food groups should include daily in the baby's diet. Encourage caregivers to offer solid foods following a schedule that considers the baby's appetite and the family's schedule. Smaller babies and babies at the lower end of the age range require smaller portion sizes than older, larger babies. Offer breast milk or formula in a cup.

Suggested Meal Pattern

Older babies need more food. As a baby begins to eat more solid food, their need for breast milk or formula will decrease. By 8 to 12 months of age babies should be eating a wide variety of food with different textures, including some table foods. Again, this suggestion is only a guide; babies may eat more or less than these amounts.

Age	Babies Abilities	Foods
8 to 12 months	-Starts to pick up food with fingers. -Drinks from a cup with less spilling. -Moves food to sides of mouth and chews. - Continues practice of drinking from a cup. -Picks up food and puts in mouth.	**Morning:** 4-6 tablespoons prepared infant cereal; 2-4 tablespoons diced soft fruit. **Mid-Morning Snack:** 2 ounces water in a cup, 2-4 tablespoons yogurt, 2-4 tablespoons diced soft fruit. **Afternoon:** 2-4 tablespoons cooked mashed beans (egg or tofu), 2-4 tablespoons cooked vegetables. **Mid-Afternoon Snack:** Whole grain toast strips, add a thin smear of smooth peanut or nut butter or top with fork mashed fruit, 2 ounces water in a cup. **Evening:** 2-4 tablespoons minced moist meat, 2-4 tablespoons cooked vegetables, 2-4 tablespoons fruit, 2 tablespoons cooked whole wheat pasta or brown rice. At this age, breastfed babies usually nurse four or more times a day. Formula-fed babies drink about 24-28 ounces a day.

Home-Prepared Baby Foods

Home-prepared baby foods are a nutritious, inexpensive way to feed a baby. However, care must be taken during the preparation and storage of the food to prevent contamination. The following are guidelines to discuss with caregivers:

- The preparer's hands should be washed in hot, soapy water. All equipment used in the preparation and storage should be thoroughly washed and rinsed.
- Wash fruits and vegetables; remove skin, pits, and seeds. Boil and steam the vegetables or fruits in a small amount of water to preserve the nutrients. The fruits or vegetables can then be mashed with a fork or put in a blender or food grinder. If liquid is needed in the preparation, use water, breast milk, or formula only.
- Meats should be trimmed and then baked, broiled, or boiled in a small amount of water. The meat can then be put in a blender or food grinder or slow cooked in a crockpot. Meat should be fully cooked.
- There is no need to add salt, sugar, or fat to foods prepared for the baby. If using canned vegetables encourage parent/caregivers to rinse them off because of their high sodium content. Recommend no salt added canned vegetables and use canned fruits packed in their own juices instead of those canned in heavy syrup. Suggest to caregivers that luncheon meats, hot dogs, bacon, and sausage be offered sparingly, if at all, because of sodium nitrate, salt, and high fat contents.
- Spoons used to "taste test" foods should not be put back into the food.
- If the food is not to be eaten immediately after it is prepared, it must be properly stored. Home-prepared foods can be stored in a refrigerator for up to 48 hours.
- Foods can be stored in a freezer for one month. To store single servings for the freezer, the food can be frozen in clean ice cube trays or muffin liners and covered with aluminum foil. Once frozen, the food can be removed from the tray and stored in sandwich bags or containers, or glass jars. The frozen foods can be placed in a pan or dish and thawed in the refrigerator or warmed in an oven or pan of water on the stove. Any thawed, heated food that is not eaten should be thrown away.
- Do not feed home-prepared spinach, beets, turnips, carrots, or collard greens to babies less than 6 months of age, as these may contain large amounts of nitrates which could make them sick. Examples of home-prepared vegetables may include sweet potatoes, beans, and green peas.

Using Commercially Prepared Foods

Some caregivers will prefer the convenience of purchasing baby foods from the store. Help caregivers to understand that there will be a point in time when the baby will also be ready for table foods that are easy to chew and safe to swallow, such as rice and pasta. Around one year of age, babies should be able to eat what their caregivers eat—only the size of the pieces of food may need to be changed.

For caregivers who purchase jarred baby food, encourage them to not feed the baby directly from the baby food jar. Instead, food should be placed into a clean dish, and food that is

leftover in that dish should be discarded. The reason is if the baby is fed directly from the baby food jar or if leftover food is returned to the jar, the baby's saliva will enter the food. Enzymes in the saliva cause the food to break down and become watery. In addition, the saliva contains bacteria which can cause the food to spoil. If the baby was not fed directly from the jar, any food left over in the jar can be resealed and stored in the refrigerator for up to 48 hours.

Microwave ovens should never be used to warm baby foods, whether left in the jar or placed in another container. The unevenness in the consistency of the baby foods causes the more liquid or watery parts to heat up faster in the microwave than the thicker or more solid parts. This can allow pockets of steam to occur leading to scalds from splattered foods or exploding jars.

Weaning

Weaning from the breast or bottle to a cup is a gradual process. Learning to drink from a cup should begin when the baby is able to sit up without support and is eating solid foods. Babies can usually start drinking from a cup at 6 to 9 months of age and bottle-fed babies should be completely weaned from the bottle near the time of the first birthday. Waiting too long to wean makes it harder on both the baby and the family. Bottles are not recommended after fourteen months of age.

Weaning From the Bottle

When beginning the process, instruct the caregiver to choose a feeding the baby is least interested (such as the late afternoon feeding) and introduce a cup in its place. Encourage the caregiver to offer help in holding the cup for the early weeks of weaning.

At first, the baby will not drink the same amount of expressed breast milk or formula from a cup as from a bottle. The caregiver should continue with the cup at this feeding for a week or two before another cup feeding is added.

The weaning process should continue gradually until the baby is entirely weaned from the bottle. The bedtime bottle and early morning bottle may be the most difficult to stop. This is a time when the baby is tired and more likely to not want his routine changed. The bottle is often a source of security. To help the baby feel secure, have on-hand a favorite toy or blanket when the bottle is being used, so that when the bottle is removed, the baby has the favorite item.

Weaning From the Breast

The decision to wean the breastfed baby from the breast to the bottle or cup is an individual one and should be left up to the mom.

For moms who decide to wean their baby from the breast before their baby is one year old, you can encourage mothers of older babies (aged 7 months or older) to wean to a cup, while

younger babies may need to be weaned to a bottle. You can talk with mothers about breastfeeding to make sure they are deciding to wean based on correct information.

Recommend that weaning be done slowly and gradually. Weaning is usually accomplished by stopping one nursing at a time. It is suggested that the first feeding to stop be the one the baby is least interested, such as the late afternoon feeding. The mom then substitutes a bottle or cup of breast milk or iron-fortified formula for this feeding. The mother or caregiver should continue to use a bottle or cup at this feeding for 5 to 7 days before another nursing is stopped. During this time give the baby extra cuddling and attention so that weaning does not mean separation from the mom. Continue to hold and cuddle the baby during the feeding as you would at the breast. The weaning process will result in a gradual decrease in the breast milk supply with little or no discomfort to the mom. If the mother should experience some engorgement, she should be instructed to hand express enough milk to relieve the discomfort.

Counseling Tips for Caregivers about Weaning

- Between 6 and 9 months, babies are developmentally ready and usually interested in learning to drink from a cup. Delaying the change to a cup during this period can result in a refusal to change at an older age. At about 6 months of age, allow the baby to play with an empty cup.
- When liquids are first introduced from the cup, the baby's lips may not close around the edge of the cup and liquids will leak. At first it may be helpful for the caregiver to hold the cup.
- When starting cup feedings, give small amounts of water, breast milk, or formula. Sweetened beverages or juice should not be given to babies.
- Some babies do not want to give up breast or bottle-feeding or are unwilling to drink from a cup. The weaning process often requires patience from the caregivers. All caregivers should work together and agree about the weaning process.
- Babies who use the bottle after one year of age may drink too much milk and not eat enough solids which provide iron and other important nutrients. Inadequate iron can lead to anemia. At one year of age, children should be drinking approximately 16 ounces of milk/breast milk daily.
- Continuous sips of milk from a bottle or spill-proof cup can cause tooth decay. Allowing toddlers to use the bottle without restriction (for example, walking around with a bottle) should be discouraged.
- For babies who are bottle fed, the bottle given before a nap or bedtime is often the most difficult one to stop. This bottle can also be the most harmful to the teeth if it is filled with a sugar containing beverage (breast milk, formula, juice) and the baby takes it to bed.

