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Preschool Nutrition Module

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Preschool Nutrition Module

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Introduction

We all know that good nutrition is important, but for preschoolers, a healthy diet is crucial. Young children need energy and nutrients to be active, to think, and to grow. Good nutrition helps a child build strong teeth and bones, fight off colds and viruses, and heal faster. And without adequate nutrition, children can develop serious illnesses such as iron-deficiency anemia. What's more, in prolonged cases of poor nutrition, a child's brain won't develop properly and a child can literally stop growing.

But mealtimes offer more than just vitamins and minerals. Preschoolers develop fine motor skills as they begin to feed themselves, plus foods help them learn about colors, textures and flavors. And when they eat with others, they develop important language and social skills.

What's more, learning healthy eating habits as a child can be a lesson in prevention that lasts a lifetime. Obesity is a serious concern — during the 1990s, the number of overweight children continued to increase. Many overweight children become overweight adults, and obesity and poor diets contribute to other chronic illnesses such as diabetes and heart disease. So it's important to start early, helping children develop good eating habits and adopt active lifestyles while they're young.

As a WIC employee, your knowledge about preschool nutrition can help parents and children in so many ways, both now and in years to come.

The Basics: Nutrition Guidelines for Preschoolers

Part 1

Objectives

After reading this section, you'll be familiar with the daily nutritional recommendations for young children. Specifically you'll be able to:

1. describe the Food Guide Pyramid for Young Children by stating the different food groups and the number of servings children need from each group;
2. state why preschoolers need fewer servings than adults;
3. write a sample one-day menu for a 3-year-old child;
4. explain why preschoolers need snacks as part of their daily intake;
5. list four foods that are likely to cause choking in young children;
6. state four benefits of breastfeeding a child over one year of age; and
7. state three ways parents can encourage their children to be more physically active.

The Food Guide Pyramid for Young Children: A Daily Food Guide for Preschoolers

Each day, a child needs about 50 different nutrients for body growth, maintenance and repair. So how can you ever be sure a preschooler is getting what he needs? Needless to say, there's no single food that contains all of these nutrients in the required amounts, so the key is to offer a wide variety of foods every day.

To outline the types and amounts of foods preschoolers should eat on a daily basis, the United States Department of Agriculture developed the Food Guide Pyramid for Young Children (1). If children eat a variety of foods from each of the five food groups in the Pyramid, they're likely to meet their nutrient needs (2, 3, 4, 5).

Daily Servings and Serving Sizes

The Food Guide Pyramid for Young Children recommends fewer servings from each food group compared to serving recommendations for adults.

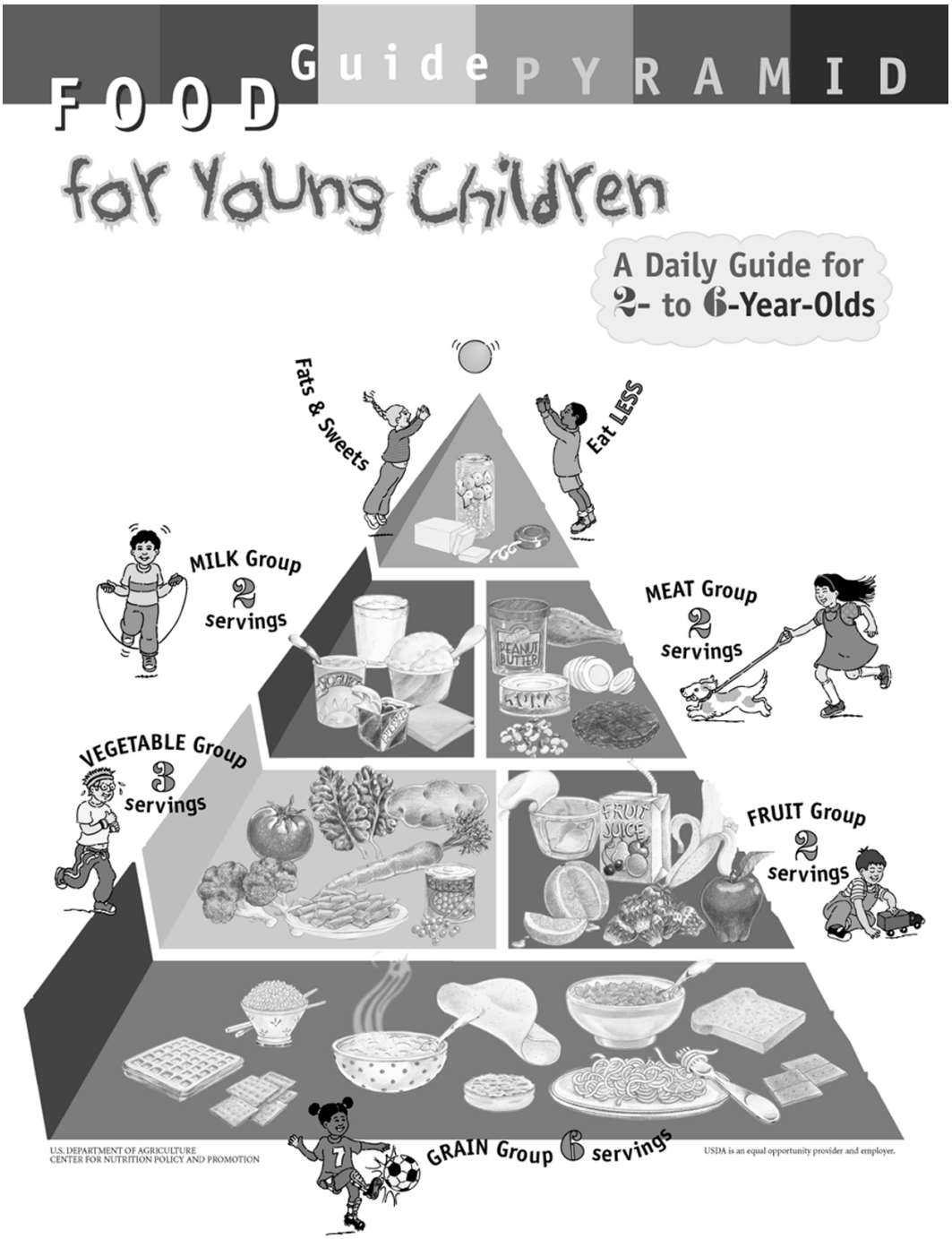
In general, preschoolers need the same variety of foods as older children and adults, but since their body size is smaller, they need *fewer* servings. So the Pyramid for Young Children indicates a single number of servings for each food group rather than a range as seen in the Food Guide Pyramid for older children and adults.

What Counts as a Serving for Preschool Children on the Pyramid?

Table 1 lists the amounts of foods that count as serving sizes for children ages 1 to 3 years old and 4 to 6 years old. These amounts count as servings when using the Pyramid to evaluate a preschooler's daily intake; they aren't necessarily portions that a mother will serve to her young child.

Toddlers 1 to 3 years of age don't need as many calories as older children, so except for the milk group, *smaller amounts count as servings* (½ slice of bread, ½ piece of fruit, ¼ cup cooked vegetables, ¼ cup cooked rice, etc.).

By the time children are 4 years old, *larger amounts count as servings* (1 slice of bread, 1 piece of fruit, ½ cup of cooked vegetables, ½ cup cooked rice, etc.). These are the same amounts that count as servings for adults.



For a list of the specific nutrients and amounts preschool children should consume, see Appendixes.

Table 1 Daily Servings for 1- to 3-Year-Olds and 4- to 6-Year Olds

Food Group	Recommended Daily Servings	Count This as a Serving for 1- to 3-Year-Olds	Count This as a Serving for 4- to 6-Year-Olds
Grain	6	½ slice bread	1 slice bread
		½ 7-in. tortilla	1 7-in. tortilla
		¼ cup cooked cereal	½ cup cooked cereal
		¼ cup rice or pasta	½ cup rice or pasta
		4 small square saltine crackers	6 small square saltine crackers
		2 small graham crackers	3 small graham crackers
		3/4 cup ready-to-eat cereal	1 cup ready-to-eat cereal
Fruits	2	¼ cup cooked or canned fruit	½ cup cooked or canned fruit
		½ piece raw fruit	1 piece raw fruit
		½ cup 100% fruit juice	3/4 cup 100% fruit juice
Vegetables	3	¼ cup cooked, canned or raw vegetable	½ cup cooked, canned or raw vegetable
		½ cup vegetable juice	3/4 cup vegetable juice
Milk	2	8 oz. milk (give 4–6 oz. at a time)*	8 oz. milk (give 4–6 oz. at a time)
		1½ oz. natural cheese	1½ oz. natural cheese
		3/4 cup yogurt	3/4 cup yogurt
		(Note: Other dairy products such as cottage cheese, ice cream, frozen yogurt and pudding do provide some calcium, but not as much as foods listed here.)	
Meat	2	1 oz. beef, turkey, chicken, fish, or pork	2 oz. beef, turkey, chicken, fish, or pork
		½ cup dried beans or peas	1 cup dried beans or peas
		1 egg (¼ cup scrambled)	2 eggs (½ cup scrambled)
		1 wiener cut into fourths lengthwise**	2 wieners cut into fourths lengthwise**
		2 slices lunch meat/cold cuts	4 slices lunch meat/cold cuts
		2 tablespoons of peanut butter (for children over 2)**	4 tablespoons of peanut butter**

*Children under 2 need whole milk and whole-milk products (7).

**Potential choking hazards.

These serving sizes count as Pyramid serving sizes. The amounts in this table can offer some guidance for actual servings, though other factors will help determine how much food to actually serve.

Actual Portions Will Vary

Keep in mind that the portions in Table 1 aren't necessarily amounts that a parent will routinely serve to their child. Actual portion sizes depend on a number of factors. For example, many preschoolers will only have a 4- to 6-ounce serving of milk with a meal or snack, rather than an 8-ounce glass which counts as a milk serving. So it's more likely that a young child will have three or four partial servings from the milk group throughout the day rather than two full servings.

Many preschoolers typically eat smaller servings which add up throughout the day.

Also, young children often eat smaller portions than older kids. One suggestion for 1- to 3-year-olds is to offer 1 measuring tablespoon of food per year of age. So about 3 tablespoons of rice or a vegetable would be good for a 3-year-old. He may eat more than that, but these small amounts should give him enough vitamins, minerals, and protein (6). Also, by offering smaller servings and allowing a child to ask for more, a parent can satisfy the child's hunger without overwhelming him. Likewise, it's important to offer new foods in small "try me" spoonfuls. Then let the child ask for more.

Keeping in mind that actual portions will vary, the Food Guide Pyramid for Young Children is an excellent guide for parents to use in planning balanced meals and snacks. See Tables 2 and 3 for sample meal plans.

Table 2 Sample Meal Plan for the 1- to 3-Year-Old Preschool Child

Breakfast	Lunch	Dinner
6 oz. milk*	4 oz. milk*	6 oz. milk*
¼ cup cream of wheat	1 oz. beef patty	1 oz. chopped chicken
½ banana	½ slice whole wheat bread	½ dinner roll
1 tsp. margarine	¼ cup cooked carrots	¼ cup broccoli
½ slice whole wheat toast	1 tsp. margarine	1 tsp. margarine
1 tsp. jelly	¼ cup canned peaches	¼ cup mashed potatoes
Mid-morning Snack	Mid-afternoon Snack	Evening Snack
2 vanilla wafers	1 oz. cheese	2 graham cracker squares
¼ cup orange juice	4 saltines	

*Children under 2 need whole milk and whole-milk products (6).

