Florida Nutrition Training Guide

Infant Nutrition Module

Florida Department of Health
Bureau of WIC and Nutrition Services
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FLORIDA DEPARTMENT OF HEALTH

FLORIDA WIC
Good Nutrition for Women, Infants & Children

Infant Nutrition Module

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Introduction

The **Infant Nutrition Module** consists of the following 3 components:

1. the module itself.
2. the workbook, to be completed by the staff member.
3. the evaluation materials for the supervising nutritionist.

Instructions

1. Read the **Knowledge Objectives** and **Performance Objectives** on pages 5-6.
2. Follow along with this presentation.
3. Stop and complete the **Self-Checks** as they appear and immediately correct any mistakes.

Instructions (continued)

4. Complete the **Practical Activity** found in your **Workbook.**

5. Arrange for a convenient time to take the **Posttest.**

Glossary

Review the **Glossary** (pages 7-10) and become familiar with *all* of the terms.

Example:

Anemia: **A condition where the blood does not contain the proper amount of hemoglobin or the proper size or amount of erythrocytes (red blood cells). When this is due to a lack of iron in the body, the condition is called iron-deficiency anemia.**

Pages 7-10 in Module

Part 1: Feeding the Infant from Birth to 12 Months of Age

Growth during the first year of life is greater than at any other time after birth. Good nutrition during this period is essential for infants to develop to their fullest potential.

Feeding the Infant from Birth to 12 Months of Age (continued)

The age recommendations given in this module are the earliest recommended age that a new feeding activity should occur. All infants progress at their own rate. Differences in developmental rates are to be expected. Check with the infant's health care provider when there is a question or concern about the infant's progress.

Feeding the Infant from Birth to 12 Months of Age (continued)

An infant who has **special needs or medical conditions or who was born prematurely or at a low birth weight** may have delayed feeding development and should be referred to the nutritionist or health care provider.

Development of an Infant's Feeding Skills

Figure 1 on page 13 of the module shows the sequence of infant development and feeding skills in normal, healthy full-term infants. It summarizes the development of an infant's mouth, hand, and body skills and how these affect the infant's ability to eat foods of different types and textures. This figure provides the background to understand why certain types and textures of food can generally be introduced during certain age periods.

Pages 12-13 in Module

Development of an Infant's Feeding Skills (continued)

- The ability of newborn infants to only suck and swallow liquids is due to their limited level of development. As infants mature, they learn how to eat strained, solid foods from a spoon given to them by a caregiver and eventually how to feed themselves small chunks of soft, cooked foods by hand and later by spoon.
- Several major reflexes related to feeding are evident during early infancy. They include the rooting reflex, the suck/swallow reflex, the tongue thrust reflex, and the gag reflex.

Pages 12-13 in Module

The Feeding Relationship

The **“feeding relationship”** is defined as the interactions that take place between the parent and child as they participate in food selection, eating, and other behaviors related to the amount and timing of food intake.

The Feeding Relationship (continued)

- When the feeding relationship is positive, the infant's health and nutritional status are promoted.

- A negative feeding relationship can result in poor dietary intake and poor growth.

The Feeding Relationship (continued)

To develop positive feeding relationships, encourage parents/caregivers to:

- **Observe and be sensitive to the infant's hunger, fullness, and food preferences, and act promptly and appropriately to meet the infant's feeding needs. Avoid putting the infant on a rigid schedule.**
- **Offer foods in a positive and accepting way without forcing the infant to eat, and avoid withholding food from the infant.**
- **Try to keep an infant calm before and during a feeding.**

Feeding the Infant: Birth to 4 Months of Age

- During the early months, nutritional needs can be **entirely** met with breast milk or iron-fortified infant formula (artificial baby milk).
- Breastfeeding best fulfills most infant's nutritional and emotional needs, as well as their immunological needs.
- Breastfeeding is best for **at least** the first year of life.

Pages 15-16 in Module

Benefits of Breastfeeding

- Human milk is particularly suited to the nutritional and immunological needs of human infants. This is called “species-specific.”
- Human milk is a dynamic, living substance. Its composition changes during a feeding, over a 24-hour period of time, and over the months of breastfeeding to meet individual needs of the growing infant.