Some suggestions for helping a baby give up the bedtime bottle include:

- Interest the baby in something other than the bottle at bedtime—a stuffed toy, blanket, etc.
- Provide lots of affection and attention instead of a bottle at bedtime.
- Offer a small snack or beverage from a cup near bedtime before cleaning the babies' teeth.
- Put a small amount of water in the bottle instead of milk.
- While it may not be easy for a mother/caretaker letting the baby cry it out is another option.

Bottles are not recommended after 14 months of age. The transition might go more smoothly if during the last weeks of bottle use, the child has had an opportunity to bond to a blanket, stuffed animal or book, so when bottle is taken "cold turkey" the child still has a security item.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

Place a check mark next to each phrase which correctly completes the statement (may be multiple answers):

1. Finger foods should be offered:

   ___a. when the baby starts to walk alone.
   ___b. when the baby sleeps through the night.
   ___c. when the baby can chew with up and down movements.
   ___d. when the baby can move his/her tongue from side to side.
   ___e. around 7 or 8 months of age.

2. Place a check mark next to the following choices of finger foods that are appropriate for an older baby (8-12 months).

   ___a. soft, peeled fruit
   ___b. whole grapes
   ___c. toast pieces
   ___d. crackers
   ___e. popcorn
   ___f. thickly spread peanut butter on soft bread

3. True (T) or False (F):

   ___a. Many babies prefer to feed themselves with their hands and fingers rather than with utensils.
   ___b. Babies who are learning to feed themselves should be served large portions of food.
   ___c. All developmentally normal babies should be able to feed themselves by 9 months of age.
   ___d. Babies 8 to 12 months of age should be eating many types of solid foods with a variety of textures and colors.
   ___e. Lifelong eating habits are formed in childhood.

4. Place a check mark in the blank next to all the statements that are <u>true</u>.

   ___a. Weaning to a cup from the breast or bottle is a gradual process.
   ___b. Weaning to a cup should begin when a baby can sit up without support and is eating solid foods.
   ___c. Babies need help holding the cup for the early weeks of cup feeding.
   ___d. There is no harm to putting the baby to bed with a bottle.
   ___e. Babies who drink from the bottle after one year of age may drink too much milk and not eat enough solid foods.

___f. Continuous sips of milk from a bottle or spill-proof cup can cause tooth decay.

5. Circle the letter of the <u>two</u> choices that accurately complete the following statement. Home-prepared foods for babies:

   a. Can be exactly the same foods that are prepared for the rest of the family with added salt, sugar, etc.
   b. Can be stored in a freezer forever.
   c. Are generally less expensive.
   d. Can be reheated over and over.
   e. Must be prepared and stored with care to prevent contamination of the food.

6. Circle those foods that should never be given to babies because they can cause choking.

Raisins	Whole hot dogs	Apple Sauce
Soft, ripe bananas	Whole grapes	Popcorn

ANSWERS

1. c, d, and e should be checked.

2. a, c, and d should be checked.

3. a. True
   b. False
   c. True
   d. True
   e. True

4. a, b, c, e and f should be checked

5. c, e

6. Raisins, whole hot dogs, whole grapes, popcorn

Section II: WIC Program Infant Nutrition Risk Factors

As discussed throughout this module, adequate nutrition during infancy is very important for long-term growth and health. All babies enrolled in WIC receive a nutritional assessment and follow-up care. Some babies will need special nutrition counseling because of certain factors related to their health. These are called nutrition risk factors (NRFs) and can affect a baby's nutritional needs and his/her food intake.

A baby with a nutritional risk has an increased chance of poor growth and development. Therefore, it is extremely important that we understand the nutritional risks of infancy and how to identify them.

Some babies are identified as high risk (HR). These babies have a more serious nutritional risk than others. An example is a baby who is not gaining sufficient weight. Caregivers of high risk babies need in-depth nutrition counseling and education. All high risk participants must be scheduled for at least one individual education contact by a licensed dietitian and have a nutrition care plan. This contact may take place at certification or at the second education contact. All second education contacts for high-risk participants must have some sort of one-to-one contact.

The licensed dietitian may also counsel other participants, who are not classified as high risk, but would benefit from a dietitian's in-depth assessment, nutrition counseling, and education. If during the nutritional interview, a CPA determines the participant is high risk they can mark the high risk check box in Focus manually.

There are many NRFs that will qualify babies for the WIC Program. This section will define and discuss these factors. The first ones to be covered are those related to inappropriate nutrition practices for babies.

Inappropriate Nutrition Practices for Infants

<u>NRF: 411a (High Risk):</u> Routinely using a substitute(s) for human milk or for FDA-approved iron-fortified formula as the primary nutrient source during the first year of life.

Examples include:

- Low iron formula without iron supplementation
- Cow's milk, goat's milk, or sheep's milk (whole, reduced fat, low fat, skim), powdered, canned evaporated or sweetened condensed milk
- Imitation or substitute milks (such as rice, almond, or soy-based beverages, non-dairy creamer), or other "homemade concoctions"

During the first year of life, breastfeeding is the preferred method of baby feeding. The American Academy of Pediatrics (AAP) recommends breast milk until two years or beyond because of its acknowledged benefits to baby nutrition, gastrointestinal function, immunity, and psychological well-being.

For babies fed infant formula, iron-fortified formula is recommended as the substitute for breastfeeding unless medically contraindicated. Rapid growth and increased physical activity significantly increase the need for iron and uses iron stores. Body stores do not meet the increased iron needs, making it necessary for the baby to receive a dependable source of iron to prevent iron deficiency anemia. Iron deficiency anemia is associated with cognitive and psychomotor impairments that may be irreversible, along with decreased immune function, apathy, short attention span, and irritability. Feeding of low-iron infant formula can compromise a baby's iron stores and lead to iron deficiency anemia.

Feeding a baby cow's milk instead of breast milk or infant formula is considered to be NRF 411a. This is because:

- The protein level in cow's milk is too high and may stress the baby's immature system
- The type of protein and fat are more difficult for the baby to digest
- It contains higher levels of sodium and other minerals than are recommended
- It is a poor source of iron and Vitamin C
- It may cause intestinal bleeding and contribute to the development of iron-deficiency anemia

Homemade formulas prepared with canned evaporated milk do not contain optimal kinds and amounts of nutrients babies need. Goat's milk, sheep's milk, imitation milks, and substitute milks do not contain nutrients in amounts appropriate for babies.

NRF 411b (Low Risk): Routinely using nursing bottles or cups improperly

Examples include:

- Using a bottle to feed fruit juice
- Feeding any sugar-containing fluids, such as soda/soft drinks, gelatin water, corn syrup solutions, and sweetened tea.
- Allowing the baby to fall asleep or be put to bed with a bottle at naps or bedtime. Allowing the baby to use the bottle without restrictions (for example, walking around with a bottle) or as a pacifier
- Propping the bottle when feeding
- Allowing a baby to carry around and drink throughout the day from a covered or training cup
- Adding any food (cereal or other solid foods) to the baby's bottle

Inappropriate use of a bottle can damage a baby or child's teeth. Caregivers sometimes don't understand that these practices are bad even if the baby does not have teeth yet. These practices set food habits that are very hard to break as the baby or child gets older. Putting a baby to bed with a bottle also increases the likelihood of ear infections.

Solid and sweet fluids in a bottle limit intake of breast milk or formula. Solids in a bottle can also result in choking especially if the hole in a nipple is made larger to accommodate flow of solid out of the bottle.

The AAP does not recommend juice be offered to babies younger than 12 months and for older children recommends that juice should be offered in a cup, not a bottle.

NRF 411c (Low Risk): Routinely offering complementary foods* or other substances that are inappropriate in type or timing.

**Complementary foods are any foods or beverages other than human milk or infant formula.*

Examples are:

- Adding sweet agents such as sugar, honey, or syrups to any beverage (including water) or prepared food, or used on a pacifier
- Introducing any food other than human milk or iron-fortified infant formula before 6 months of age

Feeding solid foods too early or adding diluted cereal or other solid foods to bottles doesn't allow babies the opportunity to learn to feed themselves. The major objection to the introduction of solids before age 6 months of age is based on the possibility that it may interfere with establishing sound eating habits and may contribute to overfeeding.

