Introduction to the Preschool Child Nutrition Module

for the Supervising Nutritionist and the Staff Member Studying the Module

The *Preschool Child Nutrition Module* is part of the *Nutrition Education Series* of the *Florida Nutrition Training Guide.* Other modules in the *Nutrition Education Series* are: Basic Nutrition, Prenatal & Postpartum Nutrition, Infant Nutrition, and Breastfeeding.

The *Preschool Child Nutrition Module* consists of the following 3 components:

- the module itself, to be studied by the staff member. The module is the "textbook" which contains information about preschool child nutrition.
- the workbook, to be completed by the staff member. The workbook contains: the self-checks, the answer key to the self-checks, and the practical activity.
- the evaluation materials for the supervising nutritionist. The evaluation materials contain: the answer key to the practical activity, the posttest, and the answer key to the posttest.

Instructions for using the module, the workbook, and the evaluation materials are contained within each of these documents. Staff members, while progressing through the module and workbook, should read all the instructions—in the order in which they are presented—to ensure proper completion of all requirements. The supervising nutritionist should also read the instructions in both the module and the workbook, as well as in the evaluation materials, in order to understand their basic format, his/her responsibilities as a supervising nutritionist, and the appropriate evaluation procedures to use.

The *Nutrition Education Series* of the *Florida Nutrition Training Guide* has been revised and updated to provide standardized nutrition training to staff members such as dietetic technicians and clerical staff (who provide newsletter nutrition education contacts).[1] In addition, this newly revised *Nutrition Education Series* has been developed so that a more diverse audience might also benefit from its use; e.g., entry-level nutrition professional staff, experienced nutrition staff new to public health, or other professional staff such as nurses. *(over)*

1. Refer to the *WIC Procedure Manual* (DHM 150-24) for complete information and policies regarding which staff members are required to complete the *Florida Nutrition Training Guide* before they are eligible to provide specific nutrition services to WIC clients.

The learning materials in each module of the *Florida Nutrition Training Guide* are developed for individualized, self-paced instruction and are competency-based. In most cases, the staff member will be studying the modules independently, and not in a group setting. The supervising nutritionist should serve as a facilitator, assisting the staff member as needed and evaluating the staff member's performance of specified activities. The study of each module, its workbook activities, and its posttest should take no more than 10 hours to complete. Therefore, the entire *Nutrition Education Series* of the *Florida Nutrition Training Guide* is approximately a 50-hour training program (but, in many cases, can be successfully completed in less time).

If you have any questions about the *Florida Nutrition Training Guide,* please contact the Nutrition Unit, WIC and Nutrition Services, Florida Department of Health at (850) 245-4202.

Instructions on HOW TO DO this Module

1. Read the Knowledge Objectives and the Performance Objectives that follow these instructions. These objectives specify what you are expected to learn (Knowledge Objectives) and what you will be expected to do (Performance Objectives) as a result of studying this *Module.*

2. Begin reading and studying the *Module.* This *Module* is designed for individualized instruction. Read the information at your own pace, or according to the timelines established by your supervising nutritionist.

3. Stop when you come to a *Self-Check* section and complete the assigned *Self-Check* questions right away. The *Self-Check* questions can be found in the *Workbook for the Preschool Child Nutrition Module*. Request this *Workbook* from your supervising nutritionist; it is yours to work in and keep. The *Workbook* contains the: *Self-Check questions, Answer Key to the Self-Check questions,* and *Practical Activity.* **Use your Workbook to record your answers—please do not write in this book.**

4. After you complete a *Self-Check* section, immediately check your answers against the *Answer Key*, which follows the *Self-Check* questions in your *Workbook*. If you have incorrect answers, re-read the appropriate section of text to find, and then record, the correct answer(s). Then, move onto the next new section in the module.

5. Continue to read and study the *Module*—repeating steps 2, 3, and 4 of these instructions—until you reach the end of the *Module.* At the end of the *Module,* you are asked to do the *Practical Activity for the Performance Objective*.

6. Complete the *Practical Activity*, which also can be found in your *Workbook*. When you complete your *Practical Activity*, submit it to your supervising nutritionist, who will, in turn, grade and evaluate it.[1] If you answer at least 85% of the questions and assignments correctly and completely, this is considered acceptable completion.

7. Arrange for a convenient time to take the *Posttest*, and also for the follow-up conference between you and your supervising nutritionist.[1] The supervising nutritionist will give you a copy of the *Posttest* at the arranged time. The *Posttest* is ***not*** an open book test.

Note: The *Posttest* measures your mastery of the Knowledge Objectives. Thus, to prepare for the *Posttest*, **review the Knowledge Objectives.** Each *Posttest* question is directly related to one of the Knowledge Objectives.

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1. **Note to the Supervising Nutritionist:** The *Answer Key to the Practical Activity*, the *Posttest*, and the *Answer Key to the Posttest* can be found in the *Evaluation Materials for the Supervising Nutritionist.*

Objectives of the Preschool Child Nutrition Module

Knowledge Objectives

The staff member will be able to:

1. Identify the reasons why it is important to help children develop positive food patterns.

2. Discuss what can be done to provide a positive environment for a child to begin forming healthy and enjoyable eating and exercise habits.

3. State twelve (12) tips which can help parents foster the development of their child's healthy eating habits.

4. Explain what to do about the following eating behavior problems that are common during the preschool years:

- introducing new foods
- food dislikes
- refusal to eat
- dawdling or playing with food
- "food jags"

5. State why serving sizes are smaller for preschool children under the age of 4 when compared to older children and adults, and explain why it is important to serve *small* amounts of a *variety* of foods each day.

6. *a.* Recognize the following components of the Food Guide Pyramid as they apply to preschool children:

- foods contained within each group
- nutrients provided by each food group

b. Locate the following information pertaining to the Food Guide Pyramid in order to provide correct information to parents/caregivers of preschool children:

- appropriate serving sizes for preschool children
- how many servings are needed each day for preschool children to meet their nutrition needs

7. Identify foods that are not recommended for preschool children because they might cause choking.

8. Identify foods that preschool children generally like and foods that preschool children generally dislike.

9. Explain how snacks and breakfast can play an important role in the diet of a preschool child.

10. Discuss how much fiber is recommended for preschool children and identify what foods are good sources of fiber.

11. Identify foods that are good sources of calcium.

12. Identify foods which would be included in a heart healthy way of eating for a preschooler. Discuss those situations in which foods *higher in fat* should be consumed.

13. Identify ways to prevent and/or treat these common nutrition-related concerns/ problems of preschool children: overweight, iron-deficiency anemia, lead poisoning, dental caries, constipation, diarrhea, and food-induced reactions.

14. State the specific types of fish that have a high mercury content and therefore, should not be consumed by young children.

15. State the physical activity guidelines for toddlers and preschoolers.

Performance Objectives

After reviewing the case study of a 3-year-old preschooler, the staff member will be able to analyze and evaluate the information presented in the case study and demonstrate an ability to offer solutions and provide appropriate basic nutrition education and counseling tips that address the nutrition needs of this preschool child.

The staff member will be able to:

1. Identify three major "problem areas" presented in the case study.

2. Demonstrate an ability to provide appropriate basic nutrition counseling to the preschooler's parents regarding ways to improve their child's eating patterns. Recommendations to the parents will include suggested dietary changes to help control or slow down their child's rate of weight gain; ways that the parents can have a positive impact on their child's eating habits; and suggestions for increasing their child's physical activity.

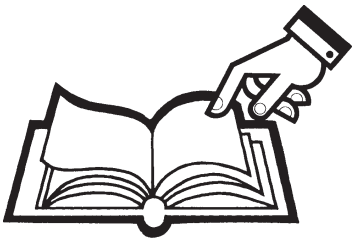
3. Provide appropriate information to share with the preschooler's parents regarding good dental hygiene for their child.

Note: Knowledge Objectives 1–15 directly relate to the *Posttest* that the staff member takes as the final requirement for successful completion of this *Module*.

Performance Objectives 1–3 directly relate to the *Practical Activity* that the staff member completes after his/her study of this module; the *Practical Activity* is located in the *Workbook for the Preschool Child Nutrition Module*.

The *Posttest* and the *Practical Activity* will be graded/evaluated by the supervising nutritionist.

Glossary for the Preschool Child Nutrition Module



Allergen. Something that *causes* allergic symptoms. In the case of a true food allergy, the allergen is the specific substance (usually a protein) in the food causing the allergy. (Refer to the section in this module: "Food-Induced Reactions" for information about this topic.)

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

Baby bottle tooth decay. A form of *early childhood caries* (ECC) which results from the long-term exposure of the teeth to sweetened beverages, juice, or even milk. Sugar from the fluid is digested by bacteria in the mouth, acid is produced by the bacteria, and the teeth decay. This often occurs when bottles are used as a pacifier and/or an infant or young child is allowed to go to bed with a bottle in his/her mouth, or carries a bottle throughout the day to suck on. Also, extended and repetitive use of a no-spill training cup can be associated with early childhood tooth decay.

Body Mass Index (BMI). Measures weight in relation to height. BMI can be calculated using either of these formulas: pounds/(inches)^2 x 703 **or** kilograms/(meters)^2 x 100.

Caregiver. For purposes of this module, "caregiver" refers to the person(s) who care(s) for the child. Most frequently this will be the parent, grandparent, or other relative. Caregiver may also refer to an individual who feeds and cares for the child during the day, for example, a babysitter or daycare provider.

Diabetes. A disease in which the individual is not able to utilize sugar properly because of a lack of the enzyme insulin, or because the body is not able to properly use the insulin which is present.

Food additives. Substances added to food to improve, enhance, or preserve the food.

Food allergy. See food hypersensitivity.

Food hypersensitivity. When there is a reaction of the immune system which results from eating a food or food additive. That is, the body produces antibodies specific to a particular substance; when it encounters the substance again, body chemicals are released which cause the allergic symptoms. This is a true "food allergy." The most common food allergens in the United States include cow's milk, wheat, fish, shellfish, eggs, peanuts, and tree nuts.

Food intolerance. An abnormal response (for example, cramps or diarrhea) to a food or food additive. It differs from a true food allergy (food hypersensitivity) because it does not involve an immune reaction. Food intolerance can have a variety of causes; for example, having an insufficient amount of a digestive enzyme to properly digest a food.

Food poisoning. Illness caused by eating foods which contain toxins (poison).

Health care provider. For purposes of this module, "health care provider" refers to the person or facility providing the primary source of medical care for the child; such as, the family doctor, pediatrician, or health clinic.

Heart healthy foods. Foods that are low in saturated fat, trans fat, total fat, dietary cholesterol, and sodium.

Hematocrit (Hct) test. This test measures the percentage of red blood cells in a sample of whole blood.

Hemoglobin (Hgb) test. This test measures the concentration of hemoglobin in a sample of whole blood. Hemoglobin is the iron-containing pigment of the red blood cells that carries and releases oxygen to the body cells.

Hyperlipidemia. Excess amounts of fats or lipids in the blood.

Hypertension. High blood pressure.

Nutritionist. For purposes of this module, "nutritionist" refers to a licensed nutritionist. In some cases, however, nutrition education and counseling services can be provided by other staff members, e.g., nutrition educators, nurses, and dietetic technicians. Refer to the *WIC Procedure Manual* (DHM 150-24), Chapter 6, Nutrition Education, for policies regarding the staff members who are qualified to provide nutrition education and counseling services to medically high risk, high risk, and low risk clients.

Overweight. A child who is 2 years of age or older is generally considered to be overweight if his/her BMI-for-age is at or above the 95th percentile. A child who is 2 years of age or older is considered to be at risk of becoming overweight if his/her BMI-for-age is greater than or equal to the 85th percentile and less than the 95th percentile.

Preschool Age. For purposes of this module, "preschool age" refers to a child who is 1 to 5 years of age.

Trace Nutrients. Essential substances [all vitamins and some minerals, such as iron, would be considered trace nutrients] which are needed by the body in very small (trace) amounts. For example, zinc (a mineral) and folic acid (a vitamin) are considered trace nutrients. They are essential for life, the body cannot produce them, and they are needed in very small amounts.

Part 1: Eating Behavior

Goals of Good Nutrition

During the preschool years, from ages 1 to 5, young children go through many changes which influence the *amount* of food they eat, the *way* the food is eaten, and their *food preferences.* The diets of young children are influenced by their growth rate, their physical maturity and development, their participation in active play, and their personality development. During these early years, many lifelong food habits, likes, and dislikes are established. Parents, caregivers, and the child's eating environment help to shape the child's attitude and behavior toward food.

Good nutrition and a healthful diet are necessary for both the physical and mental development of the preschool child. The *nutrients in food* and the *eating process* should help the child to:

- attain optimal physical and mental growth
- resist infection and disease
- develop motor skills
- grow intellectually and mature psychologically
- form good eating habits
- learn to socialize with others

Development of Food Habits

Food habits are *taught.* Learning to develop positive food patterns from an early age is an important goal. Food habits and attitudes established early in life can affect food choices and therefore one's nutritional status throughout a lifetime. For this reason, it is important for staff members to convey to the child's parent/caregiver the benefits of establishing healthy eating habits for preschool age children.

After a child reaches one year of age, changes in his/her food intake occur. At this time, the child's rate of growth slows down and his/her appetite decreases or is erratic.

As children develop and mature, they may go through stages when they refuse certain foods or request a limited variety of foods. If these situations are not handled appropriately, serious eating problems can develop. (Further discussion of eating problems and their solutions are contained later in this module.) Parents and caregivers should be encouraged to prepare a wide variety of foods in order to provide children with the *opportunity* to learn to like them.

It is in the family that children learn cultural food patterns, what foods are desirable, how and when these foods are to be eaten, and the rules of conduct while eating. Mealtime is also a time for socialization with the family. Children observe family members and imitate their attitudes toward food. Shared family meals can also give children a sense of identity and acceptance and provide a positive outlet for the attention children need and the opportunity to listen and be heard. It may seem as another obligation or burden to sit down together for a family meal; but family meals may be one of the few times family members will be together. It might be useful to discuss with parents what they could do to make shared family mealtimes a reality for their family.

Creating a Positive Eating Environment

The eating environment must be comfortable and relaxed in order for children to develop healthy eating habits. Mealtime can be uncomfortable if the preschooler is not seated properly and securely, the utensils are inappropriate, or the surroundings are unpleasant. The following considerations will provide a positive environment for the child to enjoy meals and begin forming lifelong food patterns. Encourage parents to:

- Eat family meals together regularly. It provides the security of family identity, the opportunity to socialize and to observe and learn table manners.
- Allow mealtimes to be relaxed, happy times. This is not the time for punishments or quarrels.
- Avoid distractions such as having the television on during a meal.
- Assist and remind children to use spoons and forks, but not to be discouraged when children alternate between use of their fingers and tableware. With encouragement and parental example, children gradually decrease eating foods with their fingers.
- Provide child-appropriate utensils, dishware, and sitting arrangements, such as:

spoons and forks: small handle that fits easily in child's hand; small blunt tips on spoons and forks; increase the size of utensils as the child develops.

cups and glasses: small enough to be easily grasped by the child yet sturdy enough to sit firmly on the table; unbreakable.

plates and bowls: sturdy and durable; "child-sized" with sides that the child can use to push food against.

chair: one that won't tip and is positioned so that food can be easily reached.

Fostering Healthy Eating Habits

Here are a dozen tips to help parents guide the development of their child's healthy eating habits:

Be a smart gatekeeper. Parents should buy only the foods they want their children to eat. If children munch on doughnuts and chips, it is unreasonable to think they will be hungry enough to eat a meal. If foods like sweets and chips are commonly eaten, it is also less likely that foods which are not as sweet or salty will seem as tasty.

Variety is important, but only introduce one new food at a time. Offer a small amount of the new food with a favorite food. Encourage but do not force children to try at least one bite of a new food. If the food is rejected, reintroduce the food again—and again—and again. It may take many exposures to a new food before a child is ready to taste it and it may take a lot of tastes before a child likes it.

Allow children to have the same freedom of choice that others have at meals.

Set a good example by eating moderate amounts of a wide variety of foods from all food groups and limiting the use of the salt shaker, fats, and sugars. Food preferences and eating habits of the parents and other family members are often imitated by their children.

Encourage children to help with food preparation. They may be more likely to eat food they helped prepare.

Offer foods from all the food groups daily. If a child does not have access to foods from all food groups, it will be impossible for the child to choose a balanced diet.

Serve small portions especially for children under age 4. Small amounts on small dishes allow children the satisfaction of finishing the food. They will ask for more if they are still hungry.

Behavior that is rewarded is repeated. Ignore non-eating and praise desirable mealtime behavior. Pay attention to your children when they are eating appropriately and include them in the family conversation.

Avoid making dessert a "reward" for a clean plate—this can make sweets even more desirable and nutritious foods less desirable. It might also encourage overeating.

If the child goes on a "food jag"—requesting one food often—do not be alarmed. Snacktime may be a good time to allow your child to choose a desired food. Parents should continue to serve other foods at mealtimes and not be a short-order cook for the desired food. The child will get bored with that one food if an issue is not made of it.

Don't force children to eat. Appetites vary from day to day and during illness. If a child does not eat all the food on his/her plate, remove the plate and let the child wait until the next meal or until the next planned snack. Healthy children will eat when they are hungry. Encouraging children to clean their plates when they are no longer hungry may lead to overeating or developing an aversion to food.

A healthy appetite depends on adequate play, rest, sleep, and *regular mealtimes*.

Self–Check Preschool Nutrition

This begins a series of Self-Check Questions that occur throughout this module. The Self-Checks are contained in the "Workbook for the Preschool Child Nutrition Module."

Each time you come to a Self-Check assignment in this module (highlighted with the tricycle logo—see above), go to your Workbook and complete the assigned Preschool Self-Check Questions right away. Record your answers directly in your Workbook. ***Please do not write in this book!***

After completing each assigned set of Self-Check Questions in your Workbook, you should immediately correct your responses by using the "Answer Key to the Self-Check Questions" that is also contained in the Workbook for the Preschool Child Nutrition Module.

✎ **GO TO** *the Workbook for the Preschool Child Nutrition Module and complete Self-Check Questions 1–7 right now.*

After completing Questions 1–7 , immediately check your answers against the Answer Key to the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.

Follow this procedure for all the Self-Checks.

Food Problems

Food problems during the preschool years are a common part of the maturation process. Parents and other caregivers must be encouraged to deal with the problems appropriately to avoid making mealtime an unpleasant situation for all. In general, negative behaviors should be ignored, and positive behaviors reinforced.

Study the chart on the following page, *Figure 1. Food Problems*. It can be a helpful guide when offering solutions to parents of preschool children.

Figure 1. **Food Problems**[1]

The Problem	How Child Sees It	How Parent Sees It	What Parent Should Do About It
Introducing new foods	Here is something new. Child is curious, but probably distrustful of the unknown.	Parent wants child to learn as early as possible to eat and enjoy a variety of foods.	Parent should: (1) Introduce only one new food at a time. (2) Offer a very small amount at first, at the beginning of each meal. (3) When appropriate, mix the food with another food the child likes. (4) Allow plenty of time for the child to look at and examine the food. (5) Do not try to introduce a new food when a child does not feel well or is irritable. If the food is turned down, don't make a fuss. Offer the food again a few days later.
Food dislikes	Child is asserting his/her independence by rejecting something which does not appeal to him/her. Or, child may just not like the taste.	Parent wants the child to overcome the dislike if possible.	Parent should: (1) Refrain from making an issue of the situation as this is likely to make the child more determined. (2) Try combining the food with other favorites. (3) Offer small servings. (4) Prepare the food in a different way. A fruit or vegetable might be served raw. (Check the section about choking to make sure it's not a hazardous food to preschoolers when served raw.) Milk might be used in other dishes. (5) Set a good example. (6) Remember, children—as well as adults—are entitled to a few dislikes!
Refusal to eat	Child may be asserting his/her independence or may actually not feel like eating. Child may just not be hungry for some reason.	Parent feels the child needs the food and must in some way be made to eat.	If this only happens occasionally and the child appears to feel well, the parent should simply remove the child's food and let him/her wait until the next meal. There should be no bribes or punishment. A skipped meal will not do damage to a healthy child. If the child is ill, consult the child's health care provider. Few well children starve themselves unless food becomes a weapon against parents!
Dawdling or playing with food	Child may not be hungry or may be trying to attract attention.	Parent probably becomes irritable and feels that he/she must "take over" and make the child hurry and eat.	Parent should: (1) Allow a reasonable amount of time. (2) Offer help if it is needed. (3) Explain that the food will be removed when the child is finished. (4) Refrain from making a "scene." This may be what the child wants. (5) Once the food is removed, parent should give the child no more food until the next planned meal or snack.
"Food jags"	A certain food or food combination appeals to the child and he/she wants it often.	Parent feels that it is not good for the child to eat the same thing at each meal and/or every day.	It is not unusual for a child or adult to have a brief preference for a certain food or food combination. Usually, the "jag" will not last long, if an issue is not made of it. At times, parents should offer choices, including the desired food, at snacktime. Parents should not short-order cook the desired food at mealtimes when other foods have been prepared.