Table 3 Sample Meal Plan for Preschoolers, 4 Years and Older

Breakfast	Lunch	Dinner
6 oz. milk	4 oz. milk	6 oz. milk
½ cup cream of wheat	2 oz. beef patty	2 oz. chopped chicken
½ banana	1 slice whole wheat bread	½ cup broccoli
1 tsp. margarine	½ cup cooked carrots	1 dinner roll
1 slice whole wheat toast	1½ tsp. margarine	1½ tsp. margarine
1½ tsp. jelly	¼ cup canned peaches	½ cup mashed potatoes
Mid-morning Snack	Mid-afternoon Snack	Evening Snack
4 vanilla wafers	1 oz. cheese	½ apple cut in wedges
½ cup orange juice	6 saltine crackers	2 graham cracker squares

Recommendations for Breastfed Toddlers

It's exciting that some mothers continue to breastfeed their young children past the first year. Breastfeeding beyond the first year offers benefits to both mother and baby:

- Breastfed toddlers tend to have fewer and shorter illnesses and need less medical care than toddlers who aren't breastfed.
- Breastfeeding gives comfort when a toddler is tired, upset, ill, or hurt.
- A sick child can easily digest and accept human milk as a source of food.
- Breastfeeding provides physical closeness.

So how do the dietary recommendations apply to toddlers who breastfeed? Generally, children over a year old may only breastfeed a few times a day, so they may not be getting large volumes of breastmilk. On the other hand, amounts will vary from child to child, so some toddlers may get significant nutritional benefits from breastmilk. Still, it's hard to assess, so children who nurse only two or three times a day need a variety of foods each day, including foods from the milk group.

Snacks

Healthy snacks are a great way to help a preschooler get the nutrients he needs. In fact, snacks can provide up to 20% of a child's energy and nutrient requirements.

What's more, since children have small stomachs, they usually need to eat small portions more frequently to avoid being hungry. Preschoolers may need as many as three to four snacks a day along with their regular meals to sustain their energy level. Also, encouraging children to eat small snacks spaced between meals throughout the day may help establish sound eating habits for a lifetime.

The five major food groups in the Food Guide Pyramid should be the basis for planning children' snacks and meals. However, all foods in moderation can fit into a child's diet, so

parents shouldn't completely eliminate snack choices because of calories, fat, or sugar (8). Instead, the goal is to provide healthy snacks more often and allow choices from the sweets and fats group less often.

Snack Suggestions (9)

Quick bread or muffins	Make with carrots, zucchini, pumpkin, bananas, nuts, dates, raisins, lemons, squash, and berries.
Flour tortillas	Spread with refried beans or canned chili, sprinkle with grated cheese and broil; top with either low-fat sour cream or yogurt and chili sauce.
Pita loaf	Place sliced meat, cheese, lettuce and tomato in open pocket.
English muffins or pita bread	Top with spaghetti sauce, grated cheese and processed meats; broil or bake and cut in fourths.
Potato skins	Sprinkle with shredded cheese, broil and top with either low-fat sour cream or yogurt and bacon bits.
Canned chili	Heat and top with onions, lettuce and tomato; use as dip for Italian or French bread, biscuits or corn bread.
Parfait	Make with yogurt, fruit, and granola.
Gelatin	Add fruit or vegetable juice, vegetables, fruits or cottage cheese.
Frozen fruit cubes	Freeze pureed applesauce or fruit juice into cubes.
Fruit fizz	Add club soda to fruit juice instead of serving soft drinks.

Fruit shake	Blend milk with fresh fruits (bananas, berries, or a peach) and add a dash of cinnamon and nutmeg.
Yogurt frost	Combine fruit juice and yogurt; add fresh fruit if desired.
Hot chocolate	Make hot chocolate or cocoa with milk, chocolate and a dash of cinnamon.
Celery*	Spread with either cream cheese or peanut butter* and sprinkle on raisins*, shredded carrots or nuts*.
Fresh* vegetables	Serve with a dip of cottage cheese or yogurt blended with dried buttermilk dressing.
Bananas	Dip in fruit or yogurt or spread with peanut butter* and roll in coconut, chopped nuts or granola
Sliced apples* or crackers	Serve spread with peanut butter*, cream cheese, honey, nuts*, raisins* and coconut mixed together.
Bagels	Spread with cream cheese, spreadable cheese or peanut butter* and top with chopped bananas, crushed pineapple or shredded carrots.
Kabobs*	Make with any combination of the following: cheese, fruit, vegetables and sliced or cubed cooked meat (remove toothpicks before serving).
Popcorn*	Serve to older children plain or make three quarts and sprinkle with ¼ cup grated cheese.

*These snacks may present a choking hazard for children younger than 4 years. See section on choking on page 1-10.

Are Young Children Meeting Dietary Recommendations?

Unfortunately, except for the milk group, most American children ages 2 to 5 years don't eat the recommended number of servings outlined in the Food Guide Pyramid (10). That means many preschoolers might be missing out on important nutrients. For example, children who don't eat enough servings from the meat group on a routine basis probably don't get enough iron and zinc. Likewise, if they consistently miss out on servings of fruits, vegetables and whole grains, they aren't likely to get enough fiber. So it's up to nutrition educators and programs like WIC to encourage parents to offer their children a healthy variety of foods from the Food Guide Pyramid.

Preventing Preschoolers from Choking on Food

A child chokes when food caught in the airway prevents him from breathing. Children younger than 4 years of age are at high risk of choking on food because the airway doesn't always get blocked off properly when they swallow. Also, children under 4 don't have molar teeth, so they don't always chew food thoroughly. When a child tries to cough up the food and then inhales deeply, the food can quickly enter the airway.

A child is at a high risk of choking in certain situations. These include feeding the child without close supervision; feeding while the child is walking, playing, talking, laughing, crying, or lying down; serving difficult-to-chew foods to children with poor chewing and swallowing abilities; and feeding foods that can cause choking.

These foods are most likely to cause choking:

- small nuts and seeds;
- foods that are round, firm, smooth, and/or slick like grapes, peanuts, hard candy, hot dogs, large pieces of fruit with skin, peas, round candies;
- foods that are dry or hard such as raw carrots, cookies, pieces of pretzels, potato chips, popcorn; and
- foods that are sticky or tough such as peanut butter, raisins, tough meat, and caramel candy.

Parents should follow these important tips to help prevent choking:

- Cook tough foods, like raw carrots, until they are soft.
- Cut foods into small pieces thin slices that can easily be chewed.
- Cut round foods, like hot dogs or carrots, into short strips rather than round pieces.
- Cut grapes into quarters.
- Remove all bones from chicken, meat, and fish.
- Remove pits and seeds from fruit such as oranges, grapes, watermelon, or plums.
- Serve hamburgers instead of hot dogs.
- Grind or chop nuts.
- Don't give peanut butter to children under 2; for older children, spread a thin layer onto bread (11) and/or mix it with foods like jelly or yogurt to make it easier to swallow.

Guidelines for Physical Activity for Children

Physical activity helps preschoolers increase their strength and coordination, build self-confidence, maintain a healthy weight, and reduce stress. And like healthy eating habits, routine physical activity throughout life can help reduce the risk of heart disease, high blood pressure, and diabetes (12).

Childhood obesity is on the rise; many experts say that the trend is due largely to a lack of physical activity.

Researchers haven't determined the type and amount of exercise that preschoolers need for optimal health, although most young children are naturally active and have a strong drive for motor activity. It's likely that most preschool children get enough activity when they're able to show their natural curiosity by actively exploring and playing in a safe environment (13).

However, for many children, watching television has replaced hours of running, jumping and playing games. Parents can limit the amount of time in front of the television by helping children choose which programs to watch for the day, and then turning the TV off and going outside to play.

Also, parents should set a good example by being active themselves and involving the whole family in various activities. If a family hasn't been active in the past, they can start gradually, like taking walks after dinner. Plus, parents should focus on having fun when they're helping kids choose activities. Preschoolers are more likely to stay active if they're enjoying themselves.

Other ways to increase children's physical activity:

- Plan family hikes, nature walks, and camping trips.
- Teach kids to swim and bicycle at a young age.
- Turn chores such as raking leaves, shoveling snow and gardening into fun activities.
- Check to see what sort of recreational programs are available, such as swimming lessons, neighborhood activity centers, YMCA programs and city park programs.

Self-Test Questions

1. List the five major food groups from the Food Guide Pyramid for Young Children and the number of servings that a preschool child needs from each group.

Food Group	Number of Servings
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

2. Why do preschoolers need fewer servings than adults?

   _____

3. Write an example of a day's menu for a 3-year-old child.

4. List four foods that are likely to cause choking in young children.

   1. _____
   2. _____
   3. _____
   4. _____

5. Why do preschoolers need snacks?

_____

_____

6. List four benefits of breastfeeding a child over 1 year old.

a. _____

b. _____

c. _____

d. _____

7. State three ways a parent can encourage their preschooler to be more physically active.

a. _____

b. _____

c. _____

Beyond the Basics: Specific Dietary Components to Consider *Part 2*

Objectives

In this section, you'll learn about of some of the more specific nutrients and food components that are important to think about when evaluating a preschooler's diet. After completing this section, you'll be able to:

1. identify good food sources of iron, vitamin C, vitamin A, and calcium;
2. state the amount of fluid preschool children need each day;
3. provide two reasons why it's important to regulate a young child's intake of juice and milk;
4. list three symptoms of high caffeine intake in young children;
5. explain why the recommendation for fat intake for children less than 2 years of age is different than for older children;
6. list three good food sources of fiber; and
7. state two situations in which a child may need a multivitamin and mineral supplement.

Beyond the Basics

In addition to following the Children's Food Guide Pyramid, parents and caregivers need to pay special attention to the following:

- providing enough key nutrients (iron, vitamins A and C, calcium);
- keeping an eye on fluids (water, milk, juice, caffeine-containing beverages);
- balancing other dietary components (fat, sodium, sugar, fiber); and
- evaluating the need for vitamin / mineral supplements.

Key Nutrients (Iron, Vitamins C and A, Calcium)

Iron — It's crucial that children consume several sources of iron each day in order to avoid iron deficiency anemia (discussed later in Part 3). Meats contain the most well-absorbed form of iron. However, some preschool children may not eat much meat, so parents should offer other sources of iron.

Iron-Rich Foods

- beef, pork, liver, chicken, turkey, fish
- pinto, kidney, black, and lima beans
- soy beans, peas and lentils
- nuts, seeds, and peanut butter*
- tofu

- raisins* and prunes
- dried apricots, figs, peaches, and pears
- winter squash
- tomato juice
- turnip and collard greens
- baked potato (with the skin)

- whole wheat bread
- cereals with iron
- enriched pasta
- enriched and brown rice

*Potential choking hazards.

