

Simplified Diet Manual

Eleventh Edition

Iowa Dietetic Association

Edited by Andrea K. Maher, R.D., L.D.



Includes
Study Questions and
Patient Handouts
on a Companion
Website

 WILEY-BLACKWELL

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 **WILEY-BLACKWELL**

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This book has a companion website providing patient education handouts and study questions only available online at www.wiley.com/go/maher.

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About the Book

The eleventh edition of the *Simplified Diet Manual* marks 59 years of its publication by the Iowa Dietetic Association. In 1953 Nina Kagarice Bigsby, the dietary consultant to small hospitals and nursing homes for the Iowa State Department of Health, began a survey of diets that were being prescribed by physicians in Iowa. A trial manual was compiled, used for several months in ten Iowa hospitals, and evaluated by a special committee of the Iowa Dietetic Association; then a manuscript was prepared for publication.

Hospitals and long-term care facilities in every state and many foreign countries now use the *Simplified Diet Manual*. The Iowa Dietetic Association receives the royalties from its publication and uses them for the organization's mission: "Empower members to be Iowa's food and nutrition leaders."

Through the eleven editions, many thoughtful, practical, and insightful Iowa dietitians have contributed their expertise, ideas, and experience to keep the *Simplified Diet Manual* up to date while retaining its straightforward and uncomplicated style.

Educational handouts are now available with the diet manual. Visit the website www.wiley.com/go/maher for patient education handouts that correspond with the therapeutic diets in the *Simplified Diet Manual*.

Study Guide Questions have been incorporated within the diet manual to give practice in applying the information. The material included has been carefully selected to cover basic information on the General Diet and its modifications for individually prescribed diets. Successful completion of this study will improve the skill of foodservice employees and other healthcare workers.

Instructions for Students:

1. Read and study each chapter of the *Simplified Diet Manual*.
2. Review the Study Guide Questions that follow each chapter, and answer as specified. Refer back to the chapter as needed. In some questions several answers are possible.
3. See Appendix 18 for the Suggested Responses; they may be removed from the manual. For incorrect answers, review with the instructor. If the answer section is left in the book, students should complete each section and then compare the answers with those in the answer section. The instructor should review answers with the students to provide additional clarification and explanation as needed.

The eleventh edition was edited by Andrea Maher, RD, LD, a consultant dietitian in long-term care. It reflects the comments and recommendations of Iowa Dietetic Association members and other users of this manual. These suggestions led to the revisions and additions that make this edition as comprehensive and useful as possible, consistent with current advances in Medical Nutrition Therapy.

The eleventh edition was endorsed by the Iowa Dietetic Association Publications Committee, Judy Fitzgibbons, MS, RD, LD, Chair; the Iowa Dietetic Association Board, Jill Lange, MPH, RD, LD, President; Iowa Dietetics in Health Care Communities, Jill Dolan, RD, LD, Chair; and Darcy Otto, C.D.M., C.F.P.P., Iowa Dietary Managers Association, Past-President.

The major changes in this edition are outlined in detail in the Preface.

Preface

In the early 1980s, the Iowa Dietetic Association adopted the policy of reviewing and revising its publications, including the *Simplified Diet Manual*, on a regular basis. The eleventh edition reflects the seventh time the manual has been revised under this policy. The diet manual is kept up to date and on the cutting edge by registered dietitians from the Iowa Dietetic Association that have expertise in the therapeutic diets in which they contribute.

The eleventh edition of the *Simplified Diet Manual* strives to keep up with the changes in the science of nutrition using evidence-based research. Its basic purpose is to provide consistency among diet terminology, in a simplified manner, for the prescription and interpretation of diets or nutrition plans.

Individuals' nutrition plans must meet their needs physiologically, psychosocially, and functionally. Nutritional adequacy must be emphasized, but the consideration of these needs will contribute to the greatest success. In all cases, we advocate the most liberal, least restrictive diets to meet nutritional needs, especially for residents in long-term care facilities.

Several changes were made to this edition:

- Revision of FOOD FOR THE DAY tables using wider variety of culturally diverse foods
- Addition of the Mechanical Soft and Pureed Diets
- Addition of the Small Portions Diet
- Revision of the Fat Restricted Diets
- Addition of the DASH Diet
- Revision of the Diets for Kidney and Liver Disease to include potassium and phosphorus food lists and section on Guidelines for Liver Disease

- Addition of the Kosher Diet
- Inclusion of *Choose Your Foods*, Exchange Lists for Diabetes (© 2008, American Dietetic Association, American Diabetes Association)
- Inclusion of updated Study Guide Questions at the end of each chapter for training foodservice employees in healthcare facilities that are served by a registered dietitian or dietary consultant.
- Inclusion of online patient education handouts that coordinate with therapeutic diets in the manual

The *Simplified Diet Manual* includes suggested meal patterns with most diets. As the use of the manual has spread, we realize that the names we use for meals do not always fit those used in other regions and countries. For meal planning purposes, we define meal names as follows:

Breakfast: *The first meal of the day, served shortly after rising.*

Lunch: *The meal served at midday.*

Supper: *The meal served in the evening, often a lighter meal than the midday meal.*

Snacks: *A small amount of food offered in addition to main meals.*

Simplified Diet Manual

Eleventh Edition

Guidelines for Diet Planning



Current dietary recommendations for Americans are based on two complementary resources: the Dietary Reference Intakes (DRIs) and the Dietary Guidelines for Americans (DGA).

The DRIs are published by the Food and Nutrition Board of the National Academy of Sciences. They are intended to serve as a guide for good nutrition and provide the scientific basis for the development of food guidelines in both the United States and Canada. The nutrient reference values are specified on the basis of age, gender and life stage. (1) The DRIs provide reference values for both adequate intakes and upper levels of intakes. This edition of the *Simplified Diet Manual* includes the DRIs available to date (see Appendix 1–4).

DIETARY GUIDELINES FOR AMERICANS

The *Dietary Guidelines for Americans 2010* provide advice for making food choices that promote health, a healthy weight, and help prevent disease for healthy Americans, ages 2 and older. The US Department of Agriculture (USDA) and the US Department of Health and Human Services (USDHHS) jointly publish them. The DGA are reviewed by a panel of scientists, updated if necessary, and published every 5 years. They form the basis for federal nutrition policy, education, outreach, and food assistance programs used by consumers, industry, nutrition educators, and health professionals.

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The *Dietary Guidelines for Americans 2010* were released in January 2011 and are available at www.dietaryguidelines.gov. For the first time, the guidelines address an unhealthy American public, with the majority of women and men classified as overweight or obese and the rest at risk of becoming obese. This increases the urgency and significance associated with the translation and implementation of the DGA. The decision-making process and evidence relevant to each review is publicly available at www.nutritionevidencelibrary.gov.

The DGAs recommendations support two major themes:

1. Maintain calorie balance to achieve and sustain a healthy weight by
 - Controlling total calorie intake to manage body weight. For most people, this will mean consuming fewer calories by making informed food and beverage choices.
 - Increasing physical activity and reducing time spent in sedentary behaviors.
2. Focus on nutrient-dense foods and beverages by
 - Increasing intake of foods that are consumed below recommended amounts. For most people, this means choosing more vegetables, fruits, whole grains, fat-free or low-fat milk and milk products, seafood, and oils.
 - Reducing intake of foods and food components consumed in excessive amounts. For most people, this means consuming fewer foods and beverages high in solid fats (sources of saturated and trans fatty acids), added sugars, and sodium (i.e., consume these foods and beverages less often and in small amounts). If alcohol is consumed at all, it should be consumed in moderation and only by adults of legal drinking age.

Figure 1.1 summarizes the degree to which Americans under-consume nutrient-dense foods and over-consume problem foods and the nutrients that should be limited.

USDA Food Patterns

The USDA Food Patterns provide recommended average daily intake of nutrient-dense foods from each food group at various calorie levels. The food pattern templates allow for flexibility in food choices to accommodate individual food and beverage preferences. Research on eating patterns is incorporated for the first time in the *Dietary Guidelines for Americans 2010*. Mediterranean-style eating patterns and the DASH diet (see Chapter 8) are recognized for their beneficial health outcomes and their food groups are compared to the USDA Food Patterns in the *Dietary Guidelines for Americans*.

The *Dietary Guidelines for Americans 2010* policy document states, “The USDA Food Patterns emphasize selection of most foods in nutrient-dense

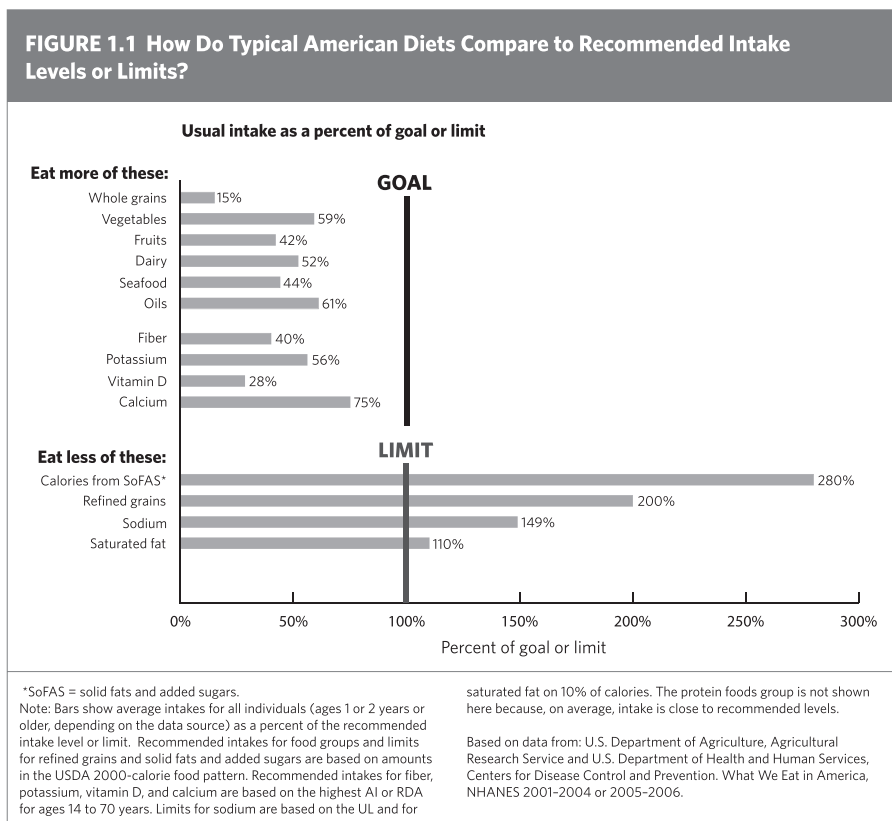


Figure 1.1 How Do Typical American Diets Compare to Recommended Intake Levels or Limits?

forms—that is, with little or no solid fats and added sugars.” The food patterns include calorie levels ranging from 1,000 to 3,200. Calorie levels ranging 1,000 to 1,400 meet the needs of most children ranging 2 to 8 years old. Patterns at 1,600 and more meet the needs for adults and children ages 9 years and older.

A “discretionary calorie” allowance is no longer included because it was a difficult concept for consumers to understand. Instead, a maximum limit for calories from solid fats and added sugars in each food pattern is provided that allows for some foods that have a higher level of solid fat or a small amount of added solid fat or added sugars. If choices that are not nutrient dense are routinely eaten, total calories will be over-consumed due to increased calories from solid fats and added sugars. If all food and beverage choices were in forms typically consumed rather than nutrient-dense forms, intake from the food groups and oils in the 2,000-calorie pattern would actually be about 2,400 calories, or 400 calories more than the target calorie level. See “USDA Food Patterns” chart in this section.

Table 1.1 USDA Food Patterns

For each food group or subgroup,^a recommended average daily intake amounts^b at all calorie levels. Recommended intakes from vegetable and protein foods subgroups are per week. For more information and tools for application, go to ChooseMyPlate.gov.

Calorie level of pattern ^c	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
Fruits	1 c	1 c	1½ c	1½ c	1½ c	2 c	2 c	2 c	2 c	2½ c	2½ c	2½ c
Vegetables^d	1 c	1½ c	1½ c	2 c	2½ c	2½ c	3 c	3 c	3½ c	3½ c	4 c	4 c
Dark-green vegetables	½ c/wk	1 c/wk	1 c/wk	1½ c/wk	1½ c/wk	1½ c/wk	2 c/wk	2 c/wk	2½ c/wk	2½ c/wk	2½ c/wk	2½ c/wk
Red and orange vegetables	2½ c/wk	3 c/wk	3 c/wk	4 c/wk	5½ c/wk	5½ c/wk	6 c/wk	6 c/wk	7 c/wk	7 c/wk	7½ c/wk	7½ c/wk
Beans and peas (legumes)	½ c/wk	½ c/wk	½ c/wk	1 c/wk	1½ c/wk	1½ c/wk	2 c/wk	2 c/wk	2½ c/wk	2½ c/wk	3 c/wk	3 c/wk
Starchy vegetables	2 c/wk	3½ c/wk	3½ c/wk	4 c/wk	5 c/wk	5 c/wk	6 c/wk	6 c/wk	7 c/wk	7 c/wk	8 c/wk	8 c/wk
Other vegetables	1½ c/wk	2½ c/wk	2½ c/wk	3½ c/wk	4 c/wk	4 c/wk	5 c/wk	5 c/wk	5½ c/wk	5½ c/wk	7 c/wk	7 c/wk
Grains^e	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	6 oz-eq	6 oz-eq	7 oz-eq	8 oz-eq	9 oz-eq	10 oz-eq	10 oz-eq	10 oz-eq
Whole grains	1½ oz-eq	2 oz-eq	2½ oz-eq	3 oz-eq	3 oz-eq	3 oz-eq	3½ oz-eq	4 oz-eq	4½ oz-eq	5 oz-eq	5 oz-eq	5 oz-eq
Enriched grains	1½ oz-eq	2 oz-eq	2½ oz-eq	2 oz-eq	3 oz-eq	3 oz-eq	3½ oz-eq	4 oz-eq	4½ oz-eq	5 oz-eq	5 oz-eq	5 oz-eq
Protein foods^d	2 oz-eq	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	5½ oz-eq	6 oz-eq	6½ oz-eq	6½ oz-eq	7 oz-eq	7 oz-eq	7 oz-eq
Seafood	3 oz/wk	5 oz/wk	6 oz/wk	8 oz/wk	8 oz/wk	8 oz/wk	9 oz/wk	10 oz/wk	10 oz/wk	11 oz/wk	11 oz/wk	11 oz/wk

Meat, poultry, eggs	10 oz/wk	14 oz/wk	19 oz/wk	24 oz/wk	24 oz/wk	26 oz/wk	29 oz/wk	31 oz/wk	31 oz/wk	34 oz/wk	34 oz/wk	34 oz/wk
Nuts, seeds, soy products	1 oz/wk	2 oz/wk	3 oz/wk	4 oz/wk	4 oz/wk	4 oz/wk	4 oz/wk	5 oz/wk	5 oz/wk	5 oz/wk	5 oz/wk	5 oz/wk
Dairy^f	2 c	2½ c	2½ c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c
Oils^g	15 g	17 g	17 g	22 g	24 g	27 g	29 g	31 g	34 g	36 g	44 g	51 g
Maximum SoFAS^h	137	121	121 (9%)	121	161	258	266	330	362	395	459	596
limit, calories (% of calories)	(14%)	(10%)		(8%)	(9%)	(13%)	(12%)	(14%)	(14%)	(14%)	(15%)	(19%)

Notes for Table 1.1

^aAll foods are assumed to be in nutrient-dense forms, lean or low-fat and prepared without added fats, sugars, or salt. Solid fats and added sugars may be included up to the daily maximum limit identified in the table. Food items in each group and subgroup are:

Fruits

All fresh, frozen, canned, and dried fruits and fruit juices: for example, oranges and orange juice, apples and apple juice, bananas, grapes, melons, berries, raisins.

Vegetables

- Dark-green vegetables: All fresh, frozen, and canned dark-green leafy vegetables and broccoli, cooked or raw: for example, broccoli; spinach; romaine; collard, turnip, and mustard greens.
- Red and orange vegetables: All fresh, frozen, and canned red and orange vegetables, cooked or raw: for example, tomatoes, red peppers, carrots, sweet potatoes, winter squash, and pumpkin.
- Beans and peas (legumes): All cooked beans and peas: for example, kidney beans, lentils, chickpeas, and pinto beans. Does not include green beans or green peas. (See additional comment under protein foods group.)
- Starchy vegetables: All fresh, frozen, and canned starchy vegetables: for example, white potatoes, corn, green peas.

(Continued)

Table 1.1 (Continued)

<ul style="list-style-type: none"> • Other vegetables 	All fresh, frozen, and canned other vegetables, cooked or raw: for example, iceberg lettuce, green beans, and onions.
Grains	
<ul style="list-style-type: none"> • Whole grains 	All whole-grain products and whole grains used as ingredients: for example, whole-wheat bread, whole-grain cereals and crackers, oatmeal, and brown rice.
<ul style="list-style-type: none"> • Enriched grains 	All enriched refined-grain products and enriched refined grains used as ingredients: for example, white breads, enriched grain cereals and crackers, enriched pasta, white rice.
Protein foods	
All meat, poultry, seafood, eggs, nuts, seeds, and processed soy products. Meat and poultry should be lean or low-fat and nuts should be unsalted. Beans and peas are considered part of this group as well as the vegetable group, but should be counted in one group only.	
Dairy	
All milks, including lactose-free and lactose-reduced products and fortified soy beverages, yogurts, frozen yo-gurts, dairy desserts, and cheeses. Most choices should be fat-free or low-fat. Cream, sour cream, and cream cheese are not included due to their low calcium content.	

b. Food group amounts are shown in cup (c) or ounce-equivalents (oz-eq). Oils are shown in grams (g). Quantity equivalents for each food group are:

- Grains, 1 ounce-equivalent is: 1 one-ounce slice bread; 1 ounce uncooked pasta or rice; ½ cup cooked rice, pasta, or cereal; 1 tortilla (6" diameter); 1 pancake (5" diameter); 1 ounce ready-to-eat cereal (about 1 cup cereal flakes).
- Vegetables and fruits, 1 cup equivalent is: 1 cup raw or cooked vegetable or fruit; ½ cup dried vegetable or fruit; 1 cup vegetable or fruit juice; 2 cups leafy salad greens.

- Protein foods, 1 ounce-equivalent is: 1 ounce lean meat, poultry, seafood; 1 egg; 1 Tbsp peanut butter; ½ ounce nuts or seeds. Also, ¼ cup cooked beans or peas may also be counted as 1 ounce-equivalent.
 - Dairy, 1 cup equivalent is: 1 cup milk, fortified soy beverage, or yogurt; 1½ ounces natural cheese (e.g., cheddar); 2 ounces of processed cheese (e.g., American).
- c. See Appendix 6 for estimated calorie needs per day by age, gender, and physical activity level. Food intake patterns at 1,000, 1,200, and 1,400 calories meet the nutritional needs of children ages 2 to 8 years. Patterns from 1,600 to 3,200 calories meet the nutritional needs of children ages 9 years and older and adults. If a child ages 4 to 8 years needs more calories and, therefore, is following a pattern at 1,600 calories or more, the recommended amount from the dairy group can be 2½ cups per day. Children ages 9 years and older and adults should not use the 1,000, 1,200, or 1,400 calorie patterns.
- d. Vegetable and protein foods subgroup amounts are shown in this table as weekly amounts, because it would be difficult for consumers to select foods from all subgroups daily.
- e. Whole-grain subgroup amounts shown in this table are minimums. More whole grains up to all of the grains recommended may be selected, with offsetting decreases in the amounts of enriched refined grains.
- f. The amount of dairy foods in the 1,200 and 1,400 calorie patterns have increased to reflect new RDAs for calcium that are higher than previous recommendations for children ages 4 to 8 years.
- g. Oils and soft margarines include vegetable, nut, and fish oils and soft vegetable oil table spreads that have no *trans* fats.
- h. SoFAS are calories from solid fats and added sugars. The limit for SoFAS is the remaining amount of calories in each food pattern after selecting the specified amounts in each food group in nutrient-dense forms (forms that are fat-free or low-fat and with no added sugars). The number of SoFAS is lower in the 1,200, 1,400, and 1,600 calorie patterns than in the 1,000 calorie pattern. The nutrient goals for the 1,200 to 1,600 calorie patterns are higher and require that more calories be used for nutrient-dense foods from the food groups.
- U.S Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2010*. 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010.]

Food Groups

A variety of foods should be selected within each food group. This helps ensure that the foods and beverages selected by individuals over time provide a mix of nutrients meeting their needs.

Vegetable Group: 1 to 4 Cups Daily

The Vegetable Group includes fresh, frozen, and canned vegetable or 100% vegetable juice. Most vegetables are naturally low in fat and calories and provide rich sources of many nutrients including potassium, dietary fiber, folate, vitamin A, vitamin E, and vitamin C. The guidelines recommend weekly intake amounts for the five vegetable subgroups and should be considered in meal planning (dark-green, red and orange, beans and peas, starchy, and other vegetables).

Table 1.2 Commonly Consumed Vegetables

Dark-green	Red and Orange	Dry beans/peas	Starchy	Other
Bok choy	Acorn squash	Black beans	Corn	Artichokes
Broccoli	Butternut squash	Black-eyed peas	Green peas	Asparagus
Collard greens	Carrots	Garbanzo beans (chickpeas)	Lima beans (green)	Bean sprouts
Dark green leafy leafy lettuce	Hubbard squash	Kidney beans	Potatoes	Beets
Kale	Pumpkin	Lentils		Brussels sprouts
Mesclun	Sweet potatoes	Lima beans (mature)		Cabbage
Mustard greens		Navy beans		Cauliflower
Romaine lettuce		Pinto beans		Celery
Spinach		Soy beans		Cucumbers
Turnip greens		Split peas		Eggplant
Watercress		Tofu (bean curd made from soybeans)		Green beans
		White beans		Green or red peppers
				Iceberg (head) lettuce
				Mushrooms
				Okra
				Onions
				Parsnips

Table 1.2 (Continued)

Dark-green	Red and Orange	Dry beans/peas	Starchy	Other
				Tomatoes
				Tomato juice
				Vegetable juice
				Turnips
				Wax beans
				Zucchini

US Department of Agriculture. MyPyramid.gov Website. Washington, DC. Vegetables. <http://www.mypyramid.gov/pyramid/vegetables.html>. Accessed February 22, 2011.

Fruit Group: 1 to 2 ½ Cups Daily

The Fruit Group includes fresh, frozen, canned, and dried fruits and 100% fruit juices. Fruits are rich in many nutrients, including potassium, dietary fiber, vitamin C, and folate. Only 100% fruit juices count as fruit servings. Selecting more fruit rather than juice is recommended. Most fruit drinks, punches, cocktails, and “-ades” contain little juice and a great deal of sugar. Beverages made from powdered fruit-flavored mixes or fruit-flavored carbonated beverages also do not count as fruit servings.

Grain Group: 3 to 10 Ounce-Equivalents Daily

The Grain Group includes any food made from wheat, rice, oats, cornmeal, barley, or another cereal grain (e.g., bread, pasta, breakfast cereals, tortillas, and grits). Grains are divided into two subgroups: whole grains and enriched grains. Selecting at least half of all grains as whole grains is recommended. Whole grains contain the entire grain kernel. Some examples of whole grains include whole-wheat bread, oatmeal, brown rice, and whole-grain cereals. Refined grains have been milled, a process that removes the bran and germ from the kernel, and reduces its nutritive value. Some refined grains are *enriched*. This means certain B vitamins and iron are added back after processing. Fiber is not usually added back to most enriched grains. Some examples of enriched grains include enriched white flour, enriched white rice, and enriched degermed cornmeal.

Dairy Group: 2 to 3 Cups Daily

The Dairy Group includes all milk, including lactose-free and lactose-reduced products and fortified soy and nut beverages; yogurt; dairy desserts; and cheeses. Most choices should be fat-free or low-fat (1%) vitamin D-fortified milk or yogurt instead of cheese. Milk-based foods that are low in calcium

content—such as cream cheese, cream, and butter—are not included. Foods in the dairy group provide calcium, potassium, vitamin D, and protein.

Protein Foods: 2 to 7 Ounce-Equivalents Daily

The Protein Group includes a variety of protein foods for improved nutrient intake and health benefits: meat, poultry, eggs, seafood, beans, peanuts, and tree nuts (i.e., walnuts, almonds, and pistachios). Most meat and poultry choices should be lean or low-fat. Dry beans and peas are part of this group as well as the Vegetable Group, but they should be counted in one group or the other when planning meals. Foods in the protein group provide B vitamins (i.e., niacin, thiamin, riboflavin, and B₆), vitamin E, iron, zinc, and magnesium.

Selecting 8 or more ounces per week of seafood is recommended (less in patterns for young children) because of the omega-3 fatty acids they contain (EPA and DHA). Seafood includes fresh water fish.

Vitamins and Minerals

Nutrient needs should be met primarily through consuming foods. In certain cases, fortified foods and dietary supplements may be useful in providing one or more nutrients that otherwise might be consumed in less than recommended amounts (e.g., vitamin D and folic acid for women capable of becoming pregnant, iron for pregnant women, and B₁₂ for individuals older than age 50 years). Sufficient evidence is not available to support a recommendation for or against the use of multivitamin/mineral supplements in the primary prevention of chronic disease for the healthy American population. (2)

The recommendation for sodium intake was set for most Americans at less than 2,300 mg and further reduced to 1,500 mg among person who are 51 and older and those of any age who are African American or have hypertension, diabetes, or chronic kidney disease. The 1500-mg recommendation applies to about half of the US population ages 2 and older. (2)

Oils

Oils are liquid at room temperature. Although not a food group, oils do provide essential fatty acids and vitamin E to the diet. Naturally occurring food sources of oils include nuts, seeds, avocados, and seafood. Oils are also extracted from plants, such as olive, peanuts, corn, safflower, canola, soybean, sesame, and sunflower. Most oils provide more unsaturated fatty acids than saturated fats. Exceptions to this rule are coconut oil and palm oils, which should be considered solid fats. Because oils are a concentrated source of calories, Americans should replace solid fats with oils, rather than add oil to the diet and should use oils in small amounts. (2)

Solid Fats and Added Sugars are of Particular Concern

Definition of Solid Fat

Solid fats are fats that are usually not liquid at room temperature. Solid fats are found in most animal foods but also can be made from vegetable oils through hydrogenation. Some common solid fats include: butter, animal fat, stick margarine, coconut oil, palm oil, and shortening.

Solid fats and added sugars are consumed in excessive amounts. Together, they contribute a substantial portion of the calories consumed by Americans—35% on average, or nearly 800 calories per day—while contributing virtually no essential nutrients to the diet. (2) Over-consumption of solid fats and added sugars can contribute to excessive weight gain. As the amount of solid fats or added sugars increases in the diet, eating foods with sufficient dietary fiber and essential nutrients, without exceeding calorie needs, becomes difficult. For most people, no more than about 5 to 15% of calories from solid fats and added sugars fit in the USDA Food Patterns, which are designed to meet nutrient needs within calorie limits. (2)

Reducing Solid Fats

Eat fewer foods that contain solid fats. The major sources for Americans are cakes, cookies, and other desserts (often made with butter, margarine, or shortening); pizza; cheese; processed and fatty meats (e.g., sausages, hot dogs, bacon, and ribs); and ice cream.

- Select lean meats and poultry and fat-free or low-fat milk and milk products.
- When cooking, replace solid fats such as butter, beef fat, chicken fat, lard, stick margarine, and shortening with oils or choose cooking methods that do not add fat.
- Choose baked, steamed, or broiled rather than fried foods most often.
- Check the Nutrition Facts label to choose foods with little or no saturated fat and no trans fat.
- Limit foods containing partially hydrogenated oils, a major source of trans fats.

Grain-based desserts are the highest ranking contributor to mean energy intake among the US population according to the National Health and Nutrition Examination Survey 2005–2006. Among adolescents ages 14 to 18 years, soda and energy sport drinks contribute the highest amount of calories. Pizza ranks number two in this age group.

Physical Activity

Physical activity receives strong emphasis in the *Dietary Guidelines for Americans*. Good nutrition and physical activity promote a healthy lifestyle. Individuals' daily routine should include physical activity; choose moderate-or vigorous-intensity physical activities. Reduce time spent in sedentary behaviors (e.g. watching television or using video games). Physical activity tools and tips are available at <http://www.health.gov/paguidelines>.

Food Safety

Food safety is discussed in the *Dietary Guidelines for Americans* because the prevention of foodborne illness depends on proper food handling. Some individuals, including women who are pregnant, young children, older adults and individuals with compromised immune systems, are at increased risk for foodborne illness. The following four basic food safety principles are the cornerstones of *Fight BAC!*®: (2)

- **Clean** hands, food contact surfaces, and vegetables and fruits.
- **Separate** raw, cooked, and ready-to-eat foods while shopping, storing, and preparing foods.
- **Cook** foods to a safe temperature.
- **Chill** (refrigerate) perishable foods promptly.

MYPLATE

The USDA released MyPlate, the new graphic symbol of nutritional advice for consumers, which coordinates with the 2010 Dietary Guidelines for Americans. MyPlate replaces the MyPyramid food guidance system.

MyPlate illustrates the five food groups using a familiar mealtime visual, a place setting. The plate is divided into four sections, representing vegetables, fruit, grains, and protein. The protein group includes a variety of foods such as meat, seafood, beans and peas, processed soy products, and so on. A circle shape next to the plate represents dairy products. Consumer messages such as, "Make half your plate fruits and vegetables," and "Switch to fat-free or low-fat (1%) milk," help consumers translate the Dietary Guidelines and MyPlate icon into healthy behaviors. Viewing MyPlate online allows consumers and professionals to obtain the most current information on the Dietary Guidelines for Americans.

Interactive tools on the website, <http://www.choosemyplate.gov> allow an individual to create a customized food plan with the amount of each food group they need daily. MyPlate includes plans for special populations such as preschoolers, kids, and women who are pregnant or breastfeeding.

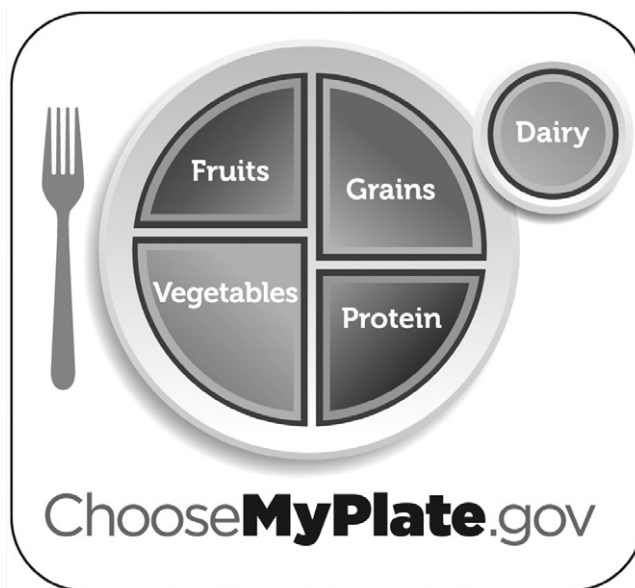


Figure 1.2 MyPlate serves as a reminder to help consumers make healthier food choices. To see this graphic in color, go to www.choosemyplate.gov

REFERENCES

1. Institute of Medicine of the National Academies. Available at <http://www.iom.edu/Activities/Nutrition/SummaryDRIs/DRI-Tables.aspx>
2. US Department of Agriculture and US Department of Health and Human Services. *Dietary Guidelines for Americans 2010*. 7th Edition, Washington, DC: US Government Printing Office, December 2010.