<u>NRF: 411d (Low Risk):</u> Routinely using feeding practices that disregard the developmental needs or stage of the infant.

Defined as:

- Inability to recognize, insensitivity to, or disregarding the baby's cues for hunger and satiety (for example, forcing a baby to eat a certain type and/or amount of food or beverage or ignoring a baby's hunger cues)
- Feeding foods of inappropriate consistency, size, or shape that puts babies at risk of choking
- Not supporting a baby's need for growing independence with self-feeding (for example, solely spoon-feeding a baby who is able and ready to finger-feed and/or try self-feeding with appropriate utensils)
- Feeding a baby food with inappropriate textures based on his/her developmental stage (for example, feeding primarily pureed or liquid foods when the baby is ready and capable of eating mashed, chopped or appropriate finger foods)

Babies fed on strict feeding schedules are often underfed or overfed. Caregivers who are insensitive to signs of hunger and satiety, or who over manage feeding, may inappropriately restrict or encourage excessive intake. Findings show that these practices may promote negative or unpleasant association with eating that may continue into later life, and may contribute to obesity. Babies should be fed foods with a texture appropriate to their developmental level.

<u>NRF 411e (High Risk):</u> Feeding foods to an infant that could be contaminated with harmful microorganisms or toxins.

Examples are:

- Unpasteurized fruit or vegetable juice
- Unpasteurized dairy products or soft cheeses such as Feta, Brie, Camembert, Blue-veined and Mexican-style cheese
- Honey (added to liquids or solid foods, used in cooking, as part of processed foods, on a pacifier, etc.)
- Raw or undercooked meat, fish, poultry or eggs
- Raw vegetable sprouts (alfalfa, clover, bean and radish)
- Deli meat, hot dogs and processed meats (avoid unless heated until steaming hot)
- Donor human milk acquired directly from individuals or the Internet

Only pasteurized juice, which is free of microorganisms, is safe for young children. The AAP recommends juice should not be introduced until the baby is 12 months old. Unpasteurized juice may contain pathogens, such as Escherichia coli, Salmonella and Cryptosporidia organisms. These organisms can cause serious disease, such as hemolyticuremic syndrome, and even death, and should never be fed to babies. Babies should not eat raw or unpasteurized milk or cheeses – unpasteurized dairy products could contain harmful bacteria, such as Brucellae bacteria, that could cause babies to contract a dangerous food borne illness. The AAP also recommends that young children should not eat unpasteurized soft cheeses

such as Feta, Brie, Camembert, Blue-veined, and Mexican-style cheese – these foods could contain Listeria bacteria (hard cheeses, processed cheeses, cream cheese, cottage cheese, and yogurt do not need to be avoided).

Honey has been associated as the primary food source of *Clostridium botulinum* during infancy. These spores are extremely resistant to heat, including pasteurization, and are not destroyed by present methods of processing honey. Botulism in infancy is caused by ingestion of the spores.

Babies should not eat raw or undercooked meat or poultry, raw fish, or shellfish, including oysters, clams, mussels, and scallops – these foods may contain harmful bacteria or parasites that could cause children to contract dangerous food borne illnesses.

Background information regarding foods that could be contaminated with harmful microorganisms is also included below:

- Raw vegetable sprouts (alfalfa, clover, bean and radish). Sprouts can cause potentially dangerous Salmonella and E-coli 0157 infection. Sprouts grown under clean conditions in the home also present a risk because bacteria may be present in seed. Cook sprouts to significantly reduce the risk of illness.
- Deli meats, hot dogs and processed meats (avoid unless heated until steaming hot) – These foods have been found to be contaminated with *Listeria monocytogenes*; if adequately cooked, this bacteria is destroyed. Listeria bacteria live at cold temperatures as well and proper refrigeration does not prevent infection of this type of bacteria.

NRF 411f (Low Risk): Routinely feeding inappropriately diluted formula.

Defined as:

- Failure to follow manufacturer's dilution instruction (to include stretching formula for household economic reasons).
- Failure to follow specific instruction accompanying a prescription.

Over dilution can result in water intoxication resulting in hyponatremia; irritability; coma; inadequate nutrient intake; failure to thrive; poor growth. Under dilution of formula increases calories, protein and solutes presented to the kidney for excretion and can result in hypernatremia, tetany and obesity. Dehydration and metabolic acidosis can occur.

Powdered formulas vary in density so manufacturer's scoops are formula-specific to assure correct dilution. One clue for you to identify incorrect formula preparation is to determine if the caregiver is using the correct manufacturer's scoop to prepare the formula.

NRF 411g (Low Risk): Routinely limiting the frequency of nursing of the exclusively breastfed infant when human milk is the sole source of nutrients.

Examples are:

- Scheduled feedings instead of demand feedings.
- Less than 8 feedings in 24 hours if less than 2 months of age.

Exclusive breastfeeding provides ideal nutrition to a baby and is sufficient to support optimal growth and development in the first 6 months of life. Frequent breastfeeding is critical to the establishment and maintenance of an adequate milk supply for the baby. Inadequate frequency of breastfeeding may lead to lactation failure in the mother and dehydration, poor weight gain, diarrhea, vomiting, illness, and malnourishment in the baby.

NRF 411h (High Risk): Routinely feeding a diet very low in calories and/or essential nutrients.

Examples are:
- Vegan diet
- Macrobiotic diet
- Other diets very low in calories and/or essential nutrients

Highly restrictive diets prevent adequate intake of nutrients, interfere with growth and development, and may lead to other adverse physiological effects.

NRF 411i (Low Risk): Routinely using inappropriate sanitation in preparation, handling, and storage of expressed human milk or formula.

Examples are:
- Limited or no access to a:
  - Safe water supply (documented by appropriate officials, such as municipal or health department authorities).
  - Heat source for sterilization.
  - Refrigerator or freezer for storage.

- Failure to prepare, handle and store bottles, storage containers or breast pumps properly; examples include:

  Human Milk
  - Thawing/heating in a microwave.
  - Refreezing.
  - Adding freshly expressed unrefrigerated human milk to frozen human milk.
  - Adding freshly pumped chilled human milk to frozen human milk in an amount that is greater than the amount of frozen human milk.
  - Feeding thawed refrigerated human milk more than 24 hours after it was thawed.
  - Saving human milk from a used bottle for another feeding.
  - Failure to clean breast pump per manufacturer's instructions.
  - Feeding donor human milk acquired directly from individuals or the Internet.

  Formula
  - Failure to prepare and/or store formula per manufacturer's or physicians instructions.
  - Storing at room temperature for more than 1 hour.
  - Using formula in a bottle one hour after the start of a feeding.

- Saving formula from a used bottle for another feeding.
- Failure to clean bottle properly.

Good sanitation is critical for the health of a baby. Gastrointestinal diseases caused by bacteria and viruses are a major cause of illness and death in young babies. Babies do not have a fully functioning immune system to protect them from many diseases. Babies who are fed infant formulas are especially susceptible because formula lacks the immunological factors found in breast milk that are important in helping to prevent gastrointestinal infections.

NRF 411j (High Risk): Feeding dietary supplements with potentially harmful consequences. Examples of dietary supplements, which when fed in excess of recommended dosage, may be toxic or have harmful consequences:

- Single or multi-vitamins
- Mineral supplements
- Herbal or botanical supplements/remedies/teas

A baby consuming inappropriate or excessive amounts of single or multivitamins, minerals, or herbal remedies not prescribed by a health care provider is at risk for a variety of adverse effects including harmful nutrient interactions and toxicity.

NRF 411k (Low Risk): Routinely not providing dietary supplements recognized as essential by national public health policy when an infant's diet alone cannot meet nutrient requirements.

- Babies who are 6 months of age or older who are ingesting less than 0.25 mg of fluoride daily when the water supply contains less than 0.3 ppm fluoride.
- Babies who are exclusively breastfed, or who are ingesting less than one liter (or one quart) per day of vitamin D-fortified formula, and are not taking a supplement of 400 IU of vitamin D.