1. Source: Adapted from "Tots at the Table" booklet, National Live Stock & Meat Board. Chicago: 1978, pp. 22-23. Adapted with permission from the National Live Stock & Meat Board.

"Managing" the Preschool Child's Eating Habits

Ellyn Satter, R.D., in her book *Child of Mine*, reminds parents about "managing" their children's eating habits:

♦ **Parents/caregivers** are responsible for
what their children are *offered* to eat
where they eat
when they eat.

Parents do not have to feel guilty or compelled to make special foods for a child when they serve foods other than what their child is demanding to eat.

♦ **Children** are responsible for
how much of the food they want to eat.

Parents help a child develop independence and the ability to listen to their own hunger cues by allowing the child to pick and choose from the foods that have been offered.

♦ **Children under 4 years of age** need *child-sized* portions.
Child-sized portions are much less than what adults need.
Children can be overwhelmed by too much food on their plate.

Adapted from: *Child of Mine: Feeding with Love and Good Sense,* by Ellyn Satter, R.D., Bull Publishing Company, Palo Alto, CA, 1983.

✎ **GO TO** *the Workbook for the Preschool Child Nutrition Module and complete Self-Check Questions 8–12 right now. Then, immediately check your answers against the Answer Key for the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.*

Part 2: Nutritional Requirements

Dietary Reference Intakes

The Institute of Medicine of the National Academy of Sciences develops reference values for the intake of nutrients by Americans. These reference values are known as ***Dietary Reference Intakes (DRIs)***. DRIs can be used for planning and assessing diets for healthy populations and are a way of presenting information about recommended nutrient intakes. The reference values are updated periodically based on new scientific research findings.

The DRIs include:

- **Recommended Dietary Allowances (RDAs);**
- **Adequate Intake (AI)**;
- Estimated Average Requirement (EAR); and
- Tolerable Upper Intake Level (UL).

For this module, we will discuss only the **RDAs** and **AIs**.

Definitions of RDA and AI

Recommended Dietary Allowance (RDA): the average daily dietary nutrient intake level sufficient to meet the nutrient requirement of nearly all (97 to 98 percent) of healthy individuals in a particular life stage and gender group.

Adequate Intake (AI): the recommended average daily intake level based on observed or experimentally determined approximations or estimates of nutrient intake by a group (or groups) of apparently healthy people that are assumed to be adequate. It is used when there is not enough scientific evidence to calculate an RDA.

The RDAs and AIs are nutrient levels that, when consumed, should decrease the risk of developing a condition associated with ill health. Nutrient intake at the level of the RDA or AI would not necessarily *replenish* individuals who are undernourished or who have a disease.

Figure 2a. Dietary Reference Intakes (DRIs) for Children Ages 1 through 8 Years, on the following page, represents the most up-to-date information regarding RDAs and AIs for young children for protein, carbohydrate, fiber, vitamins, and minerals. Note: Fiber is covered in more detail in Part 3 of this module.

Total energy requirements, i.e. kilocalories or Calories needed per day, of young children vary by age and gender. Total energy requirements increase as children grow and are higher in boys than girls. *Figure 2b. Estimated Energy Requirement (EER) for Preschool Children* is shown on page 18. The definition of EER is also shown on page 18.

Figure 2a. **Dietary Reference Intakes (DRIs) for Children Ages 1 through 8 Years**[1]

	1 through 3 years (amount per day)	*4 through 8 years (amount per day)*	*RDA or AI?*
Protein	1.10 g/kg or 13 g	0.95 g/kg or 19 g	RDA
Carbohydrate	130 g	130 g	RDA
Fiber	19 g	25 g	AI
Fat-Soluble Vitamins			
Vitamin A	300 g RE[2]	400 g RE[2]	RDA
Vitamin D	5 g[3,4]	5 g[3,4]	AI
Vitamin E	6 mg[5]	7 mg[5]	RDA
Vitamin K	30 g	55 g	RDA
Water-Soluble Vitamins and Choline			
Vitamin C	15 mg	25 mg	RDA
Thiamin	0.5 mg	0.6 mg	RDA
Riboflavin	0.5 mg	0.6 mg	RDA
Niacin	6 mg[6]	8 mg[6]	RDA
Vitamin B_6	0.5 mg	0.6 mg	RDA
Folate	150 g[7]	200 g[7]	RDA
Vitamin B_{12}	0.9 g	1.2 g	RDA
Pantothenic Acid	2 mg	3 mg	AI
Biotin	8 g	12 g	AI
Choline	200 mg	250 mg	AI
Minerals			
Calcium	500 mg	800 mg	AI
Phosphorus	460 mg	500 mg	RDA
Magnesium	80 mg	130 mg	RDA
Iron	7 mg	10 mg	RDA
Zinc	3 mg	5 mg	RDA
Iodine	90 g	90 g	RDA
Selenium	20 g	30 g	RDA
Fluoride	0.7 mg	1.1 mg	AI
Chromium	11 mg	15 mg	AI
Copper	340 g	440 g	RDA
Manganese	1.2 mg	1.5 mg	AI
Molybdenum	17 g	22 g	RDA

1. Reprinted with permission from: *Dietary Reference Intakes*, 1997, 1999, 2000, 2001, and 2002 by the National Academy of Sciences, courtesy of the National Academies Press, Washington, D.C. These reports may be accessed via the Internet at *www.nap.edu*.
2. As retinol activity equivalents (RAEs). 1 RAE = 1 g retinol, 12 µg -carotene, 24 µg -carotene, or 24 µg -cryptoxanthin in foods. To calculate RAEs from REs of provitamin A carotenoids in foods, divide the REs by 2. For preformed vitamin A in foods or supplements and for provitamin A carotenoids in supplements, 1 RE = 1 RAE.
3. As cholecalciferol. 1 g cholecalciferol = 40 International Units (IU) of vitamin D.
4. In the absence of adequate exposure to sunlight.
5. As -tocopherol.
6. As niacin equivalents (NE). 1 mg niacin = 60 mg tryptophan.
7. As dietary folate equivalents (DFE). 1 DFE = 1 g food folate = 0.6 g folic acid (from fortified food or supplement) consumed with food = 0.5 g synthetic (supplemental) folic acid taken on an empty stomach.

Note: g = grams; kg = kilograms; mg = milligrams; g = micrograms.

Definition of Estimated Energy Requirement

Estimated Energy Requirement (EER): the average dietary energy intake that is predicted to maintain energy balance of a healthy child of a defined age, gender, weight, height, and level of physical activity, and includes the needs associated with the deposition of tissues consistent with good health.

Figure 2b. **Estimated Energy Requirement (EER) for Preschool Children**[1]

	Boys		***Girls***	
Age[2] **(in years)**	**Reference Weight (in pounds)**	**EER (in kcal/day)**	**Reference Weight (in pounds)**	**EER (in kcal/day)**
1	22.7	844	20.9	768
1 1/2	25.8	961	24.2	899
2	28.0	1,050	26.7	997
2 1/2	29.7	1,121	28.6	1,077
3	31.5	1,485	30.6	1,395
4	35.7	1,566	34.8	1,475
5	40.5	1,658	39.4	1,557

1. Reprinted with permission from: *Dietary Reference Intakes for Energy, Carbohydrates, Fiber, Fat, Protein and Amino Acids (Macronutrients)*, 2002 by the National Academy of Sciences, courtesy of the National Academies Press, Washington, D.C. The report may be accessed via the Internet at *www.nap.edu*.

2. EER for children ages 3, 4, and 5 years of age were based on an active physical activity level. Less active children would need fewer calories.

Dietary Guidelines for Americans

The *Dietary Guidelines for Americans, 2000* provide helpful guidelines for healthy Americans **age 2 years and older** about healthy weight, physical activity, food choices, food safety, food preparation, and intake of alcoholic beverages. By following all of the guidelines, individuals can promote their health and reduce their risk for chronic diseases such as heart disease, certain types of cancer, diabetes, stroke, and osteoporosis. These diseases are the leading causes of death and disability among Americans. A brief outline of the guidelines is shown below. Detailed information regarding the Dietary Guidelines for Americans is located in Part 2 of the Basic Nutrition Module.

Aim for Fitness

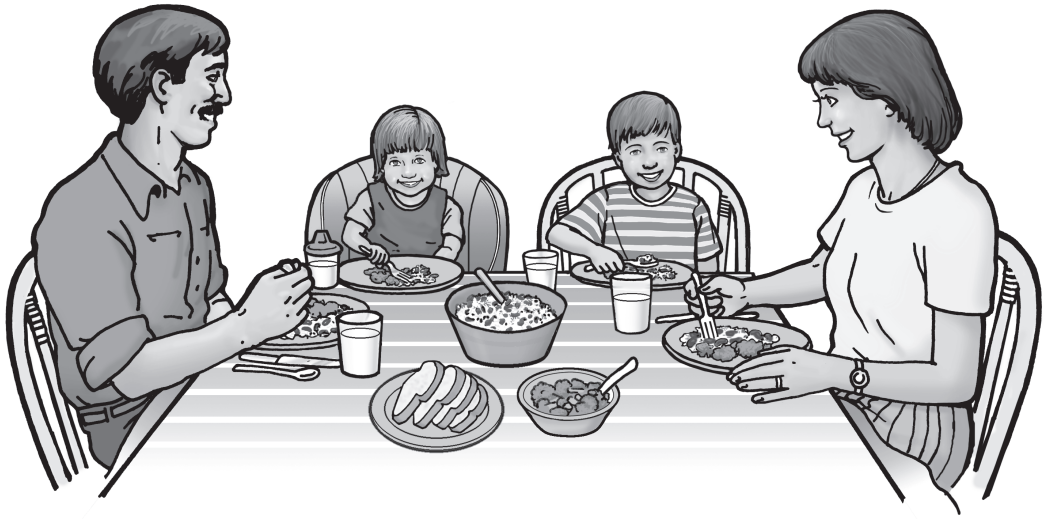
- Aim for a healthy weight.
- Be physically active each day.

Build a Healthy Base

- Let the Pyramid guide your food choices.
- Choose a variety of grains daily, especially whole grains.
- Choose a variety of fruits and vegetables daily.
- Keep food safe to eat.

Choose Sensibly

- Choose a diet that is low in saturated fat and cholesterol and moderate in total fat.
- Choose beverages and foods to moderate your intake of sugars.
- Choose and prepare foods with less salt.
- If you drink alcoholic beverages, do so in moderation. (Note: Some people should not drink alcoholic beverages at all. This includes children and adolescents.)



The Food Guide Pyramid: What Foods Should Children, Ages 1 to 5, Eat Every Day?

One way to help preschool children eat diets that are nutritionally adequate is to show the parent/caregiver how to use the Food Guide Pyramid to choose foods for their family. The Food Guide Pyramid is an outline of what to eat each day. The Food Guide Pyramid was developed to help people improve their current eating practices and to encourage them to make the best food choices.

Take a few minutes to study the Food Guide Pyramid in Figure 3 on page 22, along with the information on that page.

- Note that there are five major food groups: Bread, Cereal, Rice, & Pasta Group; Vegetable Group; Fruit Group; Milk, Yogurt, & Cheese Group; and Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group.

Milk, Yogurt, & Cheese Group	The foods in this group come from animals. These foods are important sources of protein, calcium, and some vitamins.
Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group	The foods in this group come from animals and some plants. These foods are important sources of protein, iron, zinc, and some vitamins.
Vegetable Group Fruit Group	The foods in these two groups come from plants. Most people need to eat more of these foods for the vitamins, minerals, and fiber they supply.
Bread, Cereal, Rice, & Pasta Group	The foods in this group are from grains. You need the most servings of these foods each day. These foods are important sources of B vitamins, iron, and energy.

- Each of the food groups provides some, but not all, of the nutrients a preschooler needs. Foods in one food group do not replace those in another. No one food group is more important than another—for good health, all are needed.
- The small tip of the Pyramid shows Fats, Oils, & Sweets. These foods provide calories but few vitamins and minerals. Most children should be given these foods sparingly. See the box, *A Closer Look at Fat and Added Sugars,* located on the following page, for more detailed information.
- The Food Guide Pyramid is a general outline of what a person should eat each day. It is not a rigid prescription, but provides general recommendations for choosing a healthy diet.

Figures 4a. & 4b. A Guide to Daily Food Choices for Preschool Children, presents the recommended serving sizes and the number of servings that are needed daily from each of the major food groups. Recommendations are based on the child's age, and are divided into two groups: children ages 1 to 3 years old and children ages 4 to 5 years old.

First, A Word About Serving Sizes

Serving sizes are smaller for young children than for older children and adults; they are usually about 1/2 to 2/3 the size of an adult portion. The sizes given in Figures 4a and 4b are suggested guides. Younger children usually eat smaller amounts, but may eat more frequently; an older child usually eats larger serving sizes, but may eat less often. The important thing to remember for most young children is that the total amount of food eaten from each food group should, on the average, add up to the total amount recommended daily for the child's age range.

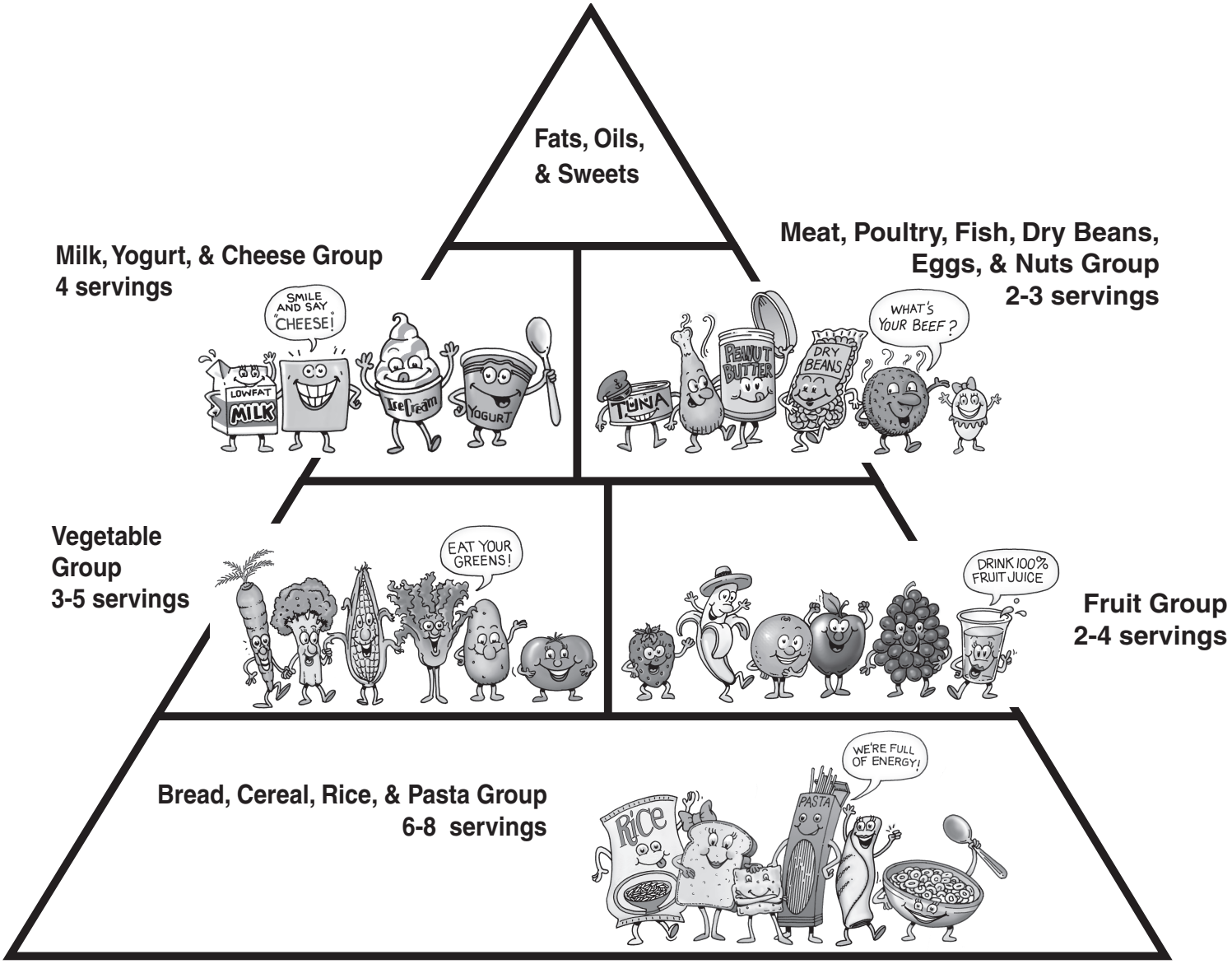
Children have smaller stomachs and will "fill up" faster with smaller amounts of food. In order to ensure that children obtain all the nutrients they need to grow and stay healthy, it is important to serve *the recommended serving size* of a *variety* of foods at each meal. If given large serving sizes, the child may "fill up" on only one or two foods, and lose his/her appetite for the other foods in the meal.

A Closer Look at Fat and Added Sugars

The small tip of the Pyramid shows Fats, Oils, & Sweets (see Figure 3 on the following page). These foods provide calories but few vitamins and minerals. Foods included in this group are salad dressings and oils, cream, butter, margarine, sugars, soft drinks, candies, and sweet desserts. It is best for most people to limit intake of these foods. However, since adequate caloric intake is so important for growth of the child, recommendations regarding the intake of fats and sweets must be individualized, according to the needs of the child.

Figure 3. **Food Guide Pyramid**[1]

- The Food Guide Pyramid should be used to help a person eat better every day.
- Each of the food groups provides some, but not all, of the nutrients a person needs.
- Foods in one group can't replace those in another.
- No one food group is more important than another—for good health, all are needed.
- The Food Guide Pyramid is a general outline of what a person should eat each day. It is not a rigid prescription, but presents general recommendations for choosing a healthy diet.



NOTE: See Figures 4a and 4b on the following pages for serving sizes for preschool children.

1. This pyramid was adapted from the Food Guide Pyramid developed by the U.S. Department of Agriculture/U.S. Department of Health and Human Services.

Figure 4a. **A Guide To Daily Food Choices for Preschool Children, Ages 1–3**

Food Groups & What Counts as One Serving	# Servings Per Day 1 to 3 years old
Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group 1 to 2 oz of cooked lean meat, poultry, or fish **These foods count as 1 oz of cooked lean meat:** 2 tablespoons peanut butter 1 egg 1/2 cup cooked dry beans, peas, or lentils 1/4 cup tuna fish	**2 to 3** (for a total of: **2–3 oz** per day for 1-year-olds; **3–4 oz** per day for 2- to 3-year-olds)
Milk, Yogurt, & Cheese Group 1/2 cup milk[2] 1/2 cup yogurt 1/2 cup pudding 3/4 oz natural cheese 1 oz processed cheese 3/4 cup ice cream, ice milk, or frozen yogurt	**4**
Fruit Group 1/2 medium piece of fresh fruit[1] 1/4 cup chopped, cooked, or canned fruit 1/2 cup 100% fruit juice	**2 to 4**
Vegetable Group 1/4 cup cooked vegetables or chopped, raw vegetables[1] 1/2 cup leafy, raw vegetables[1] 1/2 cup vegetable juice 1/4 cup potatoes (scalloped, mashed, or potato salad)	**3 to 5**
Bread, Cereal, Rice, & Pasta Group 1/2 slice bread 1/4 hamburger bun, bagel, English muffin, or roll 1/4 cup cooked cereal, rice, pasta, or grits 1/2 cup dry cereal (about 3/4 oz) 1/2 tortilla (6" diameter) 1/2 pancake or waffle (4" diameter) 2 small plain crackers 4 animal crackers 1/2 muffin (for example: corn or bran)	**6 to 8**

1. These foods may cause choking. See pages 31 and 32 in this module for information regarding foods that might cause choking in young children.
2. Fat free, lowfat, and reduced fat milk should not be given to children under 2 years of age. Lowfat or fat free milk is recommended for most children 2 years of age or older.