Vitamins C and A — Preschoolers also need to get their daily requirements of vitamins C and A, which are generally found in fruits and vegetables. A good rule to remember is to eat five servings of fruits and vegetables each day; one of these fruits or vegetables should contain vitamin C and one should contain vitamin A.

Vitamin C Foods

oranges	broccoli
orange juice	papaya
grapefruit	Brussels sprouts
grapefruit juice	strawberries
guava	cauliflower
cantaloupe	green peppers
tomatoes	green & red chiles
mango	cabbage

Vitamin A Foods

cantaloupe	winter squash
mango	collard greens
papaya	spinach
apricots	bok choy
carrots	turnip greens
red chiles	broccoli
sweet potato	tomatoes
pumpkin	vegetable juice

Calcium — Calcium is another key nutrient that preschoolers need each day. Children get most of their calcium from milk and milk products. If a preschooler doesn't drink milk, parents should try serving milk-based soups, yogurt, cheese, custard, cereal with milk and cottage cheese (Note: cottage cheese has only moderate amounts of calcium compared to many other dairy products.) Also, adding powdered milk to meat loaf, casseroles, etc. can boost a child's calcium's intake.

Non-Dairy Calcium Sources

Non-dairy foods that have as much calcium as 6–8 oz. of milk:

1 cup of calcium-fortified orange juice
2 slices of calcium-fortified bread
¾ cup Total® cereal
3 oz. canned sardines with bones
½ cup firm tofu (set with calcium sulfate)

Non-dairy foods that offer smaller amounts of calcium:

Greens, like turnip, collard, beet, and kale
Black-eye peas and northern beans
Bok choy
Corn tortillas
Broccoli
Rhubarb
Okra

Fluids (Fluid Needs, Milk, Juice, Caffeine)

Preschoolers get their 6–8 cups of fluid each day from water, milk, juice, and foods.

General Fluid Requirements — Preschoolers need about 6 to 8 cups of fluids each day, depending on their weight. Also, they need more fluids if they eat more fiber, are more physically active, or are experiencing diarrhea or vomiting. What's more, summertime temperatures and high humidity increase fluid needs. Milk and juice do contribute to a preschooler's fluid intake, though parents should offer plenty of water to help meet fluid requirements.

Milk — Although children need calcium on a daily basis, some preschoolers can end up getting too much milk. If a child drinks too much milk (generally more than 16 ounces a day), he may not be hungry for foods from other food groups and he'll miss out on important nutrients. In particular,

there's a concern about iron-rich foods when very young children drink too much milk. Getting enough iron in the diet is a challenge anyway, especially for young toddlers whose diets may not be as varied as older children. And if a child fills up on too much milk, intake of iron-rich foods can suffer, leading to iron-deficiency anemia. So while milk is a vital part of children's diets, parents should regulate their child's milk intake. The general recommendation is 16 ounces of milk a day.

Juice — The same problem can occur with fruit juice. Children can fill up on juice and won't be hungry for other foods, again missing out on important nutrients, which in turn could lead to poor growth. Plus, there are other concerns. Drinking too much apple or pear juices may cause diarrhea because some young children may not be able to absorb the types of sugars found in these juices (14). Also, fruit juice is a concentrated source of calories, so too much fruit juice adds extra calories, leading to extra weight (15). So in general, the recommendation is to avoid giving more than 4–6 ounces of juice per day.

Some children drink excessive amounts of juice, which means extra calories and extra sugar. Parents should limit juice intake to 4–6 ounces of juice per day.

Caffeine — Since some children may be sensitive to the effects of caffeine, it's a good idea to limit caffeine-containing drinks, especially tea and certain soft drinks. Caffeine has an effect on the body that's similar to drugs, so it can be harmful. Symptoms of high caffeine intake can include anxiety, restlessness, irritability, nervousness, muscle pain, rapid and irregular heart beat, upset mood, sleep delay, and stomach discomfort (16).

Caffeine is found in coffee, tea, many soft drinks and, to a lesser extent, chocolate. The amount of caffeine in foods and beverages varies depending on the serving size, the type of product and preparation method. For soft drinks, it's important to read the label since caffeine is found in both clear and caramel-colored drinks, as well as some citrus-flavored beverages.

Average Caffeine Content of Various Foods and Beverages (17)

	Average (range)
5 oz. drip-brewed coffee	115 mg. (60–80)
5 oz. brewed tea	60 mg. (20–90)
5 oz instant tea	30 mg. (25–50)
6 oz. soft drink	18 mg. (18–30)
Chocolate milk (8 oz.)	5 mg. (2–7)
Milk chocolate (1 oz.)	5 mg. (1–15)

Balancing Fat, Sodium, Sugar and Fiber

Fat — Before age 2, fat is crucial for brain growth and development, so parents shouldn't restrict their child's fat intake. For example, whole milk and whole milk products are appropriate for toddlers between age 1 and 2. However, beginning at age 2, children's diets should begin to reflect the dietary guidelines for a lower fat diet. They should get most of their calories from grain products; fruits; vegetables; low-fat dairy products; and beans, lean meat and poultry, fish or nuts. By adopting a lower-fat diet early on, they'll be more likely to develop low-fat eating habits that will last through adulthood. Adults who consume low-fat diets have been found to have lower blood cholesterol levels and a reduced risk of heart disease (18).

In recent years, the percentage of calories from fat has decreased among children over age 2, although their average intake is still higher than current recommendations (19, 20, 21, 22).

Sodium and Salt — The dietary guidelines recommend choosing and preparing foods with less salt, mostly due to the relationship between salt (sodium chloride) and high blood pressure. Only 1% to 2% of children have high blood pressure, compared to 25% of adults. Salt intake has varying effects on blood pressure, and children are less likely than adults to be "salt sensitive." In other words, cutting back on dietary sodium in children isn't as likely to decrease blood

pressure as it is in adults. What's more, it's not clear if sodium intake during childhood affects blood pressure in adulthood. For children, being overweight seems to be a more important factor in terms of contributing to high blood pressure.

A preference for salty foods is an acquired taste, which most people probably develop during childhood. So, it's a good idea to avoid adding extra salt to a preschooler's foods, and try to keep salty snacks and processed foods to a minimum. Except for 3- to 5-year-old African-American children, the average sodium intakes of preschool children are less than the adult recommended intake of 2,400 mg or less per day. However, beginning in pre-adolescence, sodium intakes do rise above recommended levels.

Sugar — Children certainly don't need extra sugar, however, sweets are an enjoyable part of our food culture. The main concerns with high-sugar foods such as soft drinks, fruit drinks, candy, etc., are that they promote dental caries, and they can easily take the place of more nutritious foods that children should be eating. However, if a healthy child is eating a variety of nutritious foods, then occasional snacks and desserts that contain sugar shouldn't pose a problem.

Fiber — It's important for children to get enough dietary fiber to promote normal bowel movements and prevent diseases of the bowel. On the other hand, too much fiber can decrease children's caloric intake as well as the absorption of some important nutrients, which would put children at risk for inadequate growth and development.

Fiber recommendations for children ages 2 and over suggest 5 grams of fiber/day plus a gram of fiber for each year of age. Based on this **age + 5 guideline,** recommendations range from 7 grams/day for a 2-year old to 10 grams/day for a 5-year old (23).

__Age + 5__: To determine how many grams of fiber a child should have each day, simply add 5 to the child's age.

Good sources of fiber include fruits, vegetables, whole grain cereals and breads, and dried beans and peas. A child is likely to meet their daily fiber needs by eating 5 servings of fruits and vegetables, and 3 servings of breads, cereals, rice and pasta made with whole grains.

Unfortunately, fiber intakes for children declined in the last decade. Three out of every five children ages 2 to 5 aren't getting enough fiber in their diets (24).

Vitamin-Mineral Supplements

According to the American Academy of Pediatrics, *there's no need for routine vitamin and mineral supplementation in healthy children* (25). An exception is supplementing with fluoride if there's not enough fluoride in the drinking water. Refer to page 3-14 for information on fluoride supplementation.

In special situations where children are at nutritional risk, multivitamin-mineral supplements should provide approximately 100% of the recommended intakes of nutrients for children unless a physician determines a need to provide higher levels. Groups at nutritional risk include the following:

- children who suffer from parental neglect or abuse;
- children with poor appetites;
- children with chronic disease (such as cystic fibrosis, inflammatory bowel disease, or liver diseases); and
- children consuming vegetarian diets without adequate dairy products need supplements, particularly vitamin B_{12}.

Although the American Academy of Pediatrics doesn't recommend multivitamin-mineral supplementation for children except for these few high-risk groups, nearly 55% of preschool children receive a supplement (26).

Self-Test Questions

1. For each of the following foods listed, make a checkmark in the appropriate column if they are a good source of iron, vitamin C, vitamin A, or calcium.

Food	Iron	Vitamin C	Vitamin A	Calcium
Cantaloupe				
Salmon with bones				
Turnip greens				

2. How much fluid does a preschool child need each day? _____

3. List two reasons why parents should limit a preschooler's intake of juice and milk.

   a. _____

   b. _____

4. List three symptoms of high caffeine intake in young children.

   a. _____

   b. _____

   c. _____

5. Why is the recommended fat intake for children under age 2 different from that for older children?

   _____

   _____

6. List three good food sources of fiber.

   a. _____

   b. _____

   c. _____

7. List two situations in which a child may need a multivitamin and mineral supplement.

   a. _____

   b. _____

Preventing and Managing Common Nutrition Problems in Preschoolers

Part 3

Objectives

After completing this section, you'll be more familiar with nutrition problems that are common in children, including prevention strategies and counseling tips. Specifically, you'll be able to:

1. list three possible health consequences of child obesity;
2. state three factors that may contribute to child obesity;
3. provide three counseling points for parents which may help prevent a child from becoming overweight;
4. state three counseling points for a case study involving an overweight preschooler;
5. provide two counseling points for a case study involving an underweight preschooler;
6. describe two ways hunger can affect a preschooler's health;
7. list two possible causes of iron-deficiency anemia in preschoolers;
8. state three counseling points for a case study involving a child with anemia;
9. explain two ways in which proper nutrition can reduce lead poisoning;
10. state three counseling points for a case study involving a child without regular dental care;
11. state three counseling points for a case study involving a child with constipation;
12. state three counseling points for a case study involving a child with diarrhea;

13. name three foods which are most likely to cause allergic reactions in preschoolers;
14. explain what effects sugar and artificial food additives have on a child with attention deficit order; and
15. describe two food safety practices that can reduce the risk of foodborne illness.

Nutritional Status of American Children

The most common nutrition concerns regarding young children in the US today include overweight, physical inactivity, growth retardation, iron-deficiency anemia, dental caries, and lead poisoning. This section discusses each of these as well as other nutrition problems that are common among today's preschoolers.

What is Normal Growth for Children?

Before addressing nutritional problems that affect growth, it's important to discuss how children normally grow. Growth is most rapid in the first year of life. Most healthy infants double their birth weight by 4 to 6 months of age and triple their birth weight by 1 year. After the first year of life, they gain weight at a slower rate, averaging about 5 pounds per year until adolescence.