Benefits of Breastfeeding (continued)

- Exclusive breastfeeding helps protect the infant from infections such as middle ear infections, gastrointestinal infections, and upper respiratory infections.
- Human milk contains enzymes which aid in the digestion and absorption of nutrients.
- Exclusive breastfeeding for the first six months of life reduces the chances of, and delays the onset of allergic disease.

Page 16 in Module

Benefits of Breastfeeding (continued)

- Studies have shown that breastfed infants have a decreased incidence of **Sudden Infant Death Syndrome (SIDS).**
- Breastfeeding can help the mother and infant develop a strong bond.
- Overfeeding becomes less likely with breastfeeding because there is no tendency to have the infant “finish the bottle.”

Pages 16-17 in Module

Support of Breastfeeding

- The national **Healthy People 2010** goals are to have at least 75% of mothers breastfeeding in the early postpartum period, at least 50% breastfeeding at 6 months postpartum, and 25% breastfeeding at 1 year postpartum.

☑ Self-Check

- **Go to** the **Workbook** and complete **Self-Check Questions 1-3.**

- **Check** your answers against the **Answer Key** in your **Workbook.**

Infant Formula (Artificial Baby Milk)

- When infants are not breastfed, it is normally best to give them an iron-fortified infant formula for the first year of life.
- It is important that the formula be iron-fortified to prevent iron-deficiency anemia.
- Infant formulas are modified to be as nutritionally similar to human milk as possible. However, no infant formula can duplicate human milk.

Page 19 in Module

Types of Infant Formula

- **Cow's milk-based formulas-**Most infants can tolerate formulas made from cow's milk.
- **Soy-based formulas-**These formulas are made from soybeans and are for infants who are unable to tolerate cow's milk-based formula.
- **Special formulas-**There are several kinds of special formulas designed for infants who have medical problems.

Page 19 in Module

Infant Formula Packaging and Mixing Requirements

- Many cow's milk-based formulas and soy-based formulas are available in a concentrated liquid form, a powdered form, and/or a ready-to-feed form.

- Remind caregivers to always check formula can labels for exact mixing instructions.

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Infant Formula Packaging and Mixing Requirements (continued)

- Improper dilution of infant formula can result in very serious health problems for the infant. Any variation from the recommended dilution and preparation instructions should only be made by the baby's health care provider.
- Cleanliness during formula preparation and proper refrigeration of bottles of prepared formula are very important in order to prevent gastrointestinal problems that can be caused by bacteria.

Page 20 in Module

Mixing Requirements: Concentrated Liquid

Concentrated liquid formula requires dilution with water in a **one-to-one ratio;** for example:

- **1 ounce of concentrated liquid formula is mixed with 1 ounce of water** to make a 2-ounce bottle of prepared formula.

OR

- **4 ounces of concentrated liquid formula are mixed with 4 ounces of water** to make an 8-ounce bottle of prepared formula.

Page 20 in Module

Mixing Requirements: Powder Formula

- **Powdered formula** is usually mixed with water in a ratio of **1 level scoop of powder formula to 2 ounces of water** (the scoop is included in the can). Thus, if 4 ounces of water is poured into a bottle, 2 level scoops of powdered formula should be added OR if 8 ounces of water is poured into a bottle, 4 level scoops of powdered formula should be added.

Page 20 in Module

Mixing Requirements: Ready-to-Feed

- Ready-to-feed formula requires **no mixing and no diluting** with water and is available in bottles and cans of various sizes.
- The ready-to-feed formula is generally the most expensive but may be preferable when there is a questionable water supply or poor refrigeration, or when the parent or caregiver has difficulty in correctly diluting concentrated liquid formula or powdered formula.

Page 20 in Module

Water Used to Mix Concentrated Liquid or Powdered Formula

- In general, tap water that comes from a municipal water system is safe for older babies and children.
- But for infants under 6 months of age, it's a good idea to boil the water used to mix with concentrated liquid or powdered formula.
- The water should be brought to a bubbly boil for 1 to 2 minutes, and then should be allowed to cool.

Page 21 in Module

Purchase of Infant Formula

- Check the formula's expiration date on the label or lid. If the expiration date has passed, the nutrient quality of the formula may have deteriorated.