Figure 4b. **A Guide To Daily Food Choices for Preschool Children, Ages 4–5**

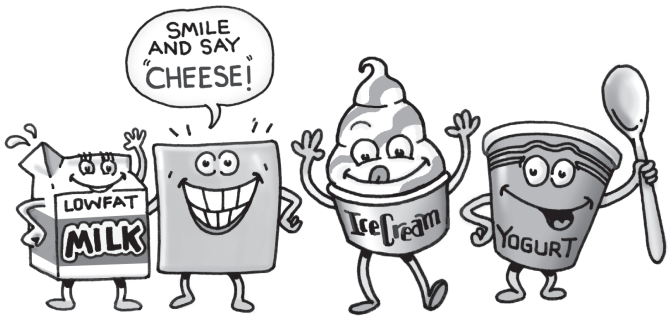
Food Groups & What Counts as One Serving	# Servings Per Day 4 to 5 years old
Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group 2 oz of cooked lean meat, poultry, or fish **These foods count as 1 oz of cooked lean meat:** 2 tablespoons peanut butter 1 egg 1/2 cup cooked dry beans, peas, or lentils 1/4 cup tuna fish	**2 to 3** (for a total of about **5 oz** per day)
Milk, Yogurt, & Cheese Group 3/4 cup lowfat or fat free milk 3/4 cup yogurt 3/4 cup pudding 1 oz natural cheese 1 1/2 oz processed cheese 1 cup ice cream, ice milk, or frozen yogurt	**4**
Fruit Group 1 medium piece of fresh fruit 1/2 cup chopped, cooked, or canned fruit 3/4 cup 100% fruit juice	**2 to 4**
Vegetable Group 1/2 cup cooked vegetables or chopped, raw vegetables 1 cup leafy, raw vegetables 3/4 cup vegetable juice 1/2 cup potatoes (scalloped, mashed, or potato salad)	**3 to 5**
Bread, Cereal, Rice, & Pasta Group 1 slice bread 1/2 hamburger bun, bagel, English muffin, or roll 1/2 cup cooked cereal, rice, pasta, or grits 3/4 cup dry cereal (about 1 oz) 1 tortilla (6" diameter) 1 pancake or waffle (4" diameter) 3 to 4 small plain crackers 8 animal crackers 1 muffin (for example: corn or bran)	**6 to 8**

Figure 5. **Fruits and Vegetables for Preschool Children**[1]

Fruits and Vegetables	Recommended Servings
Excellent Sources of *Vitamin A*	**3** **or more** ***per week***
sweet potato carrots	**or**
Good Sources of *Vitamin A*	**2** **or more** ***per day***
canned pumpkin mango cantaloupe spinach, collards, kale, or callaloo plantain dandelion, turnip, or beet greens butternut squash, hubbard squash, or calabaza raw or cooked sweet red peppers or red chili peppers	
Fair Sources of *Vitamin A*	
swiss chard mustard greens bok choy vegetable juice tomato juice tomato paste mandarin oranges apricot nectarine tangerine papaya sapote broccoli	
Excellent Sources of *Vitamin C*	**1** **or more** ***per day***
One serving contains at least 100% of the RDA for vitamin C for preschool children. broccoli brussels sprouts cantaloupe chili peppers grapefruit, pink & red guava kiwi mandarin oranges mango orange orange/grapefruit juice papaya strawberries sweet peppers, green & yellow tangerine WIC-allowed fruit & vegetable juices	
Other Fruits and Vegetables	**Eat each day for variety.**
apple asparagus avocado banana bean sprouts beets cabbage cauliflower celery cherries corn cucumber eggplant grapes, raisins green beans juices (that are not on vitamin C list) lettuce malanga (tanier) mushrooms okra onion peach pears peas pineapple plums, prunes potato squash—summer varieties including zucchini tomatoes turnip water chestnuts watermelon yam (taro) yuca (cassava)	

1. Source of data: Pennington, JAT. *Bowes and Church's Food Values of Portions Commonly Used*. 17th ed. Philadelphia: Lippincott-Raven Publishers; 1998.

Milk, Yogurt, & Cheese Group



The Milk, Yogurt, & Cheese Group provides **calcium, protein, riboflavin** (a B vitamin), **vitamin B-12, vitamin D,** and other nutrients. Preschool children should have 4 servings from this group each day.[1] Some particular favorites of young children from this group are: fluid milk, mild cheese, cottage cheese[2], yogurt, and pudding. Remember, a serving size for children 1 to 3 years is *½ cup* of milk and for children 4 to 5 years old it is *¾ cup* of milk.[1] Refer to Figures 4a and 4b in this module for more information about serving sizes for preschool children.

Mooove to lowfat or fat free milk!

For most healthy children, ***whole milk*** should be given ***from the age of 1 year until 2 years***. This will help to ensure the child receives an adequate fat and caloric intake. ***When the child is 2 years and older, lowfat or fat free milk*** should be given because most healthy children age 2 and older do not usually need the added fat and calories contained in whole milk. Some children, however, may need to stay on whole milk or may need another type of milk based on the health care provider's recommendations. For example, it may be beneficial for a child who is very underweight to consume whole milk even after turning 2 years old.

Ice cream, ice milk, and frozen yogurt provide calcium, but the amount of calcium is lower in comparison to other dairy products, and these foods are high in sugar. Regular ice cream is also high in fat, although lower fat varieties of ice cream are now available. An *occasional* serving of ice cream, ice milk, or frozen yogurt is fine.

The following suggestions may be helpful for a parent who needs to add foods from the Milk, Yogurt, & Cheese Group to their preschooler's diet. Dry (powdered) milk can be added to foods when cooking or baking. For example, dry milk can be added to some of the child's favorite foods, like meat loaf, oatmeal, and cookies. Shredded cheese can be added to grits and to a variety of soups and casseroles. Plain yogurt can be used as a base for vegetable dips. *Make the Most of Milk* is a pamphlet that can be given to clients. This pamphlet contains counseling tips and recipes for incorporating milk and milk products into the child's diet. (See page 85 of this module for pamphlet information.)

On occasion, you may encounter a child who is allergic to milk (i.e., allergic to milk *protein*) or is lactose intolerant (i.e., has symptoms such as bloating, abdominal cramping, pain, gas, and/or diarrhea following milk consumption). For more information about milk allergy or lactose intolerance, refer to the Food-Induced Reactions section of this module. If a child cannot or will not consume milk products, then nutritionally equivalent substitutes need to be found. Refer the child's parent/caregiver to the nutritionist for assistance in determining appropriate substitutes for the child.

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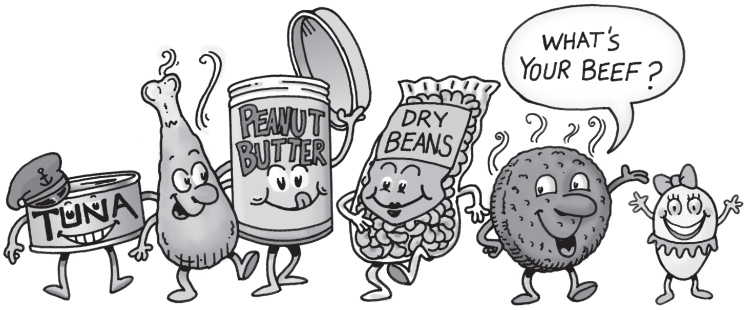
1. This module contains recommendations for 4- to 5-year-old children for the Milk, Yogurt, and Cheese Group that are higher than the recommendations of the "USDA Food Guide Pyramid for 2- to 6-year-olds." The reason for this is to ensure that 4- to 5-year-old WIC clients receive an adequate amount of calcium. See pages 17 and 70 of this module for calcium recommendations.
2. Cottage cheese is a good protein source and contains some calcium. However, milk, yogurt, and other cheeses are better sources of calcium than cottage cheese. (1 cup fluid milk = 293 mg calcium; 1 cup cottage cheese = 138 mg calcium)

✎ **GO TO** *the Workbook for the Preschool Child Nutrition Module and complete Self-Check Questions 13–18 right now. Then, immediately check your answers against the Answer Key for the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.*

Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group

Besides providing **protein,** the protein-rich foods in the Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group provide **iron, zinc, niacin** (a B vitamin), **vitamin B-12,** and other nutrients.



Parents should be aware that a serving size for a child is smaller than the serving size for an adult. A serving size for a child 1 to 3 years old is about 1 to 2 ounces and a serving size for a child 4 to 5 years old is about 2 ounces. Preschool children should eat **2 to 3 servings per day** from this group. Here is a chart showing the *total number of ounces of meat or meat substitutes* recommended per day. (Note: Figures 4a and 4b lists foods that are equivalent to 1 ounce of meat.)

Age of child	Number of ounces of meat (or meat substitute) recommended per day
1 year old	2 to 3 ounces per day
2 to 3 years old	3 to 4 ounces per day
4 to 5 years old	5 ounces per day

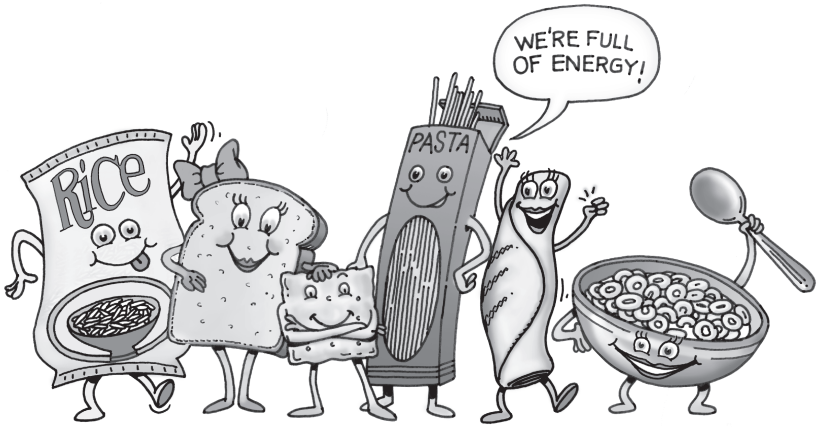
Many young children find meat difficult to chew. Parents often want to know what they can do to get their child to eat meat. Parents should make meat easier for a child to chew by doing the following: using more tender cuts of meat, cutting meat into very small pieces or grinding it, and serving meat with a sauce (e.g., spaghetti sauce).

Parents should serve a *variety* of protein-rich foods. **Some protein foods which are often popular with children include: tuna fish, meat loaf, cooked dry beans, hamburgers, chicken, and peanut butter.** ***Caution:*** Due to the choking hazard, peanut butter is ***not*** recommended for children under 2 years of age and all preschoolers should ***never*** be offered *spoonfuls* of peanut butter.

For information on the topics of *vegetarianism* and *complementary proteins,* refer to the Basic Nutrition Module. Also, check with a nutritionist if you have any questions about the nutritional adequacy of a child consuming a vegetarian diet.

Bread, Cereal, Rice, & Pasta Group

The Bread, Cereal, Rice, & Pasta Group includes those foods made from grains. **Whole grain** or **enriched** breads and cereals contain *B vitamins*[1] and *iron***.** They also supply an inexpensive source of **energy** (calories). **Whole grain products** contain many trace nutrients, as well as **fiber.** Fiber helps regulate digestion and elimination.



Preschool children should eat **6 to 8 servings per day** from the Bread, Cereal, Rice, & Pasta Group. Remember, a serving size is equal to $^{1}/_{2}$ slice of bread or $^{3}/_{4}$ ounce of cereal for children 1 to 3 years old and 1 slice of bread or 1 ounce of cereal for children 4 to 5 years old.

The Bread, Cereal, Rice, & Pasta Group is generally well-liked by preschoolers. A few of the popular choices of preschoolers are: crackers, bread, tortillas, pancakes, cereals, pasta, and rice.

However, a few words of caution regarding the Bread, Cereal, Rice, & Pasta Group:

- Discourage the use of cereals that are high in sugar.
- Limit frequency and amount of sweet rolls, cookies, and cakes because they can be *excessively high in fat, sugar, and/or salt,* when compared to the other nutrients that are provided by these products.
- Avoid adding large amounts of syrup, jelly, and/or butter to pancakes, waffles, rolls, or breads.
- Children must also be regularly offered nutritious foods from all food groups, since some children would prefer to eat only the foods from this food group.

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1. The B vitamins in enriched cereal and grain products include *thiamin, riboflavin, niacin,* and *folic acid*. *Folic acid* (a synthetic form of the B vitamin *folate*) is the form used in vitamin supplements and in the fortification of foods. *Folate* is the form of the vitamin naturally found in foods. Food folates may be destroyed by lengthy cooking and are not as well absorbed as folic acid. *Folic acid* is the term used in this module to designate both the synthetic and the naturally occurring forms of this vitamin. "Enriched" cereal and grain products (e.g., breads, pasta, rice, and corn grits) contain 140 g folic acid per 100 grams of the cereal or grain product.

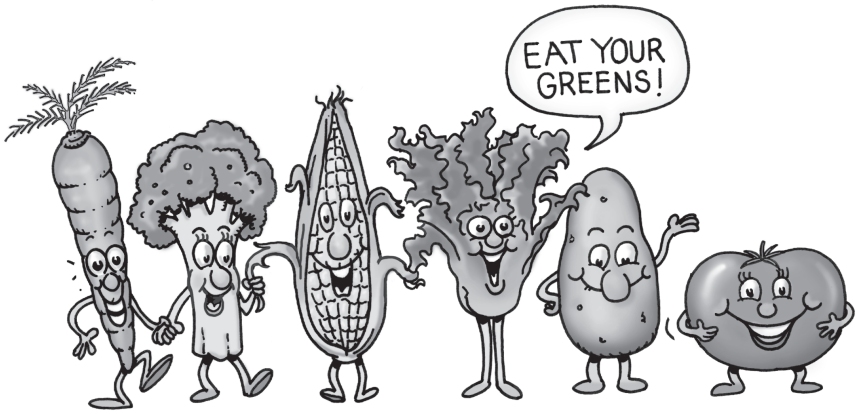
✎ **GO TO** *the Workbook for the Preschool Child Nutrition Module and complete Self-Check Questions 19–27 right now. Then immediately check your answers against the Answer Key for the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.*

Vegetable Group

The Vegetable Group includes all vegetables and their juices. Vegetables are important for their contribution of **vitamin A, vitamin C, folic acid, fiber,** and small amounts of various **minerals.** Individual vegetables vary widely in how much of these nutrients they provide. Nearly all vegetables are low in fat.

Preschool children should eat **3 to 5 servings per day** from the Vegetable Group. Remember, 1/4 cup of cooked or chopped raw vegetables (or 1/2 cup of vegetable juice) is the serving size for children 1 to 3 years old, while 1/2 cup of cooked or chopped raw vegetables (or 3/4 cup of vegetable juice) is the serving size for children 4 to 5 years old.

Since children may prefer other foods over vegetables, careful preparation is important. Children enjoy bright colors and a variety of textures and shapes. Vegetables can be appealing when served raw (for example, raw vegetables like carrots can be shredded, or some raw vegetables can be cut into different shapes) and when they are not overcooked. Overcooking will destroy vitamin C and folic acid. Another way to get children to eat vegetables is to serve spaghetti, lasagna, or other tomato-based meals. Favorite vegetables of children include: potatoes; vegetable soup; and raw vegetables such as broccoli, cauliflower, zucchini, or cucumbers cut in different shapes and served with a dip.

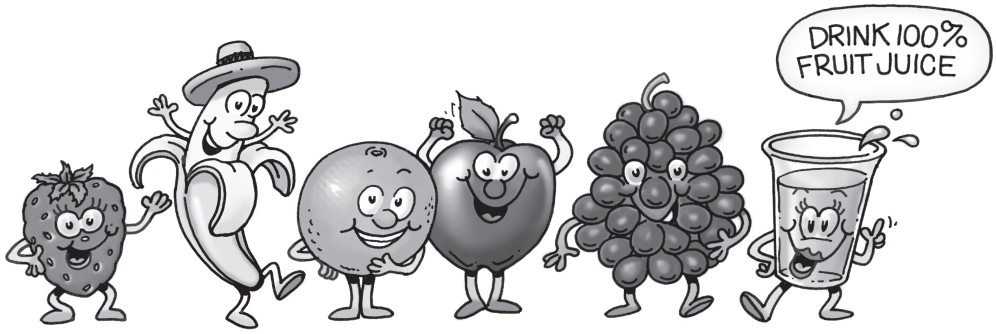


Some raw vegetables such as *raw carrot and celery sticks are* ***not*** *recommended for the preschooler under 4 years old because of possible choking.* To minimize the possibility of choking on a tough food, it is recommended that young children eat cooked vegetables or *tender,* raw vegetables such as peeled and diced tomato or cucumber pieces.

As with other foods, parents should not overreact to a child's refusal to eat vegetables. The child should be encouraged to try the vegetable again at a later date. The child may also accept the vegetable better if it is prepared in a different way. Parents should avoid using bribery to encourage their children to eat vegetables.

Fruit Group

All fruits and their juices belong in the Fruit Group. Similar to the Vegetable Group, the Fruit Group is important for its contribution of vitamins and minerals, and also for being low in fat. Fruits can be good sources of **vitamin A, vitamin C, folic acid, fiber, potassium** and small amounts of various other **minerals.** Individual fruits vary widely in the amounts of these nutrients.



Preschool children should eat **2 to 4 servings per day** from the Fruit Group each day. Remember, 1/2 of a medium piece of fresh fruit; 1/4 cup of chopped, cooked, or canned fruit; or 1/2 cup of fruit juice is the serving size for children 1 to 3 years old. A whole piece of fresh fruit; 1/2 cup of chopped, cooked, or canned fruit; or 3/4 cup of fruit juice is the serving size for children 4 to 5 years old.

Favorite fruits of young children include: fruit juice and frozen fruit juice on a stick, bananas, applesauce, peaches, pears, orange or tangerine wedges (with seeds removed), cantaloupe, and watermelon (with seeds removed).

Fruit drinks are not equivalent in nutritive value to **100 percent fruit juices**. Fruit drinks generally are made of a small percentage of fruit juice and may be fortified with vitamin C. Most fruit drinks contain 6 to 9 teaspoons of sugar per cup. If consumed frequently, fruit drinks can add many non-nutritive calories to the diet. Parents should be encouraged to offer water or more nutritious beverages instead of fruit drinks.

✎ **GO TO** *the Workbook for the Preschool Child Nutrition Module and complete Self-Check Questions 28–34 right now. Then, immediately check your answers against the Answer Key for the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.*

An Important Message About Choking

Choking occurs when food or small objects get caught in the throat and block the airway. This prevents oxygen from getting to the lungs and the brain. When the brain goes without oxygen for more than four minutes, brain damage or even death may occur. Parents need to take extra care to prevent choking when feeding children under 4 years old or when feeding children with developmental disabilities.

In the United States each year, about 10,000 children age 14 years or younger are treated for choking on a food substance and approximately 80 percent of these children are 4 years of age or younger. About 70 children age 14 and younger (one child every five days) die each year from food-related choking.[1] Most children that choke to death are younger than 5 years of age and two-thirds of choking victims are infants younger than 1 year of age.[2]

Foods inappropriate for a child's age and eating/chewing abilities, the textures and shapes of some foods, and lack of supervision during feeding have been cited as causes of food-related choking deaths. Parents should be warned to watch that older siblings do not offer younger siblings foods that they are not yet developmentally ready to handle.

Children do not develop a full set of baby teeth until they are about 2 to 3 years of age. Young children also may not have enough muscle control to chew and swallow foods properly. While children can choke on almost any food, the foods most likely to cause choking are:

- Foods that are round or cylindrical in shape, such as hot dogs; or foods that are small or slippery, such as peanuts. These foods might slip down a child’s throat before he/she has a chance to chew on them.
- Foods that are sticky, or foods that have the ability to “ball up” in the airway, such as peanut butter. These foods could get lodged in a child’s throat.
- Foods that require extensive chewing or are tough to break apart, such as tough meat. These foods could get lodged in a child's throat.
- Foods that are dry and difficult to chew, such as popcorn and nuts. These foods might be swallowed whole by a young child.

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1. Centers for Disease Control and Prevention. Nonfatal Choking-Related Episodes Among Children—United States, 2001. *MMWR* 2002;51:945-948.

2. Choking: Common Dangers for Children. American Academy of Pediatrics Statement, 2001.

Recommendations for Preventing Food-Related Choking

Parents/caregivers should make foods as safe as possible for young children. Prevention is the best approach. Precautions that you can recommend to parents/caregivers to prevent food-related choking in their young children are:

1. These foods **should *not* be served** to children **under the age of 4**[1]**:**
   - ✘ spoonfuls of peanut butter
   - ✘ hard candy, gum drops, chewing gum
   - ✘ fruits with pits, such as cherries
   - ✘ hot dogs and other sausage-shaped meats served whole or sliced into rounds
   - ✘ marshmallows
   - ✘ popcorn, pretzels, chips
   - ✘ raisins and other dried fruit
   - ✘ raw vegetables such as carrots and celery sticks
   - ✘ nuts, seeds, peanuts
   - ✘ whole grapes—instead cut into small pieces
   - ✘ ice cubes
   - ✘ large chunks of meat or cheese
   - ✘ fish *with bones*

Hot dogs and sausage-shaped meats should be cut into two or more lengthwise pieces first, and then into smaller pieces.

2. Parents/caregivers should modify the shapes and textures of the foods most likely to cause choking. Solid foods that require extensive chewing should be modified by cooking and pureeing, mashing, finely chopping, or dicing.

3. Peanut butter should be spread *very thinly* on toast or crackers for children 2 years of age and older. Children under 2 years of age should not be given peanut butter. Preschool children should ***never*** be given *spoonfuls* of peanut butter. Also, *creamy* peanut butter should be given, ***not*** *crunchy* peanut butter.

4. Children should be encouraged to take small bites and chew their foods completely. Some young children have a tendency to bite off more than they can chew at any one time.

5. The feeding times of preschool children should always be supervised so the parent/caregiver is aware of any difficulty the child may be having in swallowing food. Every child is different. One child may have more difficulty in chewing and swallowing appropriately than a sibling or another child did at the same age. When a child is ill, tired, excited, etc., he/she may not eat as carefully as he/she does at other times. Supervised feeding will also help prevent an older sibling or other child from feeding a younger child inappropriate foods.