ADDITIONAL RESOURCES

Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010. June 15, 2010. Accessed at <http://dietaryguidelines.gov>

Websites:

Dietary Guidelines for Americans: <http://www.cnpp.usda.gov/dietaryguidelines.htm>

ChooseMyPlate: <http://www.choosemyplate.gov>

Physical Activity Guidelines for Americans: <http://www.health.gov/paguidelines>

U.S. Department of Agriculture (USDA) Center for Nutrition Policy and Promotion: <http://www.cnpp.usda.gov>

U.S. Department of Health and Human Services (HHS) National Institutes of Health: <http://www.nih.gov>

Fight BAC!®: <http://www.fghbac.org>

USDA's Nutrition Evidence Library: <http://nutritionevidencelibrary.gov>

Dish up a Healthy Meal educational handout on MyPlate: <http://www.eatright.org/shop/product.aspx?id=6442459456>

Study Guide Questions

- A. Which website do you access to find personalized meal plans, based on *Dietary Guidelines for Americans 2010*?
- B. What are the names of the five food groups used in the 2010 DGA?
- C. Using the USDA Food Patterns table in this chapter, indicate the recommended amount (cups per week) for each vegetable subgroup in a 2,000-calorie diet. Note that when you combine the amount from each subgroup in a week, it equals 2 ½ cups daily.
 - Dark-green vegetables: __ cups per week
 - Red and orange vegetables: __ cups per week
 - Beans and peas (legumes): __ cups per week
 - Starchy vegetables: __ cups per week
 - Other vegetables: __ cups per week
- D. How much seafood is recommended for a 2,000-calorie diet?
- E. What chronic disease is considered to be the greatest threat to public health in the twenty-first century?

Study Guide Suggested Responses can be found in Appendix 18.

Nutrition for the Life Span

2

GENERAL DIET

Use

The General Diet is designed for people who require no dietary modifications and to reduce the risk of the development of chronic, nutrition-related diseases. This diet may also be referred to as a Regular Diet in some facilities.

Adequacy

The suggested food plan includes food in amounts that will provide the Dietary Reference Intakes (DRIs) recommended by the National Academy of Sciences for ages 2 years and older.

Diet Principles

1. The diet should incorporate the principles of the *Dietary Guidelines for Americans 2010*, focusing on nutrient-dense foods and beverages and maintaining calorie balance to achieve and sustain a healthy weight. Refer to Chapter 1.
2. The quantity of food selected from each food group depends on the energy needs. Individuals should follow a food pattern that meets their estimated calorie needs. Personalized daily food plans are available at <http://www.choosemyplate.gov>.

3. Select a variety of foods within each food group. This allows for personal choice and helps to ensure that the foods and beverages selected by individuals over time provide a mix of nutrients that will meet their needs. Vegetarian-style eating patterns are available in Chapter 11.
4. The diet should provide color and be pleasing in texture and flavor.

NUTRITION GUIDELINES FOR PREGNANCY AND LACTATION

These nutrition recommendations are based on the *Dietary Guidelines for Americans*, but they provide increased amounts of protein, vitamins, and minerals needed by the pregnant or lactating woman. The suggested food plan includes foods in amounts that will provide the DRIs recommended by the National Academy of Sciences for the pregnant or lactating woman, depending on food choices. Special attention should be given to intakes of iron, folate, zinc, protein, calcium, vitamin D, and fiber to ensure adequacy. Most doctors recommend pregnant women take a daily prenatal vitamin and mineral supplement in addition to eating a healthy diet. According to the *Dietary Guidelines for Americans* 2010, pregnant women should consume 600 mg/day of synthetic folic acid (from fortified foods or supplements) in addition to food forms of folate from a varied diet. It is not known whether the same level of protection could be achieved by using food that is naturally rich in folate. Pregnant women should also limit white (albacore) tuna to 6 ounces per week and avoid tilefish, shark, swordfish, and king mackerel because of their high mercury content.

Diet Principles

1. Weight gain during pregnancy should be individualized according to a woman's prepregnancy body mass index (BMI). The recommended weight gain during pregnancy for normal-weight women is 25–35 pounds. Underweight women are advised to gain 28–40 pounds; and overweight women 15–25 pounds. If excessive weight gain is a problem, the client's portion sizes and intake of "extra" foods will need to be evaluated.
2. High caffeine consumption is associated with delayed conception, spontaneous miscarriage, and low birth weight. Pregnant and lactating women are advised to limit caffeine consumption to less than 300 mg per day. This would translate into less than 16 ounces of coffee per day.
3. Because of possible harmful effects on the developing fetus, it is advisable to avoid alcohol during pregnancy. It is also suggested to limit alcohol while breastfeeding.
4. Pregnant women should be advised to limit herbal supplements until they are proven safe during pregnancy.

Table 2.1 General Diet

Food for the Day		
Food Category	Recommended Nutrient-Dense Foods	Restrict
<p>Vegetables 1–4 cups</p>	<p>Dark-green vegetables: All fresh, frozen, and canned dark-green leafy vegetables and broccoli, cooked or raw (e.g., broccoli; spinach; romaine; collard, turnip, and mustard greens).</p> <p>Red and orange vegetables: All fresh, frozen, and canned red and orange vegetables, cooked or raw (e.g., tomatoes, red peppers, carrots, sweet potatoes, winter squash, and pumpkin).</p> <p>Beans and peas: All cooked and canned beans and peas (e.g., kidney beans, lentils, chickpeas, and pinto beans). Does not include green beans or green peas.</p> <p>Starchy vegetables: All fresh, frozen, and canned starchy vegetables (e.g. white potatoes, corn, and green peas).</p> <p>Other vegetables: All fresh, frozen, and canned other vegetables, cooked or raw (e.g., iceberg lettuce, green beans, and onions).</p>	<p>Canned vegetables—rinse to decrease sodium content or choose low sodium varieties, cooked vegetables with added salt. Limit vegetables served with added sauces, condiments, and dressings.</p>
<p>Fruits 1–2.5 cups</p>	<p>All fresh, frozen, canned (in own juices or light syrup), dried (with no sugar added) or 100% fruit juice.</p>	<p>Fruit canned in heavy syrup or dried fruits with added sugar.</p>

(Continued)

Table 2.1 (Continued)

Food for the Day		
Food Category	Recommended Nutrient-Dense Foods	Restrict
Grains 3–10 ounce-equivalents At least half of all grains eaten should be whole grains	Whole grains: All whole-grain products and whole grains used as ingredients (e.g., whole wheat breads, whole grain pasta, oatmeal, whole wheat or corn tortillas, brown or wild rice, popcorn, whole wheat couscous, quinoa, whole wheat crackers, whole wheat buns and rolls). Aim for 25 to 35 grams of fiber per day.	Enriched grains: All enriched refined grain products and enriched refined grains used as ingredients (e.g., white, refined breads, enriched pasta, enriched grain cereals and crackers, white rice). Processed/packaged baked goods and snack foods.
Dairy products 2–3 cups	Fat-free or low-fat (1%) milk (except for those under 1 years of age), fat-free or low-fat, nondairy milks (fortified soy, almond, and rice), low-fat yogurt or Greek yogurt, or low-fat or part-skim cheeses.	Full fat cheese (keep servings to 3 ounces), 2% or whole milk (unless under younger than 1 year of age), full fat yogurt, cream. Processed cheese and cheese spreads.
Protein foods 2–7 ounce-equivalents	Lean or very lean cuts of meat (e.g., look for the word “loin”), at least 90% lean ground beef, skinless poultry, seafood, cooked legumes (dried beans and peas), eggs, omega-3 enriched eggs, nuts, peanut butter, seeds, and processed soy products.	High fat cuts of beef, skin-on chicken. Processed meats such as sausage, luncheon meat, hot dogs, and bacon.
Oils, Solid Fats, Added Sugars Use sparingly	Oils: Vegetable oils and soft margarines from vegetable, nut, and fish oils and soft vegetable oil table spreads that have no <i>trans</i> fat (e.g., canola, olive, soybean, peanut, and safflower oils). Solid Fats: Beef fat (suet), butter, chicken fat, coconut oil, cream, hydrogenated oils, palm kernel oil, palm oil, partially hydrogenated oil, pork fat (lard), shortening, stick margarine, sour cream, and cream cheese. Added Sugars: Brown sugar, confectioner’s powdered sugar, corn syrup, dextrin, dextrose, fructose, high-fructose corn syrup, honey, lactose, malt syrup, maltose, maple sugar, molasses, nectars, raw sugar, sucrose, and sugar.	

*The number of daily servings in a food group varies depending on caloric needs. Maximum sodium limit is 2,300 mg/day.

Table 2.2 General Diet

Suggested Menu Pattern for General Diet

<p style="text-align: center;">Breakfast</p> <p>½ c. fruit 1 oz-equivalent protein 2 oz-equivalent grains 1 c. dairy products 1 tsp. oil</p> <p style="text-align: center;">Lunch</p> <p>2 oz-equivalent protein 1 c. vegetables 1 oz-equivalent grains 1 c. dairy products 1 tsp. oil</p>	<p style="text-align: center;">Supper</p> <p>2 oz-equivalent protein 1 c. vegetables 2 oz-equivalent grains ½ c. fruit 1 c. dairy products 3 tsp. oil</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. fruit ½ cup vegetable 1 oz-equivalent grain</p>
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*Based on 1,800 calorie diet, includes up to 160 calories from solid fats and added sugars

Table 2.3 Suggested Menu Plan for General Diet

<p style="text-align: center;">Breakfast</p> <p>½ c. orange juice 1 egg ½ c. oatmeal 1 slice whole wheat toast 1 tsp. soft margarine 1 tsp. jelly 1 c. fat-free milk Hot beverage Sugar, pepper (optional)</p> <p style="text-align: center;">Lunch</p> <p>2 oz. roasted chicken breast ½ c. mashed potatoes with fat-free gravy ½ c. mixed vegetables 1 oz. wheat roll 1 tsp. soft margarine 1 c. fat-free milk Water</p>	<p style="text-align: center;">Supper</p> <p>2 oz. tuna on 2 slices whole wheat bread, 2 tsp mayonnaise 2 tomato slices 1 c. leafy greens salad 1 Tbsp. sunflower oil and vinegar dressing ½ c. fruit cocktail 1 c. fat-free milk Water</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. cantaloupe ½ c. carrot sticks 3 c. popcorn, lower fat, <i>trans-fat</i> free, no added salt</p>
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5. For management of gestational diabetes, refer to the Gestational Diabetes Meal Plan in Chapter 6.
6. With rare exceptions, breastfeeding is the optimal feeding method for infants. It has been proven to improve the health of both the mother and her infant. Exclusive breastfeeding is encouraged for the first 6 months of an infant's life and breastfeeding with complementary foods from 6 months until at least 12 months of age is ideal.

RECOMMENDATIONS FOR FEEDING NORMAL INFANTS

At no other time in the lifecycle is nutrition delivery more important for health, growth, and development than during the first year of a child's life. (1) These recommendations will provide the quantities of nutrients recommended by the American Academy of Pediatrics (AAP) for infants.

Diet Principles

The AAP and American Dietetic Association (ADA) strongly recommend breastfeeding as the preferred feeding for all infants over formula feeding. (2) As recommended by the AAP, exclusive breastfeeding for a minimum of 4 months and preferably 6 months is best. Breastfeeding should be continued the first 12 months of age and longer if it is desired by both the mother and infant. If families decide not to breastfeed their infant, iron-fortified formula is recommended.

Breast-Fed Infant: Birth to 12 Months

1. During the first 24 hours after birth, the newborn infant should breastfeed 8 to 12 times or more every 24 hours and usually for 10 to 15 minutes per breast. To assure the establishment of a good milk supply, frequent breastfeeding in the first few days is essential. Breastfeeding minimizes weight loss after birth and decreases bilirubin concentrations in infants. Health professionals need to be knowledgeable about both the science and art of breastfeeding and fully understand their patients to ensure breastfeeding success. Following the ten steps to successful breastfeeding provides a structure to support mothers choosing to breastfeed.
2. Breastmilk empties from the stomach faster than infant formula. Mothers many times compare their infants to bottle-fed infants. They believe that because their child eats very frequently, that they do not have a sufficient milk supply. As the infant becomes older, he or she breastfeeds more efficiently; the frequency and duration of feedings decreases.
3. The composition of human milk varies among individuals depending on the time of day, the stage of lactation, the time into feeding, and the diet of the mother. Foremilk is different than hindmilk. The first measure of

Table 2.4 Pregnancy/Lactation

*Food for the Day			
Food Group	Pregnancy	Lactation	Description
Vegetables	2 ½–3 cups	2 ½–3 ½ cups	Vegetables may be fresh, frozen, or canned (including potatoes); served plain, in mixed dishes or as juice. 2 cups leafy salad greens equals 1 cup of vegetables.
A variety of vegetables are recommended with the following sub group recommendations for cups per week.			
Dark green	3	3	Collard, turnip, and mustard greens, broccoli, spinach, romaine
Orange	2	2–2 ½	Carrots, sweet potatoes, winter squash and pumpkin
Legumes	3	3–3 ½	All cooked dry beans and peas and soybean products
Starchy	3–6	3–7	White potatoes, corn and peas
Other	6 ½–7	6 ½–8 ½	All other vegetables
Fruits	1 ½–2 cups	1 ½–2 ½ cups	Fruits may be fresh, frozen, or canned, served whole diced or juice. Include at least 1 cup of vitamin C rich fruit or vegetable daily.
Grains	6–8 ounces	6–10 ounces	The following each count as 1 oz-equivalent (1 serving) of grains: ½ cup cooked rice, pasta, or cooked cereal; 1 oz dry pasta or rice; 1 slice bread; 1 small muffin (1 oz.); 1 cup ready-to-eat cereal flakes. At least half of the grain servings should be whole grain. Examples are whole wheat, oatmeal, popcorn, brown rice, wild rice, bulgur, millet.
Whole grains	3–4 servings	3–5 servings	
Enriched grains	3–4 servings	3–5 servings	
Dairy Products	3 cups	3 cups	Milk may be fresh, dried, or evaporated; fat-free, low-fat; used as a beverage or in cooking; yogurt; cheese. The following each count as 1 cup (1 serving) of milk: 1 cup milk or yogurt, 1 ½ oz natural cheese such as Cheddar cheese or 2 oz processed cheese. Whole and reduced-fat milk should be used only if additional calories are needed.
Protein Foods	5–7 ounces	5.5–7 ounces	The following each count as 1 oz-equivalent: 1 oz lean meat, poultry, or fish; 1 egg; ¼ cup cooked dry beans or tofu; 1 Tbsp peanut butter; ½ oz nuts or seeds.
Oils, Solid Fat	5–7 teaspoons	5–8 teaspoons	Oils and soft margarines without trans fats that are added to foods during processing, cooking or at the table.

*For help in determining individual needs, go to www.ChooseMyPlate.gov for Daily Food Plans for Pregnancy and Breastfeeding.

Table 2.5 Ten Steps to Successful Breastfeeding

Step 1	Have a written breastfeeding policy that is routinely communicated to all healthcare staff.
Step 2	Train all healthcare professionals in skills necessary to implement this policy.
Step 3	Inform all pregnant women about the benefits and management of breastfeeding.
Step 4	Help mothers initiate breastfeeding within 1 hour of birth.
Step 5	Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.
Step 6	Give newborn infants no food or drink other than human milk, unless medically indicated.
Step 7	Practice rooming-in—allow mothers and infants to remain together 24 hours a day.
Step 8	Encourage breastfeeding on demand.
Step 9	Give no artificial treats or pacifiers to breastfeeding infants.
Step 10	Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic, and give each mother a phone number to call for breastfeeding assistance.

Adapted from American Academy of Pediatrics and American College of Obstetricians and Gynecologists. Peripartum care: the transition to lactation. In: *Breastfeeding Handbook for Physicians*. Elk Grove Village, IL: American Academy of Pediatrics; 2006: 67–80.(4)

colostrum is not only nourishing but also protects the infant by providing immunity and protection from infection; and it differs from transitional and mature milks. Milk and its changing concentrations of protein, fat, carbohydrates, minerals, and other properties continue to change over time. (4)

4. The recommendation for feeding infants with human milk is made because human milk has been studied and proven to be beneficial to infant nutrition, gastrointestinal function, the immune system, and has the potential beneficial influence on the development of the brain and spinal cord and also the prevention of the chronic diseases of childhood such as rotavirus.
5. If families decide not to breastfeed their infant, iron-fortified formula is recommended. However, because of the beneficial properties of human milk, the introduction of formula should be considered if: (a) it is used as a substitute or supplement for human milk in infants whose mothers choose not to breastfeed; (b) it is a substitute for human milk for infants that breastfeeding is medically contraindicated such as those with inborn errors

of metabolism; and (c) it is a supplement for breastfed infants when the intake of human milk is not great enough to support adequate weight gain.

Bottle-Fed Infant: Birth to 12 Months

1. The most common human milk substitute is standard cow's milk formula. These formulas are made from cow's milk that is altered by removing the butterfat, adding vegetable oils and carbohydrate, and decreasing the protein. Standard formulas vary in their ratio of caseine to whey. The current requirements for protein in infant formulas range from 1.7 to 3.4 grams per 100 calories. Taurine, a free amino acid present in human milk, is often added to standard formulas. Iron-fortified formula is recommended and requires minimal vitamin or mineral supplementation if prepared with adequately fluoridated water.
2. Infant formulas are available in three forms. The three forms are: concentrated liquid, ready-to-feed, and powder. Ready-to-feed formulas provide 20kcal/fluid ounce. When reconstituted as directed, both concentrate and powder also provide 20kcal/fluid ounce. Each manufacturer must ensure by analysis that all 29 essential nutrients are present in each batch of formula as referenced in the Infant Formula Act and make a quantitative declaration for each nutrient on the label. In the United States, this "label claim" must be accurate until the end of the shelf life of the formula. Some vitamins degrade very little over the shelf life such as vitamin K, but others such as riboflavin, vitamin B₁₂, and vitamin C experience considerable loss. (3)
3. Soy formulas also provide 20kcal/ounce and are available in the same forms as milk based formulas. Because it is low in soy formulas, carnitine that plays a role in lipid metabolism is added. (3)
4. Heating formula in the bottle in a microwave oven is not recommended because this process can cause mouth burns. The formula heats unevenly, causing the outside of the bottle to feel cool even though the contents are very hot.
5. As the infant grows, the recommended number of feedings and volume change.

Supplements for All Infants

Some supplements are suggested for both breastfed and formula fed infants.

All Infants

1. Feed infants when they give hunger cues rather than on a specific schedule. These cues include rooting, mouth opening, lip licking, placing hands to mouth, and motor activity.

Table 2.6 Suggested Number and Volume of Bottle Feedings for a Normal Infant

Age	Number of Feedings	Volume in ml
Birth–1 week	6–10	30–90
1 week–1 month	7–8	60–120
1 month–3 months	5–7	120–180
3 months–6 months	4–5	180–210
6 months–9 months	3–4	210–240
10 months–12 months	3	210–240

*Note: 120 ml = 4 fluid ounces.

Kelts: Manual of Pediatric Nutrition (p. 38) by DG Kelts and EG Jones. Little, Brown, and Company, 1994. Used with permission.

Table 2.7 Suggested Vitamin and Mineral Supplementation for Full-Term Infants (0–12 Months)

Supplement	Infants fed Human Milk	Infants Fed Commercial Formula
Vitamin K	A single dose is given at birth. Intestinal flora of breastfed infants produces less vitamin K so additional doses may be needed.	A single dose is given at birth.
Vitamin D	The content of Vitamin D is low in human milk; 200 IU/day is recommended when there is minimal exposure to sunlight.	Iron-fortified formulas are supplemented with Vitamin D.
Iron	The content of iron in human milk may not meet the child's need after 6 months of age. An iron supplement is recommended by most authorities.	Iron-fortified formula is an excellent source.
Fluoride	0.25 mg/day after 6 months if local water supply has <0.3 parts per million fluoride.	0.25 mg/day after 6 months if local water supply has <0.3 parts per million fluoride or ready-to-use formula is used.

Modified from King and Samour, *Handbook of Pediatric Nutrition*, 3rd Edition, Jones and Bartlett Publishers, 2005, p. 91, Table 2.

2. Introduce solid foods when infants are developmentally ready using a spoon. This is usually between 4 and 6 months of age or when birth weight has doubled. Signs of developmental readiness include moving food from the front to the back of the mouth and swallowing it, sitting alone or with

minimal support, reaching to grasp the spoon, and turning the head away to refuse food.

After Age 4 to 6 Months

1. Breast milk or iron-fortified formula is recommended for infants to age 1 year. Cow's milk in any form (whole, reduced-fat [2%], low-fat [1%], or fat-free [skim]) and goat's milk should not be given to infants during their first 12 months.
2. Developmental skills such as raising the head and swallowing are usually not present in the infant for solid foods until 4 to 6 months of age.
3. A commercially prepared, single-grain infant cereal (usually rice) fortified with iron should be the first solid food introduced. The order of introduction of other solid foods is not important.
4. Introduce no more than one single-ingredient food at a time. Offer new foods at weekly intervals to identify food intolerances. The new food can be offered several days in a row.
5. Begin teaching infants to drink from a cup at about 6 months.
6. Small, frequent feedings are preferable for infants. Let infants decide when they have had enough. "Full" cues include refusing to open mouth, turning head away, and spitting food out.
7. When infant foods are prepared at home, no salt or sugar should be added. Start with fresh or frozen foods as much as possible. Fruits canned in fruit juice and vegetables canned without salt can be used. The sugar and salt contents of many canned fruits and vegetables make them unsuitable for infants.
8. In the last several months of their first year, infants can progress from smooth foods to foods with more texture. Provide mashed foods first, followed by "chunky" foods. Offer cut-up soft table foods after infants have mastered eating chunky textures.
9. After the age of 12 months, foods should be the primary source of nourishment, even if a child continues to be breast- or bottle-fed.
10. By age 12 months, children make the transition from demand feeding to the family schedule of meals and snacks. By this time weaning from the bottle often occurs automatically as children become interested in eating table foods. Nursing from bottle or breast, if continued, should be in place of a scheduled snack and no longer given on demand.
11. To protect children's teeth, frequent nursing from breast or bottle should not be permitted, and bottles should not be allowed in bed. (8)

Safety Concerns

1. Honey should not be given to children under the age of 2 years. It may contain spores of the bacteria *Clostridium botulism*, which can produce a dangerous toxin in the gastrointestinal tracts of infants.

2. Water that has been in household pipes for more than 6 hours can contain lead. To ensure low levels of lead in formula and foods, prepare them with cold water that has run until it reaches its maximal coldness. Well water should be tested for nitrate and bacteria levels. Boiling well water for formula is not recommended because nitrates and other substances can become concentrated.
3. Do not give infants round, slippery, and hard foods such as carrot slices, olives, hot dogs, peanuts, and hard candies. These foods can become lodged in the throat and block the air passage.

NUTRITION GUIDELINES FOR CHILDREN

These nutrition guidelines are designed for children aged 1 to 8 years who require no special dietary modifications. The servings suggested for various age groups include foods in amounts that will provide the nutrients recommended by the AAP for the average child. Individual children from ages 2 years to puberty gain an average of 4.5–6.5 pounds and grow 2.5–3.5 inches per year on the average. This is a time when physical growth is a much slower than in infancy and appetites decrease often making feeding challenging and unpredictable. (3)

Diet Principles

1. The diet should provide adequate nourishment, variety, and color and be pleasing in texture and flavor.
2. Make mealtime enjoyable by creating a pleasant setting. Children's appetites vary from day to day and go through phases of likes and dislikes. Serve small portions and allow children to ask for more food as they are ready. Avoid nagging, forcing, and bribing children to eat. Focusing attention on a child's poor appetite or eating problem will likely make the problem last longer.
3. Successful eating patterns are set by a division of eating responsibilities. The caregiver has the responsibility of providing a variety of nutritious foods and creating the mealtime environment. Children make food choices from what is offered and determine how much is consumed. (6)
4. Include snacks with high nutrient value in menu plans. The nutrient requirements of children cannot be met by meals alone because their small stomach capacity limits the amount of food they can eat at any one time.
5. Fat and cholesterol should not be limited in the diets of children under the age of 2 years; however, high fat foods with limited amounts of nutrients (pastries, gravies, fried foods, sweets) should be offered only in limited amounts.

6. The *Dietary Guidelines for Americans 2010* recommend keeping total fat intake between 30 and 40% of total calories for children 2 to 3 years of age and between 25 and 35% of total calories for children and adolescents 4 to 18 years of age, with most fats coming from sources of unsaturated fatty acids, such as fish, nuts, and vegetable oils.
7. A sick child may regress in his or her level of eating performance, and this regression may progress throughout a long illness. For instance, a 6-year-old child may regress to the level of a 4- or 5-year-old so far as eating is concerned.
8. Excessive intake of milk tends to reduce the consumption of other foods. Fat-free or low-fat (1%) milk is recommended for healthy children over the age of 2. Whole milk is recommended between 1 and 2 years of age to provide essential fat and calories. (5)
9. For younger children it is important that meat be tender, moist, and cut into strips or bite-sized pieces to facilitate chewing and prevent choking.
10. Young children like crisp finger foods; serve them regularly.
11. Highly seasoned foods may not be well accepted; use seasonings in moderate amounts.
12. Dieting at a young age can be dangerous to children's development, both physically and psychologically. If a child is overweight, maintaining weight during growth in height is recommended rather than encouraging weight loss unless a child is severely overweight. Any weight management efforts in children should occur under the monitoring of the family physician or a pediatric weight management program.
13. Vitamin and mineral supplements may be prescribed by a physician.
14. Children who routinely drink bottled waters may not consume adequate amounts of fluoride, and therefore, it should not be offered as a frequent replacement for fluoridated tap water. Because fluoride helps protect teeth from decay, children need an adequate intake of fluoride each day. (8) Some bottled water such as baby water does contain added fluoride.
15. A review of the dietary recommendations for children and adolescents suggests serving amounts of various food groups that should be included in a child's diet from ages 1 to 8. (7)

Safety Concerns

1. Toddlers and preschoolers can choke on medium to large pieces of food. Cut foods into small pieces and remove seeds, skin, and small bones. Cut round foods like hot dogs, carrots, and string cheese into short strips and chop whole grapes and berries into small pieces. Wait until closer to age 4 to serve risky foods like popcorn, pretzels, nuts, seeds, dried fruit, and round or hard candy.

Table 2.8 Daily Estimated Calories for Children Based on Sedentary Lifestyle

Age	Daily Estimated Calories
1 Year Old	900
2–3 Years Old	1000
4–8 Years Old	1200 (Female) 1400 (Male)

Modified from *Dietary Recommendations for Children and Adolescents: A Guideline for Practitioners: Consensus Statement from the American Heart Association*. Gidding SS, Dennison BA, Birch LL, Daniels SR, Gilman MW, Lichtenstein AH, Rattay KT, Steinberger J, Stettler N, Van Horn L. Dietary recommendations for children and adolescents: A guide for practitioners: consensus statement from the American Heart Association. *Circulation* 2005 Sep 27;112(13):2061–75.

Table 2.9 Recommended Foods and Serving Sizes for Children Ages 1–8

Food Group	1 Year Old Amount/day	2–3 Years Old Amount/day	4–8 Years Old Amount/day
Vegetables			
Female			1 cup
Male			1 ½ cups
Typical serving size			
Cooked or chopped raw: ¼–½ cup			
Leafy greens: ¼–1 cup			
Select a variety of vegetables from the following groups:			
<ul style="list-style-type: none"> • Dark green—broccoli, spinach, kale, romaine lettuce • Red and orange—carrots, sweet potatoes, squash, pumpkin • Beans and peas—lentils, kidney beans, split peas, chickpeas • Starchy—white potatoes, corn, peas • Other vegetables 			
Fruits	1 cup	1 cup	1 ½ cups
Typical serving size is equal to			
Raw: ½–1 small piece			
Canned: ¼–½ cup			
100% juice: limit to 4–6 ounces if consumed			
Include citrus fruits daily			

Table 2.9 (Continued)

Food Group	1 Year Old Amount/day	2–3 Years Old Amount/day	4–8 Years Old Amount/day
Grains	2 ounces/day	3 ounces/day	
Female			4 ounces/day
Male			5 ounces/day
1 oz. equals 1 slice of bread, 1 cup of ready to eat cereal, ½ cup cooked rice, pasta, or cereal			
<i>At least half of all grains eaten should be whole grains</i>			
Dairy products	2 cups	2 cups	2 cups
1 cup milk equals			
1 cup yogurt			
1.5 oz. cheese			
Protein foods	1.5 ounces/ day	2 ounces/day	
Female			3 ounces/day
Male			4 ounces/day
Typical serving size is 1–2 ounce-equivalents. 1 oz-eq is equal to			
1 ounce meat			
½ cup dried beans or peas			
1 egg			
2 tablespoons peanut butter			
½ cup tofu			
¼ cup canned tuna or salmon			
<i>Include seafood weekly</i>			

Modified from *Dietary Recommendations for Children and adolescents: A Guideline for Practitioners: Consensus Statement from the American Heart Association*. Gidding SS, Dennison BA, Birch LL, Daniels SR, Gilman MW, Lichtenstein AH, Rattay KT, Steinberger J, Stettler N, Van Horn L. Dietary recommendations for children and adolescents: A guide for practitioners: consensus statement from the American Heart Association. *Circulation* 2005 Sep 27;112(13):2061–75.

2. Peanut butter can stick in the mouth and be hard to swallow. Wait until children are closer to 2 years to offer peanut butter. Spread it thinly on crackers, bread, or toast.
3. Require children to sit down when they eat to avoid choking and supervise them while eating.

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- ChooseMyFoods for Pregnancy and Breastfeeding. www.ChooseMyFoods.gov.

MEETING NUTRITIONAL NEEDS OF OLDER ADULTS

As people age, their nutritional needs change. The aging process can affect the older adult in numerous ways: economic, functional, physiological, and psychosocial. (1,2,3,4) These changes often influence not only nutritional status but also the risk for malnutrition. Even when older adults follow standard nutritional recommendations, they may still develop a nutritional disorder. (4)

Body composition changes as people age. Older adults are at risk for sarcopenia, which is a decrease in lean body mass (primarily loss of skeletal muscle). Loss of lean body mass affects muscle strength and ability to complete daily activities. To prevent a loss in lean body mass, adequate energy intake

is essential. Studies show that food intake decreases even in the healthy older adult. (5,6,7) Routine nutrition screening and assessment should be completed to ensure appropriate intake of food. (8)

Involuntary weight loss among older adults has been demonstrated to increase mortality risk. (5) Research suggests that whole protein and energy nutritional products are often used in long-term care facilities to supplement intake in residents with weight loss. Further research has supported this intervention in improving body weight and increasing both protein and energy intake in older adults with illness-related malnutrition. This increase in weight gain is at times small but it has been identified as consistent with a statistically significant effect on mortality in this age group. (9)

Caloric needs of acutely or chronically ill older adults range from 18 to 22 kcal/kg per day in females and 20 to 23 kcal/kg per day in males. The caloric needs of underweight older adults (BMI <20 kg/m²) may be as high as 27 to 28 kcal/kg per day. Emerging research supports a relationship between an increased number of medications with decreased energy needs. (10)

The caloric needs of healthy older adults range from 25 to 35 kcal/kg per day in females and 30 to 40 kcal/kg per day in males with use of physical activity levels ranging from sedentary to very active. (11) The caloric needs for weight maintenance of underweight older adults range from 25 to 30 kcal/kg per day, or higher energy levels for weight gain with use of physical activity levels ranging from sedentary to very active. (11)

The Modified MyPyramid for Older Adults (12,13)

In the late 1990s the researcher at Tufts University realized that the Food Guide Pyramid was unrealistic for older adults. To aid the healthcare professional in meeting the needs of older adults, a Food Guide Pyramid for Older Adults was developed at Tufts in 1999. (12) Tufts University researchers updated their Food Guide Pyramid for Older Adults in 2007 to correspond with the US Department of Agriculture (USDA) food pyramid, formally known as *MyPyramid*. The Tufts version is specifically designed for older adults and has changed in appearance and content. No suggested serving amounts were specified. It emphasizes individualization within this age group depending upon overall physical condition and activity level. The Tufts Modified MyPyramid for Older Adults emphasizes nutrient-dense food choices and the importance of fluid balance, but it has added additional guidance about forms of foods that could best meet the unique needs of older adults such as packaged fruits and vegetables in addition to fresh examples. For a number of reasons these additions may be more appropriate for older adults, especially those remaining in the community because many of these items come in bags that can be resealed or in single serve portions having longer shelf life, may be easier to prepare, and in the end minimize waste.