- Do not purchase cans of infant formula that have dents, bulges, pinched tops or bottoms, puffed ends, leaks or rust spots. The formula in such cans may be unsafe.

Storing Cans of Infant Formula

- Store unopened cans of infant formula in a cool, dry indoor place.
- Once a can of concentrated liquid or ready-to-feed formula is opened, it should be covered and stored in a refrigerator no longer than 24 hours or as specified on the formula label.
- Once a can of powdered formula is opened, the can should be covered and stored in a cool, dry place for no longer than one month.

Page 21 in Module

Preparation of Infant Formula

- Clean and sanitize the workspace.
- Wash hands thoroughly.
- Wash all equipment.
- Rinse all equipment well in hot water.
- Disinfect nipples, bottles, rings, and caps by boiling for 5 minutes in a pot with enough water to cover.

Pages 22-23 in Module

Preparation of Infant Formula (continued)

- If disposable plastic liners are used, throw out the bag after one use.
- Before opening a formula can, wash can lid with soap and clean water and rinse to remove dirt.
- Prepare the formula according to directions on the formula container. See Figures 2a-2c in the module for a checklist of instructions for preparing infant formula.
- Put clean nipple right side up on each bottle and cover with a nipple cap.

Page 23 in Module

Storing Bottles of Prepared Infant Formula

- Make sure the bottles of prepared infant formula are labeled with the baby's name and the date and time the formula was prepared.
- Refrigerate prepared bottles until ready to use. Store in the back of the refrigerator (colder area).
- To prevent spoiling, do not allow prepared bottles of formula to stand at room temperature.

Page 23 in Module

Storing Bottles of Prepared Infant Formula

- Throw out prepared formula not used within **24 hours** or as specified on the formula can.
- Throw out any unused formula left in a bottle after a feeding and rinse the bottle in cool water to remove formula.
- Clean and sanitize bottles and their parts before reusing them.

Page 23 in Module

Proper Feeding Temperature of Formula

- Infants can be fed formula that is at room temperature, slightly cooler, or slightly warmer.
- The best way to warm a bottle of infant formula is to set it in a pan or bowl of warm water for a few minutes or to shake it under warm tap water.
- Never use a microwave oven to warm infant formula or expressed breastmilk because this may cause serious burns.

☑ Self-Check

- **Go to** the **Workbook** and complete **Self-Check Questions 4-7.**

- **Check** your answers against the **Answer Key** in your **Workbook.**

Cow's Milk and Other Types of Milk or Beverages

The following are not acceptable for infants during the first year of life:

- **Fresh, dry, or evaporated cow's milk**
- **Sweetened condensed milk**
- **Goat's milk**
- **Soy milk**
- **Imitation milk beverages**
- **Beverages from rice and nuts**
- **Nondairy creamers**

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Cow's Milk and Other Types of Milk or Beverages

- Cow's milk has a higher level of protein and minerals than human breastmilk or iron-fortified infant formula.
- The immature digestive system of the young infant is not able to adequately break down cow's milk.
- Fresh, dry, or evaporated cow's milk; sweetened condensed milk, goat's milk; and other imitation milk beverages are poor sources of iron.

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Feeding Frequency and Amount for the Newborn

- Newborn infants need to be fed throughout the day and night.
- Infants differ in the age at which they are ready to sleep long stretches of time at night without feedings.
- Sleeping “through the night” is considered to be one continuous six-hour stretch.

Feeding Frequency and Amount for the Newborn: Breastfed Infants

- Newborn breastfed infants need to be fed when they are hungry and should breastfeed until they are full.
- Cues to feed the infant are as follows:
  - Pre-cry facial grimaces
  - Mouthing
  - Rooting reflex
  - Small fussing sounds
  - Hand-to-mouth activities

Feeding Frequency and Amount for the Newborn: Breastfed Infants (continued)

- Feeding on cue will not spoil the infant.
- If these early cues of needing to be breastfed are missed, then the infant will probably cry to express his or her need to breastfeed.
- Most breastfed infants will need to breastfeed and should be fed every 1 to 3 hours.
- Feedings can be expected to last about 20 to 45 minutes.