Depending on a baby's specific needs and environmental circumstances, certain dietary supplements may be recommended by the baby's health care provider to ensure health. For example, fluoride supplements may be of benefit in reducing dental decay for children living in fluoride-deficient areas. Vitamin D helps in the prevention of rickets, a bone disorder, for babies. It is important to refer babies to their health care provider to determine if a supplement is needed.

NRF #428 (Low Risk): Dietary Risk Associated with Complementary Feeding Practices (ONLY for 4-12 month old infants after a complete nutrition assessment has been performed and no other risks are identified)

A baby 4-12 months of age who has begun to or is expected to begin to:

- Consume complementary foods and beverages
- Eat independently
- Be weaned from breast milk or infant formula

- Transition from a diet based on baby/toddler foods to one based on the *Dietary Guidelines for Americans*

Note: A complete nutrition assessment, including for risk #411, Inappropriate Nutrition Practices for Infants must be completed prior to assigning this risk.

Inappropriate complementary feeding practices are common and well documented in the literature. Caregivers often do not recognize signs of developmental readiness and, therefore, offer foods and beverages that may be inappropriate in type, amount, consistency and texture.

Responding to feeding and diet-related risk factors

Once a caregiver indicates they are feeding their baby in a way that puts their baby at nutrition or health risk, you must first ask questions to gather more information. For example, you will want to determine why the caregiver is practicing a certain feeding behavior.

"I see that you haven't begun feeding Johnny solids yet. Would you tell me more about why you are choosing to wait?"

"You mentioned that you put cereal in Johnny's bottle. What have you heard about offering cereal in the bottle?"

You can ask questions to find out what the caregiver is planning to offer the baby to eat in the coming months.
"I see that you are feeding Tanisha all types of baby foods now. What are you thinking of doing next to progress her eating skills?

You may also need to ask about the eating environment and feeding relationship.
"I see that you are propping the bottle for your baby. How do you typically feed him?"

This way, if the caregiver states they usually hold the baby, you can praise them for what they are doing right and then provide education on the reasons why propping the bottle is not a good practice.

You should provide information about the specific risks for each practice. You are in a unique role to be able to provide anticipatory guidance (or telling caregivers what to expect next) on feeding and developmental stages. You can provide guidance and information on topics such as the caregiver's role in feeding, introducing new foods, nutrient adequacy, how to prepare formula properly and so on. Educate the caregiver on appropriate feeding practices incorporating best practices discussed in this module. **Listen to the caregiver to learn what they would like to work on**. Discuss a plan that works toward healthier feeding habits. Find out what might or might not be helpful with carrying out the plan. Work together with the caregiver to find a solution. Once the plan has been developed to a comfort level for the caregiver, confirm the caregiver understands and agrees with the plan. Offer the caregiver a related pamphlet to help support the message.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

Match the risks with the correlating reason to identify why it is a risk in infancy.

1. _____feeding cow's milk
2. _____feeding solids from a bottle
3. _____strict limits on number of breastfeeding sessions
4. _____propping the bottle in the baby's mouth
5. _____feeding a vegan diet

a. may lead to a mom's low milk supply and result in dehydration, poor weight gain, illness and malnutrition for the baby.

b. can lead to overfeeding and delay baby's ability to feed self.

c. can stress baby's kidneys because of high levels of protein and minerals.

d. baby may not receive adequate nutrients for growth and development.

e. limits the ability for an baby to show his fullness and can cause choking.

ANSWERS

1. c
2. b or e
3. a
4. e or b
5. d

Growth-Related Nutrition Risk Factors

Introduction

In addition to feeding and diet-related risk factors, there are growth related factors that may be affected by nutrition and will qualify a baby for the WIC Program. A baby's birth weight, length, gestational age at birth, as well as the baby's weight gain during the first year of life are signs of how a baby will likely grow or is growing. The quality and quantity of the baby's diet will further impact the baby's growth and development.

Identifying babies as having growth-related risk factors provides you with a baseline for providing education. It does not necessarily mean that aggressive nutrition intervention is needed.

For example, a baby born with a low birth weight will need to receive optimum nutrition in order to grow to his/her potential. You have an opportunity to improve the outcome of a baby with growth challenges by providing nutrition education and, when necessary, making referrals to health care providers and other programs to help families with children who have special needs.

If you identify a baby with a rapid increase in weight, (jumping channels on the growth grid) you should gather information on feeding and eating skills and the family environment to assess whether the family may benefit from baby feeding guidance or other nutrition information and education and counseling.

In all situations, an important role you play is to collect information to better understand what the caregiver's concerns are about the baby. In WIC, you become skilled at finding out about the baby's feeding environment (when and where the baby is fed, who feeds the baby, does the baby feed himself, etc.). You must assess the caregiver's level of concern about feeding-related issues and learn how they are responding to them.

For example, a mother is concerned that her baby is small and is not drinking enough formula, so she has been trying to make the baby finish all bottles. The mother may not realize that her feeding approach could make the situation worse. At WIC, we want to emphasize healthy feeding relationships rather than focus only on weight.

In this situation, you could acknowledge the mother's concern about the baby's size and then go on to collect information about the feeding environment to determine what to discuss.

You will be a great source of nutrition and developmental information. By providing anticipatory guidance on the next developmental milestone or expectation with feeding, you can prevent inappropriate feeding behaviors from ever occurring. **At every visit, praise caregivers for what they are doing correctly. Help caregivers increase their confidence in care giving and, maybe, they will be more open to other suggestions**.

Another important role you will play is referring participants to their health care providers and other appropriate community resources.

Monitoring Growth

WIC uses the 2006 World Health Organization (WHO) growth charts as a standard to evaluate growth of all babies and children up to 2 years of age. The WHO growth charts are based on a large international sample of predominately breastfed babies and children who received optimal nutrition and care. All babies included in the study were predominately (that is, exclusively or nearly exclusively) breastfed for at least 4 months and were still breastfeeding at 12 months. Thus, the growth charts are considered the standard; they identify how children *should* grow when provided with optimal conditions.

The WHO growth standards use values to identify children whose growth might indicate adverse health conditions Babies at or above the 97.7th percentile weight for length are defined as "high weight for length." Babies at or below the 2.3rd percentile weight for length are defined as "underweight." Babies between the 2.3rd and 5th percentiles are defined as "at risk for underweight."

Percentiles also serve as a reference for comparison. For example, a 6 month old boy who is at the 25th percentile length for age is taller than 25% of the boys his age and shorter than 75% of the boys his age. Don't get caught up in treating growth curves like grades in school. A baby growing at the 95th percentile isn't doing any better than the one growing at the 5th percentile. The most important part of the growth curve is to be able to compare each individual baby to himself--to evaluate his growth as it progresses from one weight to the next.

Weighing and measuring babies and recording measurements from two or more visits allow you to assess a baby's growth pattern over time. In theory, a baby whose length is at the 25th percentile should continue to grow so that her length stays at the 25th percentile over time. This is not always true. However, the greater the difference from a percentile line the more concern there is that something unusual is going on with the baby's growth. Growth that varies greatly from a normal growth channel should be considered for a referral to their Health Care Provider for follow-up and evaluation. Poor growth can indicate poor nutrition (though poor growth can also result from other factors such as illness).

You will want to assess whether an odd result is an inaccurate measurement or a potential health problem. Refer to the Level 1: Screening Module for more information on growth and measurement.

Let's now review the risk factors related to growth.

The Underweight Infant

Underweight reflects the body's thinness. It doesn't tell us the cause or nature of underweight. Poverty, infectious disease, and inadequate energy intake are some factors that can lead to

underweight. The baby who weighs less than other babies of the same length and age may be a sign of a medical problem, a feeding problem, or perhaps it may be a normal weight for the baby.

There are many reasons why a baby may have difficulty with gaining weight. Some of these include:

- Inadequate intake of food being offered (such as with a family in poverty, a depressed caregiver, quiet baby who doesn't let his needs be known, or caregiver who lacks knowledge and information on the needs of a baby).
- Inadequate retention of food, such as is common with vomiting, reflux, and diarrhea.
- Inadequate absorption of food as noted with cystic fibrosis.
- Increased calorie needs.
- Decreased growth efficiency with certain diseases or illnesses (such as with the human immunodeficiency virus).