6. Parents/caregivers should insist that children sit down during mealtime or snacks. Parents should not let children run, return to play, or lie down until *after* the meal or snack is eaten. It would be helpful to plan quiet activities before eating, so that the child is calm when he/she sits down to eat.

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1. Graves DE, Suitor CW, Holt KA. *Making Food Healthy and Safe for Children: How to Meet the National Health and Safety Performance Standards—Guidelines for Out-of-Home Child Care Programs.* Arlington, VA: National Center for Education in Maternal and Child Health, 1997.

Meal Planning for Young Children

The following is a sample meal plan for young children. Study the meal plan below and familiarize yourself with the suggested food combinations.

Sample Meal Plan for Preschoolers

Breakfast

- Fruit
- Protein[1] food (such as an egg)
- Bread, toast, tortilla, cereal, or grits
- Milk

Snack[2]

- Cheese, crackers, and juice (preferably high in vitamin C)

Noon Meal

- Protein[1] food
- Raw[3] or cooked vegetable
- Bread, tortilla, rice, or pasta
- Milk
- Fruit

Snack[2]

- Milk and crackers
- Raw[3] or cooked vegetable

Evening Meal

- Protein[1] food
- Raw[3] or cooked vegetable (1 to 2 servings)
- Bread, tortilla, rice, or pasta
- Milk

1. Protein foods are from the Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group.
2. Snacks are discussed in detail later.
3. Be careful, some raw vegetables may cause choking in children under 4 years old.

Fluids

Preschoolers need about 6 to 8 cups of fluid per day. This can include water, other beverages, and the water in food such as soup, fresh fruits, and vegetables. However, they may need more fluids if they eat more fiber, are more physically active or are experiencing diarrhea or vomiting. Also, 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.

Meal Planning Tips

Children often prefer meals which are simply prepared. Caregivers should avoid using *too much* sugar (all types), spices, and fat (such as butter, margarine, sour cream, mayonnaise, and salad dressing). Meals should offer a variety of foods, not only for their different nutrients, but also to add interesting shapes, colors, textures, and flavors. Most children prefer foods served individually (rather than combination foods) and foods which are neither *too hot* nor *too cold*.

Convenience is a factor which plays a large role in meal preparation for many families. It may be helpful to discuss with some parents how they can select convenience foods, fast foods, and combinations of other foods to provide a nutritious diet within their food budget. Nutritious casseroles and soups can be prepared in large quantities and frozen for quick use later as a "convenience food," as long as extra freezer space is available.

Foods Children Like

Preschool children like simple meals, with the foods separated from each other. "Finger foods"—small, bite-sized pieces of food eaten with the fingers—are popular. Finger foods are easy for the child to handle and they aid in the development of self-feeding skills. Examples of some finger foods are: vegetable sticks[1], slices or sections of fruit, bread, crackers, meat strips, cheese slices, ready-to-eat cereals, and hard-cooked eggs. Also, bright colors and varied shapes of foods will catch and hold the child's interest.

Children are excellent judges of well-prepared food. Textures, flavors, and temperatures of foods should be served as listed below:

Food Example	☺ Favorable Qualities	☹ Unfavorable Qualities
Meat	*Moist, Soft*	*Dry or Tough*
Hot Cereal, Mashed Potatoes	*Smooth*	*Lumpy or Sticky*
Raw Vegetables[1]	*Crisp*	*Mushy*
Cheese	*Mild Flavor*	*Spicy or Strong*
Milk	*Cold*	*Very Hot/Very Cold*

Children have sensitive taste buds; therefore, salt, sugar, pepper, and other seasonings should be used in moderation or not at all. If family members prefer highly seasoned food, advise the parent to set aside some food for the young child before adding the seasoning to the rest of the family's food.

If the above principles of food preparation are observed, children are more likely to enjoy learning to eat a variety of nutritious foods.

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1. Some raw vegetables, such as carrot sticks and celery sticks, are not recommended for children less than 4 years old because they may cause choking.

Importance of Breakfast

Most preschoolers sleep 10 to 12 hours at night. During this time the child has eaten nothing. Breakfast helps fill the child's "empty tank," giving energy to start the day.[1] The breakfast meal provides the body with food that helps brain function (increases attention and concentration). Breakfast also contributes to the quality and quantity of a child's daily nutrient intake—it can add substantially to a child's total energy, protein, carbohydrate, vitamin, and mineral intake.

Many children enjoy a breakfast of cereal, milk, juice, and toast—but breakfast does not have to be limited to these foods nor does it have to be the same day after day. Include juice and/or milk with any of the following foods for quick and nutritious, energy-boosting breakfasts:

- Hot or cold cereal—Add fruit for a special taste treat.
- Whole wheat toast with peanut butter—*Peanut butter is not recommended for children under age 2 due to the risk of choking.*
- Yogurt with fruit sliced on top.
- Small scoop of cottage cheese and applesauce, with a muffin.
- Waffles or pancakes—Parents can make up a big batch on the weekend, freeze the extras, and pop them in the toaster as needed during the week.
- Ham or turkey slice on a bagel or English muffin.
- Grits, plain or with melted cheese.
- Scrambled eggs and toast—Add bits of vegetables, cheese, or meats to the scrambled eggs for variety.
- Last night's pizza or other leftovers—These can be eaten cold or reheated.

For heart healthy ways to reduce fat in breakfast meals:

- Substitute egg whites for some of the whole eggs (2 egg whites = 1 whole egg).
- Use reduced fat cheeses and lean meats.
- Substitute applesauce for the oil or fat in a quick bread recipe.
- Add $^1/_3$ less oil or fat to quick bread/pancake recipes.
- For more ideas, see the Heart Healthy Habits section in Part 3 of this module.

Breakfast does not have to be complicated to prepare. Older preschoolers can learn to pour their own cereal and milk or help set the table. Eating breakfast can help preschoolers get a great start on their day!

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1. Our bodies store extra "fuel" in our liver. The small size of a child's liver compared to the child's body size, as well as the relatively small amount of food a child eats at one time, require a child to eat more frequently than an adult. Therefore, the child needs to eat fairly often and, in particular, to replenish the "fuel supply" after a night of sleep by eating breakfast.

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Snacks

Are snacks always "junk" foods or "empty calorie" foods?[1] No! In fact, snacks can play an important role in the diet of a young child. Snacktime can sometimes be a time when a child is most hungry and willing to eat. Snacks can supplement meals, providing nutrients which were not eaten at mealtime. For example, a child who does not drink milk at lunch could be served cheese and crackers or yogurt for an afternoon snack. In this way, snacks can be planned to help supply needed nutrients.

A good snack contains:

- Food from *one or more of the food groups,* such as: fruit, whole grain cereals, ready-to-eat cereals, crackers or bread, tortilla, fruit juice, frozen fruit juice on a stick, milk, peanut butter,[2] yogurt, cheese, and cottage cheese;
- Foods that are *low in sugar*; and
- *Small amounts* of food that don't spoil the appetite for meals.

Use Snacks to Improve Food Habits

Some mothers feel frustrated or worried when their children reject one or more of the food groups. However, this anxiety may easily aggravate the very situation that needs to be changed. The problem can be avoided, at least in part, by the use of snacks between meals.

Children's snacks can be planned to help meet nutrient needs. For example, snacks can be the means by which vitamin C is added to the diet of the child who refuses juice for breakfast, or protein for the child who is too tired or too excited at mealtime to eat meat. They can also be the means by which fast-growing youngsters are offered the nutrients needed for growth. Furthermore, snacks may be a successful way to introduce new foods.

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1. "Junk" foods or "empty calorie" foods are typically foods that are low in nutrient density, i.e., they provide calories (usually from sugars and/or fats), but very small amounts of nutrients such as vitamins, minerals, and protein.
2. The following snack foods are *not* recommended for children under 4 years of age because they can cause choking: whole grapes, nuts, seeds, popcorn, raisins, hard candy, and certain raw vegetables, like carrots and celery. Peanut butter sandwiches are not recommended for children under 2 years old. Preschool children should ***never*** be offered *spoonfuls* of peanut butter.

Most Children Need Snacks

Some children have the capacity to go easily from one meal to the next without hunger. However, many preschool children experience hunger within two to three hours after eating a meal, especially when they are in a growth spurt. If a *nutritious* snack is not offered at this point, the child's hunger may eventually be satisfied by soft drinks, candy, or some other "empty calorie" food. *Timing is important so that a snack is offered when children are hungry, but not so late that it spoils their appetite for the next meal.*

Planning for Snacks

Planning means deciding:

- *what* the special nutrition and scheduling needs of the family are;
- *how* snacks can add to the child's diet; and
- *when* would be the best time to offer snacks.

Parents should also consider their own time and energy. Having a "snack spot" in the refrigerator or a corner in the cupboard where nutritious snacks are kept may be the answer. Handy, easy-to-prepare foods make it easier and more likely for the caregiver to quickly prepare a nutritious snack for the preschooler.

Vending Machine Snacks vs. Home-Prepared Snacks

What if the family is constantly on the go? Some snacks can be brought from home and eaten between appointments or errands. These snacks can be more nutritious and less expensive than foods from a vending machine or convenience store. Parents should be sure to put perishable snacks in a cooler or an insulated bag with ice. You might suggest the following snacks for "on the go":

- dry cereal;
- fruit;
- crackers and cheese;
- sandwich quarters;
- meat sticks
  (ham, roast beef, or turkey cut into "sticks" to be eaten as a finger food);
- vegetable sticks; and
- milk or juice.

Compare the following vending machine or convenience store snacks to those prepared at home:

Vending Machine/Convenience Store Snacks

small bag of potato chips	$0.75
small bag of candy	$0.75
12 oz can of soda	$0.75
Total	**$2.25**

Home-Prepared Snacks—WIC foods appear with an asterisk (*).

Example 1		*Example 2*	
2 slices bread	$0.15	1 cup milk*	$0.20
2 tablespoons peanut butter*	$0.15	1 oz dry cereal*	$0.24
1 apple	$0.50	1 slice cheese*	$0.16
1 cup milk*	$0.20	1 small banana	$0.25
Total	**$1.00**	**Total**	**$0.85**

The home-prepared snack examples provide nutritious foods from 3 to 4 food groups of the Food Guide Pyramid, while the vending machine/convenience store snacks are generally: low in nutritional value; high in fats, oils, salt, and sweets; and *more expensive!*

Snacks Which Supplement Meals

Here are some suggestions for nutritious snacks which can be served as a supplement to the child's breakfast, noon, and evening meals. These snacks provide nutrients that the child may not eat at the breakfast, noon, and evening meals:

To add protein: Offer chopped, hard-cooked eggs; chunks of tuna; pieces of cheese; or strips of leftover chicken or ham. Serve crackers with: tuna mixed with mayonnaise; cheese; or thinly spread peanut butter (only for children over age 2). Let children use their fingers to eat these snacks.

To add vitamin C: There are a variety of fruits and vegetables which are good sources of vitamin C (and other nutrients as well) which can add taste, texture, and color to snacks. Refer to Figure 5 for a list of fruits and vegetables high in vitamin C. Serve strawberries, melons, and/or citrus fruits. Cut the rind off the melon and serve wedges that may be picked up with the fingers. Raw cabbage and green peppers also provide a substantial amount of vitamin C. WIC juices are an excellent "vitamin C" addition to a snack.

To add vitamin A: Dark green or deep yellow fruits and vegetables add vitamin A. Refer to Figure 5 for a list of fruits and vegetables high in vitamin A. Small pieces of broccoli can be served with a creamed cottage cheese dip. Giving the child small pieces of cantaloupe or mango is another way to add vitamin A at snacktime. A small slice of pumpkin or sweet potato pie, or a pumpkin muffin is another suggestion. Carrot sticks can be grated or thinly sliced and served to the older preschooler. Liver, liverwurst, milk, cheese, and eggs are other foods that are sources of vitamin A. The *Vitamin A* pamphlet can be given to clients. This pamphlet lists a variety of foods that are excellent, good, and fair sources of vitamin A and includes some recipes that incorporate foods with vitamin A. (See page 85 of this module for pamphlet information.)

Many children prefer raw vegetables instead of cooked vegetables. Snacktime can be a wonderful way to provide an alternate source of vegetables, particularly if the child resists cooked vegetables at the evening meal. Besides the ones already mentioned, help the parent/caregiver brainstorm about other vegetables their child might try, such as raw green beans, pea pods, tomatoes, zucchini, cauliflower, spinach, or other greens.

Important Reminders About Snacks

It is very important to limit "empty calorie" snacks such as sodas, fruit drinks, candy, and fried snack foods like chips. These foods are high in sugar and/or fat and contribute very few nutrients to the child's diet. If eaten regularly, they can contribute to overweight, iron-deficiency anemia, and dental caries.

Tea and **coffee** should *not* be offered to preschoolers for the following reasons:

- they have no nutritional value;
- they sometimes contain caffeine;
- when sweetened, they are high in empty calories;
- they can stain a child's teeth; and
- both regular and decaffeinated coffee and tea contain tannic acid which interferes with the body's ability to absorb iron.

Sweet Snacks/Desserts

While snacks are eaten *between* meals, we usually consider desserts as sweets eaten *at the end* of a meal. Even though desserts are characteristically sweet, they don't have to contribute *only* "empty calories." Desserts, like snacks, can also be nutritious, supplying necessary nutrients to the child's diet. Examples of more nutritious desserts are: fruit, fruit smoothie, frozen fruit juice on a stick, custard, pudding, ice cream, ice milk, vanilla yogurt topped with fruit, frozen yogurt, fruit-and-nut breads, fruit cobblers, and some types of homemade cookies such as oatmeal raisin cookies.

Traditional dessert recipes can be improved nutritionally by following one or more of these suggestions:

- *decrease* the amount of sugar, or other sweeteners, such as honey, corn syrup, brown sugar, and molasses (often can be decreased by 1/3);
- *decrease* the amount of fat such as margarine, butter, oil, and shortening (often can be decreased by 1/3);
- *substitute* applesauce for all or part of the fat;
- *substitute* all or some of the white flour with whole wheat flour;
- *add* one or more of the following ingredients: *finely chopped* nuts, dried fruit, oatmeal, WIC cereals, nonfat dry milk powder (if the product is going to be baked), or wheat germ.

Bake a smart cookie!

Encourage parents to experiment with recipes. Suggest that they make small changes at first, since drastic changes will alter the characteristics of the product.

Although some desserts *can* be more nutritious than others, the wise parent will *not* offer desserts after every meal. It is easy to aid in the development of an insatiable "sweet tooth" by offering desserts every day. If children are given desserts often, they will expect them, demand them, and then, eating desserts will become a habit. Desserts do tend to be higher in calories than other foods. Establishing the habit of eating desserts with each meal or each day may encourage overeating and lead to an eventual problem of overweight in the child. Habits established early in life are hard to break, so it is best to offer desserts only *occasionally.*

As discussed in a previous section, desserts (or other foods) should not be used to bribe or reward children. For example, children should not be rewarded with a dessert simply because they finished their vegetables, drank all their milk, or behaved well during the day. This just encourages overeating, and leads the child to believe that dessert is very desirable while other meal components are not desirable.

Calories

The Food Guide Pyramid for preschoolers represents the *typical* amount of food needed, on the *average,* each day, to supply adequate nutrients. The Pyramid is not intended to be used to enforce or restrict a specific amount of food which a child is given to eat. Children should be *offered* nutritious meals and snacks from the five food groups, and then be allowed to eat the amount *they* choose to satisfy their hunger.

Additional calories can also be obtained *occasionally* from Fats, Oils, & Sweets, which include foods such as margarine, mayonnaise, salad dressings, cream cheese[1], sodas, fruit drinks such as Kool-Aid®, and desserts.

A child's own appetite and growth are the best indicators of adequate caloric intake. If a child's weight and height are within the normal range and the child generally eats the foods specified in the Food Guide Pyramid, calculating calories is unnecessary.

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1. *Note:* Cream cheese is a poor source of protein and calcium, and is not a part of the Milk, Yogurt, & Cheese Group. Instead, it is among the Fats, Oils, & Sweets which are included in the small tip of the Food Guide Pyramid.

Part 3: Nutrition-Related Concerns/Problems

Major nutrition surveys conducted in the United States reveal that a significant number of children are receiving diets which are inadequate in quantity and/or quality. Studies of dietary intakes of children show that *iron, calcium, zinc,* and *vitamin B-6* are the nutrients *least likely to be consumed in adequate amounts.* By using the Food Guide Pyramid according to the discussion in Part 2 of this module, parents can be counseled to prevent dietary inadequacies of these nutrients.

Weaning

Weaning from the breast or bottle is a gradual process. Weaning to a cup should have begun when the infant was able to sit up without support and was eating solid foods. It is a gradual process which usually will have been initiated when the child is around 6 or 7 months of age. By the time the child has reached 1 year old, the parent should have already made significant progress in weaning the bottle-fed child. Sometimes this is not the case and parents of preschoolers need to be assisted and reminded why and how to wean from the bottle.

Weaning from the Bottle

Children who use the bottle after 1 year of age may drink too much milk and not eat enough solids which provide iron and other important nutrients. This can lead to iron-deficiency anemia, overweight, and/or constipation. Some children do not want to give up bottle feeding, or they show great unwillingness to drink milk from a cup. The weaning process often requires much patience from the parents. The bottle given before a nap or bedtime is often the most difficult one to discontinue. This bedtime bottle can also be the most harmful to the teeth if it is filled with anything but water. If milk or sweet liquids are allowed to stay in the mouth for an extended period of time, this can result in baby bottle tooth decay. (See the Infant Nutrition Module for more information about baby bottle tooth decay.)

The following suggestions can be discussed with a parent to help with weaning:

- Discontinue bottle feeding one bottle at a time, starting with the least favorite bottle. Give a cup of milk and a small snack at the time that the child would previously have received a bottle.
- Put only water in the bottle. After a few days of bottles with water only, pack the bottles away. They will be out of sight from the child and a parent will be less tempted to grab a bottle if the child is crying.
- Hold the child and read a favorite book in place of giving a bottle.
- Interest the child in something other than the bottle at bedtime—a special blanket or stuffed toy.
- Provide lots of affection and attention instead of a bottle at bedtime. Recognize that the fussing over the missing bottle will probably last only 1 to 2 nights.

Weaning from the Breast

The decision when to wean the infant or toddler from the breast to the cup is an individual one and is left up to the mother. Weaning is usually accomplished by stopping one nursing at a time and is continued gradually until the child is entirely weaned from the breast. After 1 year of age, whole cow's milk should be given in a cup as a substitute for the nursing which has been discontinued. Many breastfeeding mothers worldwide nurse until the child is 2 years or older. If mom desires to wean the child, provide information on weaning; but do not discourage mom from breastfeeding an older child if she and the child are both happy with nursing. Breastfeeding continues to provide a very healthy food, protection from illness, and meets some of the young child's emotional needs. Refer to the Breastfeeding Module for further information on weaning from the breast.

Dietary Fiber for Children

Dietary fiber is found in *plant foods* such as fruits, vegetables, grains, legumes (such as dry beans, peas, and lentils), and nuts. Dietary fiber is *not able to be digested* by humans and provides the body with little, if any, energy. When fiber passes through the digestive tract, it absorbs water and becomes larger in size. Sometimes fiber is referred to as "roughage." Even though meat appears to be "fibrous," the fibers in meat are able to be digested by humans and are not the same as dietary fiber. Dietary fiber has important health benefits in childhood, especially in promoting **normal bowel movements.** In addition, fiber may help **reduce** the **risk** of chronic diseases such as: **cancer, cardiovascular disease, and adult-onset diabetes mellitus.** Many children do not consume adequate amounts of dietary fiber to promote health and prevent disease.

However, there can be adverse effects of a very high fiber intake in childhood:

- High fiber foods are usually lower in calories than the same size (volume) of food low in fiber.
- Since children have a small stomach capacity, high fiber foods can fill the child up before sufficient calories for energy and growth are consumed.
- Minerals, such as iron, calcium, copper, and zinc, can be bound[1] by the fiber or by the phytates[2] which are naturally present in the high fiber foods, thus making these nutrients unavailable for use by the body.
- Parents, eager to consume a high fiber diet themselves or to prevent chronic disease for their child, may mistakenly put their child at nutrition risk by giving the child a very high fiber diet.

Children in High Risk Groups

Some children fall into high risk groups, because they have diseases or other conditions that require very low fiber intakes (e.g., children with an acute stage of irritable bowel syndrome); or that require very high fiber intakes (e.g., children with chronic constipation, hyperlipidemia, or diabetes). **Children with special needs should receive individualized guidance from their health care provider and nutritionist in determining the amount of fiber needed.**

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1. When a mineral is bound, it is attached to the fiber or other compounds within the food which makes the mineral unable to be digested and absorbed by the body. The mineral, therefore, passes out of the body with the fiber and other waste products.
2. Phytates are chemical compounds naturally found in the outer layers (fiber portion) of cereals, grains, nuts, and legumes (such as dry beans, peas, and lentils). Because they form an indigestible compound with minerals such as calcium and iron, phytates interfere with the body's ability to absorb these minerals.