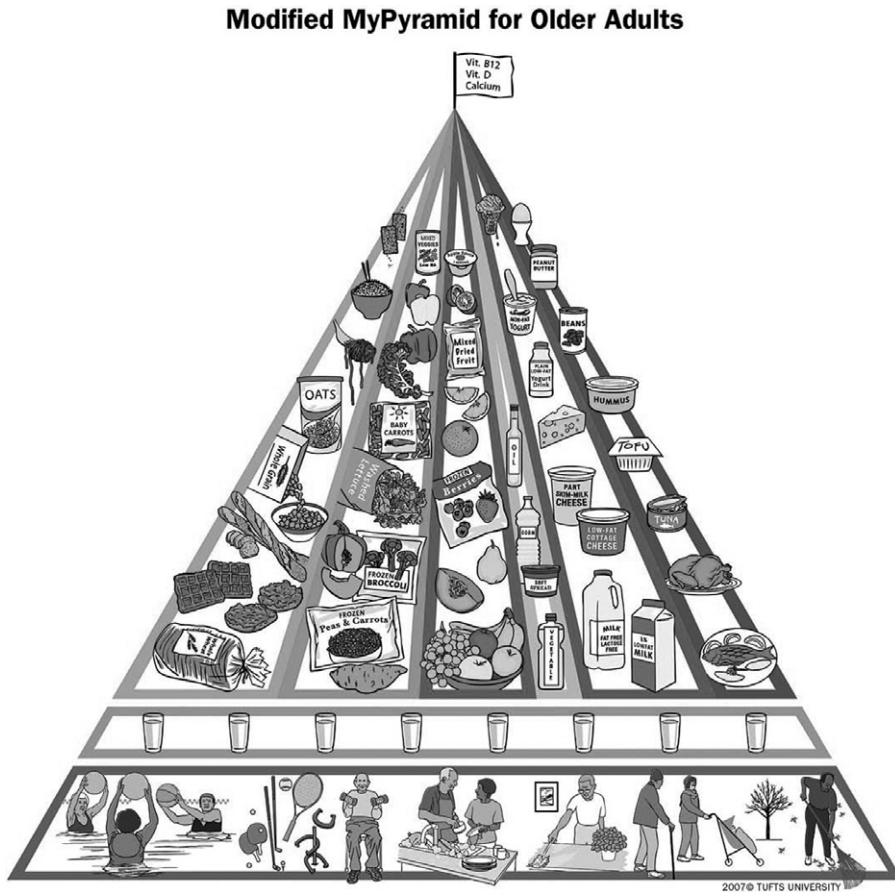


Figure 2.1

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The Tufts Modified MyPyramid for Older Adults stresses the importance of consuming fluids by having a row of glasses as its foundation. Foods and beverages with high water content such as lettuce, vegetable juice, and soups, should be emphasized because these options may be important contributors of fluid in an older person’s diet. The flag at the top suggests that older adults may need certain supplemental nutrients such as calcium, vitamin D and vitamin B₁₂.

To summarize, the Tufts Modified MyPyramid for Older Adults uses icons to emphasize the following (12):

- Whole, enriched, and fortified grains and cereals such as brown rice and 100% whole wheat bread.

- Bright-colored vegetables such as carrots and broccoli.
- Deep-colored fruit such as berries and melon.
- Fat-free and low-fat dairy products such as yogurt and low-lactose milk.
- Dry beans and nuts, fish, poultry, lean meat, and eggs.
- Liquid vegetable oils and soft spreads low in saturated and trans fat.
- Fluid intake.
- Physical activity such as walking, house work and yard work.

Nutritional status is also affected when low income and food insecurity results in the older adult not having adequate means to obtain food. When a person's income is insufficient to meet basic needs, it is the responsibility of the nutrition professional to be proactive in helping individuals seek economic assistance. Good nutritional choices should be at the forefront of maintaining healthy aging. Awareness of the full range of options available (i.e., supplemental nutrition assistance program [SNAP], formerly known as food stamps, home-delivered meals, congregate meals, and food pantries) and the patterns of use within the community may ensure nutritional needs will be met. (14)

Many diseases or conditions that would be considered abnormal or alarming in younger adult populations are often seen as a part of the "normal aging process" in the older adult. (14) Use of nutrition care protocols can help with the identification of inadequate intake patterns and unintentional weight loss. (15) The nutrition professional must determine the underlying causes of weight changes (i.e., bowel elimination, uncontrolled disease processes, economic, oral, cognition, anorexia of aging, etc.)

Medications can affect intake, nutrient absorption, metabolism, and excretion, which can alter the nutritional status of an older adult. An assessment of all medications (prescribed, over the counter, and nontraditional) is important because food and drug interactions in the older adult remain largely under recognized. (16,17)

Consider the following guidelines when prescribing or implementing food plans for older adults. Prior to prescribing a therapeutic diet, consider the person's quality of life, risk versus benefits, and the impact the diet will have on the overall nutritional status of the older adult. Prevention strategies should be based on individual functional status and the life goals of the older adults rather than on chronological age. For those in assisted living or nursing facilities, these groups should be offered as liberal a diet as possible. (18)

1. Use the General Diet as much as possible, especially for people older than 70 years of age living in long-term care facilities on a permanent basis. A diet that stresses higher amounts of fruits, vegetables, bread, cereals, potatoes, beans, nuts, and seeds should be considered (Mediterranean-style eating pattern). Olive oil, dairy products, fish, and poultry are consumed in moderate amounts. This also coincides with the Tufts Modified

Table 2.10 Older Adults

Food Category	Servings Daily
Milk products	3 cups
Protein foods	5 ounces
Fruits	1 ½ cups
Vegetables	2 ½ cups
Grains	6 servings
Oils/Fat	Small amounts needed for good health

Elder Nutrition and Food Safety (ENAFS) faculty at the University of Florida, adapted from MyPyramid for Older Adults.(13)

MyPyramid for Older Adults. (19) People living in long-term care facilities on a permanent basis desire a homelike atmosphere where they feel loved and important. Unless truly contraindicated, physicians should be encouraged to place these residents on the General Diet with only texture modifications, individualized to that resident. Serving popular, nutritious foods to some residents and not to others may cause anxiety, decreased food intake, and unhappiness. (18) Menus should be planned to include food in amounts that will provide the DRIs recommended by the National Academy of Sciences for adults. If a nutrient analysis program is not available for menu planning, the following recommendations may be a useful tool for an 1,800-calorie diet for the older adult.

2. If modifications are needed for the older person (especially the residents of long-term care facilities), the least restrictive diet is encouraged. Severely restricted diets and combination diets are not well accepted on a long-term basis and are often the cause of malnutrition in the older adult. (18)
3. Minor changes to a well-planned General Diet may meet the needs of people with high blood cholesterol, diabetes, (18,19,20) or for whom weight management is appropriate.
4. Heart failure in the United States is predominantly a disorder of older adults. Research suggests that older adults with congestive heart failure have been successful in controlling their disease with the use of drug therapy and a mild 3,000 to 4,000 sodium restriction (No Added Salt Diet) rather than significant restriction in sodium intake (less than 2,000 mg sodium). Low sodium diets may be poorly tolerated in this population leading to loss of appetite, hyponatremia (low blood sodium level), or confusion. (21,22,23)
5. Findings from a large randomized trial confirmed that the use of either vitamin C or vitamin E supplementation confirms no benefit in the prevention of cardiovascular disease in older men. In fact, an increase in hemorrhagic stroke was associated with the use of vitamin E. (24)

6. A study by Grabowski et al. concluded that very obese nursing facility residents experience higher mortality early in their stay, but this association diminishes over time with some evidence suggesting that a higher BMI may be protective among long-stay residents. (25) Serving fat-free or low-fat dairy products, limiting gravies and margarine, reducing portion size of desserts, and offering reduced sugar sweeteners and condiments may be adequate for medical nutrition therapy.
7. Individualization is the key to dietary alterations for any person. The menu plan should be personalized with a focus on physical, mental, and social well-being. Choices from all the food groups provide variety in the diet.
8. Food habits, influenced by ethnic, religious, and socioeconomic factors, are important because older adults place much emphasis on preserving their cultural traditions. Consider these factors when planning meals or dietary modifications to maximize quality of life.
9. Energy needs for the older adults are difficult to assess. (26) In some cases, energy needs decrease as a result of decreased activity and lean body mass. In other cases, needs may increase because of infection and stress. Meeting the needs of older adults is extremely challenging as requirements for many nutrients remain the same or increase. (1) For this reason, a balanced variety of foods should be consumed to ensure adequate nutrition. (27)
10. As part of the DRIs, the Recommended Daily Allowance (RDA) for protein needs of the older adult is 0.8 g/kg of body weight per day. (28) However, some research has indicated that protein needs may be as high as 1.0–1.25 g/kg. (29,30) Good sources of protein include meat, poultry, fish, eggs, dairy, soybeans, nuts, seeds, and dry beans.
11. Dietary fat intake for older adults should be no more than 25 to 35% of total daily caloric intake. It is important to strike a balance between palatability of the diet for adequate dietary intake with the need for therapeutic fat restriction. Studies indicate that as age increases, the importance of controlling high serum cholesterol levels as a risk for coronary heart disease decreases. (31,32,33) If there is decreased tolerance to fats, avoid fried foods and decrease amounts of fats added to or present in foods.
12. Intake of carbohydrates should compose 45 to 65% of total calories for the older adult to protect protein from being used as an energy source. Complex carbohydrates—whole grains, legumes, fresh fruits etc, should be a part of the older adult's daily intake. (1,12)
13. The choice of a target level for glycemic control in the older adult should be individualized. Most research suggests a HbA1c of 7.0% is desired, however considerations must be given to the life expectancy of the older adult. (34)

14. Intake of calcium and vitamin D should be emphasized in the older adult. Older adults need to maintain serum 25(OH)D levels at 30 to 60 mg/ml. (35) Research is emerging regarding vitamin D deficiency and its effect on neuromuscular function, cancer, cardiovascular disease, inflammatory illnesses, and bone mineralization. Older adults with vitamin D deficiency are at risk for osteoporosis, increased falls, and periodontal disease. (36) For adults aged 51–70 years, the DRI for vitamin D is 15 mcg and increases to 20 mcg for older adults. The recommended calcium intake for males aged 51–70 is 1000 mg and 1200 mg for older adults; calcium intake for females aged 51 and older is 1200 mg/day (37) which can be met with the General diet with three cups of dairy products daily. If an individual is unable to do this, supplementation is sometimes needed. (1,38)
15. Older adults may be less tolerant of milk and milk products, although small servings of milk (up to 8 oz per serving) may be tolerated. Milk products that have been fermented (i.e., buttermilk, cheese, or yogurt) or cooked (i.e., pudding, custard, cream soup, and sauces) are often tolerated. Other options include the use of lactose-free milk or adding lactase enzyme tablets to fresh milk to aid digestion. The older adult should be encouraged to consume other calcium-rich food and beverage sources (dark green leafy vegetables, calcium-fortified foods/beverages) to help reduce the risk of osteoporosis. Restricting milk products may not be the answer if the older adult continues with such symptoms as diarrhea, abdominal cramping, etc. Consider medical causes such as gastroenteritis, *Clostridium difficile*, colitis, and other conditions that may result in abnormal elimination patterns. Also consider possible effects of medications such as antibiotics, antacids, antidepressants, diuretics, laxatives, tranquilizers, and those with large amounts of mannitol or sorbitol.
16. Folate, (38) vitamin B₆ (1) and vitamin B₁₂ (39) intake and utilization may be affected in the older adult. Vitamin B₁₂ deficiency is frequent among older adults with a prevalence approaching 20%. (40) Intake of these vitamins should be ensured either through fortified foods or supplements.
17. Encourage intake of iron-rich foods be taken in combination with vitamin C-rich foods. Do not take iron inhibitors, whether food or medication with meals. Avoid excessive or inappropriate iron supplementation due to potential side effects, such as gastrointestinal distress, iron overload, etc.
18. A daily fluid intake of 30 ml/kg of body weight or a minimum of 1500 ml/day is often recommended for the older adult but due the lack of research, the use of physical signs and symptoms may actually assist the clinician in determining needs. A variety of beverages or foods may be used to meet fluid needs including broth, gelatin, ice cream, water, coffee, tea, carbonated beverages, and juices. Liberal fluid intake promotes gastrointestinal function and prevents dehydration. The nutrition professional must be aware that no evidence has been found to establish or validate the three

usual methods of estimating fluid needs for adults (Weight Method, RDA Method or Fluid Balance Method); however, these three equations have been cited extensively in many well-respected documents and widely used in clinical practice. Well-designed studies are needed to determine and validate predictive equations to estimate fluid requirements in the older adult. (41,42,43)

19. People who have difficulty chewing or swallowing may need adjustments in the consistency of the foods served to maintain adequate calories. (44) Meats may need to be chopped, ground, or pureed. Meats should be moist and well seasoned. Texture modifications should be individualized and used only when needed. For modifications, refer to Consistency Altered Diets in Chapter 3.
20. Taste impairment is common in the older adult. (44) Vegetables should be steamed, sautéed, or stir-fried to enhance their flavors. For those with dry mouth, offering very sweet or tart foods and beverages (lemonade or cranberry juice) may stimulate saliva production. Ice chips, sugar-free hard candy, gum or popsicles may also provide relief. Adding cream, gravy, sauces, soups, and such to increase moisture of foods provided may help in the swallowing process. Numerous other artificial saliva preparations are available to help resolve/improve this problem.
21. Finger foods may be necessary for people with decreased dexterity. These foods are more easily consumed and increase independence. For more information, refer to the Finger Food Diet in Chapter 12.
22. Food intake is improved when served at regular meal times, including a bedtime snack. Intake may be enhanced by serving the larger meal at midday or by serving smaller, more frequent meals. No more than 14 hours should elapse between a substantial evening meal and breakfast. Portion sizes at meals may vary based on an individual's nutritional needs. (45)
23. Social contact in a pleasant environment may stimulate the appetite. This is important for people who live in long-term care facilities as well as people who live independently.
24. Evaluation for depression and alcohol use and their effects on the intake of the older adult must be assessed. Regular alcohol use may be associated with changes in absorption/utilization of vitamins B₆, B₁₂, and C; thiamin deficiency, decreased zinc absorption, and increased iron absorption. (46)

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Study Guide Questions

- A. List the four diet principles for developing a General Diet for a person who requires no dietary modifications.
- B. During pregnancy, special attention should be paid to intakes of what seven nutrients to ensure adequacy?
- C. What are three nutritional advantages for infants who are breastfed?
- D. What safety precautions should be taken when feeding a child younger than 1 year of age?
- E. Describe in detail at least three diet principles to consider when developing menus for school-aged children.
- F. List at least three factors that contribute to increased nutritional risk for the older adult.
- G. Describe in detail at least three guidelines for implementing food plans for the older adult.
- H. Using the Modified MyPyramid for Older Adults as a guide, plan an entire day's menu for an 1800-calorie diet. Include specific foods and portion sizes to meet the minimum recommended serving for each food category.
- I. Discussion question: Why is it so difficult to meet the nutrient needs of the elderly with diet alone and what can be done to promote nutrient density in foods?

Study Guide Suggested Responses can be found in Appendix 18.

Consistency Altered Diets

3

Altering the consistency of foods can greatly relieve eating problems related to chewing, managing food in the mouth, and swallowing. These problems may be due to stroke, head or neck injury, cancer, cerebral palsy, dementia, and other illness, or simply the result of aging. Aspiration (inhaling) of food into the lungs as a result of inadequate chewing and swallowing is now recognized as a major contribution to respiratory infections and pneumonia among institutionalized children and adults.

Difficulties in chewing and swallowing are often diagnosed as dysphagia, which occurs among all age groups but is seen more often among the elderly. It should be emphasized that the evaluation and treatment of dysphagia requires a team approach, which includes a physician, a swallowing therapist (speech language pathologist or occupational therapist), a registered dietitian, and a nurse.

Treatment of eating difficulties facilitates rehabilitation or maintenance of skills. Treatment may include oral motor exercises and changes in eating techniques, as well as altering the consistency of food and beverages. The dietitian and swallowing therapist will work closely together in assessing, recommending, and implementing the necessary texture changes on an individual client basis.

Before making major changes in food consistency or adding dietary supplements, all factors possibly contributing to eating problems should be evaluated. Food served must be well prepared, flavorful, and appealing. Appropriate

assistive devices such as modified spoons, forks, and cups can make self-feeding easier. Proper positioning during eating and drinking is essential.

PRINCIPLES OF CONSISTENCY ALTERATION

1. The goals of consistency alteration are to allow clients to consume adequate nutrients and fluids and maintain nutritional status while reducing the risk of choking and aspiration. The chewing and swallowing ability should be evaluated before prescribing a consistency altered diet. The least restricted modification should be given.
2. Extensive individualization to meet energy, nutrient, and consistency of food and beverage needs is essential. Modifications in either solid foods or liquids or both may be necessary to achieve optimal nutritional status. Based on careful assessment of chewing and swallowing ability, diets can include combinations of unaltered solid foods, mechanically soft foods, and pureed foods. Clients vary greatly in chewing and swallowing ability.
3. The consistency of foods included in any modified diet can be altered. If no dietary modifications are needed for specific diseases, use the General Diet.
4. Monitor food and fluid intake closely as intake is often decreased. Foods of high nutrient density should be included when inadequate oral intake is observed; refer to the High Nutrient Diet in Chapter 11.
5. Adequate fluid intake is essential. If clients will drink thickened beverages, they are a source of fluids. Overly thickened beverages may be refused.
6. Fluid and nutritional supplementation may be necessary to ensure adequate hydration and nutritional status. Food intake should be evaluated and a comprehensive plan to increase food consumption should be in place before supplements are instituted.
7. Additional nutritional support or vitamin and mineral supplements may be needed for individuals with severe swallowing problems.
8. An individual's ability to chew and swallow may or may not improve. Periodic evaluation of chewing and swallowing capabilities should be conducted regularly with adjustments made in texture modification to meet the current skill level. Providing foods in a less modified texture allows the client to slowly progress to reach the highest level of independence. Reevaluation of swallowing abilities is beneficial to ensure clients are provided foods and beverages at the least restrictive level.

MECHANICAL SOFT DIET

Use

The use of this diet is for individuals who have difficulty chewing but are able to tolerate a wide variety of foods. Modifications in the diet need to be indi-

vidualized according to the patient's needs. The Mechanical Soft Diet may be used for residents with missing teeth, ill-fitting dentures, general debility or weakness, and other chewing problems; it may be useful for patients with esophageal stricture (narrowing of the esophagus).

Adequacy

The suggested food plan includes foods in amounts that will provide the Dietary Reference Intakes (DRIs) by the National Academy of Sciences for the adult if the resident consumes the proper amount and variety of foods.

Diet Principles

The Mechanical Soft Diet is designed to permit easy chewing. The General Diet is modified in consistency and texture by cooking, grinding, chopping, mincing, or mashing. The diet includes foods soft in texture such as cooked fruits and vegetables, moist ground meat, and soft bread and cereal products. Foods that “dissolve” readily when held in the mouth such as graham crackers and some ready-to-eat cereals are also appropriate. It is most important to individualize or adjust it to the tolerance of the resident.

Table 3.1 Mechanical Soft

Food for the Day		
Food Category	Recommended	Avoid
Vegetables 1–4 cups	Soft, cooked, tender, chopped, shredded vegetables. Vegetable juice. Shredded lettuce.	Most raw or undercooked vegetables and those with tough skins. Whole kernel corn. Fried vegetables.
Fruits 1–2.5 cups	Fruit juice and nectars. Cooked, tender, canned fruits. Chopped melon or other soft, raw fruits.	Dried fruits. Coconut. Chunk pineapple. Fruit with tough skin.
Grains 3–10 servings	Plain, soft breads, rolls, muffins, lightly toasted bread. Plain crackers. Cooked cereal and well-soaked dry cereals. Pastas, rice.	Breads, rolls, muffins with dry, hard crusts. Any with seeds, nuts, dried fruits, coconut. Popcorn. Most granola-type cereals. Wild rice.
Dairy Products 2–3 cups	Fat-free or low-fat milk, fat-free or low-fat, nondairy milks (soy, almond, rice), low-fat yogurt and cottage cheese, low-fat or part-skim cheeses.	Any with nuts, seeds, pieces of fruit

(Continued)

Table 3.1 (Continued)

Food for the Day		
Food Category	Recommended	Avoid
Protein Foods 2–7 ounce- equivalents	Very tender, shredded or ground meats and poultry, moistened with gravy or sauce. Well-moistened fish. Eggs. Soft or mashed beans. Meat, fish, or egg salads without celery/onion chunks	Whole meats and poultry. Hot dogs, bacon. Meats with thick hard breading. Dry or tough meats. Dry fish or fish with bones. Crunchy peanut butter. Tough legumes.
Oils, Solid Fats, Added Sugars <i>Use sparingly</i>	Plain, soft cookies, donuts, cakes. Soft pies, puddings, cheese cake, plain ice cream, sherbet, gelatin.	Any with nuts, coconut, dried fruit. Bacon, olives. Dry, hard, crunchy, chunky or sticky products.
Fluids	All	No restrictions. Must evaluate any with lumps, chunks, or seeds.

Table 3.2 Mechanical Soft

Suggested Menu Plan for Mechanical Soft Diet

<p style="text-align: center;">Breakfast</p> <p>½ c. orange juice 1 egg ½ c. oatmeal 1 slice whole wheat toast 1 tsp. jelly 1 tsp. soft margarine 1 c. fat-free milk Hot beverage Sugar, pepper (optional)</p> <p style="text-align: center;">Lunch</p> <p>2 oz. roasted chicken, ground ½ c. mashed potatoes with gravy ½ c. mixed vegetables, tender 1 oz. wheat roll 1 tsp. soft margarine 1 c. fat-free milk Water</p>	<p style="text-align: center;">Supper</p> <p>2 oz. tuna on 2 slices whole wheat bread, 2 tsp mayonnaise ½ c. tomatoes, chopped 1 c. leafy greens, shredded 1 Tbsp. salad dressing ½ c. fruit cocktail 1 c. fat-free milk Water</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. cantaloupe, soft, bite size pieces ½ c. vegetable juice 3 graham squares</p>
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PUREED DIET

Use

The Pureed Diet is designed for residents with severe chewing difficulties. This diet is appropriate for residents with poor dentition or general debility or weakness.

Adequacy

The suggested food plan includes foods in amounts that will provide the DRIs recommended by the National Academy of Sciences for the adult, if the patient consumes the proper amount and variety.

Diet Principles

1. The Pureed Diet is designed to permit easy swallowing and requires minimal or no chewing.
2. The General Diet or other appropriate diet is modified in consistency by pureeing or modifying foods to a smooth consistency.
3. To improve appearance and appetite appeal, foods may be slurried (moistening foods and retaining their shape).
4. Individuals vary in their abilities to handle different puree consistencies. Thickeners or thinning liquids are useful in adapting pureed foods to individual needs.
5. It is most important to individualize or adjust it to the tolerance of the resident.

Table 3.3 Pureed Diet

Food for the Day		
Food Category	Recommended	Avoid
Vegetables 1–4 cups	Pureed vegetables. Vegetable juices.	All raw vegetables. All vegetables that are not pureed.
Fruits 1–2.5 cups	Pureed fruits. Fruit juice and nectars. Raw, ripe banana—mashed	Dried fruits. Coconut. Raw fruit except bananas.
Grains 3–10 ounce-equivalents	Pureed or slurried breads, rolls, muffins. Plain crackers, if crushed. Cracker or bread crumbs. Cooked cereals. Milk toast. Pureed pastas and rice.	Any with seeds, nuts, dried fruits, coconut. Popcorn. Wild rice.

(Continued)

Table 3.3 (Continued)

Food for the Day		
Food Category	Recommended	Avoid
Milk Products 2–3 cups	Fat-free or low-fat milk, fat-free or low-fat, nondairy milks (soy, almond, rice), low-fat yogurt and cottage cheese, low-fat or part-skim cheeses.	Any with nuts, seeds, pieces of fruit
Protein Foods 2–3 servings (total 2–7 ounce-equivalents)	Pureed meats, scrambled eggs. Hummus or pureed lentils/legumes. Moistened tofu.	Meat, fish, poultry, legumes or lentils that are not pureed.
Oils, Solid Fats, Added Sugars Use sparingly	Most fats present no problem, for example butter, margarine, oils, mayonnaise. Plain puddings, custards, cheese cake, plain ice cream, sherbet, yogurt, gelatin. Plain cakes and cookies soaked in milk or juice.	Any with nuts, olives, coconut, bacon or other coarse or chunky pieces. Pastries, pies; any with nuts, coconut, raisins.
Fluids	All	No restrictions. Need to evaluate any with lumps, chunks, or seeds.

Table 3.4 Pureed Diet

Suggested Menu Plan for Pureed Diet

Breakfast	Lunch
½ c. orange juice 1 egg, scrambled ½ c. oatmeal 1 serving bread crumbs pureed in egg 1 tsp. jelly 1 tsp. soft margarine 1 c. fat-free milk Hot beverage Sugar, pepper (optional)	2 oz. roasted chicken, pureed ½ c. mashed potatoes with gravy 1 serving mixed vegetables, pureed 1 serving bread crumbs pureed in meat 1 tsp. soft margarine 1 c. fat-free milk Water

Table 3.4 (Continued)

Supper	Snack Ideas
2 oz. tuna, 2 slices wheat bread and 2 tsp mayonnaise, pureed 2 slices tomato, 1 cup leafy green salad and 1 Tbsp. salad dressing, pureed ½ c. fruit cocktail, pureed 1 c. fat-free milk Water	½ c. cantaloupe, pureed ½ c. vegetable juice 1 muffin, soaked

NATIONAL DYSPHAGIA DIETS*

LEVEL 1: DYSPHAGIA PUREED DIET

Description

This diet consists of pureed, homogenous, and cohesive foods. Food should be “pudding-like.” No coarse textures, raw fruits or vegetables, nuts, and so forth are allowed. Any foods that require bolus formation, controlled manipulation, or mastication are excluded.

Rationale

This diet is designed for people who have moderate to severe dysphagia, with poor oral phase abilities and reduced ability to protect their airway. Close or complete supervision and alternate feeding methods may be required.

Table 3.5 Liquid Consistency

Liquid Consistency	Nectar-like	Honey-like	Spoon-thick
Thin <i>(Includes all unthickened beverages and supplements)</i>			

*The National Dysphagia Diets Level 1, Level 2, and Level 3 are ©2003 American Dietetic Association. Used with permission.

Food Textures for NDD Level 1: Dysphagia Pureed

Table 3.6 Dysphagia Pureed

Food Groups	Recommended	Avoid
Beverages	Any smooth, homogenous beverages without lumps, chunks, or pulp. Beverages may need to be thickened to appropriate consistency. If thin liquids allowed, also may have: Milk, juices, coffee, tea, sodas, carbonated beverages, alcoholic beverages, nutritional supplements. Ice chips.	Any beverages with lumps, chunks, seeds, pulp, etc.
Breads	Commercially or facility-prepared pureed bread mixes, <i>pregelled slurried</i> breads, pancakes, sweet rolls, Danish pastries, French toast, etc., that are gelled through entire thickness of product.	All other breads, rolls, crackers, biscuits, pancakes, waffles, French toast, muffins, etc.
Cereals Cereals may have just enough milk to moisten.	Smooth, homogenous, cooked cereals such as farina-type cereals. Cereals should have a “pudding-like” consistency. If thin liquids allowed, also may have: Enough milk or cream with cereals to moisten; they should be blended in well.	All dry cereals and any cooked cereals with lumps, seeds, chunks. Oatmeal.

Table 3.6 (Continued)

Food Groups	Recommended	Avoid
Desserts	Smooth puddings, custards, yogurt, pureed desserts and soufflés. If thin liquids allowed, also may have: Frozen malts, yogurt, milk shakes, eggnog, nutritional supplements, ice cream, sherbet, plain regular or sugar-free gelatin.	Ices, gelatins, frozen juice bars, cookies, cakes, pies, pastry, coarse or textured puddings, bread and rice pudding, fruited yogurt. These foods are considered thin liquids and should be avoided if thin liquids are restricted: Frozen malts, milk shakes, frozen yogurt, eggnog, nutritional supplements, ice cream, sherbet, regular or sugar-free gelatin, or any foods that become thin liquid at either room (70°F) or body temperature (98°F).
Fats	Butter, margarine, strained gravy, sour cream, mayonnaise, cream cheese, whipped topping. Smooth sauces such as white sauce, cheese sauce or hollandaise sauce.	All fats with coarse or chunky additives.
Fruits	Pureed fruits or well-mashed fresh bananas. Fruit juices without pulp, seeds, or chunks (may need to be thickened to appropriate consistency if thin liquids are restricted). If thin liquids allowed, also may have: Unthickened fruit juices.	Whole fruits (fresh, frozen, canned, dried).
Meats and Meat Substitutes	Pureed meats. Braunschweiger. Soufflés that are smooth and homogenous. Softened tofu mixed with moisture. Hummus or other pureed legume spread.	Whole or ground meats, fish, or poultry. Nonpureed lentils or legumes. Cheese, cottage cheese. Peanut butter, unless pureed into foods correctly. Nonpureed fried, scrambled, or hard-cooked eggs.

(Continued)

Table 3.6 (Continued)

Food Groups	Recommended	Avoid
Potatoes and Starches	<p>Mashed potatoes or sauce, pureed potatoes with gravy, butter, margarine, or sour cream.</p> <p>Well-cooked pasta, noodles, bread dressing, or rice that have been pureed in a blender to smooth, homogenous consistency.</p>	<p>All other potatoes, rice, noodles.</p> <p>Plain mashed potatoes, cooked grains.</p> <p>Nonpureed bread dressing.</p>
Soups	<p>Soups that have been pureed in a blender or strained. May need to be thickened to appropriate viscosity.</p> <p>If thin liquids allowed, also may have: Broth and other thin, strained soups.</p>	<p>Soups that have chunks, lumps, etc.</p>
Vegetables	<p>Pureed vegetables without chunks, lumps, pulp, or seeds.</p> <p>Tomato paste or sauce without seeds.</p> <p>Tomato or vegetable juice (may need to be thickened to appropriate consistency if juice is thinner than prescribed liquid consistency).</p> <p>If thin liquids allowed, also may have: Thin tomato or vegetable juices.</p>	<p>All other vegetables that have not been pureed.</p> <p>Tomato sauce with seeds, thin tomato juice.</p>
Miscellaneous	<p>Sugar, artificial sweetener, salt, finely ground pepper, and spices.</p> <p>Ketchup, mustard, BBQ sauce and other smooth sauces.</p> <p>Honey, smooth jellies.</p> <p>Very soft, smooth candy such as truffles.</p> <p>If thin liquids allowed, also may have: Smooth chocolate candy with no nuts, sprinkles, etc.</p>	<p>Coarsely ground pepper and herbs.</p> <p>Chunky fruit preserves and seedy jams.</p> <p>Seeds, nuts, sticky foods.</p> <p>Chewy candies such as caramels or licorice.</p>

LEVEL 2: DYSPHAGIA MECHANICALLY ALTERED CHARACTERISTICS

Description

This level consists of foods that are moist, soft-textured, and easily formed into a bolus. Meats are ground or are minced no larger than ¼-inch pieces; they are still moist, with some cohesion. All foods from NDD Level 1 are acceptable at this level.

Rationale

This diet is a transition from the pureed textures to more solid textures. Chewing ability is required. The textures on this level are appropriate for individuals with mild to moderate oral or pharyngeal dysphagia. Patients should be assessed for tolerance to mixed textures. It is expected that some mixed textures are tolerated on this diet.

Table 3.5 Liquid Consistency

Liquid Consistency			
Thin	Nectar-like	Honey-like	Spoon-thick
<i>(Includes all unthickened beverages and supplements)</i>			

Food Textures for NDD Level 2: Dysphagia Mechanically Altered

(Includes all foods on NDD Level 1: Dysphagia Pureed in addition to the foods listed here.)