Feeding Frequency and Amount for the Newborn: Bottle-Fed Infants

- The quantity of formula an infant consumes in 24 hours will vary greatly, depending on the infant's age, size, and level of activity, and if they are also being breastfed.
- Infants should be fed infant formula as needed ("on cue"), with special instructions to the parent/caregiver to watch for the first signs of fullness to prevent overfeeding.

Feeding Frequency and Amount for the Newborn: Bottle-Fed Infants (continued)

- Most newborns will take approximately 2 to 3 ounces of infant formula every 1½ to 3 hours.
- Smaller newborns may require smaller, more frequent feedings because their stomachs are smaller and cannot handle very much formula at one time.
- Feeding time should last about 15 to 30 minutes.

☑ Self-Check

- **Go to** the **Workbook** and complete **Self-Check Questions 8-9.**

- **Check** your answers against the **Answer Key** in your **Workbook.**

Use of Bottles

- Bottles are appropriate for feeding infants who are being formula-fed, who are fed expressed breastmilk, or who are not developmentally ready to drink from a cup.

- Human milk, infant formula (artificial baby milk), and water are the **only** three liquids which should be fed from a bottle.

Use of Bottles (continued)

- Cereals and strained or pureed foods should not be put into a bottle or an “infant feeder.”
- Feeding solids from a bottle will not help the infant sleep through the night and may lead to overfeeding.
- Also, feeding infant cereal in a bottle or “infant feeder” can cause choking.

Use of Bottles (continued)

- Juices should not be introduced until the infant is developmentally ready to drink juice from a cup. Feeding juice from a bottle may lead to tooth decay and overconsumption of juice.
- It is inappropriate to add sweeteners of any kind including honey, syrup, sugar, or “gelatin water” to the bottle. These sweeteners can result in excessive caloric intake, diarrhea, and early childhood caries. In addition, feeding honey to an infant under one year of age can cause botulism.

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Use of Bottles (continued)

- **Early childhood caries (ECC)** or **baby bottle tooth decay** is caused by letting an infant or young child use a bottle-filled with a sweetened drink, juice, infant formula, other milks, or sweetened water, as a pacifier.
- In some instances, plain water can be given in the bottle to avoid the development of baby bottle tooth decay.

How to Feed With a Bottle

- An infant who is fed with a bottle should always be held during a feeding.
- A parent/caregiver should hold the infant close to his or her body; make a lot of eye contact; and talk to, sing to, and stroke the infant.
- It is also a very good practice for the parent to switch feeding sides during the feeding. “Switching” is best done at a natural break in the feeding.

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Tips for Bottle Feeding

- Feed when the baby indicates hunger.
- Feed in a smooth and continuous fashion following the baby's lead regarding when to feed and how to feed.
- The bottle should not be propped. Propping the bottle can cause middle ear infections, choking and fluid getting into the baby's lungs.

Tips for Bottle Feeding

- Wait for the baby to stop eating before burping. Babies should be burped during and after a feeding to release any air that is swallowed. This holds true for both breastfed and bottle-fed babies.
- Babies should continue to be fed until he or she indicates fullness. Babies are the best judge of how much they need.

Sleeping or Resting Position Before or After a Feeding

- Health care providers usually recommend placing babies on their backs to rest or sleep unless there is some medical reason not to do this.
- Place a baby on a firm mattress in a safety-approved crib.
- Remove all fluffy and loose bedding from the sleep area.
- Make sure the baby's face and head stay uncovered during sleep.

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☑ Self-Check

- **Go to** the **Workbook** and complete **Self-Check Questions 10-12.**

- **Check** your answers against the **Answer Key** in your **Workbook.**

Feeding the Infant: 4 to 8 Months of Age

When to introduce foods:

- The American Academy of Pediatrics (AAP) recommends that semi-solids (cereals) and solids be introduced into an infant's diet between 4 and 6 months of age if the infant has developmental readiness.
- However, the AAP recommends that exclusively breastfed infants be fed only breastmilk for the first six months of life.

Indicators of Developmental Readiness

- The ability of an infant to keep food in his/her mouth and swallow it rather than push it back out of the mouth onto the chin.
- The ability of the infant to sit with good head and neck support.
- The ability to indicate a desire for food by opening the mouth and leaning toward the spoon, and to indicate disinterest or fullness by leaning back and turning away.