How Much Dietary Fiber for Children?

The National Academy of Sciences recommends 14 grams of dietary fiber for every 1,000 calories per day that are consumed by a child. **A child's recommended daily fiber intake can be calculated by dividing the daily calorie intake by 1,000 and then multiplying that amount by 14.** Here are recommendations for each age based on the Estimated Energy Requirement (EER) for children. Note: Energy needs will vary depending on the child's size, gender, and physical activity level.

Age in years	Average EER[1] Calories/Day	Average Recommended Grams of Fiber/Day
1	806	11
1 1/2	930	13
2	1,023	14
2 1/2	1,099	15
3	1,440	20
4	1,520	21
5	1,607	22

Fiber intakes above 35 grams per day should be avoided.

Ways to Achieve an Adequate Fiber Intake

The best way for children to consume fiber is from a mixture of foods, and not from supplements of *isolated* fibers, like wheat bran, oat bran, or commercial products. (Fiber supplements may be recommended by the health care provider for some disease conditions.)

Practical steps for achieving an adequate fiber intake in a child's diet should start with gradually increasing consumption of a variety of fresh fruits, vegetables, whole grain products, and legumes.

Parents who feed their children according to the recommended number of servings per day as shown in Figures 4a and 4b, and choose high fiber foods can achieve the fiber recommendations for children. See Figure 6 on the following page for good sources of dietary fiber.

Dietary fiber will increase water retention in the stools, which leads to softer stools. Because of this water retention, water intake should also be increased. The amount of fluid needed is approximately 6 to 8 cups per day. This amount of fluid can include water, other beverages, and the water in food; e.g., soup, raw fruits, and vegetables.

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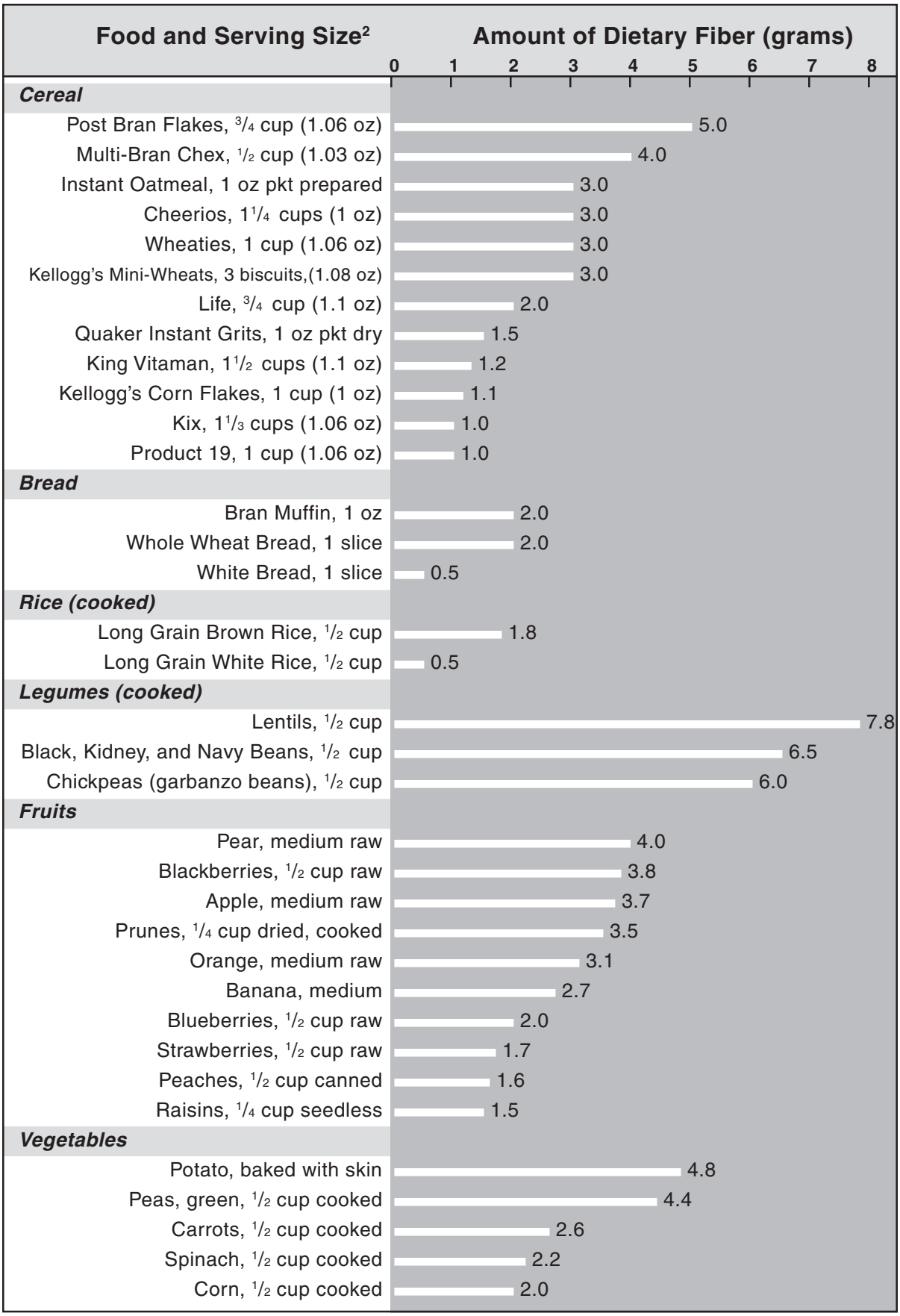
1. The average EER for 1- to 2 1/2-year-olds is based on the average EER for boys and girls. The average EER for 3- to 5-year-olds is based on the average EER for boys and girls with **active** physical activity levels.

Figure 6. **Sources of Dietary Fiber**[1]



1. Source of data: Pennington, JAT. *Bowes and Church's Food Values of Portions Commonly Used*. 17th ed. Philadelphia: Lippincott-Raven Publishers; 1998.

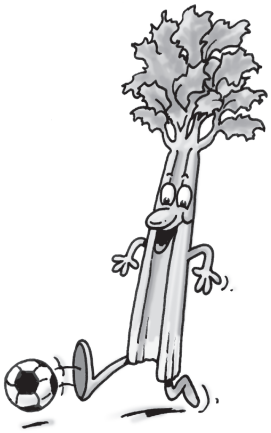
2. Serving sizes in this chart are for the preschool child ages 4 to 5 years.

Heart Healthy Habits for Children 2 Years Of Age and Older

Parents should be encouraged to help their healthy children 2 years of age and older to develop heart healthy eating habits. Preschool age is the ideal time to start developing heart healthy habits. Children learn eating patterns early in life. Nutritious, heart healthy foods are those foods which are low in saturated fat, total fat, and dietary cholesterol. These foods include: fruits; vegetables; grains; legumes; lean meat, poultry, and fish; and milk or milk products which have 1 percent or less milkfat. Children will enjoy eating these heart healthy foods, if given the opportunity.

In general, family members age 2 years and older will benefit from these heart healthy habits:

- **Eat foods lower in fat, saturated fat, and cholesterol.** See Figure 7 on the next page for foods lower in fat.
- **Choose foods high in complex carbohydrates, e.g., those foods from the Bread, Cereal, Rice & Pasta Group; Vegetable Group; and Fruit Group.**
- **Avoid being overweight.** See the Overweight section beginning on page 48 for information on how overweight can be prevented.
- **Participate in regular physical activity.**



Important Notes

- Children under 2 years old need the additional calories from fat and, unless medically necessary, should *not* be consuming *primarily* those foods which are low in fat and cholesterol.
- Be sure that children *over the age of 2* who are eating a low fat diet are obtaining enough calories for their growth and development.
- Children who are very thin and poor eaters may also benefit from continuing to consume higher fat foods, such as whole milk, after the age of 2.
- Be aware that there are times when the *general* guidelines for low fat, heart healthy eating need to be adapted for individual needs. The staff member should consult the nutritionist if a client has special needs.

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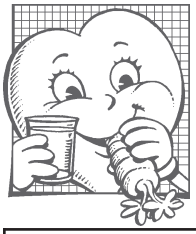

Figure 7. **Heart Healthy Eating for Children 2 to 5 Years Old**[1]

Choose More Often	*Choose Less Often*
Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group	**Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group**
Lean cuts of meat with fat trimmed	Fatty cuts of meat
Poultry without skin	Poultry with skin, fried chicken
Fish and shellfish, baked or broiled	Fish and shellfish, fried or in cream sauce
Luncheon meats like turkey ham, turkey, lean ham	Bologna, salami, sausage, bacon, hot dogs
Dry beans and peas as an alternate protein source	Dry beans and peas cooked with fat back or prepared with cheese or cream sauce
Milk, Yogurt, & Cheese Group	**Milk, Yogurt, & Cheese Group**
Lowfat (1%) or fat free milk	Whole milk or reduced fat (2%) milk
Lowfat or fat free yogurt	Yogurt made with whole milk
Lowfat cottage cheese	4% Cottage cheese
Reduced fat cheeses	Regular cheese
Ice milk, frozen yogurt	Ice cream
Bread, Cereal, Rice, & Pasta Group	**Bread, Cereal, Rice, & Pasta Group**
Bread, bagels, cereals	Croissants, granola-type cereals
Pasta or rice, plain or with vegetable sauces	Pasta or rice, prepared with cream or cheese sauces
Low fat crackers: animal crackers, graham, saltine	High fat crackers: butter, cheese, made with saturated fats
Pretzels, air-popped popcorn[2]	Potato chips, corn chips
Baked goods made with unsaturated oil, lowfat (1%) or fat free milk, and egg whites	Commercial high fat cookies, cakes, pies, pastries, muffins, biscuits, doughnuts, etc.
Vegetable Group & Fruit Group	**Vegetable Group & Fruit Group**
Plain fruits and vegetables	Vegetables prepared with butter, cream or cheese sauce; fruits or vegetables served with **high-fat** dips or **high-fat** dressings
Potatoes, baked or boiled	French fries
Fats, Oils, & Sweets	**Fats, Oils, & Sweets**
Unsaturated oils: corn, olive, peanut, canola, safflower, soybean	Coconut oil, palm kernel oil, palm oil
Margarine	Butter, lard, bacon fat, shortening
Cocoa powder	Chocolate

1. Adapted from: *Parents' Guide, Cholesterol in Children—Healthy Eating is a Family Affair,* National Cholesterol Education Program, US Department of Health and Human Services. NIH Publication No. 92-3099, November 1992.
2. Popcorn should *not* be given to preschool children under 4 years of age as it might cause choking.

Overweight

Defining Overweight

Overweight is defined as the accumulation of excess body fat. Often, a child is diagnosed as being overweight because he/she *looks* fat. The child has excessive fat in relation to his/her body size. A more objective way to determine whether a child (age 2 years or older) is **overweight** or **at risk of becoming overweight**, is to determine the child's Body Mass Index (BMI) and then plot the BMI on the National Center for Health Statistics/Centers for Disease Control 2 to 20 years BMI-for-age growth chart. The BMI-for-age indicates a child's weight in relation to his/her height for a specific age and gender.[1]

- A child who is 2 years of age or older is generally considered to be **overweight** if his/her **BMI-for-age is *at or above the 95th percentile*.** What does this mean? For example, a child who is at the 95th percentile BMI-for-age *has a BMI that is the same or more than* 95 percent of the other children of the same age and gender*;* or out of 100 children of the same gender and same age, 95 of those children have the same or lower BMI than that child.
- A child who is 2 years of age or older is considered to be ***at risk of becoming*** **overweight** if his/her BMI-for-age is ***greater than or equal to the 85th percentile and less than the 95th percentile*.**

The establishment of poor eating habits and sedentary behavior patterns, and the impact being overweight has on the child psychologically and socially are significant issues for the overweight child. An overweight child is at risk of being **teased** by other children and consequently may develop a **poor self-concept.** Physical activity may be limited, causing a **delay in motor development.** The overweight child may then feel more **self-conscious** when he/she can't keep up with other children.

Overweight in children is related to increased cardiovascular risk factors such as increased blood lipids and increased blood pressure. An overweight child may, but does not necessarily, become an overweight adult. The risks of the overweight child becoming an overweight adult increase with: (1) how overweight the child is; (2) the length of time the child is overweight; and (3) the child's genetic potential for overweight.

Being overweight in adulthood is associated with major health problems such as **diabetes, hypertension** (high blood pressure), **atherosclerosis** (a type of heart disease), and increased **problems with joints and lungs.** Because treatment of overweight—whether in an adult or a child—is so difficult, *prevention during the childhood years* becomes very important.

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1. For more information about the CDC Growth Charts, go to www.cdc.gov/growthcharts/. This website contains the growth charts, as well as tools and training materials related to the growth charts.

What Causes a Child to Become Overweight?

Eating Patterns and Physical Activity

When the amount of calories eaten is greater than the caloric need, the excess calories are stored as fat. Overweight in children is usually a result of:

- inappropriate eating patterns (eating *too many* calories); and
- insufficient physical activity (using up *too few* calories). Overweight children tend to be less active. Decreased activity may make it more difficult for the child to lose the excess fat.

Parents Take Too Much Control

When parents take *too much control* over how much their children eat, children are less able to determine for themselves how much food they really need. These children are at greater risk for becoming overweight and/or developing an eating disorder. Examples of parents taking too much control are:

- a child needs to eat everything on his/her plate before he/she is able to go play; or
- parents limit how much their child can eat because they do not want him/her to get any chubbier. Children whose food intake is restricted may beg, scavenge, and even steal food because of their hunger.

Genetics

Genetics can have a significant influence on a child's weight. While the exact influence is not known, it is thought that genetics may influence how much food a person eats, how fast the person burns calories, and how likely the person is to gain fat rather than muscle. However, it is rare that genetics is the only factor responsible for a person becoming overweight.

Preventing Overweight

Preventing overweight is very important. Once children become overweight, treatment can be difficult because of the need to provide the adequate nutrients and calories that are required for their normal growth and development. In addition, preventing overweight may also help prevent eating disorders and reduce cardiovascular risk factors.

Prevention of overweight includes adopting a lifestyle of healthy eating and physical activity habits. The preschool years are a crucial time for parents to establish a family eating style and physical activity patterns that promote good health and normal weight. Several suggestions for preventing overweight follow:

Healthy Eating and Physical Activity Tips

- Gradually change to healthful eating habits by increasing whole grains, fruits, vegetables, and legumes; and decreasing foods high in fat and sugar.
- Limit the availability of foods high in calories and low in nutrient density.
- Have nutritious snack foods available.
- Serve meals and snacks at regular times each day. Limit random eating and drinking of caloric beverages between meals.
- Limit the frequency of eating meals away from home, e.g., at fast food restaurants, and choose foods lower in fat when eating away from home.
- Encourage regular physical activity. This will help balance energy (calorie) intake and energy expenditure. It will also promote physical fitness.
- Parents should join children in active play. Is there a park or playground where everyone can play actively?

Parenting Tips

- Provide the child with lots of love and attention, and the reassurance that the child will be loved always, whatever body type he/she has.
- Do not use food as a bribe or reward.
- Serve the same healthy food to all family members; do not put an overweight child on a special low calorie diet.
- Set guidelines regarding food choices, frequency of eating, physical activity, television watching, and playing of computer/video games.
- Let the child decide how much to eat. (Do not make the child "clean his/her plate," and do not limit the amount of food a child can eat.)
- Parents should take charge! Older children, grandparents, and babysitters may offer food to the preschooler and may not be as particular as the parents about what the child is being fed.
- Find other ways, besides eating, for the family to interact and have fun together, such as: tell stories (children love to hear stories in which they or their pets are characters); read books; play a game; do a project (do a puzzle or color with the preschooler); and participate in active play together.

How Do I Counsel the Parent of an Overweight Child?

Keep in mind that there are many factors in a child's life which may lead to weight gain. To appropriately counsel the parents of an overweight child you need to consider the child's eating and activity patterns, as well as the impact of the following factors on the child's eating patterns:

The meaning of food to the family
Is food a reward for good behavior? Does the family equate food with fun or family status? Does a family member get self-esteem and praise from food preparation abilities?

The body size that is acceptable to the family
Do family members think plump children are cute and healthy? On the other hand, are the parents overly concerned about their children being thin? Also, be aware that what is considered an acceptable body weight/size may vary with different ethnic groups.

The needs of the child and family that are being satisfied by eating food
Are children or other family members eating because they are bored, angry, upset, sad, tired, rebellious, or feeling a lot of stress?

Individualize the Nutrition Counseling Session

From information obtained from medical records, nutrition history/assessment, and the parent/caregiver, the appropriate staff member will then individualize suggestions for improving the child's diet and increasing the child's activity level. The staff member should try to determine the reasons or factors that may be contributing to overeating. Also, encourage parents to help their child deal with his/her emotions in ways that are more effective than eating.

When talking with the family, discuss with them one or two specific things they are willing to work on that will address at least one (or possibly more) of the identified factor(s) which may be contributing to the child being overweight. Follow up on these areas during the next nutrition counseling session to affirm success, discuss problems encountered, and set goals for the next time period.

It is also important to *stress to the parents that they should support and encourage their child, showing love and acceptance regardless of the child's body size*. At the same time, they should take gradual measures to improve the dietary intake and physical activity level of their child. Usually it is better for the parent not to discuss concerns about a preschool child's weight with the child, unless the child brings it up. For this age child, it is more important for the parent to make the needed changes in family eating habits and physical activity patterns, while affirming the child's self-esteem.

As a staff member, be an example of kindness and acceptance of the child regardless of the child's body size. Positive reinforcement of even small improvements can help the child or parent to develop confidence.

Suggestions for Improving the Diet of an Overweight Child

When poor food choices appear to be a contributing factor to overweight, here are some common suggestions for improving the child's diet:

- Substitute fresh fruits and vegetables for high sugar and/or high fat snacks and desserts.
- Try a new fruit or vegetable every week.
- Reduce added sugars (such as sugar, honey, molasses, jellies, syrup) and reduce added fats (margarine, butter, salad dressing, cream, gravy) in the diet.
- Buy substitutes for high fat foods. For example: switch to lowfat or fat free milk and lowfat or fat free dairy products for children over 2 years old. Substitute a turkey sandwich for hot dogs at lunch or substitute baked chicken for fried chicken at dinner.
- Bake and broil foods instead of frying.
- Keep food stored away, out of sight.
- Give children water to drink, instead of flavored beverages or juice.
- Initiate the *family practice* of eating only at scheduled mealtimes or snacktimes rather than unscheduled eating throughout the day.
- Eat only in selected places in the home.
- Make meals a pleasant family experience.
- Learn how to prepare the family's favorite foods in ways that use less fat and calories.
- Limit fast food meals, and when visiting a fast food restaurant, make lower fat and lower calorie selections.
- Limit purchases of cakes, cookies, doughnuts, chips, sodas, candy, etc.

Encourage Physical Activity

Children (whether overweight or not) should be encouraged and be given regular opportunities to safely participate in physical activity (active play). Active play can help overweight children maintain their weight while they grow in height. It can also help prevent other children from becoming overweight. Enjoying active play can help establish lifestyle habits that will keep energy in balance and improve health and self-esteem. Children as young as 2 or 3 years can begin to recognize the power and control they have over their bodies. They like the opportunity to try new physical activities, improve on their abilities, and show their new "talents" to their parents. When children have to stay indoors for one reason or another (e.g., weather or safety), you can discuss suitable ways for them to enjoy active indoor play; for example, dancing to music, participating along with a physical activity video for children, or playing games such as "Simon Says" that will lead to stretching or active play.

See more detailed information regarding physical activity in Part 4 of this module.

Television, Video Games, and Computer Games

Lots of television watching (or playing video or computer games) at a young age may start an unhealthy cycle.

- The child gets used to watching a lot of television or video or computer games.
- The child doesn't get outside to play.
- The child gets behind in terms of motor development.
- The child loses the desire and "habit" of going outside.
- The child doesn't feel good.
- The child watches more television where snacks that are high in calories and low in nutrient density are constantly being advertised.[1]

Excessive television watching may be a parental habit that the child is learning and/or is a result of the television being used as a babysitter. Parents have the choice of allowing or not allowing television watching and regulating how much television a child is allowed to watch.

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1. In a study of television programs geared to children, there were an average of *21 commercials per hour,* each lasting an average of 29 seconds. Food advertisements accounted for 48% of the commercials; *91% of the foods advertised were high in fat, sugar, or salt.* Study by: H.L. Taras and M. Gage.

Iron-deficiency Anemia

Iron is important in 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 an adequate supply of iron, the body is better able to resist infection.

If an **iron deficiency** exists, a condition called **anemia** can occur. Symptoms of anemia include: fatigue; pale appearance; loss of appetite; decreased endurance; sometimes an increased frequency of colds and other infections; and learning, attention, and behavior problems. Hematocrit and hemoglobin blood tests are good screening tools that indicate that there may be anemia. Iron deficiency can also lead to increased lead absorption. Childhood lead poisoning causes neurological and developmental problems.