Education Tips and Follow Up:

- Establish a rapport with the caregiver to determine possible factors for the baby's low weight. Complete the Feeding Assessment and ask questions to determine appropriate frequency of feeds and length of feeds.
- If formula feeding, ask how formula is being prepared.
- Find out about the eating environment.
- Find out how the caregiver feels about the baby's weight.
- Ask what the health care provider has said.
- Discuss the general eating behaviors/problems that can lead to inadequate calorie intake.
- Babies with a weight-for-length less than or equal to the 2.3rd percentile are high risk, so refer the baby to the Licensed Dietitian for counseling.
- For babies with a weight-for-length greater than the 5th percentile to less than or equal to the 10th percentile, the growth is probably fine, but growth should be watched and further assessment into feeding practices should occur.

The Infant with Short Stature

Short stature is defined by two risk factors (see side bar). Stature is the amount of linear growth that has been achieved. Short length may be an indication of some form of chronic under nutrition due to a disease process or inadequate intake of nutrients. Over a long period of time an illness or nutritional deficiency may contribute to linear growth retardation or cessation. Stunted babies are likely to become stunted children, and stunted children are likely to become stunted adolescents, and so on.

It may also be perfectly normal for a baby to be small. Some children have a family history of short stature and grow at a normal rate; however, short parental stature shouldn't be used as

an explanation for a child's poor growth. You must assess normal, healthy feeding and eating to ensure nutrition is not affecting the baby's growth.

Education Tips and Follow Up:

- Establish a rapport with the caregiver to find out how they feel about the baby's stature and what the health care provider has mentioned. Complete the Nutrition Interview and ask questions to determine appropriate frequency of feeds and length of feeds.
- Find out about the eating environment. Talk about general eating behaviors/problems that can lead to inadequate intake.
- Review appropriate eating behaviors and offer information on the progression of solids and feeding abilities to expect in the coming months.

The Failure to Thrive Baby (High Risk) (NRF 134)

Failure to thrive (FTT) describes an inadequate growth pattern where growth is significantly lower than what is expected for age and sex. Typically a sign of undernutrition, the cause of FTT is often complex and includes many factors. Some of the indicators that a health care provider might use to diagnose FTT include:

- Weight-for-age or weight-for-length consistently below the 2.3rd percentile for infants/children younger than 2 years.
- Weight less than 80% of median weight-for-stature
- Progressive fall-off in weight-for-age, weight-for-stature, and/or stature-for-age, that crosses down two major percentile lines.

There are many causes of failure to thrive. Among the ways to categorize the different conditions that cause failure to thrive and poor weight gain is to group them into conditions that cause a decreased intake of calories or an increased loss of calories. Children may also have failure to thrive from having an increased requirement for calories, such as from having a chronic infection, hyperthyroidism, congenital heart disease, or chronic lung problems.

Education Tips and Follow Up:

- Establish a rapport with the caregiver to find out how they feel about the baby's growth and what the health care provider has mentioned.
- Complete the Nutrition Interview and ask questions to determine appropriate frequency of feeds and length of feeds. If formula-fed, question how the formula is mixed. If breastfeeding, assess for restricted feedings.
- Ask questions to determine if there are medical reasons for why the baby is failure to thrive.
- Ask how the caregiver knows when her baby is hungry and full. Ask about the types of solids being offered.
- Inquire about the eating environment.
- Discuss age appropriate foods and the general eating behaviors/problems which can lead to inadequate calorie intake.

- Make referrals to community resources as needed.

The Infant with Inadequate or Potentially Inadequate Growth

Inadequate growth is assessed by measuring the differences of weights and lengths between two points in time. Those measurements are plotted on charts to determine the rate of growth. In most cases, once a baby is established in a percentile rating of growth, she will remain in that percentile track. When a baby does not grow at their expected rate, we become concerned that either they are not receiving adequate nutrition, or that the baby may have a medical problem.

Possible factors associated with not adequately nourishing a baby include:
- A lack of social support for the caregiver
- A disorganized family
- A depressed caregiver
- A caregiver's lack of education, health, and nutrition knowledge

Education Tips and Follow Up:

- Establish a rapport with the caregiver to find out how they feel about their baby's growth and what their health care provider has mentioned. Complete the Nutrition Interview and ask questions to determine appropriate frequency of feeds and length of feeds. If formula-fed, question how the formula is mixed.
- Ask how the caregiver knows when her baby is hungry and full. Ask about the types of solids being offered.
- Inquire about the eating environment.
- Discuss age appropriate foods and the general eating behaviors/problems which can lead to inadequate calorie intake.

The Low Birth Weight Infant

Babies born with a low birth weight or very low birth weight can have more health challenges than babies born with normal birth weights. Low birth weight (LBW) babies are either born small for their gestational age (SGA) or born prematurely (see next risk factor, NRF #142a).

SGA babies weigh less and may be shorter than expected for their birth date. This low birth weight may be the result of intrauterine under nutrition. Inadequate nutrition to the uterus can be caused by any condition that interferes with the transfer of nutrients and oxygen from the mother to the baby before birth. This can happen if during pregnancy the mother smoked, had a poor diet, or if the baby had certain medical problems. Appropriate nutrition is necessary for these babies to grow and develop. Some LBW babies may not get enough attention from their caregivers if they are too weak to cry loudly or cannot move about normally. Other babies may not get enough to eat if they are too weak to suck.

Education Tips and Follow Up:

- Encourage caregivers to follow their health care provider's advice on breast and formula feeding and vitamin and mineral supplements. Support caregiver's plans to breast or formula feed.
- Caregivers of young babies are probably receiving more advice than most other caregivers; be sensitive to the fact that they may be overwhelmed by too much "good advice".
- Find out how the caregiver can tell when the baby is hungry and full.
- When the caregiver is getting ready to progress their baby to solids, review the signs of the baby's development readiness.
- Make referrals to community resources as needed.

The Infant Born Prematurely

A pregnancy typically lasts about 40 weeks. Premature or "preterm" birth, is defined as a birth that occurs between 20 and less than 37 weeks (36 weeks/6 days) of pregnancy. "Early term" refers to babies born between 37 weeks and less than 39 weeks (38 weeks/6 days).

Preterm birth is a significant cause of newborn morbidity and mortality. Babies who are born preterm and early term often have longer hospital stays and can have long-term effects on the health of the newborn. It is difficult for the premature baby, who comes into the world early, to get enough nutrition to complete the rapid growth and development that would normally occur in the last weeks before birth. The premature baby's weight at birth may be appropriate for his gestational age. The baby's nutritional needs are greater than mature term babies because they are continuing to "catch up" in growth and development and to lay down nutrient and energy stores that are normally complete by full term birth. The baby's immature feeding skills, such as sucking and swallowing, and immature digestive system, interfere with meeting these nutritional needs.

Education Tips and Follow Up:

- Encourage caregivers to receive and follow their health care provider's advice on breast and formula feeding, and vitamin and mineral supplements. Support caregiver's plans for breast or formula feeding.
- Caregivers of young babies are probably receiving more advice than most other caregivers; be sensitive to the fact that they may be overwhelmed with too much "good advice".
- Find out how the caregiver can tell when the baby is hungry and full.
- When the caregiver is getting ready to progress their baby to solids, the child's health care provider should review the signs of the baby's developmental readiness.

The Large for Gestational Age Infant

Babies born with a birth weight of 9 pounds or more (4000 grams or more) are considered **large for gestational age** (LGA). LGA babies are most often born to mothers who are obese, who gain excessive weight during pregnancy, or who have diabetes. A mother's size and family genetics are also major factors. A women who herself was over 8 pounds at birth is twice as likely to have a large baby. Native American, Latino, and Caucasian women tend to have larger babies than women in other ethnic groups. Because of the baby's large size, vaginal delivery may be difficult, take longer, and occasionally results in birth injury, bruising, or breathing problems. LGA babies are often listless, limp, and feed poorly. Babies born to mothers who have diabetes are very likely to become hypoglycemic in the first one to two hours after delivery. Skin-to-skin contact immediately after birth and breastfeeding in the delivery room is highly recommended to keep the baby's blood sugar from dropping.

The presence of LGA must be diagnosed, documented, or reported by a health care provider or someone working under a health care provider's orders, or as self-reported by the family.