Problems with Introducing Solid Foods too Early

- There is no advantage to the introduction of solid foods before 4 months of age. The infant's nutritional needs can be entirely met by breastmilk from birth to 6 months, or by iron-fortified infant formula from birth to between 4 to 6 months.
- Early introduction of solid foods, may result in gastrointestinal problems such as gastroesophageal reflux, constipation, and/or diarrhea for these infants.

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Problems with Introducing Solid Foods too Early (continued)

- Young infants who are not developmentally ready for solid foods may choke on solids, which can force these particles into their lungs.
- It is a common myth that feeding an infant cereal at a very early age will help the infant sleep through the night. Studies which have investigated this have failed to find the truth in this belief.

Sequence of Solid Food Introduction

- Iron-fortified cereal is the best choice for an infant's first solid food since it provides a good "solid food" source of iron.

- **Rice Cereal is recommended as the first cereal choice** because it is a single grain, easily digested, and is least likely to cause an allergic reaction.

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Sequence of Solid Food Introduction (continued)

- After cereals have been started, vegetables and fruits should be introduced to provide a variety of flavors and textures. This is usually between 6 and 8 months.
- Vegetables should be strained or pureed and should be served plain without added fat, salt, spices, or sauces.
- If using canned vegetables to make baby food, they should be labeled as “no salt added” or “low sodium.”

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Sequence of Solid Food Introduction (continued)

- Suggested fruits to serve to infants include strained or pureed pears, apples, and peaches.
- Commercially prepared infant desserts such as chocolate pudding, peach cobbler, and banana/apple dessert, as well as other desserts should **not** be given because of their high sugar content.

Sequence of Solid Food Introduction (continued)

- Plain meats, poultry, and fish **are next in the progression. They should be well-cooked and strained or pureed, and started at approximately 6 to 8 months of age.**
- Chicken, turkey, lamb, beef, pork, veal, and finfish **are suggested protein foods.**
- Egg yolks **may be offered to the infant at 8 to 10 months of age. The yolk of the egg must be hard cooked and then could be mixed with cereal or another food.**

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Sequence of Solid Food Introduction (continued)

- Egg whites **contain a variety of proteins which infants may be allergic to; therefore, egg whites should not be fed to an infant younger than one year of age.**
- **Due to their high salt and/or fat content, the following foods are generally not recommended for infants: hot dogs, sausage, bacon, bologna, salami, luncheon meats, other cured meats, fried animal foods, and the fat and skin trimmed from meat and poultry.**

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A Caution About Fish

- Infants should be observed closely if finfish are introduced because fish can cause allergic reactions.
- Do not feed any shellfish to babies less than 1 year of age.
- Some fish contain high levels of mercury. Too much mercury can harm unborn babies, infants, and young children.

A Caution About Fish (continued)

- Infants should not eat **shark, swordfish, king mackerel, or tilefish** because they contain high levels of mercury.
- Infants should eat **no more than 2 meals per week** of a variety of fish that are lower in mercury such as canned light tuna, salmon, pollock, and catfish. White albacore tuna is higher in mercury, therefore light tuna should be selected instead of white albacore tuna.
- Check local advisories about the safety of fish caught by family and friends in local lakes, rivers, and coastal areas. Go to the Florida Fish Consumption Advisories website at: http://www.doh.state.fl.us/Environment/hsee/fishconsumptionadvisories/index.html

Sequence of Solid Food Introduction (continued)

- Fruit juices should only be offered when an infant can drink from a cup, which is usually around 6 months of age.
- A good first choice of juice to be given is vitamin C fortified apple juice or white grape juice.
- Excessive intake of fruit juice can quickly fill an infant's stomach, may result in the decreased consumption of other important foods, and may lead to diarrhea.

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Sequence of Solid Food Introduction (continued)

- Under normal circumstances, the water requirements of healthy infants less than 6 months old are met by the breastmilk or formula alone as long as they are fed adequate amounts of breastmilk or properly diluted infant formula.
- Infants who begin eating a variety of solid foods, and especially any foods containing protein, should be fed about 4 to 8 ounces of water each day.