Table 3.7 Dysphagia Mechanically Altered

Food Groups	Recommended	Avoid
Beverages	All beverages with minimal amounts of texture, pulp, etc. (Any texture should be suspended in the liquid and should not precipitate out.) (May need to be thickened, depending on liquid consistency recommended.) If thin liquids allowed, also may have: Milk, juices, coffee, tea, sodas, carbonated beverages, alcoholic beverages if allowed, nutritional supplements. Ice chips.	

(Continued)

Table 3.7 (Continued)

Food Groups	Recommended	Avoid
Breads	Soft pancakes, well moistened with syrup or sauce. Pureed bread mixes, <i>pregelled</i> or <i>slurried</i> breads that are gelled through entire thickness.	All others
Cereals Cereals may have ¼ cup milk or just enough milk to moisten if thin liquids are restricted. The moisture should be well-blended into food.	Cooked cereals with little texture, including oatmeal. Slightly moistened dry cereals with little texture such as corn flakes, Rice Krispies®, Wheaties®, etc. Unprocessed what bran stirred into cereals for bulk. Note: if thin liquids are restricted, it is important that all of the liquid is absorbed into the cereal. If thin liquids allowed, also may have: Milk or cream for cereals.	Very coarse cooked cereals that may contain flax seed or other seeds or nuts. Whole-grain dry or coarse cereals. Cereals with nuts, seeds, dried fruit and/or coconut.
Desserts	Pudding, custard. Soft fruit pies with bottom crust only. Crisps and cobblers without seeds or nuts and with soft breading or crumb mixture. Canned fruit (excluding pineapple). Soft, moist cakes with icing or “slurried” cakes. Pregelled cookies or soft, moist cookies that have been “dunked” in milk, coffee, or other liquid. If thin liquids allowed, also may have: Ice cream, sherbet, malts, nutritional supplements, frozen yogurt, and other ices. Plain gelatin or gelatin with canned fruit, excluding pineapple.	Dry, coarse cakes and cookies. Anything with nuts, seeds, coconut, pineapple, or dried fruit. Breakfast yogurt with nuts. Rice or bread pudding. These foods are considered thin liquids and should be avoided if thin liquids are restricted: Frozen malts, milk shakes, frozen yogurt, eggnog, nutritional supplements, ice cream, sherbet, regular or sugar-free gelatin, or any foods that become thin liquid at either room (70°F) or body temperature (98°F).

Table 3.7 (Continued)

Food Groups	Recommended	Avoid
Fats	Butter, margarine, cream for cereal (depending on liquid consistency recommendations), gravy, cream sauces, mayonnaise, salad dressings, cream cheese, cream cheese spreads with soft additives, sour cream, sour cream dips with soft additives, whipped toppings. If thin liquids allowed, also may have: Cream for cereal.	All fats with coarse or chunky additives.
Fruits	Soft drained canned or cooked fruits without seeds or skin. Fresh soft/ripe banana. Fruit juices with small amount of pulp. If thin liquids are restricted, fruit juices should be thickened to appropriate viscosity. If thin liquids allowed, also may have: Thin fruit juices. Watermelon without seeds.	Fresh or frozen fruits. Cooked fruit with skin or seeds. Dried fruits. Fresh, canned, or cooked pineapple.
Meats, Meat Substitutes, and Entrees Meat pieces should not exceed ¼ inch cube and should be tender.	Moistened ground or cooked meat, poultry, or fish. Moist ground or tender meat may be served with gravy or sauce. Casseroles without rice. Moist macaroni and cheese, well-cooked pasta with meat sauce, tuna-noodle casserole, soft, moist lasagna. Moist meatballs, meat loaf, or fish loaf. Protein salads such as tuna or egg without large chunks, celery, or onion. Cottage cheese, smooth quiche without large chunks. Poached, scrambled, or soft-cooked eggs (egg yolks should not be “runny” but should be moist and mashable with butter, margarine, or other moisture added to them). (Cook eggs to 160°F or use pasteurized eggs for safety.) Soufflés may have small soft chunks. Tofu. Well-cooked, slightly mashed, moist legumes such as baked beans. All meats or protein substitutes should be served with sauces, or moistened to help maintain cohesiveness in the oral cavity.	Dry meats, tough meats (such as bacon, sausage, hot dogs, bratwurst). Dry casseroles or casseroles with rice or large chunks. Cheese slices and cubes. Peanut butter. Hard-cooked or crisp fried eggs. Sandwiches. Pizza.

(Continued)

Table 3.7 (Continued)

Food Groups	Recommended	Avoid
Potatoes and Starches	Well-cooked, moistened, boiled, baked, or mashed potatoes. Well-cooked shredded hash brown potatoes that are not crisp. (All potatoes need to be moist and in sauces.) Well-cooked noodles in sauce. Spaetzel or soft dumplings that have been moistened with butter or gravy.	Potato skins and chips. Fried or French-fried potatoes. Rice.
Soups	Soups with easy-to-chew or easy-to-swallow meats or vegetables: particle sizes in soups should be <math>< \frac{1}{2}</math> inch. (Soups may need to be thickened to appropriate consistency, if soup is thinner than prescribed liquid consistency). If thin liquids allowed, also may have: All soups except those noted in Avoid column.	Soups with large chunks of meat and vegetables. Soups with rice, corn, peas.
Vegetables	All soft, well-cooked vegetables. Vegetables should be <math>< \frac{1}{2}</math> inch. Should be easily mashed with a fork.	Cooked corn and peas. Broccoli, cabbage, Brussels sprouts, asparagus, or other fibrous, nontender or rubbery cooked vegetables.
Miscellaneous	Jams and preserves without seeds, jelly. Sauces, salsas, etc., that may have small tender chunks <math>< \frac{1}{2}</math> inch. Soft, smooth chocolate bars that are easily chewed.	Seeds, nuts, coconut, sticky foods. Chewy candies such as caramel and licorice.

LEVEL 3: DYSPHAGIA ADVANCED DIET

Description

This level consists of food of nearly regular textures with the exception of very hard, sticky, or crunchy foods. Foods still need to be moist and should be in bite-size pieces at the oral phase of the swallow.

Rationale

This diet is a transition to a regular diet. Adequate dentition and mastication are required. The textures of this diet are appropriate for individuals with mild oral or pharyngeal phase dysphagia. Patients should be assessed for tolerance of mixed textures. It is expected that mixed textures are tolerated on this diet.

Table 3.5 Liquid Consistency

Liquid Consistency			
Thin	Nectar-like	Honey-like	Spoon-thick
<i>(Includes all unthickened beverages and supplements)</i>			

Food Textures for NDD Level 3: Dysphagia Advanced

Table 3.8 Dysphagia Advanced

Food Groups	Recommended	Avoid
Beverages	Any beverages, depending on recommendations for liquid consistency. If thin liquids allowed, also may have: Milk, juices, coffee, tea, sodas, carbonated beverages, alcoholic beverages, nutritional supplements. Ice chips.	
Breads	Any well-moistened breads, biscuits, muffins, pancakes, waffles, etc. Need to add adequate syrup, jelly, margarine, butter, etc, to moisten well.	Dry bread, toast, crackers, etc. Tough, crusty breads such as French bread or baguettes.
Cereals Cereals may have 1/4 cup milk or just enough milk to moisten if thin liquids are restricted.	All well-moistened cereals.	Coarse or dry cereals such as shredded wheat or All Bran®.

(Continued)

Table 3.8 (Continued)

Food Groups	Recommended	Avoid
Desserts	<p>All others except those on Avoid list.</p> <p>If thin liquids allowed, also may have: Malts, milk shakes, frozen yogurts, ice cream, and other frozen desserts.</p> <p>Nutritional supplements, gelatin, and any other desserts of thin liquid consistency when in the mouth.</p>	<p>Dry cakes, cookies that are chewy or very dry.</p> <p>Anything with nuts, seeds, dry fruits, coconut, pineapple.</p> <p>These are considered thin liquids and should be avoided if thin liquids are restricted: Frozen malts, milk shakes, frozen yogurt, eggnog, nutritional supplements, ice cream, sherbet, regular or sugar-free gelatin or any foods that become thin liquid at either room (70°F) or body temperature (98°F).</p>
Fats	<p>All other fats except those on Avoid list.</p>	<p>All fats with coarse, difficult-to-chew, or chunky additives such as cream-cheese spread with nuts or pineapple.</p>
Fruits	<p>All canned and cooked fruits.</p> <p>Soft, peeled fresh fruits such as peaches, nectarines, kiwi, mangos, cantaloupe, honeydew, watermelon (without seeds).</p> <p>Soft berries with small seeds such as strawberries.</p> <p>If thin liquids allowed, also may have: Any fruit juices.</p>	<p>Difficult-to-chew fresh fruits such as apples or pears.</p> <p>Stringy, high-pulp fruits such as papaya, pineapple, or mango.</p> <p>Fresh fruits with difficult-to-chew peels such as grapes.</p> <p>Uncooked dried fruits such as prunes and apricots.</p> <p>Fruit leather, fruit roll-ups, fruit snacks, dried fruits.</p>
Meats, Meat Substitutes, and Entrees	<p>Thin-sliced, tender, or ground meats and poultry.</p> <p>Well-moistened fish.</p> <p>Eggs prepared any way.</p> <p>Yogurt without nuts or coconut.</p> <p>Casseroles with small chunks or meat, ground meats, or tender meats.</p>	<p>Tough, dry meats and poultry.</p> <p>Dry fish or fish with bones.</p> <p>Chunky peanut butter.</p> <p>Yogurt with nuts or coconut.</p>

Table 3.8 (Continued)

Food Groups	Recommended	Avoid
Potatoes and Starches	All, including rice, wild rice, moist bread dressing, and tender, fried potatoes.	Tough, crisp-fried potatoes. Potato skins. Dry bread dressing.
Soups	All soups except those on the Avoid list. Strained corn or clam chowder. (May need to be thickened to appropriate consistency if soup is thinner than prescribed liquid consistency). If thin liquids allowed, also may have: All thin soups except those on the Avoid list. Broth and bouillon.	Soups with tough meats. Corn or clam chowders. Soups that have large chunks of meat or vegetables >1 inch.
Vegetables	All cooked, tender vegetables. Shredded lettuce.	All raw vegetables except shredded lettuce. Cooked corn. Nontender or rubbery cooked vegetables.
Miscellaneous	All seasonings and sweeteners. All sauces. Nonchewy candies without nuts, seeds, or coconut. Jams, jellies, honey, preserves.	Nuts, seeds, coconut. Chewy caramel or taffy-type candies. Candies with nuts, seeds, or coconut.

NATIONAL DYSPHAGIA DIET (NDD) LIQUID CONSISTENCY LEVELS

Clients with swallowing difficulty can often handle thickened beverages better than normal thin fluids such as water, milk, or coffee. However, not everyone needs thickened liquids. Speech and occupational therapists use the following terms and measurement of thickness, or viscosity, to prescribe the appropriate consistency for liquids based on individual needs.

Definitions of Terms Used for Thickened Liquids

Table 3.9 Viscosity Borders and Ranges for Thickened Liquids

Thin	1–50 cP
Nectar-like	51–350 cP
Honey-like	351–1,750 cP
Spoon-thick	>1,750 cP

*cP = Centipoise, the term for the measure of viscosity

Foods that are naturally nectar-like and do not require modification include:

Fruit nectars such as apricot and pear nectar

Tomato juice

Buttermilk

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Some manufacturers now put the viscosity measurement on their product labels. Avoid any liquid that changes thickness (viscosity) at room temperature (70°F) or body temperature (98°F). Examples include some nutritional supplements, milkshakes, eggnog, ice cream, and gelatin. A variety of commercial thickeners are available to modify liquids' consistencies. Follow the manufacturer's instructions to obtain the desired thickness.

Food and Beverage Preparation Tips

Thickeners for Consistency Altered Foods

A variety of methods and special products are available to prepare a wide range of food consistencies. Thickeners for pureed foods and liquids include:

- For pureed foods:
 - Commercial food thickeners, bread and cracker crumbs, instant potato flakes, instant infant cereal, and instant pudding mixes are good nutritious thickeners.
- For liquids:
 - Commercial thickeners, instant pudding mix, and instant potato flakes are acceptable thickeners. Yogurt, applesauce, and puddings are also acceptable, however they increase the volume of the products considerably; these may not be good choices for persons with poor appetite. Prethickened beverages are available.
 - Addition of thickening agents, irrespective of type, to orally ingested fluids does not significantly alter the absorption rate of water from the gut. Client acceptance is always a concern. Introducing a new thickened beverage such as lemon-flavored thickened water or thickened fruit juice may

Table 3.10 Sample Menu Plan for National Dysphagia Diets

(Select from foods for the day in the General Diet or any other diet. Follow the portion sizes for the appropriate diet using the textural modifications.)

Meal	General	Dysphagia Advanced	Dysphagia Mechanical	Dysphagia Pureed
Breakfast	Orange juice*	Orange juice*	Orange juice*	Orange juice, no pulp*
	Fried egg	Fried egg	Scrambled egg	Scrambled egg, pureed
	Oatmeal or cornflakes*	Oatmeal or cornflakes*	Oatmeal or cornflakes*	Farina-type cereal
	Wheat toast	Wheat toast, moistened with soft margarine	Bread crumbs mixed in egg	Bread crumbs pureed in egg
	Soft margarine	Milk*	Soft margarine	Soft margarine
	Milk*		Milk*	Milk*
Lunch	Roasted chicken breast	Roasted chicken, ground	Chicken, ground, with gravy	Roasted chicken, pureed
	Baked potato	Baked potato-no skin	Baked potato- no skin	Mashed potatoes, margarine
	Mixed vegetables	Mixed vegetables, tender	Mixed vegetables, pureed	Mixed vegetables, pureed
	Roll/Soft margarine	Roll/Soft margarine	Slurried roll/Soft margarine	Bread crumbs pureed in meat
	Strawberry ice cream*	Strawberry ice cream*	Strawberry ice cream*	Strawberry ice cream*
	Milk*	Milk*	Milk*	Milk*
Supper	Tomato soup*	Tomato soup*	Tomato soup*	Cream of tomato soup*
	Crackers	Crackers in soup	Crackers moistened in soup	Crackers pureed in soup
	Tuna salad sandwich	Tuna salad sandwich	Tuna salad with pasta (no chunks)	Tuna salad sandwich, pureed
	Garden salad/dressing	Shredded lettuce/dressing	Green beans, cooked	Green beans, cooked, pureed
	Fruit cocktail	Fruit cocktail	Peaches, canned	Peaches, pureed
	Milk*	Milk*	Milk*	Milk*
Snacks	Cookie	Cookie, soft	Cookie, soaked	Cookie, pureed
	Cantaloupe	Cantaloupe, soft	Cantaloupe, soft	Cantaloupe, pureed

*If thin liquids restricted, thicken to appropriate consistency

be more acceptable than offering thickened coffee or milk, which would have a different mouth feel than is usually expected with those flavors.

Preparation of Texture Altered Foods

Because diminished appetite is often present in individuals requiring texture modification, it is of utmost importance that the food be prepared to enhance its natural flavor. Every attempt should be made to make the food as palatable as possible. Minimize the total volume necessary to provide nutritional adequacy. Serve the food at the proper temperature. The foods should be served as separate entities and on attractive dishes with an appetizing presentation.

Use a food processor to achieve the desired consistency. Foods with a variety of consistencies can be prepared with the addition of very little liquid. The traditional blender usually requires more liquids, which dilutes nutrient density and increases the volume of foods.

Soaking or moistening recognizable foods in liquids, gravies, and slurries helps maintain their appeal. A slurry is a combination of a commercial thickener, common thickeners, or gelatin, with such liquids as milk, juice, or broth, and can be obtained by using 1 to 4 tablespoons of thickener or gelatin to 2 cups of liquid.

Cookies and cakes without nuts and chips can be soaked in milk. Bread or biscuits soaked in gravy or pancakes soaked in syrup or slurry are often well tolerated. A slurry can also be used to moisten and soften such foods as bread, cakes, cookies, or crackers. In addition, it is used to gel pureed foods. This allows an individual to consume food items that are not routinely part of the puree texture modification. Before serving a dry, crumbly food with added slurry, be sure the slurry soaks through the entire thickness of the food.

Method for Determining the Portion Sizes of Consistency Altered Foods

Foods often change in volume when they have been modified in consistency and texture. To ensure that nutritional adequacy is maintained, the following guidelines may be used when several portions of a consistency altered food are needed. Puree is used in this example.

1. Measure out desired number of servings into container for pureeing. Puree the food. Add any necessary thickener or liquid to obtain desired consistency. In most cases, it is desirable to maintain or increase the caloric value of consistency altered foods. When thinning foods use liquids that add to the nutritional value as well as the flavor of foods. Appropriate liquids include milk, fruit or vegetable juice, broth, gravy, cream sauce, and liquid nutrient supplements. Plain water is not recommended for thinning.

2. Measure the volume of the food after it has been pureed.
3. Divide the total volume of the pureed food by the original number of portions. This is the new portion size. Note: Some foods may have a smaller, rather than larger, portion after pureeing.
4. After dividing portions, foods must be reheated or chilled to serving temperature per Hazard Analysis and Critical Control Points (HACCP) guidelines.

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Study Guide Questions

- A. List three possible causes of dysphagia.
- B. Explain how various professional healthcare disciplines should be involved in the evaluation, treatment, and plan of care for patients with dysphagia.
- C. Describe in detail four of the eight Principles of Consistency Alteration.
- D. List the four liquid consistencies included in the National Dysphagia Diet.
- E. Using the previously planned general menu for the older adult, modify the menu to accommodate Dysphagia Advanced, Dysphagia Mechanical, and Dysphagia Pureed diets. Include portion sizes.
- F. Describe the method for determining accuracy of portion sizes of consistency altered foods after measuring the final volume. Why is this important?
- G. Discussion question: What can be done to make sure foods offered on consistency altered diets are as palatable as possible?

Study Guide Suggested Responses can be found in Appendix 18.

Liquid Diets and Modifications

4

CLEAR LIQUID DIET

Use

The Clear Liquid Diet has been traditionally prescribed for preoperative or postoperative patients (before or after surgery)*; for patients with an acute gastrointestinal illness to prevent dehydration; or in conditions when it is necessary to minimize fecal residue, such as bowel preparation for surgery or a gastrointestinal procedure. It also has been used to reintroduce foods following a period with no oral intake when poor tolerance or aspiration is anticipated. Research has shown that, for postoperative patients, there was no difference in tolerance whether provided a Clear Liquid Diet or Regular (General) Diet. (3)

Adequacy

This diet is inadequate in all nutrients for patients of all ages. It is used only when absolutely necessary. It should not be used more than 3 to 4 days without supplementation. Commercial clear liquid oral supplements may provide a

*The Post-surgical Diet has been removed from the diet manual. It was traditionally prescribed when it was decided the postsurgical patient was ready to have some whole foods but was not yet ready for a routine diet. With decrease in length of hospital stays and tendency toward early postoperative discharge, a step-wise progression from liquid diets to solid food is no longer practical or necessary. However, diet progression should be carefully evaluated in patients with significant bowel resections, strictures, fistula, or motility disorders. (2) See Diet Progression for Gastroparesis in Chapter 6.

source of protein and additional vitamins and minerals, but it is not intended for a sole source of nutrition.

Note: A commercial elemental or semi-elemental formula may be useful if a clear liquid regimen is necessary for more than 3 days or if the patient has digestion or malabsorption problems.

Diet Principles

This diet is composed of clear liquids, traditionally that are transparent and liquid at body temperature, largely composed of water, sugar, and salt. It is designed to provide fluids without stimulating extensive digestive processes, to relieve thirst, and to initiate oral feedings that will promote a gradual return to a normal intake of food. Small servings may be offered every 2 or 3 hours and at mealtime. Patients with diabetes should receive approximately 200 grams of carbohydrate dispensed equally throughout the day. (1)

Table 4.1 Clear Liquid

Food for the Day	
Fruits	Strained fruit juices: apple, cherry, cranapple, cranberry, crangrape, grape, orange, grapefruit, lemon
Soup	Fat-free clear broth and bouillon
Added Sugars	Flavored and unflavored gelatin; popsicles; fruit ice made without milk; sugar, honey, syrup; hard candy; sugar substitutes
Fluids	Coffee, tea, carbonated beverages, clear fruit beverage drinks, clear liquid nutritional supplement beverage drinks, sports drinks

Table 4.2 Clear Liquid

Suggested Menu Plan for Clear Liquid Diet

<p style="text-align: center;">Breakfast</p> <ul style="list-style-type: none"> ½ c. fruit juice 6 oz broth 4 oz gelatin 8 oz tea or coffee <p style="text-align: center;">Lunch</p> <ul style="list-style-type: none"> ½ c. fruit juice 6 oz broth 4 oz gelatin 8 oz tea or coffee 	<p style="text-align: center;">Supper</p> <ul style="list-style-type: none"> ½ c. fruit juice 6 oz broth 4 oz gelatin 8 oz tea or coffee <p style="text-align: center;">Snack Ideas</p> <ul style="list-style-type: none"> ½ c. fruit juice 4 oz gelatin Popsicle Clear liquid nutritional supplement
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FULL LIQUID DIET

Use

The Full Liquid Diet has traditionally been prescribed for the postoperative patient between the clear liquid and postsurgical soft diet, however a literature search reveals there are no data supporting the use of a Full Liquid Diet as part of a postoperative diet progression. For patients with chewing or swallowing difficulties, dysphagia or mechanically altered diets are recommended.

Adequacy

Depending on the amount and choice of food eaten, this diet will tend to be low in vitamins, minerals, and fiber. It is recommended for temporary use only. A daily multivitamin and mineral supplement or commercial nutritional supplement is recommended if the diet continues for more than 5 to 7 days.

Diet Principles

1. The Full Liquid Diet includes foods that are liquid at body temperature and tolerated by the patient.
2. Because the diet typically includes many milk-containing foods, it may need modification for patients who do not tolerate lactose. Acidophilus milk, lactose-free milk, soymilk, or plain yogurt may be tolerated, and lactose-free medical nutritional supplement beverages can be useful.
3. Low-fat or fat-free dairy products should be considered for patients' not tolerating fat. (4). Modifications in carbohydrate levels may also be necessary for people with diabetes mellitus or hypoglycemia. Patients with diabetes should receive approximately 200 grams of carbohydrate dispensed equally throughout the day. (1)

Table 4.3 Full Liquid

Food for the Day	
Vegetables 1 cup or more (including potatoes)	Potato, strained in cream soups; other mild-flavored vegetables, such as asparagus, carrots, green beans, peas, or spinach, strained and combined with clear broth, cream soup, plain or flavored gelatin; vegetable juices
Fruits 1 cup or more	Citrus and other fruit juices; pureed fruit without seeds
Grains 1 or more servings	Refined or strained cooked cereals that have been thinned with hot milk or hot half-and-half

(Continued)

Table 4.3 (Continued)

Food for the Day	
Dairy Products 2-3 servings	As a beverage and in cooking; milk in milk drinks, such as eggnog, milk shake, or malted milk; in strained cream soups; yogurt without fruit pieces or seeds, melted cheese
<i>Note: Do not serve raw egg. Use blended baked custard, soft custard with added milk, or a commercial mixture that is pasteurized.</i>	
Protein Foods 2-7 ounce-equivalents	Eggs in eggnog, soft custard; pureed meat added to broth or cream soup
Added Sugars	Sugar, honey, sugar substitutes, syrup
Fluids	Coffee, tea, carbonated beverages, flavored waters, sports drinks
Other	Broth or strained cream soup combined with allowed strained vegetables; soft or baked custard, flavored and unflavored gelatin, plain ice cream, pudding, sherbet, popsicles, fruit ices, flavorings and mild spices in moderation; nutritional supplement beverages

Table 4.4 Full Liquid

Suggested Menu Plan for Full Liquid Diet

<p style="text-align: center;">Breakfast</p> <p>½ c. fruit juice 6 oz thinned, cooked cereal with cream, sugar 8 oz milk or milk beverage</p> <p style="text-align: center;">Lunch</p> <p>6 oz soup* ½ c. pureed fruit ½ c. pureed vegetable ½ c. fruit or vegetable juice ½ c. strawberry ice cream 8 oz milk or milk beverage</p>	<p style="text-align: center;">Supper</p> <p>6 oz soup* ½ c. pureed fruit ½ c. pureed vegetable ½ c. fruit or vegetable juice ½ c. pudding or custard 8 oz milk or milk beverage</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. fruit juice ½ c. pureed fruit 6 oz yogurt 8 oz milk or milk beverage Nutritional supplement</p>
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*Soups may be fortified with dry milk, pureed meat and vegetables, and a fat serving. Note: canned soups are higher in sodium.

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ENTERAL NUTRITION

Use

Enteral nutrition (tube feeding) may be prescribed for patients who are physically or psychologically unable to take food by mouth in amounts that will meet nutrient requirements. Enteral nutrition can either supplement a patient's inadequate oral intake or it can provide the sole source of nutrition. Enteral nutrition must be closely monitored by a Registered Dietitian.

Adequacy

Most enteral feedings will be nutritionally adequate when given in recommended amounts, but it is important to evaluate each patient individually.

Diet Principles

1. **Selection.** Choice of an enteral feeding product depends on the medical and nutritional needs of the patient as determined by the physician and dietitian. The patient's condition and nutritional status and requirements must be identified and then compared to formulas available. Choose the enteral formula which most closely meets the patient's requirements.
2. **Administration.** Access to the stomach or small intestine is gained via a small diameter, flexible feeding tube. The tube may be placed (a) through the nose into the stomach or bowel for short-term use or (b) directly through the skin into the stomach or bowel for long-term use. Formula is delivered through the tube by gravity flow (bolus) or by use of an enteral feeding pump. The rate and volume of formula given depend on individual factors, such as nutritional status, body size, tolerance, and type of formula. The feeding is usually initiated at a slow rate and then advanced as tolerated to the goal rate. Formula does not require dilution. Even though formulas are typically more than 80% water, this is not sufficient to meet fluid requirements. Water flushes are necessary to meet hydration needs as well as to avoid clogged feeding tubes. Flushes must be given before and after feedings and each medication, and when the feeding is interrupted for any reason.

3. **Complications.** There are four major areas of complications associated with enteral nutrition: mechanical (tube obstruction, suspected inaccurate pump administration, tube displacement), metabolic (hyperglycemia, electrolyte imbalance, dehydration), gastrointestinal (diarrhea, nausea and vomiting, cramping, constipation), and respiratory (labored breathing, aspiration). Causes and contributing factors to these complications are many and varied. Careful observation and assessment are required to treat them. Some very basic preventative strategies are: elevate head of bed to 30 to 45 degrees and maintain strict sanitary practices when storing, handling, and administering feedings. Frequent monitoring of hydration status, lab work, weight status, and physical signs is important to identify complications early.
4. **Information** about specific enteral feeding formulas can be obtained from company representatives.

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Study Guide Questions

- A. List three reasons why a Clear Liquid Diet may be prescribed.
- B. List at least six specific fluid examples which can be included on a Clear Liquid Diet.
- C. Plan a full one day menu for an individual on a Full Liquid Diet.
- D. Discussion question: Is it possible for a patient to remain on a liquid diet long term and maintain their nutritional status? Why or why not?

Study Guide Suggested Responses can be found in Appendix 18.

Diets for Weight Management

5

There are a record number of overweight adults and children in the United States today. In fact, one of the health objectives for 2010 is to reduce the prevalence of obesity among adults to less than 15%. The number of overweight and obese adults and adolescents continues to rise considerably. Because of this epidemic, healthcare teams will be faced with caring for an increased number of overweight and obese residents. Poor diet and physical inactivity are the most important factors contributing to an epidemic of overweight and obesity. (4)

Being overweight or obese is described as having an excess of body weight according to standards for height. A more specific measurement would be body mass index (BMI), refer to Appendix 5. A BMI of 25 to 29.9 kg/m² is considered overweight. Obesity is defined as a BMI of greater than 30 kg/m². In older adults, maintaining a higher BMI may not necessarily be bad as it has been associated with lower mortality rates. (2) The best BMI for subjects greater than 60 years of age has been shown to be greater than 27. In a study of body weight in older subjects aged 84 to 88 years it was observed that mortality is increased when BMI is less than 22, but is not increased when BMI is greater than 30. (1)

Obesity is the second preventable cause of death in the United States. The economic impact has been estimated at near \$117 billion when all health affects are taken into consideration. Being overweight or obese are known risk factors for type 2 diabetes, cardiopulmonary disease, stroke, hypertension (high blood

pressure), gallbladder disease, osteoarthritis, sleep apnea, and some forms of cancer. Obesity is also associated with hyperlipidemia (high blood cholesterol), complications associated with pregnancy, irregular menses, stress incontinence, depression, and increased surgical risk if such procedures are needed.

Treatment for being overweight or obese includes diet and behavior therapy. Exercise is a key part of the treatment and should be customized to the patient's ability. Patient motivation and readiness to make changes should also be evaluated as well as the individual's understanding of the causes of obesity and how obesity contributes to disease. Patients' own personal goals must always be considered prior to the initiation of a weight management program.

WEIGHT MANAGEMENT DIET

Use

The use of calorie-controlled diets for weight management follow the principals of the General Diet, except that the portion sizes and fat content are decreased based on the patient's nutritional needs and weight management goals. Weight management includes medical nutrition therapy, physical activity, and behavior therapy. People who are most successful at achieving and maintaining a healthy weight do so through continued attention to consuming only enough calories from foods and beverages to meet their needs and by being physically active. (4) Medications may be used in treatment for individuals who meet criteria established by National Heart, Lung, and Blood Institute (NHLBI). (3)

Medical nutrition therapy for weight loss should last at least 6 months or until the individual reaches his or her goal weight at which time a weight maintenance plan should be implemented. Positive outcomes include:

- Promoting weight loss by reducing calorie needs by 500 to 1,000 calories/day.
- Promoting weight maintenance by providing adequate calories based on expenditure once a weight loss goal is met.
- Achieving optimal serum lipid levels (cholesterol, HDL and LDL cholesterol, and triglycerides).
- Preventing long-term complications such as hypertension (high blood pressure), cardiovascular disease, and diabetes.
- Improving overall health through optimal nutrition and long-term behavior changes.

Adequacy

Very low calorie diets do not meet energy requirements or nutrient requirements and should only be used under medical supervision. Calorie levels less

than 1,200 for most women and 1,500 for most men should be discouraged. These levels lack adequate intake to meet Dietary Reference Intakes (DRIs) and a multivitamin or mineral supplement should be considered. The diet should be based on the individual's nutritional needs and anticipated energy output.

Diet Principals

1. Maintain a healthy weight either by weight loss or weight maintenance. A 10% loss of current body weight is a goal to promote a lower blood sugar, blood cholesterol, and blood pressure.
2. Prevent additional weight gain which is critical for health goals.
3. Establish a pattern of safe weight loss of an average of 1 to 2 pounds per week. When rapid weight loss occurs, the chance of regaining is greater.
4. Support lifestyle, behavior modification, exercise, and diet changes that are an ongoing process that last indefinitely.
5. Monitor food intake and weight by way of food diary or other means of recording.
6. Exercise a minimum of 30 minutes most days of the week, at least 5 days a week to help promote weight loss. To maintain weight loss, 60 minutes 5 to 7 days per week may be indicated.
7. Choose heart healthy foods that are moderate to small in portion size to meet weight loss goals, see the USDA Food Patterns in Chapter 1 and the Heart Healthy Diet in Chapter 7.
8. Spread meals and snacks throughout the day to prevent hunger periods.
9. Include protein and small amount of healthy fat with meals to increase satiety and decrease between-meal hunger.
10. Drink at least 64 ounces of calorie-free liquids per day to help maintain hydration as well as to promote a sense of fullness to aid with weight loss.

Weight loss with the elderly population should be evaluated based on benefit for long-term outcomes. Weight loss with children should be evaluated and monitored by a healthcare team.

Table 5.1 Suggested Menu Plan for Weight Management

Refer to the USDA Food Patterns in Chapter 1 and the suggested menu plan for the Heart Healthy Diet in Chapter 7. Individuals who are overweight or obese have an increased risk for cardiovascular disease or may already have elevated lipids. Therefore lipid lowering foods such as flax seed, oats, and trans-fat free margarine are recommended for general use. Using products that contain stanols are recommended in individuals with elevated lipid levels or at the discretion of the healthcare provider.