There are many different normal body shapes and sizes for children. Some children are short and stocky, some are tall and slender. In a healthy child, his genes are what mainly determine his growth, so the size and shape of his mother and father can often serve as indicators (27).

Children may be taller or shorter, heavier or lighter, but they usually grow in height and weight in a certain pattern. Growth charts show typical patterns of growth, and these curves are helpful in assessing an individual child's growth. A child's growth over time should follow one of the percentile lines on the chart. If a child's growth pattern is regular, then his growth is normal for him — it doesn't matter how he compares with other children his age.

As a child gets older, he may show small shifts in his growth pattern. If his shift in weight and/or height is smooth, and crosses only one percentile curve over several months or two curves over several years, it's probably normal. But if a child rapidly shifts up or down across percentile curves on his chart, something may be disrupting his growth.

Overweight

The prevalence of overweight among people of all ages has increased dramatically over the past 20 years, so much so that the condition of overweight is now considered to be an epidemic. Between 1989 and 1997, the prevalence of overweight among preschool children went from 7.0% to 8.6%. If it continues to increase at this rate, one out of every 10 preschool children will be overweight by 2005.

Childhood obesity can lead to high blood pressure, high blood sugar, high cholesterol, respiratory and orthopedic problems and adulthood obesity.

Why are medical experts so concerned about the problem of overweight children? First of all, overweight children tend to have medical problems that are typically seen only among adults — high blood pressure, high blood sugar, and high cholesterol. They also have more respiratory problems and orthopedic problems. Because there is no successful treatment for obesity once it occurs, there is a high likelihood that overweight children will become overweight adults. And being overweight as an adult significantly increases the risk of diabetes, heart disease and certain types of cancer. But by far, the most serious consequence of childhood obesity is psychological — including peer rejection, discrimination, low self-esteem and preoccupation with weight (28).

Food consumption surveys tell us that children today consume basically the same number of calories that they did 10 years ago. If this is the case, why are more children overweight today? Most experts agree that children (and adults) are gaining too much weight because they aren't as physically active as they used to be. They're spending more time in activities that don't burn very many calories, like watching TV, playing video games, or sitting in front of a computer. And many low-income children live in

neighborhoods that are no longer safe, so they aren't able to play outside as much as they would like or as much as they should.

But the development of obesity in children is not just a matter of too many calories and not enough physical activity. It's also the result of a complex interaction of genes and cultural practices mixed with economic, social and psychological factors — none of which are well understood. For example, we know that overweight children are more common in low-income populations. Obese children are also more likely to come from families that are too distant, too controlling, too rigid or too chaotic. We also know that if both parents are overweight, there is a high probability that the children will be overweight — but how much is the result of genes and how much is the result of cultural practices are unknown.

Despite the fact that obesity is a very complex health problem, WIC can play a major role in helping parent understand just what they can do to help prevent it.

Preventing Overweight in Preschoolers

The two most important things a parent can do to prevent child obesity are establishing a positive feeding relationship and encouraging the child to get plenty of physical activity. To establish a positive feeding relationship, parents must observe a **division of responsibility** in feeding their child: Parents are responsible for providing nutritious and appealing food at regular times in a pleasant atmosphere. Once they have done their part, parents must trust children to choose from what they have made available and to eat as much or as little as they want.

Division of Responsibility: *It's the parents' responsibility to provide nutritious foods. It's up to the child to decide what to eat and how much to eat.*

Parents shouldn't try to restrict the amounts of food their child eats, as the child may lose his natural ability to respond to his internal processes of hunger, appetite, and satiety. Loss of these internal processes may lead to inability to regulate his weight (34, 35).

Controlling fat intake appears to be an important part of regulating caloric intake and body weight. In the US, diets

that tend to be high in fat tend to be low in fruits and vegetables and complex carbohydrates. So what's the best way to decrease a child's preference for high-fat foods?

Children's food preferences are shaped by early experiences with food. Parents are powerful role models — children will watch and model what they see their parents eating. Children learn to prefer foods that they're familiar with, so parents should provide a variety of foods including fruits and vegetables to increase the chances that their child will accept them. Also, it's not a good idea to withhold desserts or similar foods as punishment, or conversely, offer them as rewards. Unfortunately, these practices can increase the child's desire for those foods.

Communities can support families in prevention of obesity by providing safe areas where children and families can be physically active, and offering healthy meals in day care centers, Head Start programs, and schools. Also, it's important for community programs like WIC to educate parents about the principles of a positive feeding relationship.

How Can You Tell if a Child Is Overweight?

Most professionals say that a child is overweight if he plots out at the 95th percentile weight for height or higher. Even though a child may be overweight by these standards, he's not necessarily overfat. Some children have bigger bones or heavier muscles. If one or both of the parents are large, the child may resemble one of them due to genetics. So in some situations, a child's overweight may be normal for him — providing he has a stable pattern of growth, i.e., his growth is smoothly following a percentile curve and there is no sudden weight gain.

If, however, the child's overweight is due to sudden weight gain, then the condition is abnormal for the child, and a health professional should determine the reason for the sudden increase.

As mentioned before, there are many factors that may contribute to a child's obesity. A physician should first rule out any medical conditions or medications that may be contributing to a child's obesity. If the child has no other medical problems, often health professionals will counsel parents on proper diet and physical activity for the child. However, this approach may not always provide a permanent solution to the problem, because it may not get at the underlying cause(s) of the problem. Nutrition educators are generally not trained to deal with strong psychosocial issues in a family that may be contributing to the child's overeating or physical inactivity.

Treatment of Overweight in Preschoolers

Treatment of childhood obesity has become a specialty, often requiring assistance from a number health professionals who have expertise in different areas (physicians, dietitians, psychologists, social workers, etc.). Research suggests that effective programs for child obesity require intensive behavior therapy with parental involvement (36).

So how should nutrition educators counsel a parent who is concerned that her child is overweight? The first step is to teach parents that restricting a child's food intake doesn't work. If food is restricted, a child is likely to become preoccupied with food and overeat when he gets a chance. Parents should feed an overweight child the same as a child who is not overweight. (Refer to Part 1, "The Food Guide Pyramid For Young Children" and Part 4, "Common Eating Problems in Preschoolers and How to Manage Them.")

Next, it's important to find out if the parents know why the child is gaining too much weight. Is the child overeating? Does he have unlimited access to food and snacks all day long? What about activity? If the family isn't active, find out what the barriers are and how they can make changes.

Also, how old was the child when he first had a weight problem and what changes were going on in the family within a year of that time? Changes or stress in the family may be reasons that a child turns to food for comfort. If a child wants comfort, parents need suggestions about others ways to comfort the child. In some instances, it may be appropriate to refer the family to a social worker.

Most importantly, a nutrition educator should counsel parents on helping the child feel good about himself, no matter what his body size. Parents shouldn't scold the child for being overweight or overeating, but rather help him develop interests and skills in which he can take pride. Praise and unconditional love help a child feel good about himself.

Underweight

Growing at or below the 5th percentile curve weight for height may be normal for a child, *if the growth pattern is stable*. Even shifting across growth percentile curves can be normal, if the shift happens very slowly over several months or years. However, a child rapidly crossing downward across growth

percentile curves is a cause for concern, and a physician should review the case to rule out any medical conditions that might contribute to weight loss or below normal weight gain.

Prevention of Underweight in Children

Creating a positive feeding relationship is an important step in preventing underweight in children. If parents are concerned that a child is too small and not eating enough, they may try to force the child to eat more food. This only leads to fights and may make the child's eating worse. Teach the parents about their responsibilities in feeding — that parents are responsible for providing nutritious and appealing food at regular and pleasant times. Once they have done their part, parents must trust children to pick and choose from what they have made available and to eat as much or as little as they want.

Treatment of Underweight in Children

A weight for height less than the 5th percentile or a sudden downshift across two growth curves may indicate ***failure-to-thrive.***

Failure-to-thrive (FTT) is a chronic disorder of infancy and early childhood characterized by growth failure, malnutrition, and delays in motor and social development. FTT may result from medical, social and/or environmental factors. Children with weight for length or height less than the 5th percentile or downward crossing of two growth channels are potential failure-to-thrive cases and should be referred. If a child less than 3 years of age is considered potential "failure-to-thrive," it's necessary to refer the case to a child health clinic or a physician for further assessment and treatment.

If the physician determines that the child isn't failure-to-thrive and can't find any underlying medical conditions contributing to the underweight, then it's time to focus on the feeding relationship. Some parents who worry that their child isn't eating enough will try bribes, threats, or rewards to get the child to eat more, and a mealtime battle is likely to start. The more the parents force the child to eat, the more the child resists.

A good strategy for poor eaters is to offer a variety of foods at each meal and then allow the child to select what and how much he wants to eat. Also, parents should offer moderate amounts of fat by using whole milk, moderate amounts of butter or margarine on vegetables, and sauces and gravies to make food moist and higher in fat.

Poverty, Hunger, and Growth Stunting

Growth stunting, defined as height-for-age below the 5th percentile on a reference growth curve, may indicate a child is malnourished. Growth stunting occurs more often than expected among children of low socioeconomic status suggesting that inadequate nutrition may be a problem (37).

In 1994, a Texas survey found that one in every nine Texas children under age 12 suffers from hunger. In low-income families, almost 22% of Texas children were hungry and 39% of children were at risk of hunger. This study confirmed that children from hungry families experience nearly twice the number of health problems as children from non-hungry households. Hungry children suffer from increased fatigue and irritability, more frequent headaches and ear infections, and a decreased ability to concentrate (39).

Survey results like these show that hunger, malnutrition, and growth stunting are still serious problems, and they demonstrate the need for federal food programs like WIC to help meet the nutritional needs of low-income children.

Iron-Deficiency Anemia

Iron is necessary for the formation of healthy red blood cells. It combines with protein to form hemoglobin, which is the red substance in the blood that transports oxygen to the cells and carbon dioxide away from the cells. When the body has enough iron, there is also an increased resistance to infection.

Iron deficiency occurs when there is a low dietary intake of iron, excessive blood loss or poor iron absorption. If iron deficiency persists, **anemia** can develop. Anemia is defined as

Symptoms of anemia *include:*
- *Fatigue*
- *Irritability*
- *Pale appearance*
- *Loss of appetite*
- *More colds and infections*

a reduction in hemoglobin concentration to levels below normal. Symptoms of anemia include fatigue, irritability, pale appearance, loss of appetite, and sometimes an increased frequency of colds and other infections.

Iron deficiency is a common nutrition problem among preschool children due to their rapid physical growth when extra iron is required for the production of body tissues. During the first two years of life, a child's brain attains two-thirds of its total growth, and untreated iron deficiency at this time can interfere with the development of the brain and nervous system.

Many children 1–2 years old may not be meeting the recommended dietary allowance for iron through their diet (40). Approximately 13% of Texas WIC participants, age 1–5, have low iron status. The prevalence of iron deficiency is higher among low-income children, and higher among black or Mexican-American children than among white children.

Causes of Iron-Deficiency Anemia

At 1 year of age, there's a sudden drop in dietary iron for most children when they switch from either iron-fortified formula or breastmilk to cow's milk, which is a poor source of dietary iron. What's more, some children drink more milk than they need and as a result, they don't eat enough iron-rich foods. This combination of a low intake of solid foods and excessive milk intake may contribute to iron-deficiency anemia.