Iron-deficiency anemia is the most common nutrient deficiency in children from 6 months to 3 years of age. It is especially prevalent among low income, preschool children.

Causes

A common cause of iron-deficiency anemia in the young child (1 to 2 years old) is *excessive milk intake.* The fact is, milk is a *poor source of dietary iron.* However, some parents encourage their children to drink more milk, especially when the child's consumption of solid foods decreases. This combination of low intake of solid foods and excessive intake of milk may contribute to the development of iron-deficiency anemia.

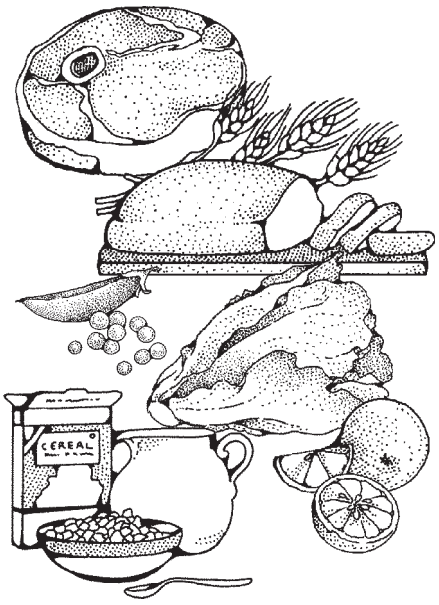
After 2 to 3 years of age, the usual causes of iron-deficiency anemia are: a lack of iron-rich foods in the diet, or consumption of foods or beverages which contain substances that inhibit iron absorption, such as tea.

Refer to Figure 8 in this module which presents a visual comparison of how much iron is contained in certain foods. When using the information in Figure 8, keep in mind that the RDA for iron for preschool children is 7 mg (ages 1 through 3 years) and 10 mg (ages 4 through 5 years).

Prevention

Prevention of iron-deficiency anemia in children may be accomplished by counseling parents/caregivers to modify the child's diet by restricting foods which are both low in iron *and* high in calories, and substituting these with more iron-rich foods. Specific suggestions are:

- Limit milk intake to a maximum of 16 ounces daily for children under 4 years of age. Children 4 to 5 years of age should consume approximately 24 ounces of milk per day. This also includes milk alternatives such as cheese and yogurt. Milk is a poor source of dietary iron. The consumption of too much milk or milk products may fill a child up so that he/she is not hungry enough to eat other foods that are higher in iron.
- Limit those foods which are both low in iron *and* high in calories, such as sweet bakery goods, candy, chips, and soft drinks.
- Do not give children tea or coffee (with or without caffeine). The tannins contained in these beverages can prevent iron from being absorbed by the body.
- Encourage the eating of: iron-rich foods such as meats, poultry, and fish; cereals fortified with at least 45% of the Daily Value[1] for iron per serving; and legumes (dry beans, peas, and lentils). Eating a variety of foods from the Vegetable Group and the Bread, Cereal, Rice, & Pasta Group can also provide additional amounts of iron.
- Iron from animal sources (e.g., meat, poultry, or fish) is better absorbed by the body than iron from plant sources (e.g., legumes, vegetables, fruits, breads, cereals). Also, if a good source of vitamin C (such as orange juice), or a meat product, is consumed along with the iron-rich *plant* food, the absorption of iron from that plant food will be increased. *A word about eggs:* even though eggs are from an animal source, the iron in them is poorly absorbed.



The Florida Department of Health pamphlet, *Iron for Healthy Blood*, may be used for the nutrition education and counseling of the parents/caregivers of children.

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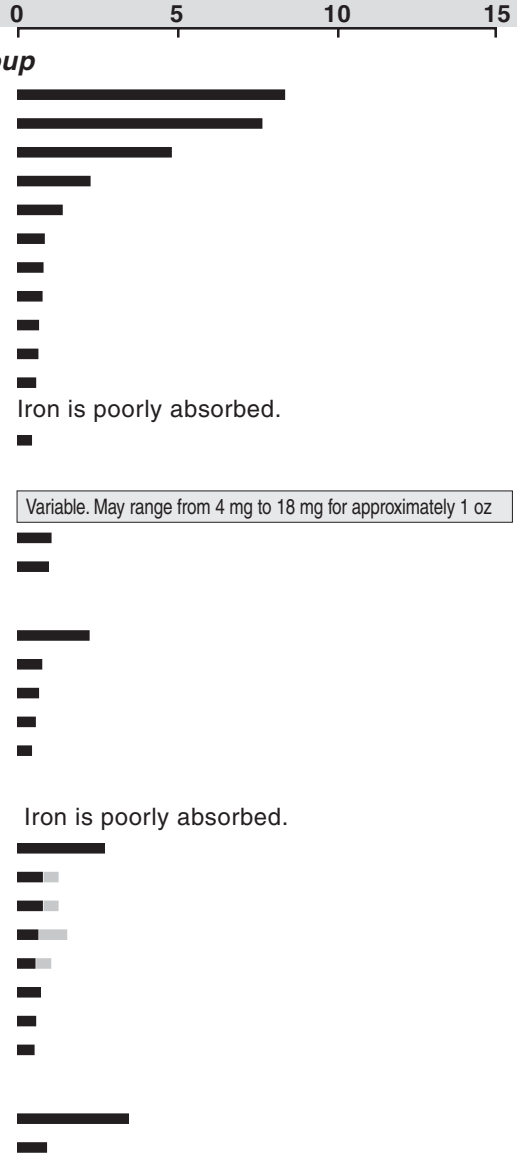
1. % Daily Values (% DV) are listed on the nutrition label of packaged foods to give the consumer information about the nutrient value of foods. A high % DV means the food contains a lot of a particular nutrient; a low % DV means it contains just a little. For more information about % DV and nutrition labeling, see the Basic Nutrition Module.

Figure 8. **Sources of Iron**[1]

Note: This chart displays how much iron is contained in certain foods. Serving sizes presented are for children 4 to 5 years. Children 1 to 3 years old would generally have smaller serving sizes. Note: The Milk, Yogurt, & Cheese Group is not listed since foods in this group only have trace amounts of iron.

Food and Serving Size	Amount of Iron (mg)
	0 5 10 15
Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group	
Clams, 1 oz cooked (6 small)	7.90 mg
Beef Liver, 2 oz cooked	7.48 mg
Chicken Liver, 2 oz cooked	4.84 mg
Dry Beans*, 1/2 cup cooked	2.30 mg
Beef, Ground Lean, 2 oz cooked	1.43 mg
Tuna, Light (not white), 2 oz canned	0.87 mg
Turkey, 2 oz cooked	0.83 mg
Pork, Lean, 2 oz cooked	0.80 mg
Chicken, 2 oz cooked	0.69 mg
Shrimp, 2 oz cooked	0.67 mg
Peanut Butter*, 2 tablespoons	0.60 mg
Egg*, 1 large boiled	0.59 mg
Catfish, 2 oz cooked	0.46 mg
Bread, Cereal, Rice, & Pasta Group	
Iron-fortified Cereals*, ready-to-eat and hot[2]	Variable. May range from 4 mg to 18 mg for approximately 1 oz
Wheat Germ, 2 tablespoons	1.08 mg
Enriched Wheat Bread, 1 slice	1.00 mg
Fruit Group	
Prune Juice, 3/4 cup	2.27 mg
Raisins, 1/4 cup	0.79 mg
Apple Juice*, 3/4 cup	0.69 mg
Cooked Prunes, 1/4 cup	0.59 mg
Prunes, 2	0.42 mg
Vegetable Group[3]	
Spinach, 1/2 cup cooked	1.44 to 3.21 mg
Potato, baked with skin	2.75 mg
Green Peas, 1/2 cup cooked	0.81 to 1.26 mg
Tomato or Vegetable Juice*, 3/4 cup	0.81 to 1.06 mg
Beets, 1/2 cup cooked	0.67 to 1.55 mg
Brussels Sprouts, 1/2 cup cooked	0.58 to 0.94 mg
Green Beans, 1/2 cup cooked	0.75 mg
Broccoli, 1/2 cup cooked	0.60 mg
Tomato, raw	0.55 mg
Other	
Blackstrap Molasses, 1 tablespoon	3.50 mg
Regular Molasses, 1 tablespoon	0.94 mg



* WIC Foods

1. Source of data: Pennington, JAT. *Bowes and Church's Food Values of Portions Commonly Used.* 17th ed. Philadelphia: Lippincott-Raven Publishers; 1998.
2. Iron fortification is different for each cereal. **Read the label** to find out *what percentage of the Daily Value of iron* is contained in the *serving size* for the cereal. Note: not all iron-fortified cereals are WIC-approved; check with your local WIC agency for the current list of WIC-approved, iron-fortified cereals. A ready-to-eat cereal is considered a good source of iron when it contains at least 45% of the Daily Value of iron per serving.
3. While many of these vegetables *appear* to be good iron sources, it must be noted that the majority of them contain other compounds that cause their iron content to be poorly absorbed by the body. This is one more reason to stress to clients the importance of adequate vegetable consumption because: *by increasing the number of vegetables—and also fruits and grains—in your daily diet (in accordance with the Food Guide Pyramid recommendations), you are also increasing the potential for adequate iron absorption for the body's use.* Check with the nutritionist in your local agency for further information about iron absorption issues.

Treatment

One of the nutrition risk criteria[1] for certification in the WIC program is a low hematocrit or hemoglobin test result. This is an indicator of possible iron-deficiency anemia.

Some tips for you when providing low risk nutrition education to the parents/caregivers of children with low hematocrit or hemoglobin readings include:

- **encourage** the use of good animal sources of iron, e.g., lean meats, poultry, and fish. Remember that iron from animal sources is well absorbed by the body.
- **encourage** the use of plant sources of iron, e.g., grains, certain vegetables, and legumes. Remember that one way to increase the absorption of iron from meals containing vegetables and grains is to eat a vitamin C-rich food at the same meal. For example, serve orange juice along with iron-fortified cereal at breakfast.
- **encourage** the use of WIC cereals for breakfast and snacks.
- ✘ **discourage** the use of tea and coffee since it has no nutritive value; it can provide many empty calories if sweetened; it interferes with iron absorption; and it sometimes contains caffeine. (Consumption of iced tea is *not* recommended for preschoolers.)
- ✘ **discourage** a daily milk intake that is greater than 16 ounces for children less than 4 years old, since milk is such a poor source of iron. Children from 4 to 5 years should have approximately 24 ounces of milk per day or the equivalent amount from other foods in the Milk, Yogurt, & Cheese Group.
- ✘ **discourage** the use of low iron, high calorie snack foods such as baked goods, soft drinks, candy, cookies, and chips.

The nutritionist will make plans for follow-up blood tests and counseling sessions at appropriate intervals. **Refer all clients with a high risk hemoglobin or hematocrit level to the nutritionist (or nutrition educator) for in-depth counseling.**

Preventing Accidental Iron Poisoning

If a child is taking iron supplements, or a family member is taking them (e.g., mom is pregnant and on prenatal vitamins), warn parents about the possibility of accidental iron poisoning. From 1986 through 1996, Poison Control Centers report that more than 110,000 children under 6 years of age accidentally swallowed iron tablets. Many of the children were hospitalized and more than 35 died. The children who died had swallowed possibly as few as 5 to as many as 98 tablets. **Accidental iron overdose is a leading cause of poisoning deaths in children under 6 years old.** Children can overdose on iron by taking excessive iron supplements or even by consuming large amounts of children's chewable vitamins. Many poisonings happen when child-resistant caps are not closed properly.

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1. For in-depth information about nutrition risk criteria, please refer to the Florida WIC Nutrition Risk Criteria Interpretive Guidelines.

CAUTION: Keep iron pills and vitamin pills with iron out of the reach of children. Pills with iron could be **deadly** to children if they ate too many by accident!

Taken as indicated on the label, or as advised by the health care provider, supplemental iron is safe. But when tablets are taken beyond the proper dose in a short period, especially by infants or toddlers, serious injury or death may result. Encourage parents to:

- Close the bottle of iron or vitamin pills tightly and correctly immediately after use. Don't put the iron or vitamin pills in another container because children may be able to open the other container.
- Put the iron or vitamin pills away immediately in a place that children can't reach them or see them.
- Do not refer to children's vitamins as "candy" or in other terms that would make them more appealing to a child.

Children who are poisoned with iron face both immediate and long-term problems. Within minutes or hours of swallowing iron tablets, they may suffer nausea, vomiting, diarrhea, and gastrointestinal bleeding, lethargy, liver damage, heart failure, and coma can occur from 12 hours to two days later. If the victims survive, they can develop other problems, such as gastrointestinal obstruction and more extensive liver damage, three to six weeks after the poisoning.

Even if there are no immediate symptoms, parents should contact a doctor or local poison control center immediately if their child has accidently swallowed a product that contains iron. Sometimes, serious symptoms do not develop right away, and delayed treatment may not be effective. The telephone number for the closest poison control center is listed with other emergency numbers in the front of phone books.

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Lead Poisoning

Lead poisoning is a common environmental disease of young children, especially low income children. Lead poisoning is a *preventable* condition.

Where is Lead Found?

Paint. Lead paint is the most common source of exposure. While it has been illegal to add lead to paint since 1979, many older houses, cars, furniture, and toys may still contain lead paint. Older homes and products may be unsafe even when covered with newer, lead-free paint. Paint which is peeling or that has been sanded off creates dust and paint chips that contain lead which can contaminate the soil or be spread throughout the house.

Soil. Lead is often found in the soil or dirt near painted buildings or busy roads. Lead gets into the soil when the lead paint is removed or flakes off of older homes. Soil may also have been contaminated from leaded gasoline.

Water. Lead plumbing and solder used to connect water pipes may, over time, leach lead into the tap water in some homes. Water that sits in the pipes for a long period of time—for example, overnight—may contain significant amounts of lead. Running the water in the morning for a few minutes will help to flush out any lead that may have leached into the water.

Household Items. A lead glaze is sometimes used in the painting of ceramic dishes made outside of the United States, or old ceramic dishes previously made in the USA. Lead can also come from food stored in pewter or lead crystal serving containers.

Lead has also been added to the plastic in making vinyl (not metal) miniblinds. When exposed to sun and heat, the blinds deteriorate and produce lead-laced dust on the surface of the slats. The U.S. Consumer Product Safety Commission recommends that families with young children throw out any imported, matte finish, vinyl miniblinds that may have been made with lead. Vinyl miniblinds are now being produced without added lead.

Health Risks

Lead damages the brain, kidneys, central nervous system, and red blood cells. Lead poisoning in preschoolers can cause permanent stunting of growth. Lead poisoning can also cause severe nutrient losses due to kidney damage, anemia, and the decreased ability to fight diseases. Exposure to lead can decrease a child's ability to learn and develop. High lead levels can cause mental retardation, convulsions, coma, and even death. Some children who have lead poisoning may appear tired or cranky. They may complain of stomach pains or lack of appetite. Because these complaints are common in young children, no one may suspect lead poisoning.

Preschoolers are at significant risk for lead toxicity because of their higher rate of lead absorption; their rapidly developing nervous system; and their frequent exposure to lead by mouthing things, playing in the dirt, etc.

Figure 9. **Blood Lead Levels**

A blood test is used to identify individuals with elevated lead levels. Blood tests for lead levels may be done in the health department or other health facility. The WIC program does not test for lead, but the results of lead testing are used as part of WIC nutrition risk criteria.[1]

9 g/dl or less[2]	A child with a venous blood lead level that is **less than or equal to 9 g/dl** is considered to be relatively safe from the adverse effects of lead exposure.
10 to 14 g/dl	A child with a venous blood lead level that is **10 to 14 g/dl** is in a border zone. The parent/caregiver should be provided with basic nutrition education about nutrition and lead poisoning. They should be given the Florida Department of Health pamphlet, *Let's Be Lead Free: A Guide to Nutrition and Lead Poisoning Prevention.* The child must also be referred to their health care provider for follow-up lead testing.
15 to 19 g/dl	A child with a venous blood lead level that is **15 to 19 g/dl** has had more significant lead exposure. The parent/caregiver should receive individualized nutrition counseling by a nutritionist who will develop a nutrition care plan for the child. The child should be followed up on a regular basis to check the adequacy of his/her diet, particularly the iron and calcium content. The child must also be referred to his/her health care provider for follow-up testing.
20 to 69 g/dl	A child with a venous blood lead level that is **20 to 69 g/dl** is considered to be lead poisoned. The child requires urgent treatment by his/her health care provider.
70 g/dl or more	A child with a venous blood lead level that is **greater than or equal to 70 g/dl** has a medical emergency. The child requires immediate medical treatment.

1. For in-depth information about nutrition risk criteria, please refer to the Florida WIC Program Nutrition Risk Criteria Interpretive Guidelines.
2. g/dl = micrograms per deciliter, which is a unit of measure used to test the level of lead in the blood.

Preventing Lead Exposure[1]

Nutrition plays a key role in preventing lead poisoning. Individuals who are well-nourished are more likely to be protected from the harmful effects of lead exposure. In contrast, those at increased risk of poor nutritional status are at increased risk of lead poisoning.

To help protect against lead poisoning:

- Homes built before 1978 may have been painted with lead-based paint. The area where children play should be kept clean and free of dust. Floors should be cleaned with a wet mop. Toys and window sills should be wet-wiped. Doors, windows, and walls should be checked for chipped or crumbling paint.
- Treat all peeling paint as if it contains lead. Don't remove old paint with a dry method like sanding—this will create contaminated dust.
- Make sure children don't chew on anything covered with paint.
- Regular meals and snacks should be offered. More lead is absorbed on an empty stomach.
- Include plenty of iron-rich and calcium-rich foods in the child's diet, as these nutrients compete with lead for absorption in the intestines. Increased lead absorption has been associated with a calcium deficient diet and low iron stores.
- Let cold water run 2 minutes from the tap before use. The reason for this is: lead may be found in the solder used to join non-lead pipes. The longer water stays in the pipes without running, the greater the chance that lead (from the solder) will dissolve into the water. Water that has been sitting in the pipes should be flushed out, by running the water before using it.
- When hot water is needed for a beverage or food, obtain cold water from the tap and heat it to the desired temperature. Hot water from the tap is more likely to contain lead than cold water, since lead more easily dissolves into the hot water. If preparing infant formula, see preparation instructions in the Infant Nutrition Module.
- Always clean surfaces where food is prepared. Wash fresh foods carefully before eating or cooking.
- Do not cook, store, or make food in pewter, ceramic dishes that have a lead glaze, or leaded crystal. Some kettles, pots, and dishes made in other countries may contain lead.
- Remove food from cans before heating. Never heat food in the can. Never store foods in opened cans.
- Make sure that children's hands are washed often—before meals, naptime, and bedtime. Children should be taught to wash their own hands when they are old enough, and parents should make sure they do it.
- Food that falls to the floor should be thrown away. Pacifiers that fall to the floor should be washed.
- Dirt yards should be covered with grass or mulch. Grass or bushes should be planted near the house to keep dust and dirt away from the inside of the home.
- Workers who are exposed to lead at their workplace should not bring lead home. These workers should change into clean clothes before going home and should wash their work clothes separately.
- Avoid folk remedies such as alcaron, alkohl, azarcon, bali goli, coral, ghasard, greta, liga, pay-loo-ah, rueda, and litargirio. They may have a high lead content.

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1. For more information about lead and a list of local and state contacts, call the National Lead Information Center Hotline at 1-800-424-5323.

✎ *GO TO the Workbook for the Preschool Child Nutrition Module and complete Self-Check Questions 65–66 right now. Then, immediately check your answers against the Answer Key for the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.*

Dental Caries

Dental caries, commonly called "cavities," are a result of the progressive decay of the teeth. *Dental caries are the most prevalent disease for all age groups beyond infancy.* Some 6 out of 10 children in the United States have one or more decayed or filled primary teeth by age 5.[1] Dental caries and their treatment can be painful, expensive, and can result in loss of teeth.

Cause

Tooth decay is caused by bacteria in the mouth which break down dietary carbohydrates, producing acid that attacks the tooth. A cavity occurs when, over time, the acids dissolve a significant portion of the protective tooth enamel. Both sugars and starches can cause tooth decay. Notorious for tooth decay are "sticky" candies and dried fruit, like raisins, that will stick to the teeth. Other sweets that can lead to tooth decay include refined sweets like cakes, cookies, brownies, etc. and sipping on sweetened beverages throughout the day. Eating starchy foods like cold cereals, breads, crackers, and chips, without brushing the teeth, also result in acid production that can lead to cavities. Like sticky sweets, starchy foods tend to adhere to the teeth for a long time, allowing acid to continue to be produced and "eat away" at the tooth.

Another important factor in whether foods cause tooth decay is the *frequency of exposure* to foods that contain sugar and/or starch, rather than the quantity of the foods eaten. This is why it is important to limit the number of times each day that children's teeth are exposed to sugar or starchy foods.