CALORIE-CONTROLLED DIETS

A diet may include a calorie range, such as 1,200 to 1,500 calories per day. Consuming fewer calories along with increased physical activity and reduced time spent in sedentary behaviors can help achieve weight loss goals. Use the “USDA Food Patterns” table in Chapter 1 to plan a healthy eating pattern or to evaluate an individual’s current food and beverage choices. For more information and tools, go to <http://www.ChooseMyPlate.gov>; website includes personalized daily food plans and weight loss information.

Calories may also be reduced by offering “free foods,” (e.g., sugar-free or reduced calorie condiments) to allow for calories to come primarily from nutrient-dense food sources. Use Appendix 17, “Choose Your Foods,” for reference in meal planning.

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Websites

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American Dietetic Association: www.eatright.org tabs: for the public/healthy weight loss; for the health professional/ADA Position Paper on Weight Management

American Obesity Association: www.obesity.org

National Center for Health Statistics: www.cdc.gov/nchs

Physical Activity Guidelines for Americans: <http://www.health.gov/paguidelines>
President's Council on Physical Fitness and Sports: www.fitness.gov

BARIATRIC DIET

This diet is used for several different procedures, including roux-en-y gastric bypass, laparoscopic adjustable band, and vertical sleeve gastrectomy.

Use

The Bariatric Diet is for the morbidly obese patient who has undergone weight loss surgery. Currently, the two most common bariatric surgeries are the laparoscopic adjustable gastric band (LAGB), which is a purely restrictive procedure, and the roux-en-y gastric bypass (RYGB), which is a combination of malabsorption and restrictive procedure. It is important to determine what type of bariatric surgery was performed as the diet and nutrition plan could vary, depending on the program. The vertical sleeve gastrectomy (VSG) is a new procedure that is purely restrictive.

Adequacy

This diet is not adequate in any nutrient without proper supplementation. The postoperative diet for all types of bariatric surgeries should be started with water, ice chips, and clear unsweetened beverages. Very small amounts should be taken at first; carbonated and caffeinated beverages are discouraged, as are beverages containing “empty” calories from added sugar. Patients then advance to a Full Liquid Diet within 1 to 2 days. The Full Liquid Diet should contain a whey protein supplement to provide 60 to 80 g protein per day. The Pureed Diet can be introduced around postoperative weeks 2 and 3. Portion size per meal varies among procedures (2 oz RYGB, 4 oz VSG, and 8 oz LAGB). A General Diet is started around week 4. Food should be well-chewed and consumed very slowly. Liquids should not be consumed with solids. Liquids should not be consumed for at least 10 minutes before and no sooner than 40 minutes after a meal.

There are no long-term special diet requirements after a weight loss surgery. Complications such as a gastrointestinal bleed or ulcer should be followed up on an outpatient basis.

Diet Principles

1. Eat three “meals” per day and maintain adequate protein.
2. Consume protein foods first.
3. Consume a minimum of 60 g protein per day.
4. Consume no liquids with meals and 10 minutes before and 40 minutes after eating solids.

5. Consume 64 oz water per day.
6. Supplement with multivitamin complete, calcium citrate 1000 to 1200 mg/day. (Additional vitamins such as iron, B₁₂ sublingual may be needed)
7. All surgical candidates should be screened for vitamin D deficiency preoperatively and treated if a vitamin D deficiency is present.

Table 5.2 Diet progression following Bariatric surgery

Day 1–2	<ul style="list-style-type: none"> • Clear liquids only (water, broth, diet Jell-O, Sugar-free Popsicle, Isopure protein supplement. Make sure UGI is cleared before advancing diet.
Days 3–14	<ul style="list-style-type: none"> • Full liquid diet • Whey protein supplements to provide a minimum of 60 g protein/day.
Days 15–30	<ul style="list-style-type: none"> • Pureed diet • Whey protein supplements to provide a minimum of 60 g protein/day.
Day 30 and beyond	<ul style="list-style-type: none"> • Soft/regular diet • Avoid breads, dried meat, pasta, and rice • Continue goal of 60 g protein and 64 oz water
Supplement Suggestions	<ul style="list-style-type: none"> • Whey protein(whey isolate is preferred; lactose-free is also desirable) • Immediately postoperatively: Chewable multivitamin complete, chewable calcium citrate 1000 mg/day with vitamin D for LAGB. • Chewable multivitamin complete, chewable calcium citrate 1000 mg/day with vitamin D, sublingual B₁₂ 500 mcg/day for VSG and RYGB. • All surgical candidates should be screened for vitamin D deficiency preoperatively. If vitamin D deficiency is present, a suggested dose for correction is 50,000 IU erocalciferol taken orally, once weekly for 8 weeks
Dietitian visits	<ul style="list-style-type: none"> • Preoperatively, postoperatively, 1 to 2 weeks postoperatively, 1, 2, 3, 6, and 9 months, and then annually. • Vitamin levels should be monitored annually.
Please NOTE:	<p>*Diet prescriptions vary among practitioners. The exact time of advancement and serving size is dependent on patients tolerance, facility guidelines, and practitioners preferences.</p>

ADDITIONAL RESOURCES

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Parkes E. Nutritional management of patients after Bariatric surgery. *Am J Med Sci*. 2006;331:207–213.

Website

American Society for Metabolic and Bariatric Surgery: <http://www.asmb.org/>

Study Guide Questions

- A. What body mass index (BMI) ranges are adults in the United States considered overweight? What BMI levels are adults in the United States considered obese?
- B. List at least six health-related problems associated with overweight and obesity.
- C. List at least six sensible food and beverage choices that could be kept on hand to offer patients on a Weight Management Diet.
- D. Discussion question: How can you make a Weight Management Diet in long-term care customer-oriented for the resident?

Study Guide Suggested Responses can be found in Appendix 18.

Diets for Diabetes

6

According to the Centers for Disease Control and Prevention, there are more than 23 million Americans with diabetes mellitus. (5) Of this population, 90 to 95% has type 2 diabetes and the remaining 5 to 10% has type 1 diabetes. Diabetes is a disease in which the body does not produce and/or properly use insulin. Insulin is a hormone that is needed for blood glucose (sugar) to get into the body and provide energy needed for daily life. Carbohydrates (sugars and starches) are digested into blood glucose. If the glucose is unable to be transported into the cell, the glucose remains in the blood stream and produces a state of hyperglycemia (high blood sugar). Prolonged high blood sugars may cause macrovascular (large vessel) and microvascular (small vessel) damage.

Type 1 diabetes (previously known as juvenile diabetes or insulin-dependent diabetes or IDDM) is an autoimmune disease that affects the pancreas so that it does not make insulin. Insulin is required for a person with type 1 diabetes to survive. Insulin may be given by injections or by an insulin pump. Currently there is no known cure for type 1 diabetes, although research is consistently underway.

Type 2 diabetes (previously known as adult onset diabetes or noninsulin dependent diabetes or NIDDM) is a disease that usually begins with insulin resistance, a condition in which the cells do not use insulin properly. As insulin needs increase, the pancreas gradually loses its ability to make insulin. Type 2 diabetes may require medication to control blood glucose. This could include

oral medications, incretin mimetic injections (Byetta® [exenatide] and Victoza® [liraglutide]) or insulin. Once a person with type 2 diabetes starts taking insulin, the person does not have type 1 diabetes; the description for this is Type 2 diabetes requiring insulin.

There are another 57 million people with prediabetes. They have blood glucose levels that are higher than normal but not high enough to have diabetes. Diet, exercise, and weight management may prevent or delay the onset of type 2 diabetes.

Another type of diabetes is called gestational diabetes. This type of diabetes only occurs during pregnancy. After delivery of the baby, blood glucose returns to normal. Women who have gestational diabetes are at a higher risk for type 2 diabetes. Meal planning, exercise, and possibly medication are used to control blood glucose during pregnancy.

CONSISTENT CARBOHYDRATE DIET

Use

The Consistent Carbohydrate Diet is an outline for meal planning for the patient with diabetes mellitus. This diet follows the principles of the General Diet but provides consistent carbohydrate intake at meals. The following goals and principles are based on the Clinical Practice Recommendations published by the American Diabetes Association (1). The goals of nutrition therapy in treating diabetes are:

- Maintain as near normal blood glucose levels as is safely possible.
- Achieve optimal serum lipid levels (cholesterol, HDL and LDL cholesterol, and triglycerides) and blood pressure levels to prevent and treat cardiovascular disease.
- Provide adequate energy to achieve and maintain a reasonable body weight in adults and to support growth during pregnancy and childhood.
- Prevent and treat short-term complications such as hyperglycemia (high blood sugar) or hypoglycemia (low blood sugar) and long-term complications such as renal (kidney) disease, cardiovascular disease, neuropathies (nerve damage), and amputation.
- Improve overall health by encouraging healthy food choices and maintain the enjoyment of eating by restricting food only when supported by science.

Adequacy

The suggested food plan includes foods in amounts that will provide the Dietary Reference Intakes (DRIs) recommended by the National Academy of

Sciences for adults. Meal plans with less than 1,200 calories may be low in vitamins and minerals and are generally not recommended. In the elderly, under-nutrition is likely and weight loss diets should be prescribed with caution. The need for a daily multivitamin supplement should be evaluated.

Diet Principles

1. **Individualization.** Individualization of treatment for patients with diabetes is essential. The effect of medical nutrition therapy on blood glucose and serum lipid levels (especially triglycerides and LDL cholesterol) must be evaluated and modified, if necessary. The dietary program and self-management plan must take into consideration the ability and willingness of the client with diabetes to follow through with recommendations. The plan should be sensitive to cultural, ethnic, and financial considerations. Reinforcement of teaching and encouragement are usually necessary over an extended period of time.
2. **Energy.** The caloric value of meal plans must provide adequate energy to achieve and maintain a desirable or reasonable weight. Weight reduction of 5 to 10% of initial body weight (approximately 10–20 pounds) may improve blood glucose levels as well as blood pressure in many obese people with type 2 diabetes. For individuals with diabetes that are within a desirable weight range, caloric intake must match expenditure to maintain normal weight. For the person below desirable weight, caloric intake must allow for appropriate weight gain.
3. **Carbohydrate.** Carbohydrates include sugars and starches. They are digested into glucose (blood sugar) all of the time. In a person that does not have diabetes, the pancreas releases insulin based on the amount of carbohydrate that is consumed. The DRIs (8) recommends 45 to 65% of total calories from carbohydrates. Carbohydrates are found in four main groups of food: (a) starches, (b) fruit and fruit juices, (c) milk and milk products, and (d) sweets, desserts, and other carbohydrates. These foods affect blood glucose in the same manner. The total amount of carbohydrate consumed is more important than the source of the carbohydrate. Research shows that sugars such as sucrose (table sugar), syrup, and honey have no more effect on blood glucose levels than other carbohydrates. Monitoring blood glucose after meals can help evaluate an individual's responses and determine if the carbohydrate level needs to be adjusted, or for those who require medication, if the dose of medication needs to be adjusted.

When foods containing added sugars are included, the carbohydrate content should be counted as part of the total carbohydrate consumed at

the meal or snack. See the Sweets, Desserts and Other Carbohydrates List in Appendix 17 for carbohydrate content per serving. Many of these foods were traditionally avoided before research revealed that these foods do not raise blood glucose more than other carbohydrates. Many of these foods also contain added fat and should be consumed in moderation if weight management is a goal. For persons managing diabetes with diet alone, oral medications or fixed doses of insulin, a consistent intake of carbohydrate is desirable and often achieved in a healthcare setting. For persons on flexible insulin doses (i.e., insulin-to-carbohydrate ratios), insulin doses are adjusted based on the amount of carbohydrate consumed at each meal. Therefore, a General Diet containing regular food is acceptable for diabetes meal planning.

4. **Protein and Fat.** Protein and fat do not affect the blood glucose directly like carbohydrates do. The amount of protein and fat servings do not need to be consistent from day to day because they have little effect on blood glucose levels. The amount of protein and fat that is provided in the General Diet is appropriate for the individual with diabetes in healthcare institutions.
5. **Exercise.** Most people with diabetes benefit from regular exercise. Exercise improves the body's response to insulin, helps lower blood glucose levels, and is a key factor in the success of clients achieving and maintaining a desirable or reasonable body weight. Individuals using insulin may need adjustments to their meal pattern to prevent hypoglycemia during or after strenuous activity.
6. **Reducing Cardiovascular Risk.** Because the diagnosis of diabetes is a single risk factor for cardiovascular disease, controlling blood lipid levels is an important treatment goal. Saturated fat should be limited to less than 7% of total calories and trans fat should be minimized. Total cholesterol intake should average less than 200 mg/day. Plasma triglyceride response to high carbohydrate diets ($\geq 55\%$ calories from carbohydrate) in individuals is quite variable. Some people have improvements in triglycerides when monounsaturated fats are substituted for a portion of the carbohydrates. Making medication changes to control lipids rather than using food restrictions may prevent malnutrition in the elderly.
7. **Meal Patterns.** Food, exercise, and insulin or oral hypoglycemic agents influence blood glucose concentration. These three influences need to be considered in various ways in the treatment of diabetes. When insulin therapy is used, the activity curve of the insulin determines the times of the day when needs for food are greatest. Exercise reduces the need for insulin and increases the need for carbohydrate. Usually a regular pattern for taking insulin injections, meals and snacks, and exercise can be worked out so that both hyperglycemia and hypoglycemia can be minimized. This is more important for the person taking insulin.

8. **Measuring Food.** Food should be measured with standard measuring equipment (8-ounce cup, measuring spoons, small food scale, ruler) until the amounts can be estimated accurately. To make certain measurements remain accurate, periodically use measuring equipment to recheck portions served. Foods are measured after they are cooked.
9. **Special Foods.** Special foods are not necessary and may be expensive. Foods labeled “sugar-free,” “no sugar,” “reduced sugar,” or “lower sugar” may be high in fat, calories, and even carbohydrates. If these products are used, read nutrition labels carefully. Sugar-free does not mean carbohydrate-free. However, many sugar-free products are also low calorie and may be used as free foods or aid in weight management goals.
10. **Consistent Carbohydrate Diets in Institutions.** According to the *Clinical Practice Recommendations* (1), it is suggested that acute healthcare facilities consider using a consistent carbohydrate meal planning system. For long-term care facilities it states “Residents with diabetes should be served a regular menu, with consistency in the amount and timing of carbohydrate. . . . Experience has shown that residents eat better when they are given less restrictive diets. . . . Meal plans such as no concentrated sweets, no sugar added, low sugar, and liberal diabetic diet are also no longer appropriate. These diets do not reflect current diabetes recommendations and unnecessarily restrict sucrose. . . . Making medication changes to control glucose, lipids and blood pressure rather than implementing food restrictions can reduce the risk of iatrogenic (medically induced) malnutrition. The specific nutrition recommendations will depend on a variety of factors, including age, life expectancy, co-morbidities and patient preferences.” (1)

Menu Planning

The preferred diet for diabetes for persons in acute and long-term care facilities is the Consistent Carbohydrate Diet. This implies that the amount of carbohydrates consumed is consistent and the time of the meals and snacks are consistent as well. This pattern will help promote optimal blood glucose control. In most healthcare settings, acute or long-term care, meal times are consistent. The menu can be adjusted to be consistent with carbohydrates for all populations and therefore eliminate therapeutic diets.

Carbohydrate counting is based on choices or grams per meal and snack. The individual is given a carbohydrate allowance that has been individualized to their nutrition therapy and blood glucose goals. One carbohydrate choice equals 15 grams of carbohydrate. Meal plans may vary from three to five choices (45–75 grams) of carbohydrates per meal and one to two choices (15–30 grams) of carbohydrates per snacks. Snacks are optional for many individuals with diabetes. However, in many institutions the length of time

Table 6.1 Conversion Guide for Carbohydrate Counting

Total Carbohydrate Grams	Carbohydrate Choices
0–5	0
6–10	½
11–20	1
21–25	1 ½
26–35	2
36–40	2 ½
41–50	3
51–55	3 ½
55–65	4
66–70	4 ½
71–80	5
81–85	5 ½
85–95	6
96–100	6 ½
101–110	7

between the evening meal and breakfast is great and most individuals need an evening snack. Those who use carbohydrate counting may use the following conversion chart.

Carbohydrate allowances may be “spent” at the discretion of the patient; however, not all choices have the same nutritional value and may alter overall nutrition status of the individual. *Choose Your Foods: Exchange Lists for Diabetes* was prepared by the American Dietetic Association and the American Diabetes Association (3), refer to Appendix 17. Use the exchange list for reference in carbohydrate counting.

Menu portion sizes should be adjusted to reflect goals of nutritional management for individuals in a facility. Patients in acute care settings may be offered a standard diet for diabetes that is consistent in carbohydrate or they may be given a General Diet menu and the carbohydrate choices may be adjusted based on the carbohydrate allowance for that patient. Traditionally, diabetic diets were ordered as “ADA” with the calorie level indicated. The American Diabetes Association does not have standard diets nor endorse standardized diets. The term ADA diet was attached to calorie levels and over time has been interpreted as a diabetic diet. The American Diabetes Association discourages the use of the term *ADA diet*. (2)

The following menu shows an example of adapting a General Diet to a Consistent Carbohydrate Diet providing about 2,000 calories per day.

Table 6.2 Suggested Menu Plan for Consistent Carbohydrate Diet*(Select from foods described)*

MEAL PATTERN	CONSISTENT CARBOHYDRATE DIET	GENERAL DIET
Breakfast	½ c. orange juice (1 choice)	½ c. orange juice
5 carbohydrate choices equal to ~75 grams carbohydrate	½ c. oatmeal (1 choice)	½ c. oatmeal
	1 slice toast (1 choice)	1 slice toast
	1 egg	1 egg
	1 c. fat-free milk (1 choice)	1 c. fat-free milk
	1 Tbsp. regular jelly (1 choice)	1 Tbsp. jelly
	1 tsp. soft margarine	1 tsp. soft margarine
	coffee	coffee
Lunch or Supper	2 oz. roasted chicken breast	2 oz. roasted chicken breast
5 carbohydrate choices equal to ~75 grams carbohydrate	½ c. mashed potatoes/gravy (1 choice)	½ c. mashed potatoes/gravy
	½ c. mixed vegetables (without corn or peas)	½ c. mixed vegetables
	1 dinner roll (1 choice)	1 dinner roll
	2 tsp. soft margarine	2 tsp. soft margarine
	2 x 2 brownie/frosting (2 choices)	2 x 2 brownie/frosting
	1 c. fat-free milk (1 choice)	1 c. fat-free milk
	coffee	coffee
Dinner	Tuna salad sandwich with 2 slices bread (2 choices)	Tuna salad sandwich with 2 slices bread
5 carbohydrate choices equal to ~75 grams carbohydrate	1 cup tomato soup with 2 crackers (1 choice)	1 cup tomato soup
	½ c. fruit cocktail (1 choice)	2 crackers
	1 c. fat-free milk (1 choice)	½ c. fruit cocktail
	coffee	1 c. fat-free milk
		coffee
Snack	½ c. carrots	½ c. carrots
1–2 carbohydrate choices equal to 15–30 grams carbohydrate	½ c. cubed cantaloupe (½ choice)	½ c. cubed cantaloupe
	3 cups popcorn (1 choice)	3 cups popcorn (1 choice)

Gestational Diabetes Meal Plan

The meal plan for a woman with gestational diabetes follows the same principles as the Consistent Carbohydrate Diet. Total carbohydrate intake is usually 40 to 45% of total calories. (4,7) Some researchers advocate lower carbohydrate intakes, however, the minimum amount of carbohydrate recommended daily in pregnancy is 175 grams according to the DRIs. (8) Care must

be taken to provide enough calories in the meal plan to promote proper weight gain and prevent starvation ketosis; extra protein and fat foods at each meal and snack time can aid in meeting calorie needs. An evening snack is necessary to prevent ketosis. Women are advised to check ketones before breakfast.

Generally, the meal pattern for breakfast is reduced in carbohydrates due to hormonal surges and insulin resistance in the morning hours. The carbohydrate allowance for breakfast is limited to two choices (30 grams) to help promote optimal blood glucose levels.

Table 6.3 Suggested Menu Plan for Gestational Diabetes ~2000 Calories

(Select from foods described)

Breakfast: Two carbohydrate choices (30 grams)

- 1 slice whole wheat toast (1 choice)
- 1 egg or 1 Tbsp. peanut butter
- 1 tsp. soft margarine
- 8 oz. low-fat milk (1 choice)

Snack: Two carbohydrate choices (30 grams)

- 3 graham cracker squares (1 choice)
- 8 oz. fat-free milk (1 choice)

Lunch or Supper: Three to four carbohydrates (45–60 grams)

- 2 slices bread (2 choices)
- ½ medium banana (1 choice)
- 6 oz. light yogurt (1 choice)
- 1 c. carrot and celery sticks
- 2-3 oz. roast beef
- 2 tsp. soft margarine

Snack: Two carbohydrate choices (30 grams)

- 3 c. popcorn, lower fat (1 choice)
- 1 c. cantaloupe (1 choice)
- 1 unsweetened beverage

Dinner: Three to four carbohydrates (45–60 grams)

- 3 oz. chicken breast
- 1 small baked potato (1 choice)
- ½ c. broccoli
- ½ c. peaches (1 choice)
- 1 small dinner roll (1 choice)
- 8 oz. fat-free milk (1 choice)
- 1 tsp. margarine

Snack: Two carbohydrate choices (30 grams)

- 6 whole wheat crackers (1 choice)
 - 1 oz. cheese
 - 8 oz. fat-free milk (1 choice)
-

Once the meal plan is in place, blood glucose is checked on a regular basis. If the blood sugars show a trend of acceptable readings, the meal plan may be adjusted to a higher carbohydrate allowance. This generally does not occur with many women with gestational diabetes due to hormonal changes during pregnancy.

Full and Clear Liquid Substitutions

When an individual with diabetes cannot eat solid food, it may be necessary to offer the Clear Liquid or Full Liquid Diet. Carbohydrate counting still plays a role with meal planning. The use of regular products is acceptable to maintain the level of carbohydrate in the meal plan. Individuals should receive approximately 200 grams of carbohydrate daily. Sugar-free products should be limited on a liquid diet due to the decreased caloric value. The following table shows carbohydrate values for selected foods that could be offered on a Full or Clear Liquid Diet.

Table 6.4

Food	Amount
15 gram carbohydrate portions	
Carbonated regular soda	½ cup
Cooked cereal	½ cup
Creamed soup	1 cup
Custard, soft	½ cup
Eggnog	½ cup
Flavored gelatin, regular	½ cup
Ice cream, regular	½ cup
Light ice cream, vanilla	½ cup
Pudding, sugar-free	½ cup
Pudding, regular	¼ cup
Sherbet	¼ cup
Sugar	1 Tbsp
Yogurt, flavored low-fat, sugar sweetened	⅓ cup

Hypoglycemia

Hypoglycemia or low blood sugar can be caused by taking too much diabetes medication, eating too few carbohydrates at meal time, skipping meals, or getting more exercise than usual. Symptoms may vary among individuals. Common signs are feeling shaky, sweaty, tired, hungry, crabby or confused, rapid heart rate, blurred vision or headaches, and numbness or tingling in the mouth and lips. In severe cases, the person may lose consciousness.

The treatment for low blood sugar is the “Rule of 15.” This means once a low blood sugar is recognized, 15 grams of carbohydrate are given. It is recommended to use only carbohydrate to treat hypoglycemia and not to use

foods high in protein or fat. Protein can stimulate the pancreas to release insulin and does not prevent a repeat low blood sugar. Fat slows down the absorption of carbohydrate leading to a delay in raising blood glucose.

Table 6.5 Treatment of Low Blood Sugar “Rule of 15”

Good Choices	Poor Choices
15 gram carbohydrate portions	
½ cup fruit juice	Donuts
4 glucose tablets	Ice cream
½ cup regular soda	Candy bars
1 cup fat-free or low-fat (1%) milk	Sandwiches
1 Tbsp. honey	Pies, cakes, cookies
1 Tbsp. sugar	Milkshakes

The blood sugar should be rechecked in 15 minutes. If the blood sugar remains low, then retreat with 15 grams of carbohydrate. Recheck the blood sugar again in 15 minutes and repeat as necessary until the blood sugar is within normal limits. If the next meal is more than one hour away, serve a snack consisting of 30 grams of carbohydrate. If the next meal is less than one hour away, continue to monitor blood glucose levels until mealtime. A repeat low blood sugar may occur if not treated properly.

Effective treatment for hypoglycemia in the healthcare setting is essential. Historically the addition of table sugar to juice or other liquids has been used to elevate blood glucose levels. This is not recommended as it may over treat the low blood sugar. A high blood sugar may be the result, causing a roller coaster effect.

Herbal Therapy and Vitamin or Mineral Supplementation

Herbal therapy is becoming more common to aid in the treatment of disease states. The herbal industry is not regulated by the Food and Drug Administration (FDA) and therefore does not uphold the same standards as other conventional therapies. Persons with diabetes need to exercise extreme caution with herbal therapies because some may interfere with diabetes medication or may cause the body to become more insulin resistant. Contact a physician or pharmacist for more information.

There is no clear data that shows benefit from the use of any vitamin or mineral supplement for persons with diabetes who do not have underlying deficiencies. In fact, regular supplementation with antioxidants, such as vitamins A, C, or E, is not recommended due to safety concerns associated with long-term use. Certain populations may need supplementation for reasons unrelated to diabetes including the elderly, pregnant and lactating women and those on low calorie diets.

Gastroparesis

Gastroparesis (delayed stomach emptying) is a complication of diabetes that may require diet modification. Offer individuals six or more small meals daily as large meals slow stomach emptying. (6) Fat, fiber, and solid foods slow down stomach emptying. If a person has severe nausea and vomiting, then a Clear Liquid Diet (see Chapter 4) is recommended. Once clear liquids are tolerated, the next step is a Full Liquid Diet (see Chapter 4). Some people do not tolerate high fat liquids such as whole milk, cream soup, and milkshakes. Once full liquids are tolerated, a low-fat, low-fiber diet is the next step. Some high fiber foods may cause bezoar formation and may need to be avoided (6).

Symptoms of gastroparesis wax and wane, therefore, an individual's ability to tolerate foods may change over time.

Table 6.6 Low-Fat, Low-Fiber Diet for Gastroparesis

Food Group	Recommended	Restrict
Vegetables	Choose cooked or canned vegetables without skins or seeds except those not recommended. May have potatoes without skins; tomato juice, sauce, and paste.	Raw, deep-fried and lightly cooked vegetables; creamed vegetables; tomato seeds and skins; avocado, broccoli, Brussels sprouts, corn, green beans, peas, potato skins, sauerkraut, dried beans and peas; cooked spinach and greens.
Fruits	Choose cooked or canned fruits without skin or seeds (e.g., applesauce, peaches, or pears); ripe banana or melons; fruit juice without pulp.	Fresh fruit except ripe banana or melon; dried fruits; canned fruit with skin or seeds; juice with pulp; jam, and marmalade
Grains	White bread, rolls, pasta and rice; refined cereals including cream of wheat and crispy rice; soda crackers	Whole grain breads, cereals, pasta; wild and brown rice; graham crackers; bran; high fat breads including biscuits, cornbread, croissants, donuts, muffins, pancakes, and waffles
Dairy Products	Fat-free or low-fat milk, low-fat yogurt, fat-free or low-fat cheese; fat-free or low-fat cottage cheese.	Whole or reduced fat milk; cheese or cottage cheese made with whole or reduced fat milk

(Continued)

Table 6.6 (Continued)

Food Group	Recommended	Restrict
Protein Foods	Choose tender lean meats which are baked, broiled or grilled and trimmed of fat. Beef (round, flank and loin cuts), pork (loin), ham, skinless chicken and turkey, fish, canned tuna in water, eggs, egg substitutes, 97% fat-free deli meats. If not tolerated, try ground meat. Smooth peanut butter or nut butters (2 Tbsp/day)	Tough, gristly or deep fried meats, bacon, hot dogs, luncheon meats, pork steak, prime rib, ribs, sardines, sausage; dried beans and peas Crunchy peanut butter or nut butters
Oils/Solid Fats <i>May need to limit to 1 serving per meal or snack if not tolerated.</i>	Butter, margarine, mayonnaise, oil (1 teaspoon) Reduced-fat margarine or mayonnaise (1 Tbsp.) Cream, salad dressing, cream cheese (1 Tbsp.) Sour cream (2 Tbsp.) May use fat-free condiments as desired	Avocado, bacon, coconut, and nuts
Added Sugars/Misc.	Plain pudding made with skim milk, gelatin, fat-free ice cream, sherbet, popsicles, angel food cake, sugar, brown sugar, clear jelly, honey, syrup, marshmallows, hard candy, coffee, tea, soft drinks, catsup, mustard, lemon juice, and vinegar	High fat desserts (cake, pie, cookies, pastries), desserts with coconut, nuts, raisins; seeds, popcorn, pickles, and whole spices
Fluids	Clear carbonated beverages, Gatorade, clear fruit drinks, coffee, and tea (hot and iced)	Juice with pulp; smoothies with pieces of fruit not allowed
Soup	Fat-free broth or bouillon, soups made with skim milk, broth soup made with allowed vegetables and pasta	Soups made with whole milk or cream; soups made with vegetables not allowed

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ADDITIONAL RESOURCES

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- American Diabetes Association. 2009. *Therapy for Diabetes Mellitus and Related Disorders, Fifth Edition*. Chicago: American Diabetes Association, 2009. www.diabetes.org.
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- St. Luke's Hospital Diabetes Education. 2008. Carbohydrate Counting Placemat for Meal Planning. Patient handout. www.stlukescr.org/our-services/all-other-services/diabetes-education/
- St. Luke's Hospital Nutrition Center. 2010. Diet Progression for Gastroparesis www.stlukescr.org/our-services/all-other-services/digestive-health/diet-information/

Study Guide Questions

- A. Differentiate between the following:
Type 1 diabetes
Type 2 diabetes
Gestational diabetes
- B. List three factors which can prevent or delay the onset of type 2 diabetes.
- C. List at least three goals of nutrition therapy in treating diabetes.
- D. List the four main groups of foods which contain carbohydrates.
- E. One carbohydrate choice is equal to how many grams of carbohydrate per serving?
- F. Using the *Suggested Menu Plan for Consistent Carbohydrate Diet* and *Choose Your Foods: Exchange Lists for Meal Planning*, plan a full one-day menu for a patient requiring three carbohydrate choices at each meal and one carbohydrate choice snacks between each meal and at HS (before bed). Be sure to include portion sizes.
- G. List at least four symptoms of hypoglycemia.
- H. Discussion question: Why is it important to liberalize diets for diabetics in a long-term care setting?

Study Guide Suggested Responses can be found in Appendix 18.

Fat Restricted Diets

7

HEART HEALTHY DIET

This was formerly known as the Cholesterol/Saturated Fat Restricted, Step I Diet.

Use

This diet is prescribed to reduce cholesterol or lipids in the blood. (3) Following this diet, the goal is to reduce total blood cholesterol, “bad” low-density lipoprotein (LDL) cholesterol, triglycerides, and to increase “good” high-density lipoprotein (HDL) cholesterol.

Adequacy

The suggested food plan includes food in the amounts that will provide the Dietary Reference Intakes (DRIs) recommended by the National Academy of Sciences for adults.

Diet Principals

A Heart Healthy Diet is recommended for the general population according to the National Cholesterol Education Program. (4) The American Heart Association released new dietary recommendations in June 2006, (2) guidelines are outlined as follows:

Simplified Diet Manual, Eleventh Edition. Edited by Andrea K. Maher.
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1. Complex carbohydrates including whole grains, fruits, and vegetables should provide most of the calories from carbohydrates.
2. When blood triglycerides are high and HDL cholesterol is low, replace simple and refined carbohydrate calories with monounsaturated fats to allow up to 35% of total calories from fat. Refer to *Choose Your Foods*, Appendix 17, for a list of foods containing monounsaturated fats.
3. Consume foods high in omega-3 fatty acids, including fatty fish, two times weekly (sources include salmon, albacore tuna, halibut, and mackerel), walnuts, flaxseed, omega-3 fortified eggs, and oils such as canola and soybean.