Education Tips and Follow Up:

- Complete a thorough nutrition assessment as outlined in the normal infant protocols.
- Find out how the caregiver can tell when the baby is hungry and full.
- Encourage caregivers to feed the baby on demand.
- When the caregiver is getting ready to progress the baby to solids, review the signs of the baby's developmental readiness.

The "Overweight" Infant

The rise in the prevalence of overweight and obesity in children adolescents is one of the most important public health issues in the United States today. The risk of a baby growing up to become an overweight adult is related to the size of his/her parents. That is, if one or both of the baby's parents are overweight, the likelihood the baby will grow up to be an overweight adult increases.

Note that Focus will assign NRF 114 using the biological mother's most recent pregnancy record.

High weight-for-length, NRF 115 is based on the baby's weight. Babies who become overweight should never be put on a diet to lose weight. Weight loss during infancy would deprive the baby of nutrients needed for growth and development. *These babies should be given time to "grow into" their weight.*

Education Tips and Follow Up:

- Complete a thorough nutrition assessment as outlined in normal baby protocols.

- Complete the Nutrition Interview to obtain clues on how the baby is being fed. The overweight baby's diet should be assessed to determine whether it is developmentally appropriate for the baby, whether correct formula dilutions are being made, and if any inappropriate foods are being fed.
- Find out how the caregiver knows when her baby is hungry and full.
- Discuss the baby's behaviors and patterns of eating. Determine if the feeding relationship could be improved.
- Find out how the baby is treated when he cries.
- Discuss with the caregiver the child's behavior and patterns of eating which may identify potential feeding issues and make suggestions. Some suggestions for caregivers include:
    - If feeding solids in the bottle, recommend only feeding solids from a spoon when developmentally ready. If not ready, stop the feeding of solids entirely.
    - If finger foods include cookies and other high fat treats, suggest nutritious finger foods such as soft fruit and cooked vegetables.
    - If giving sweetened water, juice, or soft drinks, advise that breast milk or formula is the best choice for thirst.
    - Discourage forcing the baby to finish a bottle or food. Discuss how to watch for the baby's signs of fullness and respect them.
    - If food is used to quiet the baby every time he cries, encourage the caregiver to distinguish between cries of hunger and those of discomfort. Offer food only when the baby is hungry.
    - If the baby is kept mostly in an infant carrier, encourage the caregiver to allow the baby to be active by playing with him; let him move unrestricted.
    - If the baby is forced to eat everything that is offered, recommend that caregivers respect the baby's food likes, dislikes, and needs. Most babies like plain food. Butter and sugar may make the flavor palatable to caregivers, but adds unnecessary, low nutrient dense calories for baby. Caregivers can learn to read labels on baby food jars and avoid the extra calories provided by sugar. Suggest caregivers be in charge and take responsibility for the child's health. Older children, grandparents, and babysitters often feed the baby and may not be as particular as the caregiver about what the baby is being fed.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. True (T) or False (F)?

   __a. "Overweight" babies are generally put on a weight-loss diet to avoid obesity in later life.

   __b. Overfeeding of formula or solids for an extended period of time can cause babies to become overweight.

   __c. A caregiver of an overweight baby should not use food to quiet the baby <u>every time</u> the baby cries.

   __d. The baby who weighs less than other babies of the same length and age may be of normal weight for that baby.

   __e. Nutritional deficiencies over a long period of time may lead to growth retardation.

   __f. Short stature is not a concern if both parents are short.

2. Besides the information collected on the Nutrition Interview and infant growth charts, what is a question to ask the caregiver to collect information of the feeding relationship?

3. A baby is defined as having a low birth weight if (s)he weighs _____ at birth.

4. Any baby is described as being "preterm" if (s)he is born at or before_____ weeks gestation.

ANSWERS

1. a. F
   b. T
   c. T
   d. T
   e. T
   f. F, Short stature in parents shouldn't be used to explain poor growth. You must assess feeding and eating to ensure adequate nutrition.

2. Any one of the following:

   a. How can you tell when your baby is hungry?
   b. How can you tell when your baby is full?
   c. Who feeds the baby?

3. ≤ 5 pounds 8 ounces

4. ≤ 36 weeks/6 days

Biochemical and Other Medical Indicators of Nutrition Risk

In addition to diet and growth-related risk factors, there are several biochemical and medical indicators that define nutritional risk.

These include low hemoglobin or hematocrit, elevated blood lead levels, breastfeeding complications, and specific medical conditions.

The Baby with Low Hemoglobin or Low Hematocrit

Hemoglobin and hematocrit are the most commonly used tests to screen for iron deficiency anemia. Measurements of hemoglobin and hematocrit reflect the amount of functional iron in the body. Changes in the hemoglobin concentration and hematocrit occur at the late stages of iron deficiency. While neither a hemoglobin or hematocrit test is a direct measure of iron status and do not distinguish among different types of anemia, these tests are useful indicators of iron deficiency anemia.

The most common form of nutrition-related anemia is iron-deficiency, which can be caused by a diet inadequate in iron. Inadequate intake of iron in infancy has been found to be related to poverty, inadequate dietary intake, and malnutrition. Babies who do not receive an appropriate iron source after six months of age are at risk for developing anemia. Iron deficiency can result in poor growth, decreased resistance to infection, fatigue, irritability, behavioral problems, and deficits in cognitive ability. Appropriate iron sources include iron fortified formula, iron-fortified infant cereals, meats, or oral iron supplements. Breastfed babies who are not receiving iron rich solids after six months of age are at risk for anemia. Low birth weight babies are also at increased risk of developing anemia because of low neonatal iron stores. Babies on low-iron formulas are also at risk for anemia.

Education Tips and Follow Up:

- Encourage caregivers to receive and follow their health care provider's advice on breast and formula feeding, and vitamin and mineral supplements. Support caregiver's plans for breast or formula feeding.
- Recommend iron fortified formula to all caregivers who choose to offer formula to their babies.
- Educate caregivers on the importance of offering iron-rich foods to a baby over 6 months of age. If the caregiver has not begun these foods, probe to understand her reasons.
- Educate caregivers on sources of iron-rich foods (such as iron-fortified infant cereals, mashed, cooked dry beans, and pureed/minced meats) for babies.

The Infant with an Elevated Blood Lead Level

Occasionally a baby will be tested for a blood lead level. This information can be obtained from completing a thorough nutrition assessment. Lead poisoning can cause brain damage,

mental retardation, and convulsions. Therefore it is very important to protect babies from sources of lead. Lead is a metal found in old paint, dust, soil, and sometimes, water. Babies can be exposed to lead by putting objects containing lead (such as paint chips) or contaminated with lead (such as dust that clings to toys or other objects) in their mouths. Encourage caregivers to wash baby's hands before they eat. Additionally, some folk remedies containing lead should be avoided, for example, Hispanic families may use Azarcon and Greta, for colic. Furthermore, an adequate intake of iron, zinc, calcium, and calories is known to decrease a child's susceptibility to the toxic effects of lead.

WIC's role

WIC agencies can help prevent lead poisoning and minimize negative outcomes by:

- Educating parents about how to avoid environmental lead exposure,
- Assessing history of lead testing and referring children for testing,
- Identifying community resources for blood lead tests and services,
- Collaborating with providers to ensure services are available,
- Assigning nutrition risk factors to lead affected children
- Encouraging parents/caretakers to be assertive when requesting a test
- Providing a nutritional assessment and dietary education to minimize deficiencies that can influence lead absorption.

Education Tips and Follow Up:

- Encourage caregivers to receive and follow their health care provider's advice on vitamin and mineral supplements.
- Find out what the baby's health care provider says regarding the elevated blood lead level.
- Educate caregivers on the importance of offering an iron- and vitamin C-rich and balanced diet to their baby.
- Discuss ways to protect the baby from household sources of lead.

The Infant with Breastfeeding Complications

Breastfeeding babies identified with breastfeeding complications or a potential complication are considered high risk and must be referred to the Licensed Dietitian. The Licensed Dietitian is responsible for conducting a full evaluation of the situation and creating a nutrition care plan within the certification period and determining the intervention and need for additional referral and follow-up.