Iron-deficiency anemia in preschoolers is often due to excessive milk intake, low intake of iron-rich foods, limited access to food and/or medical conditions.

After 2 years of age, children don't grow as fast, plus their diets are usually more varied, so the risk of iron deficiency decreases. In preschool children aged 3 years or older, dietary iron and iron status are usually adequate. Still for these older children, risks for iron deficiency include limited access to food because of low family income; migrant or refugee status; a low-iron or other specialized diet; or medical conditions that affect iron status, such inflammatory or bleeding disorders.

Preventing Iron-Deficiency Anemia

Parents and caregivers need to encourage preschoolers to eat a variety of foods from the Food Guide Pyramid every day, including sources of iron-rich foods. Meats contain heme iron, which is readily absorbed. Iron from non-meat sources isn't absorbed as well, but eating a food rich in vitamin C at the same meal will increase the amount of iron that the body absorbs.

Also, most young children shouldn't drink more than 16 ounces of milk a day. Parents should limit foods in the diet that are high in calories and low in nutrients including iron such as candy, soft drinks, chips, etc. Discourage the use of tea since it has no nutritive value and interferes with iron absorption.

Treating Iron-Deficiency Anemia

If a child's hematocrit or hemoglobin meets the WIC policy criteria for low iron status, WIC staff need to refer the child to a physician or child health clinic for treatment. In addition to nutrition counseling, the physician will generally give iron supplements for treatment of anemia. If the anemia doesn't respond to iron supplementation in about a month, the physician will order additional tests to determine the cause of anemia.

WIC iron status screening criteria

For ages 12–24 months: Hgb <11.0 g/dL and Hct <33.0%

For ages 2–5 years: Hgb <11.1 g/dL and Hct <33.0%

Lead Poisoning

The prevalence of elevated blood lead levels in children 6 months to 5 years has dropped dramatically in the last few decades. In 1984, three million children in the US had blood lead poisoning, which is defined as a blood level exceeding 15 micrograms per deciliter. This compares with less than 400,000 children during 1988–91. Although the prevalence of lead poisoning is declining, it's still a major public health concern because of the serious health problems it can cause.

Some of the decline in blood lead levels may be related to a decline in airborne lead. Also, there are now more efforts to educate the public about the risks from lead and to reduce lead levels in the home (41).

Lead poisoning occurs in young children for a number of reasons. First, they have a tendency to put their hands in their mouths, plus they like to chew or eat non-food items such as dirt, window sills, etc. Also, children's growing bodies absorb more lead than adults. Children under 7 years are at highest risk because their brains and internal organs are still developing.

The effects of lead depend on how much lead the child absorbs. Even low levels can lead to decreases in child's intelligence, and higher levels can lead to impairment of growth, kidney damage, seizures, coma and even death.

***Lead poisoning** can decrease intelligence, impair growth, damage kidneys and cause seizures, coma, and even death.*

Sources of lead include:

- Houses and playground equipment with lead-based paint (painted before 1980).
- Factories where lead-containing chemicals are used.
- Hobbies such as fishing with lead weights or reloading ammunition.
- Some pottery glazes contain lead.
- Some imported toys and candy wrappers contain lead paint/ink.
- Pipes may be lead-soldered and may leach lead into the drinking water.
- Folk medicines such as greta and azarcon contain powdered lead.

Preventing Lead Poisoning

Good nutrition practices can reduce the amount of lead that a child absorbs. Because more lead is absorbed on an empty stomach, it helps when a child eats three meals and two or three snacks each day. In addition, foods high in calcium and iron can reduce lead absorption.

Also, health specialists recommend storing foods in glass, plastic or pottery made with lead-free glaze (never use

imported pottery or pottery items not intended to be used with food). And it's best to use only cold water for drinking, cooking and preparing infant formula since lead from pipes is more likely to leach into hot water. Before using water, it helps to run it for 15–30 seconds or until it feels colder to help flush out the pipes. This is especially important when the water hasn't run for several hours (42).

Washing is another step in prevention: wash children's hands and faces before they eat; wash pacifiers and toys each time they fall on the ground; wash fruits and vegetables before cooking to remove soil that might contain lead; and wash hands and counter surfaces before preparing foods.

Testing for Lead Poisoning

Parents can have their children screened for lead poisoning as part of the Texas Health Steps well-child check-ups (if they are on Medicaid), or through their private physician. If a child has high a high blood lead level, it's important to evaluate the environment to determine the source of lead, and then separate the child from the source. Also, if the blood lead level is extremely high, a child can receive treatment.

Tooth Decay

Two out of every 10 preschool-aged children have had tooth decay in their primary (baby) teeth, and these children generally are from low-income and minorities families.

Certain foods high in sugars and starches promote tooth decay. Decay starts with bacteria found naturally in the plaque on the teeth. When mixed with sugar, the bacteria produce an acid that attacks the tooth surface and can create a hole or cavity.

Each time a child eats food with sugar or starch, the bacteria on the teeth have a chance to form acid. If a child snacks often on sugar-rich foods, his teeth are bathed in acid all day and tooth decay is more likely to occur.

Preventing Tooth Decay

Parents play a crucial role in caring for their young children's teeth early on, through both dental care and good nutrition. They can start by planning regular meals and snacks, and not allowing free access to food between meals. Good choices for snacks include cheese, fresh vegetables, and fresh fruit. Snacks that are not good for the teeth include cakes, candies, ice cream, and soft drinks. Parents should brush their children's teeth twice a day and floss them once a day.

Although fluoride isn't an essential nutrient, fluoridated drinking water is extremely beneficial in reducing dental caries. If the drinking water supply has fluoride levels less than 0.6 parts per million, then a dentist or pediatrician may prescribe oral fluoride supplementation for a preschooler. It's important to find out the level of fluoride in the drinking water in a particular community by calling the local health department, contacting the local water supplier, or consulting with a local dentist or pediatrician. The supplement dose is determined by the fluoride content of the drinking water as well as by the fluoride found in food, beverages, and toothpaste. The dentist or pediatrician will prescribe the appropriate dose.

Baby Bottle Tooth Decay

***To prevent baby bottle tooth decay**, parents shouldn't use bottles for juice or sweetened beverages. Also a child shouldn't have a bottle in bed or carry a bottle around throughout the day.*

Baby bottle tooth decay is a serious dental health concern, but it's something that parents can prevent. This problem occurs when infants or children are put to bed with a bottle or carry around a bottle of a sweetened liquid and drink from it throughout the day. The teeth are bathed in sugar, leading to cavities, especially on the upper front teeth. Parents should look for white spots on the upper front teeth near the gum line — these are early signs of baby bottle tooth decay. Also, a child should see a dentist by his 1st birthday (43).

Constipation

Constipation is defined as the passage of firm or hard stools. *Infrequent and/or irregular bowel movements do not by themselves indicate constipation*. Often constipation occurs along with other symptoms such as difficulty in the passage of stools, bloody stools, and abdominal pain.

Healthy children have a range of normal bowel patterns that varies depending on age and/or usual dietary intake. Among children 1 through 4 years of age, the frequency of stools varies from one every four days to two to three per day.

Most commonly, constipation in children is caused by poor toilet habits, inadequate amounts of fiber and fluid, lack of physical activity and/or stress. Also, a medical problem or medication can cause constipation.

Preventing Constipation

Parents can help their children prevent constipation through diet, regular physical activity, and regular bathroom habits. Preschool children should drink about 6–8 cups of fluid each day and eat a variety of foods based on the Food Guide Pyramid. In order to get enough fiber, it's especially important for children to eat five servings of fruits and vegetables each day and six servings of breads and cereals each day, with a focus on 100% whole grains.

Adequate fluids, fiber and physical activity can help prevent constipation in preschoolers.

At least 30 minutes of moderate physical activity on a daily basis is helpful. Also, parents should set regular schedules for taking children to the bathroom, and ask them to sit on the toilet with proper foot support for 5–10 minutes after each meal.

Treating Constipation

When a child is constipated, *gradually* add more fiber-rich foods the diet. High-fiber foods include cooked dry beans (such as black-eyed peas or pinto beans), broccoli, corn, baked potato with skin, strawberries, dried fruit such as raisins (except for children under 4), fruits with skin such as apples and pears, bran muffins, oatmeal, and bread labeled 100% whole wheat. As the child gets more fiber-rich foods, he also needs more fluids. Water and unsweetened juices are best. As for milk, preschoolers generally shouldn't drink more than 16 ounces per day. Likewise, most children shouldn't drink more than 6 ounces of juice per day as a child may drink too much juice and not eat enough solid foods.

Parents should avoid over-the-counter medications for constipation unless a doctor prescribes them. If vomiting, stomach pains, bloody stools, or poor growth accompany the constipation, or if it doesn't improve by above-mentioned suggestions, there may be a more serious problem and a physician should see the child (44).

Diarrhea

A child with diarrhea has an increase in frequency, fluidity, or volume of stools compared to his normal stools. As already mentioned, normal bowel patterns vary among healthy children, and the frequency of stools for preschool children varies from one every four days to two to three per day.

Diarrhea can be dangerous if not treated quickly because it can lead to a severe less of fluid from the body (dehydration).

Young children with diarrhea can quickly become dehydrated and, if they aren't treated immediately, the condition can be fatal. Diarrhea can be acute (lasting less than two weeks) or chronic (lasting longer than two weeks).

Acute diarrhea can result from a viral or bacterial infection or when a child ingests a poison. Conversely, children with chronic diarrhea may have a gastrointestinal disorder, infection, or cow's milk or soy-protein allergy. Also, some young children who drink too much fruit juice can get diarrhea because they aren't able to absorb the types of sugars in some juices.

Dietary Management of Acute Diarrhea to Prevent Dehydration

*An **oral electrolyte solution (OES)** contains sodium and potassium and is designed to replace lost body fluids.*

Treating acute diarrhea is two-fold: first, the child needs extra fluids and electrolytes to prevent dehydration, plus he needs to eat enough solid foods to stay nourished. Parents can use commercially produced **oral electrolyte solutions (OES)** such as Pedialyte® and Infalyte® if available and affordable. Or, they can make a homemade electrolyte solution by slowly adding 2 cups of boiled and cooled water and ¼ level

measuring teaspoon of salt to ½ to 1 cup of infant rice cereal. For children under 2, parents should give one-half cup of OES slowly every hour using a small spoon. If the child is over 2 years of age, they can give ½ to 1 cup every hour.

There are a number of fluids that parents shouldn't give to a child with acute diarrhea, unless they are the only fluids available or are the only fluids the child will take. These include sports drinks, Kool-Aid®, fruit juice, sweetened fruit drinks, or sweetened tea. Sugary solutions tend to increase diarrhea, so if resorting to these fluids, parents should dilute them first (e.g., ½ cup fruit juice mixed with ½ cup water).

In order to stay nourished, a child should continue to eat foods he normally eats, including meat or fish, eggs, dried beans, milk products, cooked vegetables and bananas.