Heart Healthy Diet Guidelines

- Less than 30% total calories from fat
- Total of 8–10% calories from saturated fat
- Less than 1% of calories from *trans* fats (Table 7.3)
- Less than 300 mg of dietary cholesterol per day
- Limit sodium to 2,400 mg per day
- Maintain healthy body weight

Table 7.1 Heart Healthy Diet

Food for the Day		
	Recommended	Restrict
Vegetables 1–4 cups	All fresh, frozen, or canned vegetables (choose low sodium varieties or rinse before serving); 100% vegetables juice.	Commercial fried vegetables, vegetables in butter, cream sauce, or cheese sauce, fried potatoes, French fries, chips
Fruits 1–2.5 cups	Any fresh, frozen, dried, or canned fruits or 100% fruit juice.	Dried fruit with added sugar, fried fruit, fruit served with added fat.
Grains 3–10 ounce-equivalents	Whole-grain breads, cereals, rice, pasta, crackers, and tortillas; brown rice, quinoa, whole wheat couscous, barley, oats. Products made with oat bran. Flaxseed, chia seed.	Egg noodles; fried rice; commercial muffins, biscuits, doughnuts, sweet rolls, croissants; egg or cheese breads; party crackers; regular granolas, regular granola bars, sweets made with partially hydrogenated oils.

Table 7.1 (Continued)

Food for the Day		
	Recommended	Restrict
<p>Dairy Products 2–3 cups</p>	<p>Fat-free or low-fat (1%) milk, fat-free dry milk, evaporated fat-free milk, buttermilk made from fat-free milk, fat-free soy milk or milk substitutes; almond milk, fat-free and low-fat yogurt including Greek yogurt, low-fat cottage cheese, low-fat cheese.</p>	<p>Cream, sour cream, whole or reduced fat milk, regular evaporated milk, whole or reduced fat yogurt, cheese, whole milk ice cream, half and half</p>
<p>Protein Foods 2–7 ounce-equivalents Note: Eggs <i>limit yolks to 1 per day</i></p>	<p>Lean beef, and pork (loin, leg, round, extra lean hamburger), lamb, veal, skinless poultry, 95–99% fat-free luncheon meats, fish, dried beans, nuts and nut butters, meat alternatives / substitutes. Egg whites, egg substitutes or omega-3 fortified eggs; hard-cooked or scrambled.</p>	<p>High fat cuts of beef, pork, lamb. Bacon, salt pork, hot dogs, sausage, regular cold cuts, canned meats, skin of chicken or turkey, fish canned in oil, or organ meats. Whole eggs and egg yolks especially fried in partially hydrogenated (<i>trans</i> fat) oils.</p>
<p>Oils. Solid Fats <i>Use sparingly</i></p>	<p>Unsaturated oils (Canola oil, olive oil, sesame oil, flax seed oil, soy); nonhydrogenated margarines, low-fat or nonfat salad dressings or those made with canola or olive oil; see Fat List in Appendix 17.</p>	<p>Butter, margarine, solid shortening, lard, salt pork, chicken fat, coconut oil, palm oil, palm kernel oil, creamy salad dressings; nondairy creamers, partially hydrogenated oils (<i>trans</i> fat)</p>
<p>Added Sugars <i>Use sparingly</i></p>	<p>70% dark chocolate, sugar-free gelatin desserts, angel food cake. Any low-fat cookies, pies, cakes, or other desserts. Sherbet, low-fat ice cream or frozen yogurt.</p>	<p>Any full fat cakes, cookies, pies, or other desserts. Milk chocolate, puddings, custards, and ice creams unless made with fat-free milk or fat-free dry milk.</p>
<p>Fluids</p>	<p>Water and other fluids, such as milk, coffee, tea, fruit or vegetables juice</p>	<p>High sugar beverages including sweetened fruit juices and pop</p>

Table 7.2 Heart Healthy

Suggested Menu Plan for Heart Healthy Diet

<p style="text-align: center;">Breakfast</p> <p>½ c. orange juice 1 egg or egg substitute ½ c. oatmeal 1 slice whole wheat toast 1 tsp. jelly 1 tsp. margarine (<i>trans</i> fat-free) 1 c. fat-free milk Hot beverage Sugar, pepper (optional) NO SALT</p> <p style="text-align: center;">Lunch</p> <p>2 oz. roasted chicken breast ½ c. mashed potatoes (cooked from fresh) ½ c. mixed vegetables (cooked from fresh or frozen) 1 oz. whole wheat roll 1 tsp. margarine (<i>trans</i> fat-free) 1 c. fat-free milk Water NO SALT</p>	<p style="text-align: center;">Supper</p> <p>2 oz. albacore tuna salad made with 2 tsp. reduced-fat mayonnaise on 2 slices whole wheat bread (<i>choose fatty fish 2 times per week</i>) 2 tomato slices 1 c. leafy greens salad 1 Tbsp. sunflower oil and vinegar dressing ½ c. fruit cocktail 1 c. fat-free milk Water NO SALT</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. cantaloupe ½ c. carrot sticks 3 c. popcorn, lower fat, <i>trans</i>-fat free, no added salt</p>
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Table 7.3 Common Sources of Trans Fat

- Food prepared with partially hydrogenated vegetable oils (baked goods such as cookies, crackers, and snack cakes)
- Commercially prepared fried foods
- Some margarines
- Fried foods served in restaurants and fast food restaurants such as French fries, chicken nuggets, fish patties, and fried pies
- Look for the words *partially hydrogenated oil* in the ingredients list

THERAPEUTIC LIFESTYLE CHANGE DIET

This is formally known as the Step II Diet.

The Therapeutic Lifestyle Change (TLC) Diet is recommended for those identified at high risk or have known cardiovascular disease according to the National Cholesterol Education Program. (4)

Use

This diet is prescribed for those individuals who have LDL cholesterol above the goal range for their category of risk for heart disease. This diet specifically focuses on the reduction of LDL with food choices and incorporates functional foods. Functional foods are whole foods and fortified, enriched, or enhanced foods that have a potentially beneficial effect on health when consumed at effective levels as part of a varied diet on a regular basis. (1)

Adequacy

The suggested food plan includes food in the amounts that will provide the DRIs recommended by the National Academy of Sciences for adults.

TLC Diet Principles

The TLC Diet follows the same diet principals as the Heart Healthy Diet but also incorporates functional foods.

TLC Diet Guidelines

- Total of 25–35% calories from fat
- Less than 7% total calories from saturated fats
- Less than 1% of calories from trans fats
- Up to 10% calories from polyunsaturated fat
- Up to 20% of calories from monounsaturated fats
- Less than 200mg dietary cholesterol per day
- Total of 50–60% calories from carbohydrate
- Total of 15% calories from protein
- Consume 2 grams per day of plant stanols/sterols (Table 7.5). Most natural foods are below 500mg per serving, therefore food manufactures supplement foods to meet the recommendations.
- Consume 10–25 grams per day of soluble fiber. Sources include oat bran, beans, legumes, ground flax seed, and chia seed.
- Maintain desirable body weight and prevent weight gains
- Moderate exercise to expend an additional 200 calories per day
- Soy protein can be used to replace animal products. Sources include tofu, soy milk, and temph.

Table 7.4 TLC Diet

Food for the Day		
	Recommended	Restrict
Vegetables 1–4 cups	All fresh, frozen, or canned vegetables (choose low sodium varieties or rinse before serving); 100% vegetables juice.	Commercial fried vegetables, vegetables in butter, cream sauce, or cheese sauce, fried potatoes, French fries, chips
Fruits 1–2.5 cups	Any fresh, frozen, dried, or canned fruits or 100% fruit juice. <i>*Especially any 100% fruit juices with added plant sterols.</i>	Dried fruit with added sugar, fried fruit, fruit served with added fat.
Grains 3–10 ounce-equivalents	Whole-grain breads, cereals, rice, pasta, crackers, and tortillas; brown rice, quinoa, whole wheat couscous, barley, oats. Products made with oat bran. <i>*Oat bars made with plant sterols. Flax seed and chia seeds.</i>	Egg noodles; fried rice; commercial muffins, biscuits, doughnuts, sweet rolls, croissants; egg or cheese breads; party crackers; regular granolas, regular granola bars, sweets made with partially hydrogenated oils.
Dairy Products 2–3 cups	Fat-free or low-fat (1%) milk, fat-free dry milk, evaporated fat-free milk, buttermilk made from fat-free milk, fat-free soy milk or milk substitutes; almond milk, fat-free and low-fat yogurt including Greek yogurt, low-fat cottage cheese, low-fat cheese. <i>*Functional foods that contain added plant sterols.</i>	Cream, sour cream, whole or reduced fat milk, regular evaporated milk, whole or reduced fat yogurt, cheese, whole milk ice cream, half and half
Protein Foods 2–7 ounce-equivalents Note: Eggs limit yolks to 1 per day	Lean beef, and pork (loin, leg, round, extra lean hamburger), lamb, veal, skinless poultry, 95–99% fat-free luncheon meats, fish, dried beans, nuts and nut butters, meat alternatives/substitutes. Egg whites, egg substitutes or <i>*Omega-3 fortified eggs;</i> hard-cooked or scrambled.	High fat cuts of beef, pork, lamb. Bacon, salt pork, hot dogs, sausage, regular cold cuts, canned meats, skin of chicken or turkey, fish canned in oil, or organ meats. Whole eggs and egg yolks especially fried in partially hydrogenated (<i>trans</i> fat) oils.

Table 7.4 (Continued)

Food for the Day		
	Recommended	Restrict
Oils, Solid Fats <i>Use sparingly</i>	Unsaturated oils (Canola oil, olive oil, sesame oil, flax seed oil, soy); nonhydrogenated margarines, low-fat or nonfat salad dressings or those made with canola or olive oil; see Fat List in Appendix 17. <i>*Margarine spreads with added plant sterols.</i>	Butter, margarine, solid shortening, lard, salt pork, chicken fat, coconut oil, palm oil, palm kernel oil, creamy salad dressings; nondairy creamers, partially hydrogenated oils (<i>trans fat</i>)
Added Sugars <i>Use sparingly</i>	70% dark chocolate, sugar-free gelatin desserts, angel food cake. Any low-fat cookies, pies, cakes, or other desserts. Sherbet, low-fat ice cream or frozen yogurt.	Any full fat cakes, cookies, pies, or other desserts. Milk chocolate, puddings, custards, and ice creams unless made with fat-free milk or fat-free dry milk.
Fluids	Water and other fluids, such as milk, coffee, tea, fruit or vegetables juice	High sugar beverages including sweetened fruit juices and pop

*Include functional foods as italicized herein and as listed in Table 7.5.

Table 7.5 Food Sources of Plant Sterols

Food Sources	Amount (grams)
Avocado, 1 small	0.13
Sunflower seeds, ¼ cup	0.19
Nature Valley Healthy Heart®, 1 bar	0.40
Corazonas Chips	0.40
Rice Dream® Heart Wise Rice Milk, 8oz	0.65
Silk Heart Health Soymilk, 8oz	0.65
Lifetime® Low-Fat Cheese Slices 1 slice	0.65
Minute Maid HeartWise®, 8oz	1.00
Benecol®, Take Control®, 1 Tbsp	1.00
Kardea Bar	1.00
Smart Balance® Heart Right Buttery Spread, 1 Tbsp	1.70

Table 7.6 TLC Diet**Suggested Menu Plan for TLC Diet**

<p style="text-align: center;">Breakfast</p> <p>½ c. orange juice with plant sterols 1 omega-3 egg ½ c. oatmeal with up to 1 Tbsp ground flaxseed 1 slice whole wheat toast 1 tsp. jelly 1 tsp. margarine (<i>trans</i> fat-free of added plant sterols) 1 c. fat-free milk or milk fortified with plant sterols Hot beverage Sugar, pepper (optional) NO SALT</p> <p style="text-align: center;">Lunch</p> <p>2 oz. baked chicken- no skin ½ c. mashed potatoes (cooked from fresh) ½ c. mixed vegetables (cooked from fresh or frozen) 1 oz. whole wheat roll 1 tsp. margarine (<i>trans</i> fat-free of added plant sterols) 1 c. fat-free milk Water NO SALT</p>	<p style="text-align: center;">Supper</p> <p>2 oz. albacore tuna salad made with 2 tsp reduced-fat mayonnaise on 2 slices whole wheat bread (<i>choose fatty fish 2 times per week</i>) 2 tomato slices 1 c. leafy greens salad 1 Tbsp. sunflower oil and vinegar dressing ½ c. fruit cocktail 1 c. fat-free milk Water NO SALT</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. cantaloupe ½ c. carrot sticks 3c. popcorn, lower fat, <i>trans</i>-fat free, no added salt</p>
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LOW-FAT DIET

This diet allows only 40–50 grams of fat per day.

Use

The Low-Fat Diet may be prescribed to reduce the fat intake for clients with diseases of the gallbladder, liver, or pancreas, or if disturbances in digestion

and absorption of fat occur. For diet management of high blood cholesterol and other blood lipids, see the Heart Healthy Diet.

Adequacy

The suggested food plan includes foods in amounts that will provide the DRIs recommended by the National Academy of Sciences for adults. Restriction of fat (the most concentrated source of calories) may result in a diet low in calories. When additional calories are needed, add them in the form of complex carbohydrates. Medium chain triglycerides (MCT) may be useful in meeting energy needs.

Diet Principles

1. The diet is designed to limit fat intake to 40–50 grams daily.
2. Foods may cause distress for reasons other than fat content; refer to Guidelines for Peptic Ulcer, GERD, Hiatal Hernia in Chapter 11. If a food is tolerated, it should be allowed.

Table 7.7 Low-Fat Diet

Food for the Day		
	Recommended	Restrict
Vegetables 1–4 cups	All fresh, frozen, or canned vegetables; vegetables juice; Any fat used in preparation must be taken from the fat allowance.	Any that may cause discomfort; cabbage family, onion, peppers, sauerkraut, cucumber, dried legumes, rutabagas, turnips, radishes; fried potatoes, potato chips, creamed potatoes
Fruits 1–2.5 cups	Any fresh, frozen, dried, or canned fruits; fruit juice	Any fruit if not tolerated, fruit prepared with fat
Grains 3–10 ounce-equivalents	Whole-grain breads, cereals, rice, pasta, crackers, and tortillas; brown rice, quinoa, whole wheat couscous, barley, oats. Products made with oat bran. Oat bars made with plant sterols. Flaxseed and chia seeds.	High-sugar or high-fat breads, such as muffins, croissants, biscuits, waffles, pancakes, popovers, rich rolls, sweet rolls, and doughnuts; party crackers; granola, fried rice; buttered popcorn

(Continued)

Table 7.7 (Continued)

Food for the Day		
	Recommended	Restrict
Dairy Products 2–3 cups	Fat-free milk, buttermilk made from fat-free milk, fat-free dry milk, nonfat yogurt. Any low-fat dairy substitute (rice, soy or almond). Part-skim cottage cheese. Low-fat natural or processed cheeses with 5g or less fat per oz.	Cream, whole milk, reduced fat and low-fat milk; ice cream, ice milk; whole milk yogurt, coconut milk
Meat and Beans 2–3 servings (total 2–7 ounce-equivalents) Note: Eggs (if tolerated) limit to 1 yolk per day.	Lean beef, pork, lamb, veal, poultry; 95–99% fat-free luncheon meats, fish. Egg whites, egg substitutes or omega-3 fortified eggs; hard-cooked or scrambled.	Regular luncheon meat, hot dogs, corned beef, sausages, processed meats or fish, fish packed in oil. Fried eggs
Oils, Solid Fats Limit to 1 tablespoon	Canola oil, olive oil, sesame oil, flax seed oil, soy oil, nonhydrogenated margarines, low-fat or nonfat salad dressings. Fats from seeds and nuts, nut butters, and avocados.	Butter, margarine; solid shortening, lard, salt pork, chicken fat, coconut oil, palm oil, palm kernel oil; creamy salad dressings; nondairy creamers, partially hydrogenated oils.
Added Sugars Use sparingly	70% dark chocolate, sugar-free gelatin desserts, angel food cake. Any low-fat cookies, pies, cakes, or other desserts. Sherbet, low-fat ice cream or frozen yogurt.	Any other cakes, cookies, pies, or other desserts. Milk chocolate, puddings, custards, and ice creams unless made with fat-free milk or fat-free dry milk.
Seasonings/Condiments	All spices, seasonings, and flavorings.	Olives; cream sauces and gravies unless fat free
Fluids	Water and other fluids, such as milk, coffee, tea, fruit or vegetables juice	

Table 7.8 Low-Fat Diet**Suggested Menu Plan for Low-Fat Diet**

<p style="text-align: center;">Breakfast</p> <p>½ c. orange juice 1 scrambled egg (egg whites) ½ c. oatmeal 1 slice whole wheat toast 1 tsp. jelly 1 tsp. soft margarine 1 c. fat-free milk Hot beverage Sugar, pepper (optional)</p> <p style="text-align: center;">Lunch</p> <p>2 oz. roasted chicken breast ½ c. mashed potatoes with fat-free gravy ½ c. mixed vegetables 1 oz. whole wheat roll 1 tsp. soft margarine 1 c. fat-free milk Water</p>	<p style="text-align: center;">Supper</p> <p>2 oz. tuna salad (water packed) made with 2 tsp. reduced-fat mayonnaise on 2 slices bread 2 tomato slices 1 Tbsp. vinaigrette dressing ½ c. fruit cocktail 1 c. fat-free milk Water</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. cantaloupe ½ c. carrot sticks 3 c. popcorn, no fat added</p>
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1. American Dietetic Association. Position Paper of the American Dietetic Association: Functional Foods. *J Am Diet Assoc.* 2009 Dec; 109(4):735–46.
2. American Heart Association. 2006. Diet and Lifestyle Recommendations Revision 2006: A Scientific Statement From the AHA Nutrition Committee. *Circulation.* 2006;114:82–96.
3. Krauss RM, Eckel RH, Howard B, et al. AHA Dietary Guidelines: Revision 2000: A statement for healthcare professionals from the nutrition committee of the American Heart Association. *Stroke.* 2000;31:2751–66.
4. Third Report of the NCEP on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults, National Institutes of Health. *JAMA.* 2002;106:3143–3421.

Websites

American Heart Association: www.americanheart.org.

National Heart, Lung, and Blood Institute's Therapeutic Lifestyle Changes (TLC) diet: www.nhlbi.nih.gov/chd/lifestyles.htm.

Study Guide Questions

- A. The Heart Healthy Diet limits cholesterol to less than _____ mg cholesterol, _____% or less total calories from fat and _____ mg of sodium.
- B. Describe in detail at least four of the diet principles presented for a Heart Healthy Diet and how those can be met in a community living setting.
- C. List at least three diseases for which a Low-Fat Diet may be prescribed.
- D. The Low-Fat diet limits fat consumption to approximately _____ – _____ grams of fat per day.
- E. Modify the General menu planned in Chapter 2 for an individual on a Low-Fat Diet. What modifications would you make to incorporate omega-3 fatty acids?
- F. Discussion question: How can recipes be modified to reduce the overall fat in that food?

Study Guide Suggested Responses can be found in Appendix 18.

Sodium Restricted Diets

8

DASH DIET

Use

This diet is high in fruits, vegetables, low-fat dairy products, and reduced saturated and total fat to lower blood pressure. (1) The DASH Diet emphasizes foods high in nutrients such as potassium, magnesium, calcium, and fiber that have been linked to antihypertensive effects. (1) See Table 8.1.

Adequacy

The suggested food plan provides foods in amounts that will provide the Dietary Reference Intakes (DRIs) recommended by the National Academy of Sciences for adults.

Diet Principles

Increased sodium chloride (table salt) intake is a major factor elevating blood pressure and is a risk factor for cardiovascular and renal disease. Blood pressure rises with increased sodium chloride intake and has a greater response to changes in sodium below 2,300mg. (1) Besides reducing sodium chloride

intake, other factors that can decrease blood pressure include weight loss, moderation of alcohol intake, and consuming a diet based on the DASH diet. (2)

The DASH diet provides for two levels of daily sodium consumption: 2,300 mg and 1,500 mg. (3) According to a 2006 scientific statement from the American Heart Association Nutrition Committee, a 1,500-mg sodium diet is not readily achievable until there is an increased availability of low sodium, good tasting commercial foods. (4) Processed foods currently provide 75–80% of salt intake. (5) For this reason, only the 2,300-mg sodium DASH diet is provided.

Table 8.1 Daily Nutrient Goals Used in the DASH Studies

Total Fat	27% of calories	Sodium	2,300 mgs
Saturated Fat	6% of calories	Potassium	4,700 mgs
Protein	18% of calories	Calcium	1,250 mg
Carbohydrate	55% of calories	Magnesium	500 mg
Cholesterol	150 mg	Fiber	30 g

Adapted from NIH Publication No. 06-4082, Revised April 2006, p. 5.

The 2,300-mg sodium DASH diet should be used with caution in the following circumstances:

1. The DASH diet is high in potassium and increases risk of hyperkalemia for elderly with one or more of these diagnoses: diabetes, chronic renal insufficiency, end-stage renal disease, severe heart failure, and adrenal insufficiency. (2)
2. The DASH diet may increase risk of hyperkalemia if one or more medications are taken that impair potassium excretion. (2) These drugs include oral potassium supplements, β -adrenergic blockers, nonsteroidal anti-inflammatory drugs, angiotensin-converting enzyme (ACE) inhibitors, and potassium-sparing diuretics. (6)
3. Older adults may limit their caloric intake and increase their risk of nutritional deficiencies. (4,7)
4. The DASH diet is not recommended for people with stage 3 or 4 chronic kidney disease due to the high potassium and phosphorus content of the diet. (4)

The DASH diet reduces blood pressure with an eating plan low in saturated fat, cholesterol, and total fat and high in fruits, vegetables, fat-free or low-fat (1% milk) and low-fat milk products. The DASH diet can be adapted for weight loss if needed, which will also decrease blood pressure.

Table 8.2 DASH Diet

Food for the Day	
Vegetables 4–5 servings	1 c. raw leafy vegetable ½ c. cut-up raw or cooked vegetables ½ c. vegetable juice
Fruits 4–5 servings	1 medium fruit ¼ c. dried fruit ½ c. fresh, frozen, or canned fruit ½ c. fruit juice
Grains 6–8 servings <i>Aim for whole grains for most of grain servings per day</i>	1 slice bread ½ c. cooked rice or pasta ½ c. cooked cereal 1 oz. dry cereal (or check serving size on box)
Milk 2–3 cups	1 c. skim or 1% milk 1 ½ oz. fat-free, low-fat or reduced fat cheese 1 c. fat-free or low-fat regular yogurt 1 c. fat-free or low-fat frozen yogurt
Meats and Beans 6 servings or less	1 oz. cooked lean meats, poultry or fish (trim visible fats; broil, roast or poach; remove skin from poultry) 1 egg –limit to 4 egg yolks per week 1 oz. low sodium ham
Nuts, seeds, and legumes 4–5 servings per week	c. or 1 ½ oz. unsalted nuts 2 Tbsp. peanut butter 2 Tbsp. or ½ oz. unsalted seeds ½ c. cooked legumes (dry beans and peas)
Oils/Fats 2–3 servings <i>Use soft margarine or liquid margarines, vegetable oil such as canola, corn, olive, or safflower</i>	1 tsp. soft margarine 1 tsp. vegetable oil 1 Tbsp. mayonnaise 1 Tbsp. regular salad dressing 2 Tbsp. low-fat dressing Fat-free gravy
Sweets/Desserts 5 or less per week	1 Tbsp. sugar 1 Tbsp. jelly, jam or regular syrup ½ c. sorbet, gelatin 1 c. lemonade
Adapted from NIH Publication No. 06-4082, Revised April 2006, p. 8–9	
<p>ALCOHOL: Limit alcohol to ≤2 alcoholic drinks per day for men and ≤1 alcoholic drink per day for women and lighter-weight persons. 1 drink = 12 oz; regular beer, 5 oz; wine (12% alcohol); 1.5 oz. of 80-proof distilled spirits. Moderate drinking is recommended for those who drink alcohol as alcohol can negatively influence blood pressure. (3)</p>	

*Based on 2,000 calories daily.

Table 8.3 Tips to Reduce Salt and Sodium

- Choose “low or reduced” sodium, or “no salt added” versions of foods and condiments when available.
- Choose fresh, frozen, or canned (“low sodium, “reduced sodium” or “no salt added”) vegetables.
- Use fresh poultry, fish, and lean meat, rather than canned, smoked or processed types.
- Choose ready-to-eat breakfast cereals that are lower in sodium.
- Limit cured foods (such as bacon and ham), foods packed in brine (such as pickles, pickled vegetables, olives, and sauerkraut); and condiments (such as mustard, horseradish, ketchup, and barbecue sauce). Limit even lower sodium versions of soy sauce and teriyaki sauce. Treat these condiments sparingly as you do table salt.
- Cook rice, pasta, and hot cereals without salt. Cut back on instant or flavored rice, pasta, and cereal mixes, which usually have added salt.
- Choose “convenience” foods that are lower in sodium. Cut back on frozen dinners, mixed dishes such as pizza, packaged mixes, canned soups or broths, and salad dressings—these often have a lot of sodium.
- Rinse canned foods, such as tuna and canned beans, to remove some of the sodium.
- Use spices instead of salt. In cooking and at the table, flavor foods with herbs, spices, lemon, lime, vinegar, or salt-free seasoning blends. Start by cutting salt in half.
- On Nutrition Labels aim for foods that are less than 5% of the daily value of sodium. Foods with 20% or more daily value of sodium are considered high.

Adapted from NIH Publication No. 06-4082, Revised April 2006, pp. 17,19.

NO ADDED SALT DIET

This is also known as the Low Salt Diet and salt consumption is limited to between 3,000 and 4,000 mg [130–174 mEq] sodium daily.

Use

Current average sodium intake is >4,000 mg when salt in cooking and salt at the table is added. (5) The No Added Salt (NAS) diet averages <4,000 mg and is a more palatable moderate sodium restricted diet while still providing benefits controlling edema or hypertension. (13) The NAS diet is an appropriate diet for the elderly who have increased risk of weight loss. (14) For management of fluid restrictions, see Fluid Restrictions in Chapter 9.

Adequacy

The suggested food plan provides foods in amounts that will provide the DRIs recommended by the National Academy of Sciences for adults.

Diet Principles

1. Table salt (which is sodium chloride, containing about 40% sodium) and foods processed with salt are limited because 1 teaspoon of table salt is the

equivalent of 2,300mg of sodium. Certain foods that contain liberal amounts of natural sodium and other foods that contain sodium compounds may be limited.

2. The General Diet (including lightly salted foods in cooking) is served without a salt packet. Limit foods with visible salt including chips, salted pretzels, salted nuts, salted crackers, and popcorn.
3. Some higher sodium foods may be served during the week, but they should be limited so that the daily average of sodium over the week is <4,000 mg sodium. Foods high in sodium are listed in the *Food for the Day* in Table 8.5.
4. Salt substitutes may promote acceptance of sodium-restricted diets but should be used only if permitted by the physician.

Table 8.4 No Added Salt

Suggested Menu Plan for No Added Salt Diet
(3000–4000 mg sodium [130–174 mEq])

<p style="text-align: center;">Breakfast</p> <p>½ c. orange juice 1 egg ½ c. oatmeal 1 slice whole wheat toast 1 tsp. jelly 1 tsp. soft margarine 1 c. fat-free milk Hot beverage Sugar, pepper (optional) NO SALT</p> <p style="text-align: center;">Lunch</p> <p>2 oz. roasted chicken breast ½ c. mashed potatoes with gravy ½ c. mixed vegetables 1 oz. whole wheat roll 1 tsp. soft margarine 1 c. fat-free Water NO SALT</p>	<p style="text-align: center;">Supper</p> <p>2 oz. tuna on 2 slices whole wheat bread 2 tsp mayonnaise 2 tomato slices 1 c. leafy greens salad 1 Tbsp. salad dressing ½ c. fruit cocktail 1 c. fat-free milk Water NO SALT</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. cantaloupe ½ c. carrot sticks 3 c. popcorn, no salt added</p>
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LOW SODIUM DIET

This diet restricts sodium intake to 2,000 mg [87 mEq] daily.

Use

The Low Sodium Diet is the current recommendation of the Joint WHO/FAO Expert Consultation on diet nutrition and the prevention of chronic diseases. (8) This diet is useful in preventing or controlling edema or hypertension in certain populations. Caution is required for use with frail elderly because weight loss may occur as a result of palatability concerns. (7,9,10) Elderly require higher levels of salt to detect salt flavor in their diet. (11,12) For management of fluid restrictions, see Fluid Restrictions in Chapter 9.

Adequacy

The suggested food plan provides foods in amounts that will provide the DRIs recommended by the National Academy of Sciences for adults.

Diet Principles

1. Prepare all foods without salt and do not add salt at the table because 1 teaspoon of table salt is the equivalent of 2,300 mg of sodium. Avoid all processed and prepared foods and beverages high in sodium.
2. Limit the amounts of milk, meat, ready-to-eat cereals, and breads and desserts made with salt and baking powder or soda.
3. Some medications, including over-the-counter preparations for treatment of indigestion or excess acid, contain large amounts of sodium.
4. Local water supplies and water that has been chemically softened may contain considerable sodium. The amount of sodium in water should be determined and considered in menu planning.
5. Salt substitutes may promote acceptance of sodium-restricted diets, but they should be used only if permitted by physician. One teaspoon of salt substitute (usually potassium chloride) contains between 2,240 mg (57 mEq) and 3,180 mg (81 mEq) of potassium, and it can be harmful for some patients with renal concerns or receiving certain medications. (6)

Table 8.5 Low Sodium Diet

Food for the Day	Recommended	Restrict (FOOD HIGH IN SODIUM)
Vegetables 1–4 cups (including potatoes)	Vegetables may be raw or cooked; fresh, frozen, or no added salt canned vegetables.	Canned vegetables (unless labeled “no added salt”); sauerkraut; tomato juice or vegetable juices canned with salt.

Table 8.5 (Continued)

Food for the Day		
	Recommended	Restrict (FOOD HIGH IN SODIUM)
Fruits 1–2.5 cups	Fresh, frozen, canned (in own juices or light syrup), dried (with no sugar added) or 100% fruit juice.	Dried fruits with sodium sulfite.
Grains 3–10 servings	Whole-grain breads, whole-grain pasta, oatmeal, breakfast cereals, whole wheat or corn tortillas, brown or wild rice, popcorn, whole wheat couscous, quinoa, whole wheat crackers, pretzels, whole wheat buns and rolls. Aim for 25–35 grams of fiber per day.	Breads, rolls, or crackers with salted toppings; chips or other high sodium snacks, packaged rice, macaroni, or noodle mixtures, salted popcorn, instant hot cereals and commercial bread stuffing.
Dairy Products 2–3 cups	Fat-free or low-fat (1%) milk, low-fat or fat-free nondairy milks (soy, almond, rice), low-fat yogurt or Greek yogurt.	Buttermilk, cottage cheese, or other aged cheeses. Processed cheese, cheese spreads, or sauces.
Protein Foods 2–3 servings (total 2–7 ounce-equivalents)	Lean or very lean cuts of meats, skinless poultry, fish, dry beans or legumes, eggs (omega-3 enriched eggs), nuts, and seeds.	Smoked, salted, cured, koshered meats, or fish such as bacon, bologna, chipped beef, corned beef, hot dogs, ham, luncheon meats, Canadian bacon, pickled meats, salt pork, sausage. Canned tuna, salmon, sardines; imitation crab or lobster. Most commercial entrees.
Oils, Solid Fats Use sparingly	Canola oil, flax seed oil, sesame oil, olive oil.	Salted gravy, bacon, salt pork, seasoned dips, salted nuts, limit salad dressings to 1 tablespoon per day.
Fluids 6–8 cups	Water and other fluids, such as coffee, tea, 100% fruit juice.	Commercially canned soups, bouillon, broths, dehydrated soup mixes, bouillon cubes, granules, or packets.