Education Tips and Follow Up

A detailed description of your role in handling the participant with this risk factor is found in the *Breastfeeding Module.*

The Infant with Specific Medical Conditions

There are only certain medical conditions that can be used as nutrition risk factors. A medical problem is a nutrition risk factor if it causes, contributes to, or results from an inability to obtain adequate nutrition for growth and development of the baby or the maintenance of health. To be used, the condition must have been diagnosed by a health care provider (as self-reported by the caregiver); or be reported or documented by a health care provider, or someone working under health care provider's orders.

Some of these conditions interfere with eating a large variety of foods such as a wheat allergy (which may prevent eating not only many foods from the grain group, but many other foods containing wheat). Other conditions change the need for nutrients or energy so that they are significantly above or below the normal requirement for the participant's age. Examples of these conditions include severe burns, cancer, heart disease, and some kinds of cerebral palsy.

Some medical conditions require special diets, varied timing for when to start solids, nutrition supplements, eating equipment, or medications. For example, special diets are usually prescribed for babies with diabetes and certain metabolic disorders. Participants with cystic fibrosis and heart disease often use nutrition supplements and medications. Participants with severe cerebral palsy or cleft palate may use specially adapted eating utensils.

Risk Assessment: All medical conditions are high risk unless noted as low risk.

Education Tips and Follow Up:

- Establish a rapport with the caregiver to develop trust.
- Determine if the baby's health care provider requires a special diet for the baby and how you can support the diet if applicable.
- Offer information on the progression of the diet in infancy and educate on general feeding relationship behaviors if appropriate.

Predisposing Nutrition Risk Factors

Lastly, there are conditions that predispose babies to inadequate nutrition patterns by virtue of caregiver's limited ability to make feeding decisions and/or prepare food, residing in foster care, having a mother on WIC, or a mother who wasn't on WIC but would have qualified, or being the baby of a priority I breastfeeding mother.

Environmental Tobacco Smoke Exposure

Secondhand smoke contains more than 4,000 chemicals, including 50 cancer-causing poisons. Breathing secondhand smoke is harmful to a baby's health. Babies who breathe the poisons found in secondhand smoke are more likely to have asthma attacks, ear infections, allergies, wheezing and coughing spells, bronchitis and pneumonia. The poisons in secondhand smoke

can also lead to childhood asthma, Sudden Infant Death Syndrome (SIDS), and behavior and learning problems in children.

Education Tips and Follow Up:

- Complete a thorough nutrition assessment as outlined in normal baby protocols.
- Provide information about the specific risks involved with secondhand smoke.
- Discuss ways the caregiver can protect the child from secondhand smoke (for example, smoke outside; don't smoke in the car, etc.).
- Listen to the caregiver to learn what they would like to work on.
- Offer information on the smoking cessation programs and refer as appropriate.

Homelessness

A baby who lacks a fixed and regular night time home; or whose primary night time home is a shelter (including a welfare hotel, a congregate shelter, or a shelter for victims of domestic violence) designated to provide temporary living accommodations; an institution that provides temporary housing for individuals intended to be institutionalized; a temporary accommodation of not more than 365 days in the residence of another individual ; or a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings.

Migrancy

A baby who is a member of a family that contains at least one individual whose principal employment is in agriculture on a seasonal basis, who has been employed within the last 24 months, and who establishes, for the purposes of such employment, a temporary residence.

Education Tips and Follow Up

Providing effective and appropriate nutrition education to individuals who have a transient lifestyle requires you have an understanding of the participant's transient lifestyle. It is important to identify the caregiver's ability to provide regular healthy meals to the baby. Because a participant may only be enrolled for a short period of time, ongoing, long-term education goals may not be appropriate. Priority topics to be covered include: (1) how to use the eWIC card, (2) what are WIC-allowable foods, and (3) referral to other services.
Work with the caregiver to select a food package that will fit her ability to store and prepare food.

Infant/Child of Primary Caregiver with Limited Ability to Make Appropriate Feeding Decisions and/or Prepare Food

Baby whose primary caregiver is assessed to have a limited ability to make appropriate feeding decisions and/or prepare food. Examples include, but are not limited to:

- Documented or self-reported misuse of alcohol, use of illegal substances, use of marijuana, or misuse of prescription medications.
- Mental illness, including clinical depression.*
- Intellectual disability.*
- Physically disabled to a degree which restricts or limits food preparation abilities.
- ≤ 17 years of age.

* Presence of the condition diagnosed, documented, or reported by a physician or psychologist or someone working under a physician's orders, or as self-reported by applicant/participant/caregiver.

Foster Care

Entering the foster care system during the previous 6 months or moving from one foster care home to another foster care home during the previous 6 months.

Education Tips and Follow-up:

- Foster children have a high frequency of mental and physical problems that are often the result of abuse and neglect happening before foster care. They are often more likely to have inadequate nutrition.
- Follow the normal nutrition protocols to identify nutritional needs.
- Provide a baseline nutrition assessment and provide nutrition education.
- Provide referrals to resources that support the foster parent and participant's ability to be healthy.

Recipient of Abuse

Battering or child abuse/neglect within the past 6 months as self-reported, or as documented by a social worker, health care provider, or on other appropriate documents, or as reported through consultation with a social worker, health care provider, or other appropriate personnel.

Child abuse/neglect is defined as any recent act or failure to act resulting in imminent risk of serious harm, death, serious physical or emotional harm, sexual abuse, or exploitation of a baby or child by a parent or care giver.

Education Tips and Follow-up:

- Serious neglect and abuse have short-and long-term physical, emotional, and functional consequences for children. Nutritional neglect is the most common cause of poor growth in infancy and may account for as much as half of all cases of non-organic failure to thrive.
- Follow the normal nutrition protocols to identify nutritional needs.
- Provide a baseline nutrition assessment and provide nutrition education.

- Report known or suspected child abuse or neglect. (WIC regulations regarding confidentiality do not take precedence over state laws requiring reporting of known or suspected child abuse or neglect.)

Mother either on WIC or WIC-eligible during Pregnancy

Baby less than 6 months of age whose mom was a WIC participant during pregnancy or whose mother's medical records document that the woman was at nutritional risk during pregnancy because of detrimental or abnormal nutritional conditions detectable by biochemical or anthropometric measurements or other documented nutritionally related medical conditions.

Breastfeeding Infant of Woman at Nutritional Risk

A breastfeeding baby of a woman at nutrition risk. The baby's risk must be the same priority as at-risk mom.

Education Tips and Follow-up:

- A baby born to a mom who has nutritional risks during pregnancy may not have received optimal nutrition while in the uterus and may be more likely to have nutritional problems after birth. Enrolling the baby in WIC means to ensure a healthy diet for the critical first year of life. A breastfed baby is dependent on the mom's milk as the primary source of nutrition. Inadequate maternal nutrition may result in decreased nutrient content of the milk. Special attention should therefore be given to the health and nutritional status of breastfed babies whose moms are at nutritional risk.
- Follow the normal nutrition protocols to identify nutritional needs.
- Provide a baseline nutrition assessment and provide nutrition education.
- Provide referrals as needed.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. Put a check mark next to the nutrition risk factor for babies.

   a. ___ Low hematocrit/hemoglobin levels
   b. ___ Elevated blood lead levels
   c. ___ Failure to thrive
   d. ___ Cow's milk allergy
   e. ___ Jaundice
   f. ___ Substance Abuse
   g. ___ Complications of delivery
   h. ___ Gastrointestinal disorders
   i. ___ Baby up to 6 months old of WIC mom

j. ___ Environmental tobacco smoke exposure
k. ___ Small for gestational age
l. ___ Breastfed baby of a priority 1 mom
m.___ Baby of a mom diagnosed with clinical depression
n. ___ Homelessness
o. ___ Breastfeeding complications or potential complications

True (T) or False (F)?

2. ___ A 9-month old baby with hemoglobin of 9.7 is considered high risk.

ANSWERS

1. All letters except f and g should be checked.

2. T

Section III: Normal Infant Protocols

The following pages outline developmental patterns and baby protocols for breastfed and formula-fed babies at certification and follow-up visits. The protocols provide guidance for assessing a baby's nutritional risk and eligibility, providing nutrition education, making referrals, and following up at subsequent visits.