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Water Intake

- Infants with medical conditions such as vomiting, diarrhea, fever, diabetes, etc. may have increased water needs. Refer infants with these medical conditions to the health care provider for evaluation and recommendation of fluid intake.
- Water intoxication can develop in infants who consume infant formula overdiluted with water and those who are force-fed water.

Pages 42-43 in Module

☑ Self-Check

- **Go to** the **Workbook** and complete **Self-Check Questions 13-16.**

- **Check** your answers against the **Answer Key** in your **Workbook**.

Appropriate Infant Feeding Practices

- Infants should be fed in a high chair or in an upright position on the parent's lap.
- Solids should be fed from a spoon. Spoon feeding plays an important part in the development of the ability to self-feed.
- New foods that are rejected by an infant should not be forced on him or her, but should be offered at another time.

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Appropriate Infant Feeding Practices (continued)

- Each new food item should be introduced **one at a time** with approximately **one week** in between each new item. This will allow the infant to become accustomed to new foods. It will also provide an opportunity for parents to readily identify if any one food causes an adverse reaction.

Inappropriate Infant Feeding Practices

- Infants should not be given foods which contain large amounts of sugar and/or fat.
- Plain foods are recommended to allow the infant to experience the individual tastes of foods and to avoid feeding excessive calories.
- Low-calorie sweeteners, such as saccharin or aspartame (Nutrasweet®), are not appropriate for infants and young children.

Commercial Baby Foods

- Single-ingredient fruit, vegetable, or meat products of commercially prepared baby food contain only one ingredient and water.

- These single-ingredient foods are generally preferred instead of baby food mixtures, fruit desserts, or baby foods with added ingredients or fillers.

Commercial Baby Foods (continued)

- **Jars of baby food should be washed before opening. Jar lids should make a popping sound when opened. Check if the "bubble" on the top of the jar has already popped up.** If so, do not feed the food in that jar to the infant.
- **Do** not **feed an infant directly from the baby food jar. If leftover food is returned to the jar, the infant's saliva will enter the food. The saliva contains bacteria which can cause the food to spoil.**

Pages 47-48 in Module

Home-Prepared Baby Foods

- Home-prepared baby foods are generally lower in cost than commercial baby foods.
- Foods prepared for the infant should contain no added salt, sugar, fat, or seasonings.
- Care must be taken during preparation and storage of the food to prevent contamination.
- Home-prepared foods can be stored in a refrigerator for up to 48 hours, except for meats and egg yolks which should be used within 24 hours.

Home-Prepared Baby Foods (continued)

- The foods can be stored in a freezer for 1 month.
- To thaw, the frozen foods can be placed in a pan or dish and thawed in the refrigerator, or warmed in a conventional or microwave oven or pan of water on the stove.
- Any thawed, heated food that is not eaten should be thrown away.

Choking Prevention

- Choking is a major cause of death in infants and young children.
- Closely supervise infants and young children when they are eating.
- Parents and caregivers should modify foods to make them safer, or substitute foods that may cause choking with a safe alternative food.

Choking Prevention (continued)

The following foods are not recommended for infants and young children because they are associated with choking: fish, chicken, or turkey with bones, tough meat, nuts, hot dogs, whole beans, popcorn, nuts, seeds, potato chips, corn chips, cheese curls, cheese puffs, pretzels, peanut butter, other nut/seed butters, raisins and other uncooked dried fruits, large chunks of cheese, cooked or raw whole kernel corn, other whole grain kernels, raw vegetables such as carrots or celery, round-shaped candies, granola and plain wheat germ, whole grapes/cherries/berries, fruit pieces with pits, whole pieces of canned fruit, hot/sticky breads, marshmallows, and hard cookies.

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☑ Self-Check

- **Go to** the **Workbook** and complete **Self-Check Question 17-21**.

- **Check** your answers against the **Answer Key** in your **Workbook**.

Feeding the Infant: 8 to 12 Months of Age

- When the infant shows signs of being able to chew with up and down movement of the jaw, and can move the tongue from side to side and swallow, finger foods should be offered. This is usually at 8 months of age.
- Appropriate finger foods for infants are small pieces of soft food which can be easily dissolved in the throat or dislodged if they become stuck.