(Continued)

Table 8.5 (Continued)

Food for the Day		
	Recommended	Restrict (FOOD HIGH IN SODIUM)
Seasonings/ Condiments	Salt substitute, approved by physician or dietitian.	Salt and salt-based seasonings. Prepared condiments such as steak sauce, soy sauce, teriyaki sauce, barbecue sauce, salsa, ketchup and mustard Olives, pickles, relishes.

*Low sodium foods contain no more than 140 mg of sodium per serving.

Table 8.6 Low Sodium Diet

Suggested Menu Plan for Low Sodium Diet
(2000 mg sodium [87 mEq])

<p style="text-align: center;">Breakfast</p> <p>½ c. orange juice 1 egg ½ c. oatmeal 1 slice whole wheat toast 1 tsp. jelly 1 tsp. soft margarine 1 c. fat-free milk Hot beverage Sugar, pepper (optional) NO SALT</p> <p style="text-align: center;">Lunch</p> <p>2 oz. roasted chicken breast ½ c. mashed potatoes (cooked from fresh) ½ c. mixed vegetables (cooked from fresh or frozen) 1 oz. whole wheat roll 1 tsp. soft margarine 1 c. fat-free milk Water NO SALT</p>	<p style="text-align: center;">Supper</p> <p>2 oz. tuna on 2 slices whole wheat bread 2 tsp. mayonnaise 2 tomato slices 1 c. leafy greens salad 1 Tbsp. vinaigrette ½ c. fruit cocktail 1 c. fat-free milk Water NO SALT</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. cantaloupe ½ c. carrot sticks 3 c. popcorn, no added salt</p>
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United States Department of Agriculture: <http://www.usda.gov>. Search “whats in food and salt”

Study Guide Questions

- A. What nutrients are considered in the DASH diet principles?
- B. List two conditions which a No Added Salt Diet may help to prevent or control
- C. Using the Food for the Day table for the No Added Salt Diet, list at least two foods from each food group that should be limited.
- D. A Low Sodium Diet limits sodium to approximately _____ mg per day.
- E. Modify the General menu planned in Chapter 2 for an individual on a Low Sodium (2,000 mg/day sodium) Diet.
- F. Discussion question: How can flavors in foods be enhanced when sodium is limited to maintain palatability?

Study Guide Suggested Responses can be found in Appendix 18.

Diets for Renal and Liver Disease



MODIFIED RENAL DIET

Use

The Modified Renal Diet may be prescribed for individuals with end-stage renal disease (ESRD) who are on dialysis and reside in a healthcare setting. These individuals often have other medical conditions and a high incidence of malnutrition related to poor appetite and gastrointestinal intolerances such as nausea and vomiting. (1) Many patients with renal disease in long-term care will not need a strict therapeutic diet because their appetite is already so limited. The use of the Modified Renal Diet in this setting can allow the person to enjoy the main menu with relatively few changes, a key factor in satisfaction and diet adherence. (2)

The diet principles that follow should be implemented on initiation of the diet. The registered dietitians in the facility and in the dialysis unit should collaborate to individualize nutrition therapy and promote consistency for the best overall health outcome for the patient.

Adjustments to the renal diet will depend on the person's individual biochemistry results (lab work) and tolerance of dialysis treatments. (3) If the patient is transported from the facility to a dialysis unit for treatments, a nourishing snack or sack meal may need to be planned and sent along with the individual, depending on the timing of meals, see "Carry-Out Meals and Snacks."

Adequacy

The suggested diet plan may not provide adequate quantities of B vitamins, calcium, and vitamin D as recommended by the National Academy of Sciences for adults. The Dietary Reference Intakes (DRIs) for phosphorus and potassium intake may not be met. The kidney's impairment affects the levels of these nutrients and the interactions between them. (4,5) The renal dietitian will need to recommend appropriate vitamins and minerals. As a result of the kidney's impaired function, any over-the-counter nutritional supplements such as glucosamine, multivitamins, minerals, and amino acids should be used only with the approval of the renal physician and dietitian. (6)

Diet Principles

The Modified Renal Diet is limited in sodium, phosphorus, and potassium with emphasis on adequate protein and calories, however, the least restrictive menu should be used. The following modifications should be made in addition to the No Added Salt Diet (see Chapter 8) to create the Modified Renal Diet. These principles should be done initially, then, with input from the renal dietitian and patient, further substitutions may be necessary.

1. Energy. Adequate caloric intake, usually 30–35 kcal/kg is essential. (7)
When calorie intake is inadequate, the body will break down protein for energy instead of using it for essential growth and repair of body tissues.
2. Carbohydrates. The addition of refined carbohydrates and simple sugars (i.e., desserts) can be useful in achieving adequate protein-sparing calories. If the person with ESRD has diabetes, refer to the Consistent Carbohydrate Diet in Chapter 6.
3. Protein. Patients on dialysis require more protein than usually expected: 1.2–1.3 g/kg. (8,9) A minimum of 6 ounces of meat or meat alternative should be encouraged. Protein of high biological value is preferable; at least half of the protein intake should come from animal-derived foods, including meat, poultry, fish, and eggs. Soybeans provide an alternative complete protein.
Suggestions for increasing protein offered:
 - Double egg portion at breakfast
 - Large portion of meat at midday and evening meal
 - Meat or egg sandwich for snackFor vegetarians, the phosphorus content of beans and legumes means alternative special protein supplements may be needed.
4. Sodium (Na⁺) restriction may be needed to control fluid, especially between dialysis treatments (10) and to manage blood pressure. The No Added Salt Diet principles apply to the Modified Renal Diet along with the following:

- Substitute lower sodium plain meats to replace high sodium meats. Either remove the breading on meat, such as that sometimes added to fish and chicken, or select meats with a lower sodium content.
 - Substitute all soup with either appropriately made lower sodium soups or a lower potassium vegetable (Table 9.2).
 - Avoid salt substitutes, seasoning mixes, and low sodium broths or bouillons that contain potassium.
 - Avoid foods with visible salt such as chips, pretzels, salted nuts and popcorn, and salted crackers.
5. Potassium (K⁺) is usually limited on a renal diet to avoid dangerous levels that could cause heart problems. The exception is for people on Continuous Ambulatory Peritoneal Dialysis (CAPD) who often experience low levels of potassium and usually do not need a potassium restriction. (7) The following steps will decrease potassium for the Modified Renal Diet:
- Substitute citrus, prune, tomato, and vegetable juices with cranberry, apple, or other lower potassium juice (vitamin C-fortified).
 - Substitute citrus fruit, bananas, tomatoes, and prunes with lower potassium fruits. Fresh tomatoes can be allowed in small amounts (one to two slices per meal). Star fruit (carambola) is toxic for the person with kidney disease and should not be served. (14)
 - Typically small amounts of tomato sauce are tolerated (i.e. half portion of spaghetti sauce with regular portion of noodles); the meat provided still needs to be a regular or double portion.
 - No baked potatoes or potato chips, even if low salt. Allow mashed or boiled potatoes if serving size does not exceed ¼ cup per day.
 - Do not use salt substitutes containing potassium.
 - See the Potassium in Foods (Table 9.2) in this chapter for more substitution ideas.
6. Phosphorus needs to be limited in the diet and treated with physician-ordered phosphate binders, which are given with each meal and snack. If phosphorus is uncontrolled, painful bone loss and calcium deposits in tissue can occur. (12) The phosphate binders are necessary to allow enough protein to be consumed. The following steps will decrease phosphorus for the Modified Renal Diet:
- Substitute refined carbohydrates (such as white bread, white rice) for whole grain or bran-containing breads and cereals.
 - Avoid beans and legumes (including pork and beans and baked bean dishes); substitute green beans or other lower potassium vegetables.
 - Restrict milk serving to ½ cup per day, usually whole milk or half-and-half served at breakfast. Frozen yogurt, custard, pudding, and ice cream and ice milk are included in this restriction.
 - Limit cheese intake to ½ ounce per day. (Cream cheese is the exception, because it is low enough in phosphorus to be used without limit.) Cottage

cheese ($\frac{1}{4}$ – $\frac{1}{2}$ cup) and milk-rich desserts are typically not allowed but may be included in a person's nutrition plan upon the discretion of the renal dietitian.

- See Table 9.3 for more substitution ideas. (13)
7. Fluid restriction, when ordered, must be individualized. See the Sample Menu Plan for Fluid Restrictions in Table 9.3.

To increase compliance with the Modified Renal Diet, the practice of providing half-portions of desired, but restricted, foods is appropriate as then only half the carbohydrate, sodium, phosphorus, and potassium has been consumed. The dietitian in the dialysis unit can also provide recommendations regarding the volume of desired foods that could be consumed either the night before or the morning of dialysis treatments to assist with diet satisfaction.

Table 9.1 Suggested Menu Plan for Modified Renal Diet

<p style="text-align: center;">Breakfast</p> <p>$\frac{1}{2}$ c. vitamin C-fortified apple juice 2 eggs $\frac{3}{4}$ c. puffed rice cereal 1 slice white toast 1 Tbsp jelly 2 tsp. soft margarine $\frac{1}{2}$ c. reduced-fat or whole milk Sugar, pepper (<i>optional</i>) NO SALT</p> <p style="text-align: center;">Lunch</p> <p>4 oz. roasted chicken breast $\frac{1}{4}$ c. mashed potatoes $\frac{1}{2}$ c. mixed vegetables 1 oz white roll 2 tsp. soft margarine 1 cookie NO MILK $\frac{1}{2}$ c. vitamin C-fortified apple juice NO SALT</p>	<p style="text-align: center;">Supper</p> <p>2 oz. tuna on 2 slices enriched white bread with 2 tsp mayonnaise 1 tomato slice 1 c. leafy greens salad 1 Tbsp. vinaigrette $\frac{1}{2}$ c. fruit cocktail canned in heavy syrup NO MILK $\frac{1}{2}$ c. vitamin C-fortified apple juice NO SALT</p> <p style="text-align: center;">Snack Ideas</p> <p>$\frac{1}{2}$ c. watermelon $\frac{1}{2}$ c. carrot sticks 1 deli meat sandwich</p>
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Carry-Out Meals and Snacks for Dialysis

Patients with renal disease may need to be away during the day for dialysis or other appointments. Sending along an appropriate meal will make their day easier and more comfortable. Perishable foods should be well-chilled and packed in insulated containers with appropriate utensils. Note: regulations at the dialysis unit may limit what is appropriate for that meal's time frame and convenience (i.e., lunch needs to be consumed after dialysis is over).

The following are suggestions for simple, portable meals:

- Sandwiches on bread, pocket bread or flour tortillas: Meat (roasted beef, pork, poultry) with margarine or mayonnaise or egg salad, chicken/turkey salad, or tuna salad.
- Chef salad and bread: Cubed meat, tuna, and/or egg with lettuce and low potassium raw vegetables; salad dressing, dinner roll, muffin, unsalted crackers, popcorn, or pretzels.
- Low or medium potassium fruit: Small apple, blueberries, grapes, raisins, applesauce, pineapple, or canned, drained fruit such as peaches, pears, fruit cocktail.
- Low or medium potassium raw vegetable: Cucumber slices, green pepper strips, lettuce, broccoli, carrots, cauliflower, celery, radishes, turnips.
- Beverage (regular or sugar-free depending upon diet requirements): Apple juice, grape juice, cranberry juice cocktail, lemonade, punch, carbonated beverages including ginger ale, lemon-lime, and root beer.

*Note: be sure to check for sodium on all canned and bottled beverages

- Snacks: To add calories to a meal or for a midmorning or midafternoon snack: Bagel with cream cheese, graham crackers, unsalted crackers, tortilla chips, unsalted pretzels, rice cakes, vanilla wafers, animal crackers, approved cookies, and sweetened gelatin cup.
- DO NOT SEND: Bologna, cheese, peanut butter, ham, ham salad, banana, melon, fresh orange, dried fruit, tomato, milk, orange juice, grapefruit juice, tomato juice, or cola beverages

Potassium in Foods

Menu modifications can be made using the “higher” and “lower” potassium food lists.

Table 9.2 Potassium (K+) Content in Selected Foods

Food Category	Foods High in Potassium (≥250 mg K+/Serving)	Foods Lower in Potassium (120–250 mg K+/Serving) Lowest K+ sources are bolded (≤120 mg K+/Serving)
Vegetables	Artichoke	Bamboo Shoots
	Asparagus	Bean sprouts
	Beans, dried, cooked, (includes baked beans, lentils and limas)	Beets, canned, drained
	Beet greens, cooked	Broccoli
	Beets	Cabbage
	Brussels sprouts	Carrots
	Collards, cooked	Cauliflower
	Kale	Celery
	Kohlrabi	Corn
	Parsnips	Cucumber, peeled
	Potato, baked, boiled or prepared from frozen	Eggplant
	Potato, mashed, from homemade	Green Beans
	Spinach, cooked	Green/Red Peppers
	Pumpkin, canned	Lettuce, iceberg
	Salsa	Mixed Vegetables, canned or frozen
	Squash, winter, cooked	Mushrooms, ¼ cup
	Sweet potato, cooked	Mustard greens, cooked
	Swiss chard, cooked	Okra
	Tomato (whole, juice or sauce)	Onions
	Vegetable juice	Peas
	Potatoes, mashed, made with water, boxed flakes or granules	
	Radishes	
	Spinach, fresh	
	Turnips	
	Turnip Greens, cooked	
	Water Chestnuts	
	Wax (Yellow) Beans	
	Zucchini/Summer Squash	

Table 9.2 (Continued)

Food Category	Foods High in Potassium (≥250 mg K+/Serving)	Foods Lower in Potassium (120–250 mg K+/Serving) Lowest K+ sources are bolded (≤120 mg K+/Serving)
Fruits	Avocado Banana Cantaloupe Dried fruit, raisins Honeydew melon Kiwifruit Mango Nectarine Orange (fruit and juice) Papaya Pomegranate Prunes (fruit and juice)	Apple (including juice) Applesauce Apricots Blackberries Blueberries Cherries Cranberries (juice and all forms) Fruit Cocktail Grapes (including juice) Grapefruit, ½ medium Peaches, raw and canned Pear, raw Pears, canned Pineapple (including juice) Plums, raw and canned Raspberries Strawberries Tangerines (Mandarin Oranges) Tropical Fruit Mix, canned Watermelon
Dairy Products	Milk, fresh or canned Yogurt	Cottage cheese
Protein Foods	Dried beans and peas such as pork and beans, refried beans, split peas, kidney beans, lentils. Soybeans, cooked	Peanut butter, 1 tbsp
Others	Salt substitutes (containing potassium chloride) Low sodium broth and bouillon (may contain potassium chloride; check nutrient analysis before using)	2 Tbsp. Ketchup, chili sauce, taco sauce or salsa.

*Unless otherwise noted, portions are ½ cup or, if whole, 1 medium piece.

Nutrient values from (11) Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 22. For a comprehensive list of selected foods containing potassium, refer to website <http://www.nal.usda.gov/fnic/foodcomp/search/>.

Phosphorus in Foods

Menu modifications can be made using the phosphorus substitutions listed in Table 9.4. It is important to note that too much emphasis on dietary phosphorus restriction means less protein and nutrient intake for persons on dialysis. It is best to treat patients with phosphate binders before unnecessary restriction of phosphorus.

Table 9.3 High Phosphorus Foods

Food Category	Foods High in Phosphorus
Vegetables	Lima beans, cooked legumes (dry beans and peas)
Fruits	None
Grains	Whole wheat bread, corn tortillas, corn bread, whole wheat bread, biscuits, brown rice, pancakes, waffles, muffins. Cereals made with bran or whole grains (shredded wheat, oats)
Dairy Products	Milk, cheese, pudding, yogurt, cottage cheese Eggnog
Protein Foods	Beef, pork, lamb, veal, poultry, fish, eggs Legumes (dry beans and peas) such as pork and beans, refried beans, split peas, kidney beans Nuts and seeds, peanut butter Soybeans, tofu
Oils, Solid Fats	None
Added Sugars	Desserts containing >1 oz chocolate Cake doughnuts Ice cream Cream pies
Others	Breads and desserts made with baking powder

Nutrient values from (11) Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 22. For a comprehensive list of selected foods containing phosphorus, refer to website <http://www.nal.usda.gov/fnic/foodcomp/search/>.

Table 9.4 Phosphorus Substitutions

Instead of:	Replace with:
Milk	Half and half cream (½ c. on cereal) or nondairy creamer
Hard cheese	Cream cheese
Ice cream	Sherbet, sorbet
Baked beans, lima beans	Mixed vegetables or green beans
Nuts or seeds	Unsalted popcorn and pretzels
Peanut butter (2 Tbsp serving)	Limit to 1 Tbsp. with jelly

Table 9.4 (Continued)

Instead of:	Replace with:
Chocolate	Graham crackers, animal crackers, hard or jellied candy
Whole grain bread	White or rye bread, enriched
Whole grain cereals	Rice or corn cereal
Cola and pepper-type carbonated drinks, beer or bottled beverages with added phosphoric acid	Root beer, orange, lemon-lime, ginger ale, coffee, tea

Emergency Dialysis Diet

Emergencies such as snowstorms, floods, or illness may cause someone to miss a scheduled dialysis treatment. The guidelines in Table 9.5 can help prevent complications.

Table 9.5 Emergency Dialysis Diet

Potassium	Choose only the lowest potassium fruits, vegetables and juices Limit fruits to 1 ½ c. daily. Limit vegetables to ½ c. daily. Limit juice to ½ c. daily.
Phosphorus	Limit fluid milk to ½ c. daily. Avoid cheese, yogurt and ice cream.
Protein Foods	Limit meat, poultry, fish and eggs to a total of 4 oz. daily. Avoid high sodium items like peanut butter, ham, bacon, sausage, hot dogs, and processed lunchmeats.
Fluids	Limit salty foods to avoid drinking too much water or other beverages. Drink only half the amount of fluids usually allowed.
Carbohydrates	Eat more buttered white bread or rolls, rice, buttered pasta, cereal (without nuts and fruit), low salt crackers, vanilla wafers, bagels, English muffins, tortillas, angel food cake, unsalted pretzels and popcorn, rice cakes or animal crackers to satisfy hunger.

Adapted from Mary Greeley Medical Center, Dialysis Center patient education information “Iowa Snowstorm Diet” by Debra Hassebrock, RD, LD. Used with permission.

FLUID RESTRICTIONS

All foods contain some fluid; however, only foods liquid at room temperature or that become liquid when swallowed—such as gelatin—need to be counted.

Table 9.6 Fluid Restrictions**Foods that are considered liquids (1 fluid oz = 30 mL):****½ Cup Gelatin or 1 cup of Crushed Ice = 120 mL****½ Cup Ice Cream or Sherbet = 90 mL****Popsicles (Double) = 80 mL****SAMPLE MENU PLAN FOR FLUID RESTRICTIONS**

Fluid Restriction	Breakfast	Lunch	Dinner	Nursing or Snacks
1000 mL	240 mL	240 mL	240 mL	280 mL
1200 mL	360 mL	240 mL	240 mL	360 mL
1500 mL	360 mL	360 mL	360 mL	420 mL
1600 mL	480 mL	360 mL	360 mL	400 mL
1800 mL	480 mL	480 mL	360 mL	480 mL
2000 mL	480 mL	480 mL	480 mL	560 mL

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NUTRITIONAL GUIDELINES FOR LIVER DISEASE

Liver (hepatic) disease may require physician ordered protein, sodium, fat, calorie controlled, or fluid intake restrictions. The goal of nutrition therapy in patients with liver disease is to maintain the best nutritional status possible and manage the symptoms of liver disease without causing further damage to the liver.

Alcoholic liver disease develops when the liver has too much alcohol to handle and is not able to process it. The first stage of alcoholic liver disease is fatty liver in which fat deposits in the liver. Fatty liver can be reversed by avoiding alcohol.

Nonalcoholic liver disease develops when dietary intake of excess fat exceeds the liver's capacity to process it. When the body transfers fat from other parts of the body to use and the liver is not able to metabolize it, more fat deposits in the liver. Fatty liver can be caused by many factors (other than alcohol) including obesity, excessive calorie intake, protein malnutrition, chronic use of total parenteral nutrition, intestinal bypass for obesity, diabetes and insulin resistance, and infection. Fatty liver can be reversed if the reason for the damage can be removed.

When damage is done to the liver, permanent scarring (cirrhosis) can lead to liver failure or liver cancer. Fluid retention is a complication of cirrhosis that can cause abdominal swelling (ascites) or edema. If liver disease progresses, it can lead to hepatic encephalopathy (type of brain damage from a build up of ammonia).

Diet Principles

The type of liver disease and other conditions your patient will affect what nutritional modifications are needed.

1. **Calories** from a variety of foods are needed to maintain a healthy weight and help the liver function as well as it can. If weight loss is needed it should be done slowly, not more than 1 pound per week. Smaller meals and snacks throughout the day may help ensure adequate calorie intake at 25–35 kcal/kg dry weight.

2. **Protein** is important for liver cell repair. A malnourished patient will need adequate amounts of protein to prevent breakdown of the body's protein stores. Dairy and vegetable proteins are easier to tolerate than animal proteins. Protein restrictions should be cautioned due to the risk of malnutrition. If a protein restricted diet is necessary, use the following guidelines for reducing protein intake from a General Diet.

Table 9.7 Guidelines for Reducing Protein in Liver Disease

Breakfast	Lunch or Supper and Dinner
<ul style="list-style-type: none"> • Provide a maximum of 1 whole egg (Avoid sausage, sausage gravy, or egg casserole) • Substitute ½ c. half and half for fluid milk 	<ul style="list-style-type: none"> • Provide a half portion of the main dish. (If chili or bean soup is provided, give only a half portion.) • Avoid fluid milk
Snacks	
<ul style="list-style-type: none"> • Avoid fluid milk, yogurt and items high in protein like meat, cheese, cottage cheese, and high calorie/high protein beverages and supplements 	

Protein restriction should be ordered by the physician and individualized by the registered dietitian after intakes are available for assessment.

3. **Carbohydrates.** Complex carbohydrates high in fiber, whole grain foods, and a variety of fresh fruit and fresh vegetables should be encouraged. Fiber goal should be 25 grams per day. Excess calories in the form of simple, refined carbohydrates can cause hyperglycemia and more fat deposits in the liver.
4. **Fat** intake should be 30% or less of total daily calories. Avoid as much saturated fat and *trans* fats as possible to help decrease hyperlipidemia. Refer to the Heart Healthy Diet in Chapter 7. Be sure to incorporate essential fatty acids (linoleic and linolenic fatty acids). Some patients may have problems with digestion or absorbing fat, which then is lost in the stool; medium chain triglycerides (MCT) oil is absorbed more easily by the body and may be useful in meeting energy needs.
5. **Sodium** should be limited to maintain normal fluid and electrolyte balance. Those that have fluid retention and swelling in the abdomen wall (ascites) or the legs (peripheral edema) need a Low Sodium Diet (Chapter 8).
6. **Fluids** may need to be limited (1,000–2,000 mL of fluid per day) if serum sodium levels are low or if fluid retention is not well controlled. See Fluid Restrictions in Chapter 9.

7. A vitamin supplement with adequate B-complex vitamins, vitamins A, C, D, E, and K, and folate may be needed. Thiamin may need to be higher in alcoholic liver diseases. Avoid mega-vitamin supplements, especially vitamins A and D. Excess vitamin A is toxic to the liver.
8. Alcohol should be avoided to allow the liver a chance to heal, rebuild, and a chance for new cells to grow.
9. Beware of “natural” diet treatments and herbal remedies because many are quite dangerous and toxic to the liver.
10. In malnourished patients, enteral nutrition support at 1,200 calories and 45 grams of protein per day may be needed plus oral intake. (1,2)

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- The Positive Side: http://www.positiveside.ca/e/V6I1/Liver_e.htm
- NASPGHAN: <http://www.naspghan.org/>
- National Institutes of Health: www.nlm.nih.gov/medlineplus/liverdiseases.html
- Hepatitis Information Network: <http://www.hepnet.com/>
- Hepatitis B Foundations: <http://www.hepb.org>

Study Guide Questions

- A. What key nutrients are considered in the Modified Renal Diet?
- B. Who is responsible for calculating and teaching individuals and caregivers about the client's diet restrictions?
- C. List at least four sources of high biological value protein.
- D. Why is adequate energy intake essential to individuals with end-stage renal disease?
- E. Milk is usually limited in the Modified Renal Diet to ___ cup because it is high in the nutrient _____.
- F. List four examples of common foods that would be considered "fluids" and should be included in a fluid restriction.
- G. Use of salt substitute and low sodium broth and bouillon should only be used with the approval of the physician or dietitian. What component of these foods is of particular concern?
- H. Discussion question: What interventions can be implemented to promote adequate energy intake for patients with end-stage renal disease?

Study Guide Suggested Responses can be found in Appendix 18.

Fiber Modified Diets

10

HIGH FIBER DIET

Use

The High Fiber Diet is useful in the treatment of many of the diseases of public health significance—obesity, cardiovascular disease, and type 2 diabetes—as well as the less prevalent but no less significant diagnoses of colonic diverticulosis and constipation. These conditions can be prevented or treated by increasing the amounts and varieties of fiber-containing foods. (3) Additionally, a diet higher in fiber is likely to be less calorically dense and have a higher satiety value than a diet lower in fiber.

Adequacy

The suggested food plan provides foods in amounts that will provide the Dietary Reference Intakes (DRIs) recommended by the National Academy of Sciences for adults.

Diet Principles

1. The High Fiber Diet contributes 25–30 grams of dietary fiber, defined as plant materials resistant to digestion. Because fiber is found exclusively in plant foods, increase consumption of whole grains (e.g., whole wheat, bulgur, oatmeal, whole cornmeal, brown rice, buckwheat, wild rice, whole rye, whole-grain barley, amaranth, millet, quinoa, sorghum, and popcorn),

- fruits, vegetables, beans, nuts, and seeds. Increased fiber intake should come from a variety of food sources rather than from fiber supplements to ensure adequate nutrient intake.
2. High dietary fiber foods should be added gradually to prevent possible short-term side effects including abdominal discomfort, bloating, cramping, or diarrhea. If symptoms continue, reduce fiber intake.
 3. A high fiber diet should be accompanied by a liberal intake of water or other fluids. Because fiber holds water, thereby softening the stool, at least 8 cups of liquids should be ingested daily. Inadequate fluid can lead to constipation or impaction in the colon because dietary fiber absorbs water from the intestinal tract.
 4. Despite the popular notion that indigestible fiber from nuts, corn, popcorn, and seeds could lodge in the diverticula and cause inflammation and infection, no scientific data support this, so eliminating specific foods is not necessary.* (2,4)

Table 10.1 High Fiber Diet

Food for the Day	
Vegetables 1–4 cups	Vegetables: asparagus, broccoli, Brussels sprouts, carrots, cabbage, cauliflower, celery, corn, green beans, greens, lima beans, okra, onions, parsnips, peas, peppers, potatoes (white or sweet, including skin), radishes, sauerkraut, spinach, squash, tomatoes, yams
Fruits 1–2.5 cups	Fruits: apples, apricots, bananas, berries, melons, cherries, figs, grapefruit, oranges, peaches, pears, pineapple, plums, prunes, and rhubarb. Those with skins or seeds will contain more fiber.
Grains 3–10 ounce-equivalents <i>More than half of all grains eaten should be whole grains for extra fiber</i>	Whole grain breads, cereals and pastas, listing whole-wheat flour as the first ingredient; use whole-grain flours in cooking whenever possible (e.g., whole-wheat breads, whole-grain pasta, oatmeal, whole wheat or corn tortillas, brown or wild rice, popcorn, whole wheat couscous, quinoa, whole wheat crackers, whole wheat buns and rolls). Substitute whole wheat or oat flour for up to half of the flour in pancake, waffle, muffin or other flour-based recipes.

*Many, but not all whole-grain products are good sources of dietary fiber. Use the Nutrition Facts label on whole-grain products to choose foods that are a good or excellent source of dietary fiber.

Table 10.1 (Continued)

Food for the Day	
Dairy Products 2–3 cups	Not a source of fiber
Protein Foods 2–7 ounce-equivalents	Cooked legumes (dried beans and peas), nuts, soybeans. Use whole grains in mixed dishes, such as barley in vegetable soup or stews and bulgur wheat in casseroles or stir-fries. May also add flax seed, wheat germ, chia seed or other whole grains.
Oils, Solid Fats, Added Sugars Use sparingly	Not a source of fiber

Table 10.2 Suggested Menu Plan for High Fiber Diet

<p style="text-align: center;">Breakfast</p> <p>1 small orange 1 egg ½ c. oatmeal with up to 1 Tbsp ground flaxseed 1 slice whole wheat toast 1 tsp. jelly 1 tsp. soft margarine 1 c. fat-free milk Hot beverage Sugar, pepper (optional)</p> <p style="text-align: center;">Lunch</p> <p>2 oz. roasted chicken breast 3 oz. baked potato with skin ½ c. mixed vegetables with corn and peas 1 oz. whole wheat roll 2 tsp. soft margarine 1 c. fat-free milk Water</p>	<p style="text-align: center;">Supper</p> <p>2 oz. tuna on 2 slices whole wheat bread with 2 tsp mayonnaise 2 tomato slices 1 c. leafy greens salad 1 Tbsp. salad dressing ½ c. fruit cocktail 1 c. fat-free milk Water</p> <p style="text-align: center;">Snack Ideas</p> <p>1 c. cantaloupe ½ c. carrot sticks 3 c. popcorn</p>
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LOW FIBER DIET

Use

The Low Fiber Diet is designed for use in patients receiving radiation therapy on or near the intestine; in partial bowel obstruction; in periods of disease flares or intestinal strictures in inflammatory bowel disease (Crohn's disease or ulcerative colitis); and diverticulitis. Long-term use of this diet is discouraged because it may contribute to constipation and diverticular disease. (1,5,6,7)

Adequacy

The suggested food plan provides foods in amounts that will provide the DRIs recommended by the National Academy of Sciences for adults.

Diet Principles

The diet includes foods that will reduce frequency and volume of stools. It is smooth in texture and is mechanically and chemically nonirritating.