Early Childhood Caries (also referred to as Baby Bottle Tooth Decay)

Children who are put to bed with a bottle of milk, juice, or sweetened drink can develop serious tooth decay called **early childhood caries (ECC) or baby bottle tooth decay.** ECC may occur in children who are given pacifying bottles of juice, milk, or formula to drink during the day or overnight. The sugar contents of the liquid pool around the upper front teeth, mix with cavity-causing bacteria, which causes rapidly progressing destruction. ECC is not only painful and unattractive because of the tooth decay, but may also cause problems such as crooked permanent teeth and speech problems, such as lisping. Children with these problems may be teased by other children.

1. U.S. Department of Health and Human Services, National Center for Health Statistics, 1997.

Children should *never* be put to bed with a bottle of milk, juice, or sweet drink. Weaning from bottle to cup should begin around 6 to 7 months of age and be completed near the time of the first birthday. *Bottles should not be used after 14 months of age for developmentally normal, healthy children.* Also, parents/caregivers should *not* allow children to *continuously* drink from a sippy cup (containing milk, juice, or sweet drink) throughout the day. An in-depth discussion of ECC is contained in the Infant Nutrition Module, and weaning is discussed in the beginning of Part 3 of this Preschool Nutrition Module.

Prevention

Cavities may be prevented by parents/caregivers adhering to the following guidelines:

1. **Regularly clean the child's teeth.**
   - Brush the teeth thoroughly after meals or at least twice daily, or as directed by the dentist or health care provider. Toothpaste should start to be used at about 18 to 24 months of age. (See number 4 on the following page for fluoride information.)
   - Parents/caregivers should begin flossing the child's teeth once a day when the child has all of his/her baby teeth, usually by age 2 to 2$^{1}/_{2}$ years.
   - Parents/caregivers should help their children brush and floss their teeth until children are able to effectively clean their teeth by themselves. By age 4 to 5, children should be able to brush their own teeth under the parent's supervision.
2. **Promote healthy eating and drinking habits.**
   - Follow the Food Guide Pyramid presented in this module.
   - Avoid foods high in sugar content, especially those that stick to the teeth, like gum drops. Even raisins as a between-meal snack should be offered only occasionally, since raisins also stick to the teeth.
   - Limit the number of *times* each day that children's teeth are exposed to sugar. If sweets are going to be served, they should be served *directly after mealtime* so that children can conveniently brush their teeth afterwards.
   - Serve snacks which are not as likely to promote tooth decay: raw fruits and vegetables*, cheese, yogurt, meat cubes or slices, unsweetened fruit juice, milk. **Caution: These foods may cause choking in young children.*
   - *Do not* put the child to bed with a bottle or sippy cup filled with milk, juice, or sweetened liquid.
3. **Take the child for regular dental check-ups.**
   - Parents should be encouraged to take children for regular dental check-ups beginning at 12 months of age, or 6 months *after* the first tooth erupts. Regular dental check-ups will help to detect and/or correct dental problems before significant problems develop, as well as provide parents/caregivers with education on oral hygiene techniques and prevention of tooth decay. Studies show that 40% of children from low-income families have untreated dental caries. (Cook, Sherman, and Brown, 1995) Dental services are provided through Medicaid for eligible clients.

4. **Follow recommendations regarding the use of fluoride for children.** For more information on fluoride, refer to the fluoride section of the Infant Nutrition Module.

   - Toothpaste containing fluoride should be used when brushing a child's teeth beginning at ages 18 to 24 months. A very small amount of toothpaste (the size of a pea) should be used because young children are likely to swallow it and can consume too much fluoride. Parents/caregivers should instruct children in good brushing and rinsing habits to minimize swallowing of toothpaste. Some children like to eat toothpaste, so it is important to keep it out of their reach.
   - Children under 5 years of age should not be given over-the-counter fluoride mouth rinses unless prescribed by their dentist.
   - Fluoride supplements are recommended for children when there is a low concentration of fluoride in the household water supply. Parents should follow the instructions of the child's health care provider on the use of fluoride supplements. Below is the Fluoride Supplementation Schedule adapted from page 525 of the *Pediatric Nutrition Handbook* of the American Academy of Pediatrics, 4th edition, 1998.

Age of Child	Amount of fluoride supplement recommended per day when the household water supply contains:		
	< 0.3 ppm[1] of fluoride	*0.3-0.6 ppm of fluoride*	*> 0.6 ppm of fluoride*
6 months to less than 3 years	0.25 mg[1] fluoride supplement per day	no fluoride supplement is recommended	no fluoride supplement is recommended
3 years to less than 6 years	0.5 mg fluoride supplement per day	0.25 mg fluoride supplement per day	no fluoride supplement is recommended
6 years to 16 years	1.0 mg fluoride supplement per day	0.5 mg fluoride supplement per day	no fluoride supplement is recommended

1. mg = milligrams; ppm = parts per million

Reasons for Preventing Cavities in Preschool Children

Some people believe that it is not important to take care of their children's baby teeth, because the baby teeth are going to fall out anyway and eventually will be replaced by the adult teeth. **This is wrong!** It is very important to take care of the baby teeth and to follow all the measures just listed in order to prevent cavities in them. Baby teeth are necessary for proper speech development; they maintain spaces for the permanent teeth to come in properly; and, if well cared for, they contribute positively to a child's self-esteem.

Treatment

Once dental caries exist, the only effective treatment is to have a dentist "fill" the cavity. Other interventions at this point are too late. However, following the guidelines that we have just listed for *preventing* caries may improve the child's future dental health.

Constipation[1]

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 to 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 to 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 percent whole grains.

At least 60 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 to 10 minutes after each meal.

Treating Constipation

The three major ways of **treating constipation** are to **increase fiber**, **fluid**, and **physical activity.** For young children, excessive milk consumption may also lead to constipation and should be discussed with the parent. When a child is constipated, *gradually* add more fiber-rich foods to the diet. Information regarding fiber can be found beginning on page 43 of this module. As the child gets more fiber-rich foods, he also needs more fluids. Water is best. As for milk, about 16 to 24 ounces per day is generally recommended. Four to eight ounces of juice per day can also contribute to the fluid intake.

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 the above-mentioned suggestions, there may be a more serious problem and the child should be seen by his/her health care provider.

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1. Adapted from: Texas Department of Health, Bureau of Nutrition Services, WIC Program. *Preschool Child Nutrition Module*; 2000, p. 3-14 to 3-16.

Diarrhea

A child with diarrhea has an increase in frequency, fluidity, or volume of stools compared to his/her normal stools. As already mentioned, normal bowel patterns vary among healthy children, and the frequency of stools for preschool children varies from once every 4 days to 2 or 3 stools per day.

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. On the other hand, 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.

All families should be encouraged to have a supply of a commercially available oral rehydration solution (ORS), such as Pedialyte® and Infalyte®, in the home at all times and to start therapy with ORS as soon as diarrhea begins. (Although producing a homemade solution with appropriate concentrations of glucose and sodium is possible, serious errors can occur; thus standard commercial oral rehydration preparations should be recommended.) The most important aspect of home management of diarrhea is the need to replace fluid losses *and* to maintain adequate nutrient intake. 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. Children with **minimal dehydration**, should be provided ORS for each episode of vomiting or diarrheal stool to *replace fluid losses*. (Children weighing under 22 pounds should be given 2 to 4 ounces ORS for each episode, while children weighing more than 22 pounds should be given 4 to 8 ounces ORS for each episode.) Children with **mild to moderate dehydration** would require replacement of fluid losses as described for those with minimal dehydration, as well as rehydration therapy of 3/4 to 1 1/2 ounces ORS per pound of the child's body weight over a 3 to 4 hours. For example, a 40 pound child would require 30 to 60 ounces of fluid for rehydration over 3 to 4 hours.

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., 1/2 cup fruit juice mixed with 1/2 cup water).

A child with diarrhea should be referred to a health care provider if:

- there is a history of premature birth, chronic medical conditions, or other illness occurring at the same time.
- there is fever of greater than or equal to 102°F (39°C).
- there is visible blood in the stool.
- there is high output, including frequent and substantial volumes of diarrhea.
- there is persistent vomiting.

- the parent/caregiver reports signs consistent with dehydration, such as sunken eyes, decreased tears, dry mucous membranes, or decrease urine output.
- there is a change in mental status, such as irritability, apathy, or lethargy.
- the child is not responding well to oral rehydration therapy already administered or there is an inability of the caregiver to administer oral rehydration therapy.

✎ **GO TO** *the Workbook for the Preschool Child Nutrition Module and complete Self-Check Questions 67-72 right now. Then, immediately check your answers against the Answer Key for the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.*

Food-Induced Reactions

Many adverse symptoms have been attributed to eating various foods, from hyperactivity to life-threatening shock. In some cases, food sensitivities are confirmed by a health care provider. In other cases, parents may come to their own conclusions about the cause of the symptoms without being diagnosed by a health care provider. To help you better understand this topic, **food hypersensitivity, food intolerance, food poisoning, and food additives,** will be discussed in this section of the module. If you have questions about how to deal with a child with food-induced reactions, ask the nutritionist or refer the child to the nutritionist.

Food Hypersensitivity: True Food Allergy

Food hypersensitivity (true food allergy) is a reaction of the immune system resulting from eating a food or food additive to which the child has become sensitized. The immune system is composed of body organs, cells, antibodies, and the chemicals released in the body which defend the body against infection. When an allergenic food is consumed, the allergen (the specific substance in the food, usually a protein) reaches the bloodstream and triggers body responses that produce the allergic symptoms.

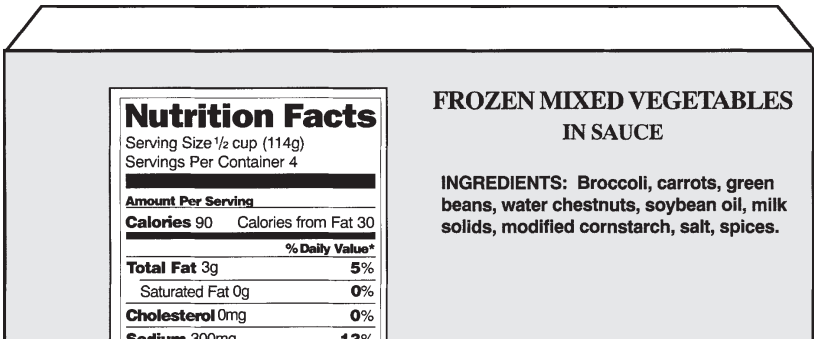
Note: For this module, the term "allergenic food" will be used to indicate a food to which an individual has a true allergic response.

- Allergic symptoms can include: hives, eczema, skin rashes, nausea, vomiting, diarrhea, cramps, wheezing, runny nose, coughing, swelling of the face or throat, and, in severe forms, can cause death if not treated immediately. Symptoms usually appear within seconds or up to 2 hours after eating the food. Reactions may be delayed up to 2 days later.
- Very small amounts of an allergen can produce an allergic response. For example, eating one bite of a piece of cake that has one egg in the entire cake can produce an immediate allergic response in a child allergic to eggs.

- Merely handling the allergenic food or breathing the vapors that are produced when the allergenic food is cooking can sometimes cause symptoms as well.
- Physical or emotional stress can increase the severity of the allergic response. For example, a child may have allergic symptoms after eating an allergenic food and exercising vigorously. If the same allergenic food was eaten by the child and the child had not been as physically active, the outcome may have been less severe symptoms or no symptoms.
- The foods which most often cause allergic reactions are milk, eggs, wheat, peanuts, tree nuts, and shellfish. Any food item which contains these foods *as ingredients* can cause allergic reactions in susceptible children. Citrus fruits, strawberries, chocolate, and tomatoes have also been also cited as causing food hypersensitivity.
- About half of the children who have food allergies before the age of 3 will outgrow them in 1 to 7 years.
- The majority of infants who are allergic to cow's milk will be able to tolerate cow's milk by the time they are 4 years old. Since many children will outgrow their allergies, parents should check with their health care provider about re-trials with cow's milk at a later date.
- Children who develop allergies to specific foods after age 3 tend not to outgrow these allergies.

Treatment of Food Hypersensitivity

Treatment of food hypersensitivity must be based on a correct diagnosis by a health care provider. Actual or true food allergies are *far less common* than generally thought. Sometimes major food groups are inappropriately omitted from a child's diet, based on a parent's initial guess. The long term elimination of staple items such as milk, eggs, and wheat should be done only when clearly justified by proper diagnosis.



If a child is truly allergic to a food, the food must be removed from the diet and appropriate substitutes found. Parents of an allergic child must be *vigilant* to check recipes, food labels, and to ask others who are preparing foods whether the allergenic ingredient is in the food. Parents should also explain to their child why certain foods must be avoided and provide encouragement to resist foods which cause allergic reactions. Children with a true food allergy to a major food group should be referred to the nutritionist for further consultation.

See *Figure 10. Alternate Calcium Sources*, on page 71, when milk and other milk products cannot be consumed.

Food Intolerance

Food intolerance is an abnormal response to a food or food additive which does not involve an immune mechanism. For example, children who have a lactose intolerance have *limited* ability to digest lactose, the sugar in milk, because their bodies are not producing an adequate amount of *lactase,* the enzyme needed to digest lactose. The cramps, bloating, gas, and diarrhea experienced after consuming milk is a result of the undigested milk sugar moving through the intestinal tract. Often a lactose-intolerant person can drink small amounts of milk at a time. Most children will not have a problem consuming 16 ounces of milk per day, *if the milk is consumed in* $^{1}/_{4}$ *cup servings at a time.* A permanent lactose intolerance is *not common* in preschool children.

Managing Lactose (Milk Sugar) Intolerance

The following are suggestions for managing lactose intolerance:

- Offer small amounts of milk at a time.
- Drink milk with other foods.
- Avoid eating combinations of dairy foods at the same meal.
- Eat yogurt or cheese to count as some of the recommended servings from the Milk, Yogurt, & Cheese Group.
- Lactose-reduced or lactose-free milk may be consumed instead of regular milk. (Special food packages with lactose-reduced or lactose-free milk may be prescribed for WIC clients. Refer the child's parent/caregiver to a nutritionist in these instances.)

Temporary Lactose Intolerance

Children may develop a *temporary intolerance* to lactose as a result of an intestinal disease (for example, caused by a virus such as the rotavirus). Lactose-free feedings may be required if diarrhea is prolonged.[1] Restriction of other sugars may also be necessary. Most children can gradually go back to normal eating in 1 to 3 weeks. When the infection is mild, milk products can often continue to be consumed. Frequent small feedings may be helpful.

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1. Severe and/or prolonged diarrhea can result in life-threatening dehydration. If a staff member has any concerns or questions about a child with diarrhea, the child should be referred *immediately* to a nutritionist or health care provider.

Alternate Calcium Sources

Refer to *Figure 10. Alternate Calcium Sources* on the following page. The foods in this figure are alternate sources of calcium for those who are unable to or do not desire to drink milk or eat milk products. The Adequate Intake (AI) for calcium for children 1 to 3 years old is 500 milligrams (mg) per day, and for children 4 to 5 years old, it is 800 mg per day.[1] Serving sizes shown in Figure 10 are for children 4 to 5 years old.

Obtaining 500 to 800 mg of calcium each day would be difficult without consumption of either milk, milk products, a calcium-fortified product, or a calcium supplement.[2] Keep in mind that **milk** is also an excellent source of protein, vitamins, and fluid. If a child does not drink milk, these nutrients must be provided by other sources.

Children need vitamin D (present in fluid milk) in order to utilize calcium in the body. Encourage the parent/caregiver of a child who cannot drink milk to discuss this with the child's health care provider. The American Academy of Pediatrics recommends that children who do not get regular sunlight exposure or who do not consume at least 16 fluid ounces of vitamin-D fortified milk per day, receive a supplement of 200 IU of vitamin D per day. This can be provided by a daily multivitamin supplement that contains at least 200 IU of vitamin D.[3]

Food Poisoning

Food poisoning is an illness caused by eating foods containing toxins or "poisons." Toxins may be either from the food itself (for example, poisonous mushrooms), food additives, or from microorganisms. An example of a microorganism which causes food poisoning is *Staphylococcus aureus*. This microorganism grows rapidly in protein foods left at room temperature, producing a toxin. The person who unsuspectingly eats a food with the toxin will soon experience severe nausea and vomiting. (You cannot smell or taste the toxin and it will *not* be easily destroyed by heat, e.g., reheating will *not* destroy the toxin.) Adequate food sanitation and avoidance of foods with toxic compounds will help to prevent this type of adverse food reaction.

Food Additives

Several food additives including sulfites and the food color tartrazine (FD & C Yellow No 5) cause allergic symptoms in some people. Sulfites can be especially problematic for children with asthma. Parents/caregivers of a child allergic to sulfites or tartrazine should carefully read labels of all processed foods and drugs.

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1. Refer to Figure 2 of this module.
2. When a food label's *Nutrition Facts* box states the % Daily Value (DV) for calcium, you can easily convert it to mg calcium by adding a zero to the number and removing the % sign. For example, 10% DV equals 100 mg of calcium for the serving size listed.
3. Gartner LM, Greer FR. Prevention of Rickets and Vitamin D Deficiency: New Guidelines for Vitamin D Intake. *Pediatrics.* 2003;111(4):908-910.

Figure 10. **Alternate Calcium Sources**[1]

Food	Serving Size	Amount of Calcium
Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group		
Calcium-fortified Tofu	1/2 cup	258 mg
Salmon, canned with bones	2 oz	121 mg
Sardines, with bones	2 sardines	92 mg
Egg*, cooked	1	25 mg
Dry Beans*, cooked	1/2 cup	24 to 40 mg
Peanut Butter*	2 tablespoons	11 mg
Milk Alternate		
Soy infant formula*	3/4 cup	114 mg
(Soy infant formula is fortified with calcium and vitamin D.)		
Fruit Group		
Calcium-fortified Orange Juice	3/4 cup	150 to 200 mg
Orange	1 medium	56 mg
Orange Juice*	3/4 cup	20 mg
Vegetable Group (cooked)		
Greens such as collards, kale, and spinach	1/2 cup	47 to 179 mg
(The calcium in greens is poorly absorbed.)		
Broccoli, Green Beans, Cabbage, Winter Squash, Mashed Potatoes[2], Brussels Sprouts, Carrots	1/2 cup	21 to 47 mg
Bread, Cereal, Rice, & Pasta Group[2]		
Calcium-fortified Cereals*	1 oz	80 to 150 mg
Buttermilk Waffle	1	78 mg
French Toast	1 slice	48 mg
English Muffin	1/2	46 mg
Biscuit, Pancake (homemade), Tortilla, Muffin	1	14 to 50 mg
For Comparison, the calcium amounts for foods from the Milk, Yogurt, & Cheese Group are shown below:		
Fluid Milk*	6 fluid oz	220 mg
Evaporated Milk*	3 fluid oz	276 mg
Dry Milk*	1/4 cup	377 mg
Yogurt	3/4 cup	206 to 300 mg
Natural Cheese* such as Cheddar, Mozzarella, Colby	1 oz	147 to 204 mg
Processed American Cheese*	1 1/2 oz	186 mg
Instant Breakfast	1 packet	79 to 150 mg
Cottage Cheese	3/4 cup	104 mg

* WIC Foods

1. Source of data: Pennington, JAT. Bowes and Church's Food Values of Portions Commonly Used. 17th Edition. Philadelphia: Lippincott-Raven Publishers; 1998.
2. Caution for those allergic to milk proteins: Many of these foods will contain added milk.

Other food additives have been suggested as being a dietary cause of hyperactivity. Advocates of this theory recommend providing a diet free of artificial colorings and flavorings, natural salicylates (mostly found in fruits), and some preservatives—this is referred to as the Feingold diet. Studies have shown that the Feingold diet has no effect on most children; however, a very small number of hyperactive children may benefit from a diet free of additives.

Health Advisory for Mercury in Fish

Fish can be an important part of a balanced diet. It is a good source of protein and is low in fat. However, some fish contain high levels of mercury. Too much mercury can harm unborn babies, infants, and young children (under 10 years). Pregnant women, breastfeeding women, women who may become pregnant, infants, and young children should not eat these fish: **Shark**, **Swordfish**, **King Mackerel**, and **Tilefish** (also known as **Golden Snapper** or **White Snapper**).

Is it OK for these women and young children to eat other fish such as shellfish, canned fish, smaller ocean fish, or farm-raised fish?

Yes. Each individual can safely enjoy eating 12 ounces of these types of cooked fish per week. A typical serving size of fish is from 3 to 6 ounces of cooked fish.
Note: 4 ounces of raw fish is about the size of a slice of sandwich bread. When cooked, 4 oz of raw fish equals about 3 oz of cooked fish.

What about fish caught in local Florida waters?

Pregnant women, breastfeeding women, women who may become pregnant, infants, and young children should limit their consumption of **Largemouth Bass**, **Bowfin**, and **Gar** to one serving per month. Other types of fish caught in Florida may also need to be limited, depending on where the fish was caught. For specific information regarding fish caught in Florida waters, go to the following Web site:

http://www.doh.state.fl.us/Environment/hsee/fishconsumptionadvisories/index.html.