Homemade Oral Electrolyte Solution

½ to 1 cup infant rice cereal

2 cups boiled water, cooled

¼ level teaspoon salt

Refer an Infant or Child with Diarrhea to a Doctor if … (45)

- the child has a fever above 99 degrees F
- diarrhea continues for more than 24 hours
- child has five or more episodes of watery diarrhea in 24 hours
- there are signs of dehydration (dry mouth and tongue, no tears when crying)

Adverse Food Reactions

An adverse food reaction is any negative reaction after eating a food. An adverse food reaction can be one of two types: a **food intolerance** or a **food allergy** (food hypersensitivity).

A food intolerance doesn't involve the immune system, although with many food intolerances, the gastrointestinal tract is involved. Food intolerances can be a result of bacteria

*A **food intolerance** is a negative reaction to a food that does not involve the immune system.*

*A **food allergy** (or food hypersensitivity) is a negative reaction to a food that involves the immune system, such as hives or swelling.*

such as *Salmonella*; drug-like substances in food such as caffeine; or digestive disorders, such as lactose intolerance. Food intolerances make up the majority of adverse reactions to foods, and people often mistakenly refer to them as food allergies.

A food allergy, on the other hand, involves a response by the immune system. When a person eats a food they're allergic to, his body produces antibodies to destroy the allergen, which is a protein in the food. Overall, only 2 to 4% of children are believed to have food allergies, and only a few foods have been found to cause most of the allergic reactions in children: milk, eggs, peanuts, soy, wheat, and shellfish. Usually a person isn't allergic to more than two or three foods.

Symptoms of Food Allergies

- Hives
- Swelling of the face, lips, and throat
- Rash
- Asthma
- Nausea and abdominal cramps
- Vomiting and diarrhea
- Anaphylactic shock

Testing for Food Allergies

To test for food allergies, a physician will take a careful history and perform a physical examination. Also, physicians can use skin prick tests with food extracts or radioallergosorbent (RAST) tests to initially food allergies. Once the suspected foods are identified, the next step is to eliminate them from the diet for 1 to 2 weeks. Then the foods are slowly added back to the child's diet to see if they still cause allergic reactions.

Treating a Food Allergy

The only way to treat a food allergy is to eliminate the food from the child's diet and educate the parents about avoiding the particular food. Parents need to learn to read food labels and look for "hidden forms" of the food(s) which cause the allergies. Also, they need to be sure that they still provide a balanced diet for their child. Sometimes a child can "grow out" of a food allergy, however, some allergies last longer than others, such as peanut and shellfish allergies (46, 47).

Preventing the Formation of Food Allergies

In infants with a family history of food allergies, breastfeeding can delay food allergies, especially if the mother avoids major allergens as milk, egg, peanut, and fish. Also, parents of high-risk children should avoid giving highly allergenic foods (milk, eggs, peanuts, and shellfish) for the first 2 to 3 years of life.

Hyperactivity and Diet

Hyperactivity or attention deficit-hyperactivity disorder (ADHD) refers to a group of various behavior problems that impairs a child's learning. Some symptoms of ADHD include hyperactivity, short attention span, talking excessively, unable to play quietly, easily distracted, etc. While research hasn't uncovered the cause of ADHD, ADHD can be treated with medications, psychotherapy, structured environments free of distractions, and special classroom assistance.

Some people claim that eliminating artificial food additives and naturally occurring salicylates from the diet (practiced in diets such as the Feingold diet), can improve behavior in children with ADHD. Studies don't support these claims, although if a family wishes to pursue this treatment for their child, there's no harm in placing the child on a food additive-free diet. In fact, there may be benefits because of improved family interaction. This is called the placebo effect (48).

Studies do not support claims that sugar, food additives, or salicylates cause hyperactivity in children.

Studies also fail to support the claim that sugar has an effect on hyperactivity, attention span, aggressive or disruptive behavior, or learning problems. A few children may have unusual reactions or rare allergies, but researchers haven't found sugar to be the cause in these instances (49).

Foodborne Illness

Foodborne illness can cause diarrhea and vomiting in young children, which can lead to dehydration. In some cases, foodborne illness may lead to death if the child is not treated soon enough.

Most foodborne illness is caused by bacteria that multiply rapidly at temperatures between 60 degrees F and 125 degrees F. Some of the bacteria responsible for foodborne illness include *Salmonella, Staphylococcus aureus, Clostridium perfringens, Campylobacter jejuni, Clostridium botulinum, Listeria monocytogenes, Escherichia coli* O157:H7, and *Yersinia enterocolitica*.

Foodborne illnesses are often linked to the consumption of

- inadequately cooked ground beef at home, camp, and day care centers;
- unpasteurized apple juice/apple cider (unwashed apples that have fallen to the ground may be contaminated from manure);
- unpasteurized milk at a dairy farm; and
- city water that has not been treated with chlorine (50, 51).

Proper cooking and pasteurization destroy harmful bacteria. Hamburgers need to reach an internal temperature of 157 degrees F to be safe. Visually, this means cooking the meat until it's gray (not pink) with clear juices. Children should only drink pasteurized apple juice and milk — pasteurization is a process whereby these beverages are heated to a high enough temperature to destroy germs that can cause illness. That means they shouldn't drink raw milk freshly obtained

from a cow, and it's a bad idea to buy fresh apple juice or apple cider from a roadside stand, unless it's been pasteurized.

Parents should follow food safety rules when shopping for, storing, preparing, and serving food. One of the most important rules is to keep certain foods out of the danger zone — the middle range of temperatures in which bacteria multiply. To avoid this danger zone, hot foods need to stay hot, at an internal temperature of 140 degrees F or above. Likewise, cold foods need to stay cold, at an internal temperature of 40 degrees F or below.

Keep hot foods hot and cold foods cold. Refrigerate leftovers promptly and be sure to wash hands and utensils frequently.

When foods are boiled, baked, fried and roasted, they reach high temperatures (160 degrees F to 212 degrees F) that kill most bacteria. Also, promptly refrigerating foods at 40 degrees F or below in containers that are less than 2 inches deep inhibits the growth of most bacteria. Freezing at 0 degrees F or below stops bacterial growth, but freezing doesn't kill bacteria that are already present. To avoid introducing bacteria that can cause foodborne illness, it is important to ensure that everything that touches food during preparation and serving is clean (52).

Self-Test Questions

1. List three possible health consequences of child obesity.

   _____

   _____

   _____

2. State three factors that may contribute to child obesity.

   _____

   _____

   _____

3. Provide three counseling points for parents which may help prevent a child from becoming overweight.

   _____

   _____

   _____

4. Mary is a 3-year-old child whose weight for height is over the 95th percentile. Her mother reports that Mary has been gaining weight for the last six months. Her mother is worried that Mary is getting too fat, so she limits the amounts and types of food she provides. State three counseling points for Mary's mother.

   _____

   _____

   _____

5. Juan is a 4-year-old who is a picky eater. His weight-for-height is below the 5th percentile. His parents are worried because he won't eat, so they make him sit at the table until he finishes his plate. State three counseling points for Juan's parents.

_____

_____

_____

6. List two health problems that hunger can cause in a preschooler.

_____

_____

7. List two possible causes of iron-deficiency anemia in preschoolers.

_____

_____

8. Betsy is a 2-year-old child with a low hemoglobin. Her mother says that Betsy is still on the bottle. Betsy doesn't like to eat meat. List three counseling points to cover with Betsy's mother.

_____

_____

_____

9. Explain two ways proper nutrition can reduce lead poisoning.

_____

_____

10. Ben is a 3-year-old who has never seen a dentist. His mother says he is a good eater, adding that "He likes to eat potato chips and cookies while watching TV." List three counseling points to cover with Ben's mother.

_____

_____

_____

11. Charlene is 4 years old. Her mother reports that Charlene has difficulty passing stools. Charlene eats mostly hot dogs, bread, Jell-O,® and milk. List three counseling points to cover with Charlene's mother.

_____

_____

_____

12. Ted is 1 year old. His mother reports that he has been having diarrhea for the last two days and she thinks he has a fever. List three counseling points to cover with Ted's mother.

_____

_____

_____

13. Name three foods which are most likely to cause allergic reactions in preschoolers.

_____

_____

_____

14. According to studies, how do sugar and artificial food additives affect a child with attention deficit hyperactivity disorder?

_____

15. List two food safety practices that reduce the risk of foodborne illness.

_____

_____

Practical Tips for Getting Kids to Eat Healthy Foods

Part 4

Objectives

After reading this section, you'll be more familiar with children's feeding skills and food preferences, as well as practical suggestions for parents and caregivers. Specifically you'll be able to:

1. list three ways that a parent can encourage a preschooler to feed himself;
2. explain why a child's appetite may decrease during the preschool years;
3. list at least three factors which can influence a preschooler's food preferences;
4. revise a menu in order to make it more acceptable to a preschooler;
5. list two ways 3- and 4-year-olds can help prepare foods in the kitchen; and
6. identify appropriate ways to manage three common eating problems of preschoolers.

Development of Feeding Skills in Young Children

Most children learn to feed themselves between ages 1 and 2. Needless to say, spills and messes are common, especially between 12 and 18 months of age. But by age 2, spills don't happen nearly as often.

Parents can encourage children to feed themselves in a number of ways. First, to help with spills, they can cover the floor under a child's seat with paper, vinyl or plastic. Second, since preschool children are interested in how food feels, parents can encourage finger-feeding by giving small pieces of food. It helps to cut meat, vegetables, bread and cheese into small strips that a toddler can easily pick up and handle. Third, parents can purchase a spoon or fork with a short, straight, broad, solid handle; the spoon should have a wide

mouth and the fork should have blunt tines. Children will begin to feed themselves with a spoon first and will learn to use a fork later. As children become more skilled with tableware, they gradually decrease the use of their fingers.

By 15 months of age, most children can manage the cup by themselves, although not expertly. They have difficulty lifting and tilting a cup and in lowering it to a tray after drinking. By 18 to 24 months of age, children can tip the cup more readily.

Rotary chewing movements (diagonal movement of the jaw as food is moved to the side or center of the mouth) are well established by age 2 years. Keep in mind that children under 4 have not fully developed their chewing and swallowing skills, so they are at risk of choking on certain foods.

Appetite, Food Preferences and Feeding Strategies

Although children's appetites, food preferences and eating habits will vary, there are some general things to consider when planning meals and introducing foods to preschoolers.

(1) A slower growth rate leads to a decreased appetite

Children grow the fastest during the first year of life. After the first year, weight gain slows down, and, because they're growing more slowly, most children's appetites will usually decrease.

(2) Mealtimes should be pleasant and positive

Children tend to prefer foods that are presented in pleasant, social situations. With things like cake, punch and cookies featured at parties and celebrations, it's no wonder that children learn to prefer these foods that they associate with happy times. On the other hand, many nutritious foods like meats and vegetables are often the focus of unpleasant situations - say, for example, when a parent forces a child to eat a their dinner before leaving the table, or bribes a child to eat his vegetables in order to watch TV.

So to keep mealtime positive, parents should follow these three important tips:

- Eat meals as a family, in a pleasant atmosphere, without arguing or scolding.