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Finger Foods

- Good example of finger foods include: cooked macaroni or noodles; small pieces of toasted bread; small, thin pieces of mild cheese; crackers; and teething biscuits.
- At 10 months of age, finger foods can include small pieces of soft, peeled fruit; small pieces of soft-cooked vegetables; and small pieces of tender-cooked meats.

Self-Feeding Skills

- Near the age of 1 year, infants become interested in holding utensils and feeding themselves.
- Many infants prefer to feed themselves with their hands and fingers rather than with utensils.
- Give child small portions of food.
- The process of learning to eat independently continues into the second year of life.

Pages 53-54 in Module

Meal Planning

- An infant who is 8 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 snacks.
- The daily diet should include foods from all of the food groups of the Food Guide Pyramid.

Tips About Feeding Habits

- Lifelong eating habits are formed in childhood and early positive experiences with foods can encourage acceptance of them later in life.
- Parents should not assume that their infants will not like a food that another family member will not eat.
- The infant should take part in the family's mealtime.

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☑ Self-Check

- **Go to** the **Workbook** and complete **Self-Check Questions 22-24**.

- **Check** your answers against the **Answer Key** in your **Workbook**.

Weaning

- Weaning from the breast or bottle is a gradual process.
- Weaning to a cup begins when the infant is able to sit up without support and is eating solid foods.
- Bottle-fed infants should be completely weaned from the bottle near the time of their first birthday.

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Weaning from the Breast

- Many children continue breastfeeding after their first birthday and well into their second year of life.
- Weaning is usually accomplished by stopping one breastfeeding at a time.
- It is suggested that the first feeding to stop should be the one which the infant is least interested, such as the late afternoon feeding.

Weaning from the Bottle

- Usually starts when an infant can adequately drink from a cup with assistance, and ends when the infant is receiving all of his or her liquids in a cup (around 12 to 14 months of age).
- Bottles should not be used after 12 to 14 months of age by normal, healthy infants.

Tips About Weaning

- Between 4 to 12 months, infants are developmentally ready and usually interested in learning to drink from a cup.
- Infants need help holding the cup for the early weeks of cup feeding.
- As the infant gets used to drinking from a cup, liquids such as breastmilk, formula, or juice may be offered from the cup.

☑ Self-Check

- **Go to** the **Workbook** and complete **Self-Check Question 25**.

- **Check** your answers against the **Answer Key** in your **Workbook**.

Part 2: Nutrition-Related Health Issues from Birth to 12 Months of Age

Dental Health

- The primary teeth (i.e., baby teeth) begin to form in the jaw before birth and they continue to develop throughout the first year of life.
- There are several nutrients that are necessary for the development of healthy teeth, but the most important are **protein, calcium, phosphorus, and fluoride**.

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Early Childhood Caries (Baby Bottle Tooth Decay)

- Infants and children who are put to bed with a bottle of infant formula, milk, juice, or a sweetened drink can develop serious tooth decay referred to as early childhood caries (ECC) or baby bottle tooth decay.

- ECC is rare in breastfed infants since the mechanics of suckling and the positioning of the breast in the mouth during breastfeeding are different from bottle feeding.

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Prevention of Tooth Decay

- Breastfeed the infant for one year or more.
- Feed only breastmilk, formula, or water from a bottle.
- Do not let a baby carry around and continuously drink from a bottle or sippy cup.
- Do not prop a bottle.
- Daily cleaning of gums and teeth, should be started early in life.

Iron Needs During Infancy

- Iron is necessary throughout life, but is especially important during infancy and childhood when growth is rapid.
- Breastmilk contains a form of iron that is well absorbed and utilized by infants.
- Iron-fortified infant cereal is a good food source of iron for both formula-fed infants and breastfed infants.

Iron Needs During Infancy (continued)

- **Meats are good solid foods that supply iron for an infant at 6 months of age or older.** These include liver and red meat that are commercially strained or pureed, or meats that have been well-cooked until tender and then pureed in a blender, food grinder, or food processor

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Iron Needs During Infancy (continued)

- For infants 8 months of age or older**, mashed, cooked dry beans and peas may be added. Also, lean meat, chicken, and turkey can be well-cooked until tender and then ground, mashed, or finely chopped.**
- **Absorption of iron by the body can be increased by feeding a vitamin C-enriched juice or another food which is high in vitamin C at the same time as the food which contains iron.**

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Vitamin D Needs During Infancy

- Rickets is a disease caused by an extreme vitamin D deficiency in infants and children.
- Cases of rickets in infants which are attributed to inadequate vitamin D and decreased exposure to sunlight continue to be reported in the United States.
- A potential source of vitamin D is synthesis in the skin from the ultraviolet B light fraction of sunlight.