✎ **GO TO** *the Workbook for the Preschool Child Nutrition Module and complete Self-Check Questions 73-78 right now. Then, immediately check your answers against the Answer Key for the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.*

Part 4. Physical Activity for Preschool Children

Physical Activity Guidelines for Toddlers and Preschoolers

The National Association for Sport and Physical Education (NASPE) released Early Childhood Physical Activity Guidelines in February 2002. The document was developed to provide teachers, parents, caregivers, and health care professionals with guidelines that address the kinds of physical activity, the environment, and the individuals responsible for facilitating the physical activity for toddlers and preschoolers.

Dr. Jane Clark, professor at the University of Maryland, who chaired the task force that developed the guidelines stated, "Adopting a physically active lifestyle early in life increases the likelihood that infants and young children will learn to move skillfully. Promoting and fostering enjoyment of movement and motor skill confidence and competence at an early age will help to ensure healthy development and later participation in physical activity."

For toddlers, basic movement skills such as running, jumping, throwing, and kicking do not just appear because a child grows older, but emerge from an interaction between hereditary potential and movement experience. These behaviors are also clearly influenced by the environment. For instance, a child who does not have access to stairs may be delayed in stair climbing and a child who is discouraged from bouncing and chasing balls may lag in hand-eye coordination.

During the preschool years, children should be encouraged to practice movement skills in a variety of activities and settings. Instruction and positive reinforcement is critical during this time in order to ensure that children develop most of these skills before entering school.

Guideline 1. Toddlers should accumulate at least 30 minutes daily of structured physical activity; preschoolers at least 60 minutes.

Guideline 2. Toddlers and preschoolers should engage in at least 60 minutes and up to several hours per day of daily, unstructured physical activity and should not be sedentary for more than 60 minutes at a time except when sleeping.

Guideline 3. Toddlers should develop movement skills that are building blocks for more complex movement tasks; preschoolers should develop competence in movement skills that are building blocks for more complex movement tasks.

Guideline 4. Toddlers and preschoolers should have indoor and outdoor areas that meet or exceed recommended safety standards for performing large muscle activities.

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

When the guidelines were released, Nazrat Mirza, MD, a pediatrician at Children's National Medical Center, Washington, D.C. stated the following:

> Obesity is a major health problem in children and adolescents. Over the past 20 years, obesity has tripled among adolescents and doubled among children in this country. The rapid rise of obesity is due to decreased physical activity and increased sedentary activities such as watching television and computer and video games. Prevention and treatment of obesity entails changes in lifestyle that promote physical activity and minimize sedentary behavior. Although there is no data to show strong correlation between obesity in early childhood and adult obesity, promoting positive behaviors early on in childhood may lead to persistence of these behaviors into adulthood—helping alleviate the problem of obesity.

NASPE Executive Director, Judy Young, PhD, stated the following:

> Because children are not small adults, these activity recommendations are based on the developmental characteristics of children. For instance, children develop skills through involvement in physical activity and parent involvement plays a significant role in children developing motor competence and enjoying physical activity. Only through devoting time to these skills will they become a regular part of a healthy lifestyle. Children and youth who do not participate in adequate physical activity are much more likely to be sedentary as adults than children and youth who are active.

Information about NASPE can be found on the Internet at *www.aahperd.org*, the web site of the American Alliance for Health, Physical Education, Recreation & Dance (AAHPERD).

"Fit WIC" Concepts and Activities for Preschoolers

In 1998, USDA funded a childhood obesity prevention initiative called "Fit WIC." The purpose of this initiative was to examine how WIC could better respond to the issue of childhood obesity. The "Fit WIC" implementation manual contains the experiences of the five "Fit WIC" Project Teams, their procedures, requirements, problems experienced, suggested solutions, outcomes, lessons learned and recommendations. The manual presents five intervention programs that can be implemented in your WIC agency or in other community agencies directed toward the prevention of overweight in young children. This document can be found on the Internet at *www.nal.usda.gov/wicworks/Sharing_Center/statedev_FIT.html*.

Here are the concepts and developmentally appropriate physical activity guidelines for preschoolers from the Vermont "Fit WIC" Educator's Guide:

"Fit WIC" Concepts

- Children learn by doing, and young children use movement to explore many aspects of their environment. Physical activity is an essential component of a child's overall development. Learning physical skills is as important as learning colors, numbers, and letters. In fact, when children are physically active they are using their brains as much as their muscles.
- Although young children can learn some fundamental physical skills on their own, they also need adult help to further develop and expand their motor competence. Children need guidance to master movement skills, just as they do to refine other cognitive skills.
- Parents are their child's first and most important teachers. All parents can teach their children physical skills, thus giving them the direction and encouragement they need to feel successful and self-confident. Parents who serve as role models for physical activity and who are involved in their child's play also contribute greatly to their child's successful overall development. As educators, you are equally important teachers and role models of physical activity for young children.
- Outdoor playtime is more likely to produce vigorous physical activity in young children than indoor playtime.
- Children benefit from being physically active everyday. Regular physical activity improves mood and overall health and prevents overweight and related diseases. Play everyday!

"Fit WIC" Physical Activity Guidelines

Young children need to participate in age-appropriate skill building activities to help them develop physical, as well as social, emotional, and cognitive skills. Children learn best when they can integrate all of these aspects of development.

- Basic motor skills such as throwing, catching, kicking, balancing, etc. should be taught to young children using age and developmentally appropriate methods. The fundamental skills learned during the toddler and preschool years are essential building blocks for adding the more complex motor skills that are required during the school years and on into adulthood. These are skills that children will use throughout their lives. Active children may be more likely to grow into active adults.
- Preschool movement activities involve the large muscle groups and focus on gross motor practice much more than the small muscle, fine motor activities that are appropriate for older children.
- Young children are naturally active and enjoy exploring their environment when given the opportunity. They are interested in playing with others, but may not always be

able to share or wait their turn. It is best if each child can have his/her own equipment, allowing all children in a group to play simultaneously and continuously. The emphasis should be on cooperation, not competition.

- Sometimes it's good to let children run with their imaginations, while at other times it's good to direct their play. Young children like and need guidance.
- The NASPE physical activity guidelines (as discussed in the beginning of Part 4 of this module) were incorporated into the Vermont Fit WIC activities.
- Children tend to have short bursts of vigorous activity, followed by recovery periods, throughout the day.
- Each preschool child's physical, social, and cognitive abilities will be different. It's important to encourage and praise each child's efforts to master the fundamental motor skills. Children need to be challenged with physical activity, but at the same time need to feel successful in their efforts about 70 to 80 percent of the time. If children become frustrated or bored with an activity, the skill they are working on should be modified so that it is a little easier or a little more challenging for that child. Activities should be modified to meet the special needs of children with disabilities.

The Parent's Role in Physical Activity for Preschoolers

Parents should be encouraged to:

- Be more active with their child. Be a role model. For example: plan family hikes, nature walks, and camping trips.
- Provide the time, place, and equipment, if necessary, for their child to participate in active play. For example: check to see what sort of recreational programs are available such as swimming lessons, neighborhood activity centers, YMCA programs, and city park programs.

- Help children develop motor skills such as jumping or throwing a ball so that they can enjoy physical activity throughout their lives.
- Limit television, video, and computer games to 1 to 2 hours per day. Choose quality television programs or videos and, when possible, those that are free of advertising. Do not allow the child to have a television in his/her bedroom. Children under age 2 should not watch any television.
- Try to find a child care provider that incorporates physical activity into the day. If lack of space or equipment is the problem, work with the child care provider to come up with creative ideas to provide physical activity opportunities for the children.
- Offer activities, not food, as rewards.

Playing with Your Toddler[1]

Activities to build large muscles:

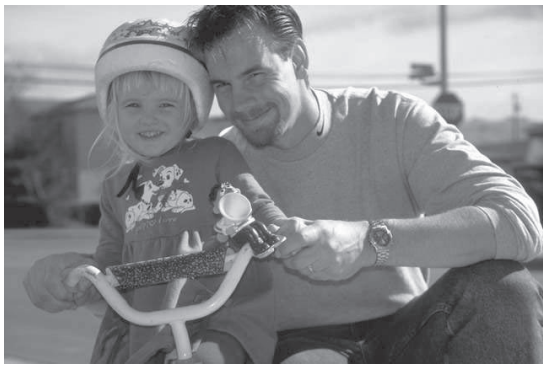
- Dancing
- Riding toys
- Pushing and pulling
- Jumping
- Throwing
- Hopping

Games to play:

- Dance to music
- Follow-the-leader
- Hide and seek
- Make believe (that you are cooking, in a band, cleaning house, etc.)

Activities to build small muscles:

- Stacking blocks
- Using a spoon
- Drawing with jumbo crayons
- Picking up small objects
- Putting toys and puzzles together



Playing with Your 3 to 5 Year Old[1]

Preschoolers learn by:

- Copying
- Following examples
- Following simple directions
- Playing make believe
- Moving

Toys to play with:

- Light weight hand paddles
- Hula hoops
- Beach balls/large balls
- Tricycle
- Jump ropes
- Light weight bat and ball
- Child-size toys such as a broom or rake
- Toy cars and trucks
- Blocks

Activities for the preschooler:

- Catching
- Tumbling
- Dancing
- Galloping
- Skipping
- Kicking
- Crawling
- Climbing
- Rolling
- Hopping

Games to play:

- Hopscotch
- Leap frog
- Hide-and-seek

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1. Information in this section was adapted from these pamphlets: *Playing with Your Toddler* (IC 910098) and *Playing with Your 3 to 5 Year Old* (IC 910086) developed by the WIC Supplemental Nutrition Branch, California Department of Health Services, June 2002.

Indoor helping activities:

- Pick up toys
- Help make beds
- Help dust furniture
- Help feed and care for pets
- Help clean floors
- Carry laundry
- Help with grocery shopping
- Help with meal preparation

Outdoor helping activities:

- Help walk the dog
- Help clean up the yard
- Help garden
- Help wash the dog
- Help wash the car

Injury Prevention and Safety

Here are some tips for injury prevention and safety:

- Children should be supervised when they participate in physical activity.
- Safety equipment should be used when children participate in certain physical activities, e.g., using a helmet when riding a bicycle.
- Protect children from excessive exposure to the sun by using sunscreen, sunglasses, brimmed hats, and clothing that protects the skin.
- If outdoor safety is a concern, children can do many activities indoors with soft equipment that can be used in tight spaces (e.g., playing "Simon Says," tag, or hide-and-seek; tossing a ball; crawling through an obstacle course).

✎ **GO TO** *the Workbook for the Preschool Child Nutrition Module and complete Self-Check Questions 79-81 right now. Then, immediately check your answers against the Answer Key for the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.*

Part 5: Case Studies

Read the following four case studies and the suggestions given for counseling the clients in these case studies. When you are finished reading these case studies, you will be given an opportunity to test your skills by doing the *Practical Activity* which involves an in-depth look at another fictitious case study.

Case Study #1

Mary Ambrose is an active, energetic 2-year-old child enrolled in your WIC program. Her height, weight, and hematocrit are normal. Her mother complains that Mary is a very picky eater and will hardly eat anything. In particular, Mary will not eat vegetables. Mary's mother complains that the only way she can get Mary to eat her vegetables is to tell her she can have her favorite dessert if she eats all the vegetables on her plate.

Possible counseling points:

✔ Reassure Mary's mother that Mary's growth is *normal* and that it's common for preschoolers to be picky about their food. After a child reaches one year of age, changes in her food intake occur; i.e., at this time, the child's rate of growth slows down and her appetite decreases or is erratic. Thus, Mary may not seem to be eating much because she is not growing as rapidly *now* as she did when she was younger. Also, you may want to remind Mary's mother that Mary's serving sizes are smaller than the adult serving sizes.

✔ Encourage Mary's mother to *continue* to offer vegetables, to prepare them in a variety of ways, and to set an example by eating and enjoying vegetables. Reassure her that children often need to be exposed to vegetables a number of times before they decide to eat them.

✔ Try serving spaghetti, lasagna, or other tomato-based meal.

✔ Try "disguising" vegetables in dishes like omelets or pizza or in breads and muffins (like pumpkin bread, zucchini bread, or carrot muffins).

✔ Suggest that bribing Mary with dessert may be encouraging her to overeat. It also may reinforce the idea that vegetables are bad and sweets are good.

✔ Recommend "between meal" snacktimes that are established and consistent. It may be that Mary is allowed to snack throughout the day. Then, when it comes to mealtimes, Mary is not hungry and only eats a little.

Counseling point you should NOT suggest:

⦸ Tell Mary's mother that because Mary is a preschooler she is growing very fast and she should be eating a lot every day.

Note: If Mary's height and/or weight should begin to drop out of normal range, or she has other symptoms of illness, Mary may need to be checked by her health care provider to see why her appetite is so poor. Refer her to the nutritionist for further assessment.

Case Study #2

The Pollard family sits down to dinner one night. The Pollard family includes Mr. and Mrs. Pollard and their two children, Sandra (28 months) and Amy (7 years). The dinner meal that night consists of noodles, hamburger patties, and carrots. The children are each given a glass of milk. Mrs. Pollard knows from past experience that Sandra doesn't like cooked carrots, but that she does like noodles and milk and will generally eat hamburger. Towards the end of the meal, Sandra hasn't eaten much. She ate some noodles and drank half her milk, but she hasn't touched her meat or carrots. Sandra starts to fidget and play with her food. Mrs. Pollard lets her get down from the table to go play. If Mrs. Pollard described this situation to you in the WIC office the next day, what would be an appropriate response you could give her?

Possible counseling points:

✔ Suggest that Mrs. Pollard continue to include at least two things in the meal that Sandra likes to eat, but don't limit the menu to only those things Sandra likes.

✔ Reassure Mrs. Pollard that Sandra probably wasn't very hungry and that it was okay to let her be excused from the table when she had lost interest in the food.

✔ Praise Mrs. Pollard for not offering to fix Sandra something else for dinner when she refused the hamburger and carrots.

✔ Praise Mrs. Pollard for offering a well-balanced meal, but not forcing Sandra to eat it.

Counseling points you should NOT suggest:

⦸ Tell Mrs. Pollard that she should have made Sandra sit at the table until she had eaten her hamburger and carrots, because otherwise her intake at the meal was very inadequate.

⦸ Tell Mrs. Pollard to promise Sandra dessert if she eats her hamburger and carrots next time.

Case Study #3

A father complains to you that his 3-year-old son, Jason, will eat only sweets.

Possible counseling points:

✔ Try to help the father realize that parents are in charge of the foods that are available in the home and that maybe a parent/caregiver is buying too many sweets.

✔ Help the father determine whether he is using sweets as a reward with his son.

✔ Make "sweets" something more nutritious, such as frozen fruit bars, custard, or pudding.

✔ Find out what other *more nutritious* foods Jason likes, and encourage Jason to eat these foods; have them available in the home.

Counseling point you should NOT suggest:

⃠ Tell Jason's father that he should never keep any sweets in the house.

Case Study #4

Mr. and Mrs. Eastman come into your WIC office for their nutrition education appointment. They complain that they have been trying to serve well-balanced meals, but their $2^1/_2$-year-old Jennifer is so active that she won't sit down at the table and consequently misses many meals.

Possible counseling points:

✔ It's reasonable for parents to insist that all family members come and sit at the table at mealtime, at least for a while, whether they want to eat or not.

✔ A brief, quiet period before meals might help Jennifer calm down. For example, one parent can read a book to her while the other finishes dinner preparation.

✔ Help the parents determine whether there are distractions (such as television or loud music) that may be making it hard for Jennifer to settle down.

Counseling points you should NOT suggest:

⃠ Jennifer must be hyperactive since she won't sit at the table and must be seen by her health care provider.

⃠ Jennifer needs to be put on a strict diet which eliminates food additives. These additives might be causing her to be hyperactive.

Congratulations! You have just finished your study of the Preschool Child Nutrition Module.

Self–Check Preschool Nutrition

✎ **GO TO** *the "Practical Activity for the Performance Objectives," which is in your Workbook for the Preschool Child Nutrition Module—it follows the Answer Key to the Self-Check Questions. Do this Practical Activity according to the instructions provided.*

Preschool Child Nutrition References

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Pamphlets that can be used for nutrition education:

Florida Department of Health pamphlets:

Feeding Your Child, Ages 2 to 5. DH 150-96 (English), DH 150-36 (Spanish), and DH 150-759 (Creole).

Feeding Your Toddler, Ages 12-24 months. DH 150-394 (English), DH 150-497 (Spanish), and DH 150-758 (Creole).

Iron for Healthy Blood. DH 150-94 (English), DH 150-30 (Spanish), and DH 150-375 (Creole).

Let's Be Lead Free. DH 150-687 (English), DH 150-688 (Spanish), and DH 150-693 (Creole).

Make the Most of Milk. DH 150-575 (English) and DH 150-629 (Spanish).

Protecting Tiny Teeth. DH 150-113 (English) and DH 150-303 (Spanish).

Smart Snacks Using the Food Guide Pyramid. DH 150-37 (English) and DH 150-510 (Spanish).

Vitamin A. DH 150-574 (English).

Weight: Keeping a Healthy Balance in Children. DH 150-521 (English) and DH 150-630 (Spanish).

Center on Hunger and Poverty camera-ready pamphlets: Camera-ready copies of these nutrition pamphlets were sent to all Florida local WIC agencies from the state WIC office. To order additional copies, go to www.centeronhunger.org/pubs.html#NE.

Exploring Healthy Eating - Training Packet (includes Curriculum, Discussion Guide and Tip Sheets), 1999.

Exploring Healthy Eating - Nutrition Curriculum for Parents, Providers and Preschoolers, (available in English and Spanish), 1997.

"Fit WIC" Materials: For PDFs of these materials, go to: www.nal.usda.gov/wicworks/Sharing_Center/statedev_FIT.html

Additional Resources

Bright Futures
Bright Futures is a national health promotion initiative dedicated to the principle that every child deserves to be healthy and that optimal health involves a trusting relationship between the health professional, the child, the family, and the community as partners in health practice. The publications *Bright Futures in Practice: Nutrition* (2nd ed.) and *Bright Futures in Practice: Physical Activity* contain sections for preschoolers. Also, there are a series of client education fact sheets that can be printed or ordered. Bright Futures publications and training tools are at: www.brightfutures.org.

Give Me 5 A Day! (English and Spanish)
This colorful, interactive children's book was published in 2003 by the Florida Department of Health, Bureaus of WIC and Nutrition and Child Nutrition Programs. The book was written to improve literacy among lower income individuals by encouraging reading and to "teach" information about nutrition. The book combines the "5 A Day" message with physical activity. For ordering information, see the Florida Department of Health website at: www.doh.state.fl.us.

Florida Kids! Get Fit! (English and Spanish on one poster)
A large (54" x 29") laminated poster developed by the Florida Department of Health from a page in the *Give Me 5 A Day!* book. It shows fruit and vegetable characters being physically active, and contains both a "5 A Day" message and a physical activity message. This poster can double as a display for health fairs, waiting rooms, etc.

Go, Glow, Grow Foods for You (English and Spanish)
This colorful, interactive nutrition activity booklet for 3- and 4-year-olds was published in April 1996. Its focus is the Food Guide Pyramid and eating a variety of foods. Parents, teachers and caregivers can use it to introduce or reinforce nutrition messages for children. Up to 30 copies may be ordered through USDA Team Nutrition at: www.fns.usda.gov/tn/Resources/NTISform.html. Additional copies may be purchased from NFSMI. Call 1-800-321-3054.

Healthy kids. Healthy families. (English and Spanish)
This free brochure contains information about physical activity for children and their families. It is available at: www.cdc.gov/HealthyYouth/PhysicalActivity or call (888) 231-6405.

Nibbles for Health: Nutrition Newsletters for Parents of Young Children
This kit was published in March 2003 by USDA Team Nutrition. It contains a Leader Guide, 41 newsletters, and 3 sharing sessions which are intended for parents of preschool-aged children, to help them promote healthful eating and active living to young children. This document can be found at: www.fns.usda.gov/tn/Resources/index.htm.

Raising Healthy Children (English and Spanish)
In 2002, this curriculum was adapted by the Florida Department of Health from the Pennsylvania WIC Program. Although designed as an obesity prevention program, the different topics focus on healthy eating habits and physical activity that can be applied to almost all children. Topics include: (1) Limit Juice Intake; (2) Choosing Healthy Snacks; (3) Choosing Fast Foods Wisely; (4) Eating More Fruits and Vegetables; (5) Increasing Physical Activity; (6) Choosing Lowfat Foods; and (7) Teaching Positive Attitudes About Foods.

Tickle Your Appetite WIC/Team Nutrition Educator's Kit for Children
This kit was published in November 1997 by USDA Team Nutrition. It provides ideas and materials to communicate key nutrition messages to WIC preschool participants ages 3 to 5 years. It contains: three 4-minute video segments; an audiotape with songs from the video; activities; recipes; and reproducible handouts and artwork. This kit was distributed to all local WIC agencies.

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Bureau of WIC and Nutrition Services

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