- Don't bribe a child with a reward to get him to eat his food.
- Introduce new foods to children in a neutral manner. If a child is forced to eat a food, he may learn to dislike the food.

(3) Children prefer familiar foods

Young children prefer familiar foods and are generally reluctant to try new foods. But if a child has more opportunities to see and try the same food under favorable conditions, he'll usually learn to accept what he initially rejected. Still, parents need to be patient — sometimes it takes eight to ten tries before a child decides he'll eat a certain food.

It helps to introduce a very small portion of a something new along with a familiar food. Again, parents need to be patient. If all a child does is look the new food or just feel or smell it, that's okay; it's a part of learning to accept it (53).

(4) Many children prefer plain foods

Children may be willing to eat plain foods rather than combination or casserole-type foods. Try separating foods on the plate — many children don't like foods to "run into each other."

(5) Children need easy-to-eat foods

Dry foods are especially hard for children to eat, so when planning a meal, balance dry foods with one or two moist foods. For instance, a slice of meat loaf (relatively dry) can be served with mashed potatoes and a little gravy.

Prepare foods so that a child can eat them with his fingers. Serve hard-cooked eggs in quarters, cut cooked meat into small strips, and serve cooked green beans as finger foods.

Before the age of 4, handling silverware is a difficult task, so most foods served to young children should be cut into bit-sized pieces. Certain small foods like cooked green peas can be especially difficult for a child to spoon up, so try mixing them with mashed potatoes for easier eating. To make soup easier to eat, serve it from a cup or make it slightly thicker so that it doesn't spill from the spoon as easily.

(6) Provide different textures

When planning meals for young children, it's important to offer different textures. Soft foods are easy to eat, crisp foods allow for easy chewing and sounds in the mouth, and chewy foods help a child use his emerging chewing skills without having too much to chew. Compared to adults, young children have a harder time chewing meat, so they usually prefer ground or soft meats like hamburgers or lunch meats.

(7) Offset strong flavors

In general, young children reject strong flavors. Parents can try cooking and serving strong-flavored vegetables such as cabbage with a mild-flavored sauce. Likewise, children often reject sharply tart fruits, so it helps to mix them with sweeter fruits. Tart oranges are popular when mixed with cooked peaches or bananas.

(8) Serve various colors

Children are more interested in food when there's a lot of color. Green, orange, yellow, and pink are common colors in food. Try adding a bit of tomato, carrot, or parsley to perk up a child's interest in eating.

(9) Don't serve foods that are too hot

A young child may prefer food served at room temperature. Be sure to first heat food thoroughly to kill any harmful bacteria, and then allow the food to cool a bit just before serving.

Kids in the Kitchen

Children who help prepare meals develop a more keen interest in food. Children of different ages can perform a variety of tasks when working one-on-one with an adult in the kitchen (see below). The keys to getting children to help in the kitchen are spending time with them and having plenty of patience. Also, parents should always stress the importance of washing hands before helping in the kitchen.

2- and 3-Year-Olds Can...

- shuck corn
- wash vegetables
- snap beans
- unload dishwasher (with help)
- wipe table
- tear lettuce
- shape burgers and meatballs
- peel bananas (if top is cut)
- place things in trash
- clear own place setting

3- and 4-Year-Olds Can...

- break eggs into bowl
- measure and mix ingredients
- open packages
- knead and shape dough

- pour cereal, milk and water
- make sandwiches
- toss salads
- "wash" baking utensils (water play)

5-Year-Olds Can...

- make cakes and cookies using baking mixes
- use blenders or hand mixers with close supervision
- help make pancakes, french toast, scrambled eggs, hot cereal and rice (with close supervision)
- set and clear the table
- load the dishwasher

Developing a Positive Feeding Relationship

Positive feeding experiences will help a child develop good eating habits for a lifetime. To develop a healthy feeding relationship, parents should be aware of the division of responsibility in feeding: *Parents are responsible for what they offer the child to eat; the child is responsible for how much and even whether he eats* (26).

Parent's Feeding Responsibilities

- Set a good example by eating and enjoying foods. Children tend to have the same feelings about food as their parents.
- Prepare and offer nutritious meals and snacks in a neutral fashion.
- Allow a child to eat the amount of food he wants.
- Don't make a child clean his plate. Even adults have a hard time knowing how hungry they are. Instead give small helpings and then provide a second helping if he's still hungry. But at times, his eyes will be bigger than his stomach and he won't eat everything.
- Provide meals and snacks on a regular schedule. A child's stomach is small and his energy needs are high, so he should have three meals a day with planned snacks in between. Don't allow panhandling for food at other times.

- Keep family mealtimes pleasant without arguing, fighting or scolding.
- Make meals a family event by including your child at the table, rather than feeding him separately.
- Help your child pay attention to his eating. To eat well, he needs to be calm, well-rested, and hungry. And make sure the TV is off; it can distract the whole family from eating and interferes with family social time.

Common Eating Problems and How to Manage Them

"He won't eat his vegetables."

Learning to like vegetables and vegetable juices can be challenging for children, while it seems easier to like fruit and fruit juices. Parents should offer a variety of both fruit and vegetables. To a certain extent, vegetables and fruits are alike nutritionally. As long as parents keep offering fruits and vegetables without pressuring the child to eat them, he'll eventually learn to like them.

"She's never willing to try anything new!"

Young children are cautious about new food. The first time they see a food they usually won't eat it. They might just look at it; they might just watch their parents eat it. They might look and watch for several meals. As long as parents don't pressure the child to eat the new food, she'll eventually try it out by putting some in her mouth and tasting it.

"Some days she does great, and then other days, she won't eat a thing!"

It's common for a child to eat a food enthusiastically today and reject it tomorrow. Children eat food because it tastes good. And food tastes different to them from one day to the next. It is also common for children to eat different amounts of food from one day to the next.

"He throws a fit when I serve a food he doesn't like."

A child needs to learn to be polite about refusing food. He shouldn't say "Yuk!" or act out at mealtime; a simple "No, thank you" will do.

"When he doesn't like what I've made, he asks me to make something else."

Parents shouldn't turn into short-order cooks if their child won't eat what's on the table. Instead they should simply tell him that he doesn't have to eat, but that this is his chance for food. Sometimes he might not eat anything. Parents don't need to worry. He'll make up his nutritional needs at another meal or snack later in the day or later the week.

"She asks for a lot of snacks and beverages between meals."

Parents should offer nutritious mid-morning and mid-afternoon snacks, but they shouldn't give handouts in-between. Also, they need to limit beverages between times. If a child drinks too much juice or milk, she'll eat poorly at meals. So sometimes it's best to offer water between meals and snacks, rather than milk, juice or other beverages that can fill the child up too much.

"Every day, it's the same thing — all he ever wants to eat is macaroni and cheese!"

One way to help reduce food jags is to plan meals ahead of time rather than asking a child what he wants to eat. When parents ask what he wants, he'll tell them he wants his favorite food. But when he doesn't get asked, he takes his chances like the rest of the family — sometimes he'll get lucky, sometimes he won't. Another option is to offer him the choice between two specific meals — either one or the other. By offering only specific choices, he doesn't have a chance to get into a food jag.

Also, parents should avoid using dessert as a reward. If a child is told she can't have dessert until she eats her vegetables, she learns that dessert must be wonderful while vegetables aren't so great. What's more, if the child eats all of

the other food on her plate just so she can have dessert, she's likely to overeat twice — first to get her meal down, and then again when she eats dessert after she's already full.

"She just won't eat enough."

Parents should schedule three meals and two snacks to try to get in enough food. On the other hand, they shouldn't let her panhandle for food between times, or let her drink all the juice or milk she wants. They need to try to keep mealtimes pleasant, and not scold her if she resists eating.

If a child seems to be growing poorly, parents should make an appointment with a health care provider to check and monitor growth.

Self-Test Questions

1. Why would a child's appetite decrease during the preschool years?

2. List three ways parents can encourage a child to learn to feed himself.

   _____

   _____

   _____

3. List three factors that can influence a preschooler's food preferences.

   _____

   _____

   _____

4. Revise the following menu in order to make it more acceptable to a preschooler.

   Baked pork chop
   Steamed cabbage
   Bread
   Whole orange
   Milk

5. List two food preparation activities for 3- and 4-year-old children.

   _____

   _____

6. State appropriate ways to manage each of these common eating problems of preschoolers.

   a. A child eats very little food.

   _____

   _____

   b. A child complains that she doesn't like the food that is being served and asks for something else to eat.

   _____

   _____

   c. A child eats a lot of snacks between meals and then won't eat much at mealtime.

   _____

   _____

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Appendixes

Appendix A *1989 Recommended Dietary Allowances (per Day)*

Nutrient	Children Ages 1–3	Children Ages 4–6
Protein	16 g	24 g
Vitamin A	400 µg RE	500 µg RE
Vitamin E	6 mg TE	7 mg TE
Vitamin K	15 µg	20 µg
Vitamin C	40 mg	45 mg
Iron	10 mg	10 mg
Zinc	10 mg	10 mg
Iodine	70 µg	90 µg
Selenium	20 µg	20 µg

Appendix B *1997 Dietary Reference Intakes for Various Nutrients (per Day)*

Nutrient	Children Ages 1–3	Children Ages 4–8
Calcium	500 mg	800 mg
Phosphorus	460 mg	500 mg
Magnesium	80 mg	130 mg
Vitamin D	5 µg	5 µg
Fluoride	0.7 mg	1.1 mg
Thiamine	0.5 mg	0.6 mg
Riboflavin	0.5 mg	0.6 mg
Niacin	6.0 mg	8.0 mg
Vitamin B_6	0.5 mg	0.6 mg
Folate	150 µg	200 µg
Vitamin B_{12}	0.9 µg	1.2 µg
Pantothenic Acid	2.0 mg	3.0 mg
Biotin	8.0 µg	12.0 µg
Choline	200 mg	250 mg

TEXAS DEPARTMENT OF HEALTH • BUREAU OF NUTRITION SERVICES

Preschool Nutrition Module

Answer Key for Self-Test Questions

Stock No. 13-41
November 2000

Division of Public Health Nutrition and Education

Bureau of Nutrition Services

Texas Department of Health

This is a companion publication to ***Preschool Nutrition Module,*** *stock number 13-40, also available from TDH.*

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Part 1: The Basics — Nutrition Guidelines for Preschoolers

1. List the five major food groups from the Food Guide Pyramid for Young Children and the number of servings that a preschool child needs from each group.

   Answer:

   Breads, cereals, rice, and pasta ..... 6 servings
   Fruits ..... 2 servings
   Vegetables ..... 3 servings
   Milk, yogurt, and cheese ..... 2 servings
   Meat, poultry, fish, dry beans, eggs,
   and nuts ..... 2 servings

2. Why do preschoolers need fewer servings than adults?

   Answer: Because their caloric and nutrient needs are less.

3. Write an example of a day's menu for a 3-year-old child.

   Answer: A day's menu for a 3-year-old child should include three meals and two to three snacks. It should include the recommended servings and serving sizes for a 3-year-old. Refer to Table 1: Daily Servings for 1- to 3-year-olds and 4- to 6-year-olds.