Normal Infant Protocol - Breastfed

1. Assessment at Certification Visit
    - Check and plot weight and recumbent length.
    - Check hemoglobin/hematocrit (if certified 9-12 months of age).
    - Complete a nutrition interview to assess for nutrition practices, health/medical, immunizations, oral health, and lifestyle risk factors.
    - Assess for breastfeeding problems and concerns (using the nutrition interview, infant growth grid, and through discussion with the caregivers).
    - Assign subjective Nutrition Risk Factors (NRFs).

2. Counseling Points
    - Identify and prioritize nutritional problems and concerns.
    - Counsel on only one or two points at each contact based on issues of highest concern and participant's NRFs.
    - Encourage good baby feeding practices.
        - Review frequency and duration of breastfeeding.
        - Discuss urine and stool output.
        - Discuss basic hunger and satiety cues.
        - Discuss breastfeeding high risk complications according to the education points outlined in the Reference Section of the *Breastfeeding Module* and refer to health care provider when appropriate.
        - Discuss growth patterns and appetite spurts.
        - Discourage use of supplemental formula when establishing mom's milk supply. Discuss impact on breast milk production.
        - Baby does not need supplemental water for the first 6 months. Advise to check with baby's health care provider on recommendations for vitamin/mineral supplements (for example, Vitamin D, iron and fluoride).
        - Introduce solid foods around 6 months of age when the baby is developmentally ready
        - Introduce self-feeding with a cup and spoon when the baby is developmentally ready.
        - A supplemental source of iron, such as iron-fortified infant cereal and/or pureed meat (especially for the breast-fed baby) should be started at 6 months if developmentally ready.

- If baby takes a bottle, discourage:
  - Use of bottle until baby is about a month old and nursing well.
  - Taking a bottle to bed.
  - Liquids in the bottle (except expressed breast milk, formula or water for older babies), particularly sweetened water such as honey or sugar water, Kool-Aid, sports drinks, soda, or juice)
  - Use of cow's milk.
- Discourage exposure of baby to secondhand tobacco smoke which can cause breathing difficulties and more respiratory and ear infections.

Behavior Change Goal Setting

Help caregiver prioritize nutrition concerns and identify 1-2 nutrition or feeding changes that the caregiver is wanting to make to improve baby's nutrition issues. Goals should be based on stages of change.

3. Refer To:
   - Breastfeeding Peer Counselors for support throughout lactation.
   - Trained lactation staff as needed if breastfeeding complications were identified during the nutritional interview. Refer to health care provider or other community breastfeeding support, such as lactation consultants, if the issue is severe enough to warrant additional attention. .
   - Clinic or health care provider for well-baby care, including immunizations and vitamins/mineral supplement questions.
   - Other community services as appropriate and available such as Iowa 1st Five, Medicaid , SNAP (Food Assistance), Temporary Assistance for Needy Families (TANF), breastfeeding support groups, parenting classes, La Leche League.

4. Documentation

   Document referrals made, pamphlets provided, client comments/follow up on goals and referrals, assessment/ counseling/plan, and behavior change goals set in Focus. Goals need to be specific, measurable, achievable, and time specific.

5. Follow Up at Next Visit
   - **Low-Risk Participants**
     - Review behavior change goal from previous visit. Praise caregivers for any attempted change.
     - Reinforce good principles of infant nutrition, including guidance that will help caregivers anticipate the baby's developmental feeding and nutrition needs.
     - Follow up on referrals as appropriate.
     - Assess immunization record and measure weight and length at Health Update visit.

- **High-Risk Participants**
  A high-risk condition is a nutrition problem or the potential for developing a nutrition problem that requires additional assessment, intervention, monitoring and evaluation by a licensed dietitian (Journal of the American Dietetic Association 2003; 103(6):1061-1072).

  Participants who are at high-risk must be scheduled for at least one individual education contact by a licensed dietitian and have a nutrition care plan. This contact may take place at certification or at the second education contact. All second education contacts for high-risk participants must be scheduled as one-to-one contacts. Additional information over high-risk participants can be found in the Nutrition Risk Definitions policy.

Normal Infant Protocol - Formula-fed

1. Assessment at Certification Visit
   - Check and plot weight and recumbent length.
   - Check hemoglobin/hematocrit (if certified at 9-12 months of age).
   - Complete a nutrition interview to assess for nutrition practices, health/medical, immunizations, oral health, and lifestyle risk factors.
   - Assess for feeding problems and concerns (using the nutrition interview, infant growth grid, and through discussion with the caregivers).
   - Assign Subjective Nutrition Risk Factors (NRFs).

2. Counseling Points
   - Identify and prioritize nutritional problems and concerns.
   - Counsel on only one or two points at each contact based on issues of highest concern and participant's NRFs.
   - Encourage good baby feeding practices.
     - Review frequency and duration of feedings.
     - Iron fortified formula for the first year.
     - Discuss urine and stool output.
     - Discuss basic hunger and satiety cues.
     - Discuss growth patterns and appetite spurts.
     - Baby does not need supplemental water for the first 6 months. Advise to check with baby's health care provider on recommendations for vitamin/mineral supplements (for example, Vitamin D, iron and fluoride).
     - Introduce solid foods around 6 months of age when the baby is developmentally ready
     - Introduce self-feeding with a cup and spoon when the baby is developmentally ready.
     - A supplemental source of iron, such as iron-fortified infant cereal and/or pureed meat should be started at 6 months if developmentally ready.

- Discourage:
  - Taking a bottle to bed.
  - Liquids in the bottle except formula or water (for older babies), particularly sweetened waters such as honey or sugar water, Kool-Aid, sports drinks, soda, or juice.
  - Use of cow's milk.
  - Exposure of baby to secondhand tobacco smoke which can cause breathing difficulties and more respiratory and ear infections.

Behavior Change Goal Setting

Help caregivers prioritize nutrition concerns and identify 1-2 nutrition or feeding changes that the caregiver is wanting to make to improve baby's nutrition issues. Goals should be based on stages of change.

3. Refer To:
   - Clinic or health care provider for well-baby care, including immunizations and vitamins/mineral supplement questions.
     - Other community services as appropriate and available such as Iowa 1st Five, Medicaid, SNAP (Food Assistance), TANF, parenting classes.

4. Documentation

   Document referrals made, pamphlets provided, client comments/follow up on goals and referrals, assessment/ counseling/plan, and behavior change goals set in Focus. Goals need to be specific, measurable, achievable, and time specific.

5. Follow up at Next Visit
   - **Low-Risk Participants**
     - Review behavior change goal from previous visit. Praise caregivers for any attempted change.
     - Reinforce good principles of infant nutrition, including guidance that will help caregivers anticipate the baby's developmental feeding and nutrition needs.
     - Follow up on referrals as appropriate.
     - Assess immunization record and measure weight and length at Health Update visit.

   - **High-Risk Participants**

     A high-risk condition is a nutrition problem or the potential for developing a nutrition problem that requires additional assessment, intervention, monitoring and evaluation by a licensed dietitian (Journal of the American Dietetic Association 2003; 103(6):1061-1072).

Participants who are at high-risk must be scheduled for at least one individual education contact by a licensed dietitian and have a nutrition care plan. This contact may take place at certification or at the second education contact. All second education contacts for high-risk participants must be scheduled as one-to-one contacts. Additional information over high-risk participants can be found in the Nutrition Risk Definitions policy.

Training Activity

Now that you have completed this module, please take the Infant Module on-line post-test located on the Web Portal Training Personnel page. **Good Luck!**

Infant Works Cited

Section I: Feeding the Infant from Birth to Twelve Months of Age

1. *Starting Solid Foods*. 29 Oct. 2020, www.healthychildren.org/English/ages-stages/baby/feeding-nutrition/Pages/Starting-Solid-Foods.aspx.
2. *Contraindications to Breastfeeding or Feeding Expressed Breast Milk to Infants*, Centers for Disease Control and Prevention, 14 Dec. 2019, www.cdc.gov/breastfeeding/breastfeeding-special-circumstances/contraindications-to-breastfeeding.html.
3. "Iron Fortification of Infant Formulas." *Pediatrics*, vol. 104, no. 1, 1999, pp. 119–123., doi:10.1542/peds.104.1.119.
4. "Cronobacter Infection and Infants." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 14 Feb. 2020, www.cdc.gov/cronobacter/infection-and-infants.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Ffeatures%2Fcronobacter%2Findex.html.