Vitamin D Needs During Infancy (continued)

- Infants who are breastfed but do not receive supplemental vitamin D or adequate sunlight exposure are at increased risk of developing vitamin D deficiency or rickets.
- The American Academy of Pediatrics (AAP) recommends a supplement of 200 IU of vitamin D per day for all breastfed infants unless they are weaned to at least 16 oz of vitamin-D fortified formula or milk, and all non-breastfed infants who are taking less than 16 oz of vitamin D fortified formula per day.

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Infants At Risk of Becoming Overweight

- The rise in the number of overweight children and adolescents in the United States is one of the most important public health issues we currently face.
- Important contributors for the rapid rise in obesity in the United States include a large and growing abundance of calorically dense foods and an increase in sedentary lifestyle for all ages.

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Counseling Parents of Infants At Risk of Overweight

- Parents of infants at risk of becoming overweight should be encourages to change any inappropriate feeding or caregiving practices.

Physical Activity Guidelines for Infants

- “Adopting a physically active lifestyle early in life increases the likelihood that infants and young children will learn to move skillfully…”
- **Guideline 1:** Infants should interact with parents and/or caregivers in daily physical activities that are dedicated to promoting the exploration of their environment.

Physical Activity Guidelines for Infants (continued)

- **Guideline 2:** Infants should be placed in safe settings that facilitate physical activity and do not restrict movement for prolonged periods of time.

- **Guideline 3:** Infants' physical activity should promote the development of movement skills.

Physical Activity Guidelines for Infants (continued)

- **Guideline 4:** Infants should have an environment that meets or exceeds recommended safety standards for performing large muscle activities.

- **Guideline 5:** Individuals responsible for the well-being of infants should be aware of the importance of physical activity and facilitate the child's movement skills.

Special Problems: Gastrointestinal Disturbances

- Certain **gastrointestinal disturbances** are commonly reported by mothers of infants, especially those who are bottle fed. These include constipation, diarrhea, spitting up, and colic.

Special Problems: Gastrointestinal Disturbances (continued)

- Although many bottle-fed infants have a daily stool (or more than one stool per day), others may have only one stool every 2 to 3 days.
- Frequency is not a good indicator of constipation.
- Constipation in infants is better characterized by hard, dry stools which are difficult for an infant to pass.

Special Problems: Gastrointestinal Disturbances (continued)

- Diarrhea is defined as the passage of loose, unformed, or watery stools that have an unpleasant odor.
- Also, diarrhea is when the number of stools passed in a day is more frequent than normal.
- Frequently, oral rehydration therapy is recommended.

Special Problems: Gastrointestinal Disturbances (continued)

- **Spitting up** is not the same as vomiting. Spitting up involves small amounts of milk that come up.
- This may occur several times a day during or shortly after feeding.
- Normally, breastfed infants spit up much less than bottle-fed infants.

Special Problems: Gastrointestinal Disturbances (continued)

- **Colic** is described as extreme discomfort in the infant's upper and/or lower gastrointestinal tract.
- Infants with colic will frequently show signs of discomfort by screaming, flexing the limbs, and continuous crying.
- The cause or causes of colic are not really known.

Special Formula

- An infant who has one or more medical conditions, e.g., prematurity, a disease state, or a physical disability, may require a special formula.
- Some special formulas contain more calories and different types of proteins, fats, and vitamins/mineral levels than the standard infant formulas.

☑ Self-Check

- **Go to the** Workbook **and complete** Self-Check Questions 106-111.
- **Check your answers against the** Answer Key **in your** Workbook**.**
- **Go to the** Practical Activity **for the** Performance Objectives **in your** Workbook **and complete according to the instructions.**
- **Arrange for a convenient time to take the** Posttest**.**