4. List four foods that are likely to cause choking in young children.

   Any of the following are acceptable answers: hot dogs, popcorn, round candies, whole grapes, peanuts, hard candy, large pieces of fruit with skin, raw peas, raw carrots, cookies, pieces of potato chips or pretzels, peanut butter, raisins, tough meat, and caramel candy.

5. Why do preschoolers need snacks?

   Answer: Preschoolers need snacks because they have small stomachs and need to eat small amounts of food more frequently to meet their nutrient needs and avoid being hungry. Preschoolers may need as many as three to four snacks a day along with their regular meals to sustain their energy level.

6. List four benefits of breastfeeding a child over 1 year old.

   Answer:

   - Breastfed toddlers have fewer and shorter illnesses.
   - Breastfeeding comforts a child who is tired, upset, ill, or hungry.
   - A sick child can easily digest and accept human milk as a source of food.
   - Breastfeeding provides physical closeness.

7. State three ways a parent can encourage their preschooler to be more physically active.

Any of the following are acceptable answers:

- Involve the whole family in activities.
- Limit time spent watching TV.
- Focus on fun when choosing activities.
- Plan family hikes, nature walks, camping and canoeing trips.
- Teach kids to swim and bicycle at a young age.
- Turn chores into fun activities.
- Check to see what sort of community recreation programs are available.

Part 2: Beyond the Basics — Specific Dietary Components to Consider

1. For each of the following foods listed, make a checkmark in the appropriate column if they are a good source of iron, vitamin C, vitamin A, or calcium.

Answer:

Food	Iron	Vitamin C	Vitamin A	Calcium
Cantaloupe		✓	✓	
Salmon with bones	✓			✓
Turnip greens	✓	✓	✓	✓

2. How much fluid does a preschool child need each day?

Answer: 6–8 cups of fluid per day.

3. List two reasons why parents should limit a preschooler's intake of juice and milk.

Any of the following are acceptable answers:

- Drinking too much milk can lead to iron-deficiency anemia in preschoolers because the milk takes the place of iron-rich foods.
- Too much apple and pear juice may cause diarrhea because the preschooler may not be able to absorb the types of carbohydrate found in these juices.
- Excessive intake of fruit juice could lead to poor growth because the juice displaces more nutritious foods.
- Drinking too much juice may lead to overweight because the excess fruit juice adds extra calories to a child's diet.

4. List three symptoms of high caffeine intake in young children.

   Any of the following are acceptable answers:
   anxiety, restlessness, irritability, nervousness, muscle pain, rapid and irregular heartbeat, upset mood, sleep delay, and stomach discomfort.

5. Why is the recommended fat intake for children under age 2 different that for older children?

   Answer: Before age 2, parents shouldn't restrict fat because it's important for proper brain growth and development.

6. List three good sources of fiber.

   Any of the following are acceptable answers: whole grain breads and cereals, dried beans and peas, and fruits and vegetables.

7. List two situations in which a child may need a multivitamin and mineral supplement.

   Any of the following are acceptable answers:
   - children who suffer from parental neglect or abuse
   - children with poor appetites
   - children with chronic diseases
   - children consuming vegan diets

Part 3: Preventing and Managing Common Nutrition Problems in Preschoolers

1. List three possible health consequences of child obesity.

   Any of the following are acceptable answers:
   - increased blood pressure
   - abnormal glucose tolerance
   - increased blood cholesterol
   - respiratory and orthopedic problems

2. State three factors that may contribute to child obesity.

   Any of the following are acceptable answers:
   Genetics, physical inactivity, excess calories, cultural, ethnic, socioeconomic, psychological, social, family.

3. Provide three counseling points for parents which may help prevent a child from becoming overweight.

   Any of the following are acceptable answers:

- Parents must observe a division of responsibility in feeding their child. Parents are responsible for providing wholesome and appealing food at regular and pleasant times. Children should be allowed to pick and choose from what parents have made available and to consume as much or as little as they want.
- Parents should be good role models.
- Parents should provide a wide variety of foods including fruits and vegetables.
- Desserts shouldn't be used as a reward or punishment.

4. Mary is a 3-year-old child whose weight-for-height is over the 95th percentile. Her mother reports that Mary has been gaining weight for the last six months. Her mother is worried that Mary is getting too fat, so she limits the amounts and types of food she provides. State three counseling points for Mary's mother.

   Any of the following are acceptable answers:
   - Restricting a child's food intake does not work.
   - Parents should feed an overweight child the same as a child who is not overweight.
   - Parents should help the child to feel good about herself.
   - Ask parents if they know why the child is gaining too much weight — were there any changes that were going on in the family at that time?
   - Ask the parent if the child has received a recent check-up by a physician.

5. Juan is a 4-year-old who is a picky eater. His weight-for-height is below the 5th percentile. His parents are worried because he won't eat, so they makes him sit at the table until he finishes his plate. State three counseling points for Juan's parents.

   Any of the following are acceptable answers:
   - Don't pressure the child to eat.
   - Parents should offer a variety of food at mealtimes and allow the child to select what and how much he wants to eat.
   - Meals should not be restricted in fat.
   - Ask the parents if the child has had a well-child check-up by a physician.

6. List two health problems that hunger can cause in a preschooler.

   Any of the following are acceptable answers: fatigue, irritability, frequent headaches, ear infections, decreased ability to concentrate.

7. List two possible causes of iron-deficiency anemia in preschoolers.

   Any of the following are acceptable answers:
   - Excessive milk intake in 1- to 2-year-old
   - Low intake of iron-rich foods
   - Limited access to food
   - Medical conditions that affect iron status

8. Betsy is a 2-year-old child with a low hemoglobin. Her mother says that Betsy is still on the bottle. Betsy doesn't like to eat meat. List three counseling points to cover with Betsy's mother.

   Any of the following are acceptable answers:
   - Betsy should be weaned from the bottle and eat more of a varied diet.
   - If Betsy doesn't like to eat meat, she should get other iron-rich foods such as dried beans and peas, fortified breakfast cereal, greens, etc.
   - She should also eat a food rich in Vitamin C along with iron-rich foods to increase iron absorption.
   - Refer Betsy to a physician for treatment of anemia.

9. Explain two ways proper nutrition can reduce lead poisoning.

   Answer:
   - More lead is absorbed on an empty stomach, so a child that eats three meals and several snacks each day is at less risk of lead poisoning.
   - Foods high in calcium and iron can reduce lead absorption.

10. Ben is a 3-year-old who has never seen a dentist. His mother says he is a good eater, adding that "He likes to eat potato chips and cookies while watching TV." List three counseling points to cover with Ben's mother.
    - Parents should schedule an appointment with a dentist for the child.
    - Parents should limit access to foods between meals — especially foods high in sugar or starch.
    - Good snacks include cheese, fresh vegetables, fresh fruit, and cheese.
    - Parents should brush the child's teeth twice a day and floss once a day.

11. Charlene is 4 years old. Her mother reports that Charlene has difficulty passing stools. Charlene eats mostly hot dogs, bread, Jell-O,® and milk. List three counseling points to cover with Charlene's mother.

    Answer:
    - Parents should gradually add fiber-rich foods and fluids to Charlene's diet.
    - Parents should encourage Charlene to get 30 minutes of physical activity each day.
    - Milk intake may need to be limited to 16 ounces a day to encourage consumption of other foods and more fiber.

12. Ted is 1 year old. His mother reports that he has been having diarrhea for the last two days and she thinks he has a fever. List three counseling points to cover with Ted's mother.

    Any of the following are acceptable answers:
    - Refer Ted to a physician if the child has a fever above 99 degrees F.

- Parents should prevent dehydration by increasing fluids with an electrolyte mixture (commercially prepared or homemade)
- Parents should continue feeding Ted if he wants to eat.
- Parents should avoid giving sugary drinks such as sodas, sports drinks and fruit juices.

13. Name three foods which are most likely to cause allergic reactions in preschoolers.
    Any of the following are acceptable answers: milk, eggs, peanuts, soy, wheat, and shellfish.

14. What effects can sugar and artificial food additives have on a child with attention deficit hyperactivity disorder?
    Answer: Studies show that artificial food additives and sugar do not have any adverse effects on a child with ADHD.

15. List two food safety practices that reduce the risk of foodborne illness.
    Any of the following are acceptable answers:
    - Only drink pasteurized apple juice and milk.
    - Hamburger meat should be cooked until it's gray and the juices are clear.
    - Foods should be held at 140 degrees F or below 40 degrees F.
    - Everything that touches food during preparation and serving is clean.

Part 4: Practical Tips for Getting Kids to Eat Healthy Foods

1. Why would a child's appetite decrease during the preschool years?
   Answer: A child's growth slows after the first year of life, so the child's appetite may decrease.

2. List three ways parents can encourage a child to learn to feed himself.
   Answer:
   - covering the floor directly under a child's seat with paper or plastic;
   - serving finger foods; and
   - purchasing a spoon or fork with a short, straight, broad, solid handle; the spoon should have a wide mouth and the fork should have blunt tines.

3. List three factors that can influence a preschooler's food preferences.

Any of the following are acceptable answers:

- Children prefer foods that they are familiar with.
- Children are often reluctant to try new foods, and if a child is forced to eat something new, he may learn to dislike the food.
- Serving foods in pleasant and positive situations is helpful.
- Many children prefer plain foods.
- Children tend to prefer foods that are easy to eat.
- Offering different textures can be helpful.
- Serving foods of different colors can encourage children.
- Serving foods at moderate rather than hot temperatures can be helpful.

4. Revise the following menu in order to make it more acceptable to a preschooler.

   Baked pork chop
   Steamed cabbage
   Bread
   Whole orange
   Milk

   There are a number of changes you could make to the menu:

   - Since pork chops are dry, serve them with a sauce for dipping. Also, cut the pork chop into strips so it's easier to eat. Or serve a different meat like hamburger.
   - Most children don't like the strong flavor of steamed cabbage, so try serving it with a sauce, or serve a different vegetable instead, like green beans.
   - The orange needs to be cut-up into smaller pieces, and since it's tart, mix it with other fruits such as sliced bananas.
   - There isn't much color in the menu, so add a slice of tomato or something else to add color.

5. List two food preparation activities for 3- and 4-year-old children.

   Any of the following are acceptable answers:

   - Break eggs into bowl
   - Measure and mix ingredients
   - Open packages
   - Knead and shape dough
   - Pour cereal, milk and water
   - Make sandwiches
   - Toss salad
   - "Wash" baking utensils (water play)

6. State appropriate ways to manage each of the common eating problems of preschoolers.

   a. A child eats very little food.

   Answer: Put a variety of foods on the table and let the child pick and choose *what* he wants to eat, plus let him decide *how much* he wants to eat. Also, schedule three meals and three snacks throughout the day; don't let the child panhandle in between times.

   b. A child complains that she doesn't like the food that is being served and asks for something else to eat.

   Answer: Tell her that she doesn't have to eat, but this is her chance for food. If she won't eat what's on the table, don't be a short-order cook.

   c. A child eats a lot of snacks between meals and then won't eat much at mealtime.

   Answer: Snacks should be offered mid-morning and mid-afternoon, but don't give handouts between times. If a child fills up on snacks or beverages between meals, he won't be hungry for his regular meals.