Food tolerances vary greatly and patients should be encouraged to eat the most liberal diet possible and include adequate fluids.† (7)

Table 10.3 Low Fiber Diet

Food for the Day		
	Recommended	Avoid
Vegetables 1–cups	All vegetable juices, most well cooked or canned without seeds; mashed potatoes without skins	All raw vegetables; lettuces that have been cooked
Fruits 1–2.5 cups	Ripe bananas, most well cooked or canned fruits; pulp free juice	Prune juice; any juice with pulp; most fresh fruits, berries, and other fruit with seeds; dried fruit, fruit skins

†The American Dietetic Association's *Nutrition Care Manual* reports "The Low Residue Diet is being removed from diet manuals, including the American Dietetic Association's Nutrition Care Manual, because there is no scientifically acceptable definition of residue and thus the amount of residue produced by digestion of various foods cannot be estimated from widely available sources. Data documenting the efficacy of a low residue diet are unavailable in the literature. The low fiber diet is the preferred alternative to the low residue diet because the amount of fiber in the diet can be estimated from food composition tables." (8)

Table 10.3 (Continued)

Food for the Day		
	Recommended	Avoid
Grains 3–10 ounce- equivalents	Enriched white bread without seeds; cornbread, biscuits, muffins, pancakes, waffles, plain sweet roll; graham crackers made with refined flours, saltines; enriched, cooked refined cereals, such as farina, grits, cornmeal; dry cereals such as puffed rice, rice flakes, cornflakes or others that are low in fiber; white pasta; white rice	Bread, crackers, or cereals containing whole grains, bran, dried fruits, nuts, or seeds; brown or wild rice
Dairy Products 2–3 cups	All milk and milk drinks; yogurt. If an individual does not tolerate milk to drink, choose lactose free substitutes such as soy, rice, or almond milk; mild cheese, cottage cheese	Yogurt, if flavored with fruit containing small seeds; choose lactose free milk substitutes if lactose intolerant
Protein Foods 2–7 ounce equivalents	Ground or well-cooked meat, poultry, or fish; eggs; smooth nut butters, if tolerated; tofu	Legumes (dried beans and peas), chunky nut butters; tough meats, soybeans
Oils, Solid Fats <i>Use sparingly</i>	Vegetable oils, fortified margarine, butter, cream, mayonnaise, mildly seasoned salad dressings	None
Added Sugars <i>Use sparingly</i>	Pudding, custard, flavored or frozen yogurt with allowed fruits, gelatin, plain sherbet, fruit ice, popsicles; plain cake and cookies; pie made with allowed fruits; honey, syrups, hard candy, marshmallows; jelly	All desserts and candy containing coconut, nuts, seeds, or dried fruit; jams and preserves; aim to keep added sugars in diet to a minimum
Fluids	Water and other fluids, such as milk, coffee, tea, fruit or vegetable juice, carbonated beverages	Prune juice, any juice with pulp
Others	Salt, pepper, ketchup, mustard, spices and herbs, vinegar	Nuts and seeds, coconut, popcorn, pickles and relish with seeds

Table 10.4 Suggested Menu Plan for Low Fiber Diet

<p style="text-align: center;">Breakfast</p> <p>½ c. grape juice 1 egg ½ c. puffed rice cereal 1 slice enriched white toast 1 tsp. jelly 1 tsp. soft margarine 1 c. fat-free Hot beverage Sugar, salt, pepper (optional)</p> <p style="text-align: center;">Lunch</p> <p>2 oz. roasted chicken breast ½ c. mashed potatoes with gravy ½ c. mixed vegetables (no peas or corn) 1 oz. enriched white roll 1 tsp. soft margarine 1 c. fat-free milk Water</p>	<p style="text-align: center;">Supper</p> <p>2 oz. tuna on 2 slices enriched white bread with 2 tsp mayonnaise ½ c. tomato juice ½ c. green beans, canned ½ c. peaches 1 c. fat-free milk Water</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. applesauce 6 oz. yogurt, smooth 8 animal crackers</p>
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Study Guide Questions

- A. List at least three diseases for which a High Fiber Diet may be useful.
- B. The High Fiber Diet contributes ____–____ grams of dietary fiber.
- C. Fiber should be added gradually to prevent what four short-term side effects?
- D. What are the potential complications of inadequate fluid intake?
- E. Long term use of a Low Fiber Diet is discouraged because it can contribute to _____ and _____.
- F. Modify the General menu planned in Chapter 2 to include increased fiber foods.
- G. Discussion question: What are dietary interventions that can be incorporated into the diet on a routine basis to reduce the use of bowel medications?

Study Guide Suggested Responses can be found in Appendix 18.

Other Modified Diets

11

HIGH NUTRIENT DIET

Use

The High Nutrient Diet is more concentrated in energy and nutrients, particularly protein, than the General Diet. It is designed for nutritional rehabilitation of malnourished patients and for patients with elevated nutrient and energy needs, such as wound healing. It may also be useful for the prevention of malnutrition in patients unable to consume normal portions of food due to cognitive impairment or lack of appetite, (1) chronic inflammation, (2,3) or decreases in physical activity. (1) The High Nutrient Diet makes use of enhanced foods, food fortifiers, and nutrient-dense foods. Whole grains, a variety of fruits and vegetables, high nutrient beverages, such as milk and juices, beneficial oils, and high protein foods are all included in the diet.

Adequacy

Adequate intake of all nutrients through diet alone is likely not possible for patients with higher nutrient needs and lower appetites. Vitamin and mineral supplementation or nutritional supplements are essential for achieving adequacy in these patients. Adequacy is based on the complete nutrition assessment by the registered dietitian.

Diet Principles

1. Lack of appetite is often present in ill or traumatized patients and is associated with weight loss. (4) Overall quality of food served, food texture and temperature, portion size, food preferences, taste acuity, body positioning, the need for feeding assistance or assistive devices for self-feeding, medications that impact food intake, and the presence of pain, depression, or infection are among the factors that could affect a patient's intake and should be considered for effective interventions. (5,6,7) Initially, smaller portion sizes with a gradual increase in size and number of servings according to patient acceptance may be needed.
2. Pressure sore development has been associated with weight loss and nutritional adequacy appears important for wound healing. (9,10) Guidelines for nutritional treatment of wounds call for providing enhanced nutrition particularly energy, protein, and selected vitamins and minerals. Nutritional supplements or vitamin and mineral supplements are likely indicated to achieve these higher intakes. Surgical wounds may require inputs of arginine, glutamine, and omega-3 fatty acids for proper healing, but these have not been thoroughly studied in healing of pressure sores. (11,12,13)
3. The High Nutrient Diet should provide adequate protein, vitamins, and minerals without causing significant weight gain unless the patient's body mass index (BMI) is below the normal range (<18.5). Weight should be monitored closely and the energy content of meals and snacks adjusted accordingly. (12) If increased energy intake is recommended, it should be accomplished with high nutrient foods. A simple addition to one or all meals (14) or the use of more nutrient dense foods may be sufficient. (15) Some examples include fortified cereal, higher fat milk or chocolate milk, extra margarine, peanut butter, or added canola oil where appropriate. Excessive increases in portion size or total food volume at meals may be ineffective for patients unable to consume normal amounts of food. Rich pastries, high fat desserts, and candy provide calories but may decrease patients' appetites for high nutrient foods.
4. Patients with pressure sores have increased protein requirements. (8,12) Nonfat dry milk added to a variety of foods is an effective way of increasing dietary protein content particularly if food volume and calorie requirements are relatively small. It can be added to fluid milk or to prepared dishes such as meat loaf, mashed potatoes, cream soups, or hot cereal. Other possibilities include substituting peanut butter for margarine, cooked dry beans for potatoes or other starchy vegetable, and adding an egg to breakfast. High protein medical nutritional supplements may also be considered.
5. Provide extra fluids to patients consuming higher levels of protein and total calories. Free water contained in food, beverages, and tube feedings contributes to overall hydration needs.

6. Dietary interventions at meals that are most effective will be those best accepted by the patient. Some individuals show improved consumption if they receive three small meals with between-meal snacks or nutritional supplements. For other patients, fewer daily feedings that are more nutrient dense may result in improved intake. Patients' individual differences and preferences should be considered.
7. Commercially prepared nutritional supplements offered between meals have been shown to enhance total nutrient and energy intakes. (16) Additionally, there are a variety of concentrated calorie and protein food fortifiers available for addition to foods and beverages. For older adults, it is recommended that in most cases, liquid nutritional supplements be served between meals (17) and not with meals. However, patients who sleep between meals or who refuse most of the regular meal may need the supplement at meal time.

Table 11.1 Suggested Menu Plan for High Nutrient Diet

<p style="text-align: center;">Breakfast</p> <ul style="list-style-type: none"> ½ c. orange juice 1 fried egg ½ c. oatmeal (may be fortified) 1 slice whole wheat toast 1 Tbsp. jelly 1 Tbsp. peanut butter 1 c. whole milk Hot beverage Sugar, pepper (optional) <p style="text-align: center;">Lunch</p> <ul style="list-style-type: none"> 2 oz. roasted chicken ½ c. mashed "power" potatoes with gravy ½ c. mixed vegetables 1 oz. whole wheat roll 2 tsp. soft margarine ½ cup strawberry ice cream 1 c. whole milk Water 	<p style="text-align: center;">Supper</p> <ul style="list-style-type: none"> 2 oz. tuna on 2 slices whole wheat bread with 1Tbsp. mayonnaise 2 tomato slices 1 c. leafy greens salad with grated parmesan cheese and walnuts 1 Tbsp. salad dressing ½ c. fruit cocktail canned in heavy syrup 1 c. whole milk Water <p style="text-align: center;">Snack Ideas</p> <ul style="list-style-type: none"> ½ c. fortified pudding Milkshake or medical nutrition supplement 3 c. popcorn with butter
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SMALL PORTIONS DIET

Use

The Small Portions diet follows the principals of the General Diet, except for the reduced portion sizes of some foods. This diet is indicated for patients who

need a reduced portion size for weight maintenance or weight reduction or for individuals who request a reduced portion because the portion size offered on the General Diet is too overwhelming.

Small Portion Diet principles may be adjusted to accommodate individual preferences and nutritional needs.

Adequacy

The suggested food plan reduces the calories from the General Diet to prevent undesired weight gain or promotes gradual weight loss, depending on the individual's energy needs. It provides adequate protein intake but may not meet all Dietary Reference Intakes (DRIs) of some individuals as recommended by the National Academy of Sciences for adults. The need for vitamin and mineral supplementation should be assessed on an individual basis by the healthcare team. Individuals consuming a small portion diet should be weighed frequently and monitored for poor food intake, resulting in undernutrition.

Diet Principles

1. Meats, meat alternates, or entrée: offer same portion as General Diet.
2. Vegetables: portion reduced to $\frac{1}{3}$ cup.
3. Fruits: offer same portion as General Diet.
4. Milk and milk products: offer same portion as General Diet.
5. Grains other than fortified breakfast cereals: portion reduced to half serving; $\frac{1}{2}$ slice of bread, $\frac{1}{4}$ cup of pasta or rice.
6. Fluids other than milk: offer same portion as General Diet.
7. Discretionary calories (desserts, alcohol): portion reduced to half serving.

Table 11.2 Suggested Menu Plan for Small Portion Diet

Breakfast	Lunch
$\frac{1}{2}$ c. orange juice	2 oz. roasted chicken breast
1 egg	$\frac{1}{4}$ c. mashed potatoes with gravy
$\frac{1}{2}$ c. oatmeal	$\frac{1}{3}$ c. mixed vegetables
$\frac{1}{2}$ slice whole wheat toast	$\frac{1}{2}$ oz. whole wheat roll
1 tsp. jelly	1 tsp. soft margarine
1 tsp. soft margarine	$\frac{1}{4}$ cup ice cream
1 c. fat-free milk	1 c. fat-free milk
Hot beverage	Water
Sugar, pepper (optional)	

Table 11.2 (Continued)

Supper	Snack Ideas
6 oz. tomato soup 1/3 c. tuna salad on 1 slice whole wheat bread 1/2 c. leafy greens salad 1 Tbsp. sunflower oil and vinegar dressing 1/2 c. fruit cocktail 1 c. fat-free milk Water	1/2 c. cantaloupe 1/2 c. carrot sticks 1 c. popcorn

ADDITIONAL RESOURCES

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VEGETARIAN DIETS

Use

The use of the vegetarian diet is for individuals wishing to avoid foods that come from animals. The diet exclusions vary depending on the type of vegetarian. Vegetarian-style eating patterns have been associated with improved health outcomes—lower levels of obesity, a reduced risk of cardiovascular disease, and lower total mortality. (1)

- Vegan or Total Vegetarian Diet excludes meat, fowl, seafood, eggs, and dairy and foods that contain them.
- The Lacto-Vegetarian Diet excludes meat, fowl, seafood, eggs, and foods that contain them. Consumes plant foods, cheese, and other dairy products.
- Lacto-Ovo-Vegetarian Diet excludes meat, fowl, and seafood and foods that contain them. Consumes plant foods, cheese, other dairy products, and eggs.
- Semi-Vegetarian Diet excludes red meat but may include chicken or fish and most other animal products. The use of the General Diet with proper exclusions is recommended for this diet.

Adequacy

The suggested food plans include foods in amounts that will provide the DRIs recommended by the National Academy of Sciences for adults. Vegetarian diets when planned appropriately are nutritionally adequate for individuals during all stages of the life cycle including, pregnancy, lactation, childhood, adolescence, and athletes. Additional modifications may be needed during illness. The *Dietary Guidelines for Americans 2010* include USDA Food Patterns and vegetarian variations to help individuals carry out diet recommendations; they can be viewed at www.dietaryguidelines.org in the DGA Policy Document.

Diet Principles

1. Obtain an accurate diet history and assessment to determine the extent to which foods are limited, excluded and to determine the quality of the foods they consume.
2. Provide adequate nutrients by including mostly foods rich in nutrients and fortified. Limit low-nutrient foods, sweets, and fats.
3. Limit highly processed grains and other refined carbohydrates to ensure adequate intake of trace nutrients.
4. Avoid excess cholesterol intake by limiting eggs to three or four egg yolks a week for those who consume eggs.
5. Careful consideration should be given to the following when planning vegetarian diets:
 - a. **Protein.** Plant proteins alone can provide enough amino acids (the building blocks of protein) when a variety of plant proteins are eaten throughout the day and the total caloric intake meets the individual's energy needs. It is no longer recommended that complementary proteins be eaten at the same meal. Protein needs may be higher than the Recommended Daily Allowances in those whose main protein source is from cereals and legumes, especially when quantity is limited. Increase in the total quantity of these foods or inclusion of more beans and soy products is recommended. Substitutes for 1 ounce of meat are:
 - 8 ounces fortified soy milk
 - ½ cup cooked dry beans
 - 2 tablespoons peanut butter or other nut butter
 - 2 tablespoons nuts or seeds
 - 4 ounces tofu, tempeh, or vegetable burger
 - 1 whole egg or 2 egg whites (Lacto-Ovo-Vegetarian)
 - b. **n-3 (Omega) Fatty Acids.** Vegans in particular who do not consume fish, eggs, or algae may have lower levels of omega-3 fatty acids: docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA). Additional plant-based n-3 fatty acid α -linolenic acid (ALA) can be consumed and

- used for conversion into DHA and EPA. Good sources of ALA for vegans are flaxseed, walnuts, canola oil and soy.
- c. **Calcium** intake of vegans tends to be low. Vegans tend to have a ratio of calcium to protein that is similar or lower than nonvegetarians, which some studies find is a good predictor of bone health. Therefore, calcium fortified foods or dietary supplements should be used. Fortified foods include fruit juices, soy milk, rice milk, and breakfast cereal or bars.
 - d. **Vitamin D.** Sun exposure and intake of fortified foods are important in meeting recommended vitamin D needs. Foods that are fortified with vitamin D include cow's milk, some brands of soy milk, rice milk, and orange juice, and some breakfast cereals and margarines. Those who have limited exposure to sunlight and insufficient intake of foods are recommended to use a vitamin D supplement.
 - e. **Iron** in plants is not as readily absorbed as that in meats. Foods rich in vitamin C can enhance absorption by reducing the inhibitory effects of phytate. The following can also interfere with iron absorption: tea, herbal tea, coffee, and cocoa. See Iron Content of Selected Food in Appendix 8 for good sources of iron.
 - f. **Vitamin B₁₂.** Only animal products contain vitamin B₁₂. Diets of vegetarians who eat dairy products and eggs are rarely deficient in vitamin B₁₂. Vegans need a reliable source of vitamin B₁₂; good fortified sources include fortified cereals, fortified soy or rice beverages, some brands of nutritional (brewer's) yeast, meat analogs, and a daily vitamin supplement.
 - g. **Zinc.** The absorption of zinc is decreased by phytic acid (commonly higher in vegetarian diets). Vegetarians usually have adequate zinc status. Foods containing zinc include fortified cereals, beans, wheat germ, nuts, and seeds.
 - h. **Iodine.** Vegans consuming plant based diets typically are low. A diet including iodized salt is recommended. Sea vegetables can assist in meeting needs (content can vary). Additionally, it is important to note that Kosher and sea salt and tamari typically do not contain iodine.
6. Read product labels carefully to avoid hidden ingredients such as meat extracts, animal fats, eggs, and milk.
 7. The *Dietary Guidelines for Americans 2010* include Lacto-ovo Vegetarian and Vegan Adaptions of the USDA Food Patterns, visit <http://dietaryguidelines.gov>.

Table 11.4 has guidelines for the Lacto-Ovo-Vegetarian Diet. Items marked with an asterisk would be omitted from a vegan (no animal products) meal plan.

Table 11.3 Vegetarian Diet

Food for the Day	Recommended	Avoid
Vegetables 1–4 cups	Any fresh, canned, frozen; vegetable juice	Deep-fried or battered and fried vegetables
Fruits 1–2.5 cups	Any fresh, canned, frozen, dried; 100% fruit juice	Dried fruit with added sweetener
Grains 3–10 ounce equivalents At least half of all grains eaten should be whole grains	Whole wheat grain products: pasta, tortillas, waffles, crackers, bread and cereal Popcorn, oats, millet, quinoa, brown rice	Enriched grains, or grains with excess sweeteners
Dairy products 2–3 cups	Fat-free* or low-fat (1%) milk* Almond, coconut, hemp, oat, soy, or other dairy alternatives Low-fat flavored or plain yogurt,* soy yogurt Low-fat cheese* or soy cheese.	Whole* or reduced fat milk*, chocolate milk.* high-fat cheese*, sour cream*, cream cheese.*
Protein foods 2–7 ounce- equivalents	Eggs,* meat alternatives, tofu, tempeh, seitan, textured vegetable protein; vegan jerky Legumes, dried beans, edamame Nuts and nut butters including soy nut butter, tahini and hummus	Refried beans, fried meat alternatives
Oils, Solid Fats, Added Sugars Use sparingly	Vegetable oils and soft margarines from vegetables. Low-fat, moderately sweetened such as pudding/custard made with fat-free milk.* Angel food cake,* graham crackers, vanilla wafers, flavored yogurt,* light ice cream,* frozen yogurt,* fruit and nut bars	Hydrogenated oils, palm kernel oil, palm oil, stick margarine, partially hydrogenated oil High sugar, high-fat desserts such as pie,* pastries,* frosted cake,* candy, ice cream,* and frozen treats.
Fluids	Water, bottled and sparkling, milk,* coffee, tea, coconut water.	Beverages with added sweeteners.
Other	Vegetable broth, herbs and spices, hummus, low sodium seasonings, nutritional yeast, brewer’s yeast, wheat germ, flax seed, chia seed, stevia	

*These items would be omitted from a vegan (no animal products) meal plan.

Table 11.4 Suggested Menu Plan for Lacto-Ovo Vegetarian Diet

<p>Breakfast</p> <p>½ c. orange juice 1 egg or 1 Tbsp. peanut butter ½ c. oatmeal 1 slice whole wheat toast 1 c. fat-free milk Hot beverage Sugar, pepper (optional)</p> <p>Lunch</p> <p>2 oz. meatless burger, soy-based ½ c. mashed potatoes (made without chicken stock) ½ c. mixed vegetables 1 oz whole wheat roll 1 tsp. soft margarine 1 c. fat-free milk Water</p>	<p>Supper</p> <p>1 oz. low-fat cheese 1 oz. seasoned pinto beans served over 1 c. leafy greens salad 1 Tbsp. sunflower oil and vinegar dressing 2 tomato slices 1 whole-grain bagel 1 tsp. soft margarine ½ c. fruit cocktail 1 c. fat-free milk Water</p> <p>Snack Ideas</p> <p>1 c. cantaloupe ½ c. carrot sticks 3 c. popcorn</p>
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Table 11.5 Suggested Menu Plan for Vegan Diet

<p>Breakfast</p> <p>½ c. orange juice 1 Tbsp. peanut butter ½ c. oatmeal made with fortified soy milk 1 slice whole wheat toast 1 c. fortified soy milk Hot beverage Sugar, pepper (optional)</p> <p>Lunch</p> <p>2 oz. meatless burger, soy-based ½ c. mashed potatoes made with fortified soy milk ½ c. mixed vegetables 1 oz. whole wheat roll 1 tsp. soft margarine 1 cup strawberries with 3 graham cracker squares 1 c. fortified soy milk</p>	<p>Supper</p> <p>2 oz. seasoned pinto beans served over 1 c. leafy greens salad 1 Tbsp. sunflower oil and vinegar dressing 2 tomato slices 1 whole-grain bagel 1 tsp. soft margarine ½ c. fruit cocktail 1 c. fortified soy milk</p> <p>Snack Ideas</p> <p>1 c. cantaloupe ½ c. carrot sticks 3 c. popcorn</p>
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1. US Department of Agriculture, & US Department of Health and Human Services. *Dietary Guidelines for American*, 2010, 7th ed. Washington, DC: US Government Printing Office, 2010.

ADDITIONAL RESOURCES

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- American Dietetic Association. Position Paper of the American Dietetic Association: Vegetarian diets *J Am Diet Assoc*. 2009 July;109(7):1266–82. <http://www.eatright.org/ada/files/veg.pdf>
- Havala S. *Vegetarian Cooking for Dummies*. New York: Wiley, 2001.

Websites

- MyPyramid Vegetarian diets: http://www.mypyramid.gov/tips_resources/vegetarian_diets_print.htm
- Vegetarian Nutrition Dietetic Practice Group: <http://vegetariannutrition.net/index.php>

FOOD ALLERGIES AND INTOLERANCES

If someone has an unpleasant reaction to something they ate, they might wonder if they have a food allergy. Food allergies affect up to 6 to 8% of children under the age of 3 and 2% of adults. One out of three people either believe they have a food allergy or modify their or their family's diet. Food allergy is commonly suspected, yet healthcare providers diagnose it less frequently than most people believe. In many cases, it is a food intolerance—not a true allergy—that is causing the problem.

Food Allergy

A food allergy is an abnormal response to a food triggered by the body's immune system. It causes the body to produce antibodies called immunoglobulin E (IgE) to fight it. Symptoms may be immediate or delayed up to a few hours and range from uncomfortable (e.g., hives, stomach upset) to life threatening (e.g., swelling of the tongue, closing of the throat). A severe type of reaction is called anaphylaxis, commonly known as anaphylactic shock. Anaphylactic shock can produce symptoms such as those listed in addition to a drop in blood pressure, unconsciousness, and even death. Diagnosis of a food allergy can usually be made based on skin or lab tests and a detailed diet

history. If a severe food allergy exists, an antihistamine or epinephrine kit (i.e., EpiPen) should be on hand per medical prescription.

Food allergies and food intolerances are often mistaken for one another. Most people with a food allergy need to totally eliminate the offending food, however, for some food intolerances, such as lactose intolerance, smaller portions (e.g., 4 oz milk) or a modified version of the offending food (e.g., lactose-reduced or lactose-free milk, yogurt, or cheese) may be well tolerated.

Food Intolerance

A food intolerance is when eating a certain food or foods triggers a negative physiological response, but the immune system is not affected in the same way. Symptoms may take up to 3 days to show, making food intolerances difficult to diagnose. Elimination diets, detailed diet history, and specialty tests are the most common methods for diagnosis. This is not life threatening, but symptoms may be severe and include gastrointestinal distress, headaches, and sinus or respiratory problems.

Celiac Disease and Nonceliac Gluten Sensitivity

Celiac disease is an autoimmune disease. There are many different symptoms including diarrhea, constipation, anemia, and low bone density. At present, the only treatment is to follow a gluten-free diet. Gluten is the protein found in wheat, rye, barley, and oats (unless it is gluten-free oats) and when eaten causes an immune system response that damages the lining of the small intestine. Continuous exposure to gluten can cause a wide variety of health problems.

Nonceliac gluten sensitivity is thought to be an immune system response to gluten. The treatment is to follow a gluten-free diet. Refer to the Gluten Restricted Diet in this chapter.

Common Food Allergies

Eight foods account for 90% of food allergies. Wheat, milk, eggs, fish, crustacean shellfish, tree nuts, soy, and peanuts are the most common allergens. In adults, the most common foods that cause allergic reactions are shellfish (such as crayfish, lobster, shrimp, and crab), peanuts, tree nuts, fish, and eggs. The most common foods that cause problems in children are eggs, milk, and peanuts. Presently there are no medications that cure food allergies or food intolerances. Strict avoidance of the allergy-causing food is the only way to avoid a reaction. Reading ingredient labels for all foods is the key to maintaining control over the allergy.

Milk Allergy

Eliminating all milk and milk by-products from the diet is necessary. This includes yogurt, butter, most margarines, cheese, cream, and milk.

Milk is an important source of calcium, vitamin A, vitamin D, riboflavin, pantothenic acid, and phosphorus. Enriched soy, almond, hemp, or rice milk beverages are good alternative sources of calcium, vitamin A, and vitamin D. These enriched beverages can also be used as a substitute for milk in recipes. Alternative sources of riboflavin, pantothenic acid, and phosphorus are found in legumes (such as peas, beans, or soy), nuts, and whole grains.

Reading food labels is crucial. For a milk-free diet, you should avoid foods with these ingredients:

Table 11.6 Milk Allergy

Artificial butter flavor
Butter, butter fat, butter oil
Buttermilk
Casein
Caseinates (such as ammonium, calcium, magnesium, potassium, or sodium caseinate)
Cheese
Cottage cheese
Cream
Curds
Custard
Ghee
Goat's milk
Half & half
Hydrolysates (listed as casein, milk protein, protein, whey, or whey protein hydrolysate)
Lactalbumin, lactalbumin phosphate
Lactoglobulin
Lactose
Lactulose
Milk (derivative, powder, protein, solids, malted, condensed, evaporated, dry, whole, low-fat, nonfat, skimmed, and goat's milk)
Nougat
Pudding
Rennet casein
Sour cream, sour cream solids
Sour milk solids
Whey (in all forms, including sweet, delactosed, and protein concentrate)
Yogurt

Egg Allergy

Eggs must be avoided completely, even if a diagnosis of allergy to only egg whites or egg yolks has been made. It is difficult to separate the egg white and yolk from each other completely, without having some cross contamination. Eggs provide the diet with vitamin B₁₂, pantothenic acid, folate, riboflavin, selenium, and biotin. These nutrients can be easily provided by other foods in the diet, such as whole grains, legumes, and meat products.

Reading food labels is crucial. For an egg-free diet, you should avoid foods with the ingredients noted in Table 11.7.

Table 11.7 Egg Allergy

Albumin
Egg (white, yolk, dried, powdered, solids)
Egg substitutes
Eggnog
Globulin
Livetin
Mayonnaise
Meringue
Ovalbumin
Ovomucin
Ovomucoid
Ovovitellin

Peanut Allergy

Peanuts and peanut derivatives need to be avoided. Peanuts provide niacin, vitamin E, magnesium, chromium, and manganese. A diet with a variety of vegetables, whole grains, meats, and legumes will meet these needs as well.

Reading food labels is crucial. For a peanut-free diet, you should avoid foods with the ingredients listed in Table 11.8.

Table 11.8 Peanut Allergy

Beer nuts
Pesto
Peanut oil
Ground nuts
Mixed nuts
Peanuts
Peanut butter
Peanut flour
Chili sauce
Hot sauce
Egg rolls

Tree Nut Allergy

An allergy to tree nuts is one of the most common food allergies in adults. Tree nuts include almonds, Brazil nuts, cashews, chestnuts, hazelnuts, hickory nuts, pecans, pine nuts, pistachios, walnuts, coconut, and macadamia nuts.

Tree nuts are being added to many foods, so reading food labels is critical with this food allergy. For a tree nut-free diet, you should avoid foods with the ingredients listed in Table 11.9.

Table 11.9 Tree Nut Allergy

Almonds
Brazil nuts
Cashews
Chestnuts
Filbert/hazelnuts
Gianduja (creamy mixture of chocolate and chopped toasted nuts found in premium or imported chocolate)
Hickory nuts
Macadamia nuts
Almond paste
Mashuga nuts
Nougat
Nu-Nuts artificial nuts
Nut butters
Nut meal
Nut oil
Nut paste (such as almond paste)
Pecans
Pine nuts
Pistachios
Walnuts
Coconut (FDA identified as a tree nut, October 2006)
<i>Check food labels for possible tree nut ingredients:</i>
Barbeque sauce
Honey
Pie crust
Breading for chicken
Meat-free burgers
Pasta

Fish and Shellfish Allergies

All species of fish should be avoided if diagnosed with a fish allergy. For a shellfish allergy, shrimp, crabs, lobster, and crawfish, and mollusks, such as clams, oysters, and scallops, should be avoided.

Foods that contain fish or fish products are Worcestershire sauce (if it contains anchovy), Caesar salad, caviar, and roe (fish eggs). Surimi is made from fish muscle that is reshaped and used to make imitation seafood (like imitation crab legs, crab cakes, and imitation lobster products).

Nutrients that are found in fish can also be found in meats, grains, legumes, and oils, therefore substitution should be fairly easy.

Unexpected sources of fish and shellfish are listed in Table 11.10.

Table 11.10 Fish Allergy

Fish

Check food labels for possible fish ingredients:

Salad dressing

Worcestershire sauce

Bouillabaisse

Imitation fish or shellfish

Shellfish

Asian food

Shrimp, crab, lobster

ADDITIONAL RESOURCES

Websites

Asthma and Allergy Foundation of America: www.aafa.org

The Food Allergy and Anaphylaxis Network: www.foodallergy.org

Gluten Intolerance Group: www.gluten.net

National Institutes of Health: <http://www.niaid.nih.gov/topics/foodallergy/Pages/default.aspx>

LACTOSE RESTRICTED DIET

Use

The Lactose Restricted Diet is used for patients who cannot digest lactose, the carbohydrate found in milk. Lactose intolerance results from diminished production of lactase enzyme in the small intestine. The degree of sensitivity will vary from person to person; consequently the diet should be individualized.

Adequacy

The diet will provide the DRIs recommended by the National Academy of Sciences; however, there may be a risk for deficiencies in calcium, riboflavin,

and vitamin D depending on food choices and if lactase enzyme is used to aid digestion. Supplementary sources of these nutrients may be advisable.

Diet Principles

1. The diet limits lactose-containing foods according to individual tolerance. Less than 12 grams per day is generally recommended. Foods with small amounts of lactose are often tolerated when eaten in small portions or as part of a meal. Fermented dairy products like yogurt and aged cheeses are often tolerated.
2. Read all labels carefully to identify foods containing lactose. Look for the words *lactose*, *milk*, *nonfat dry milk*, *milk solids*, *skim milk*, *whey*, or *curds*. Other prepared foods that may contain lactose include commercial breads and baked goods, processed breakfast cereals, instant potatoes, soup and breakfast drink mixes, margarine, lunchmeats (other than kosher), salad dressings, candies and snacks, mixes for pancakes, biscuits, and cookies.
3. Many prescriptions and over-the-counter medications contain lactose. Check labels or consult with a pharmacist. Commercially available lactase enzyme (Lactaid, Dairy Ease) may be taken with food, beverages, and some medications as needed.
4. Calcium may be supplemented to provide 1,000–1,500 mg/day as needed.

Table 11.11 Lactose Restricted Diet

Food for the Day	Recommend	Limit to Tolerance
Vegetables 1–4 cups	All vegetables and vegetable juices	Any vegetable prepared with milk or cheese sauce; instant potatoes
Fruits 1–2.5 cups	All fruits and fruit juices	Fruit drinks containing lactose
Grains 3–10 ounce-equivalents	Crackers, Italian, French, or Jewish rye bread; cereals, rice, pasta, hominy, oats, barley, wheat, cornmeal, tortillas, rice and popcorn	Any bread, cereal, or grain prepared with milk or milk products; instant cereals; dry cereals containing lactose or milk
Milk products 2–3 cups	Soy, rice, almond, hemp, oat milk Lactose-free milk products. Milk treated with lactase enzyme	Milk and milk products; butter- milk, yogurt, cocoa mixes All forms of cheese made with milk

(Continued)

Table 11.11 (Continued)

Food for the Day	Recommend	Limit to Tolerance
Protein foods 2-7 ounce-equivalents	All fresh meat, poultry, fish, shellfish; eggs; peanut butter, dried beans, lentils; nuts, seeds, tofu, kosher prepared meat products	Meat or meat substitute prepared with milk; cold cuts, wieners, or other meat with added lactose; powdered eggs
Oils, Solid Fats <i>Use sparingly</i>	Milk-free margarine (kosher margarines do not contain milk); some nondairy cream substitutes; vegetable oils, shortening, lard, bacon, salad dressings made without milk or cheese Olives, nuts and seeds Gravy made without milk	Butter, margarine, salad dressings, mayonnaise-type salad dressings, sour cream, cream cheese, cream
Added Sugars <i>Use sparingly</i>	Desserts made without milk; fruit ices, popsicles, gelatin; angel food cake, fruit rollups, sugar, corn syrup, maple syrup, honey, jam, jelly, marshmallows, hard candies, gum drops, jelly beans and fruit pie fillings	Any dessert, pudding or mix containing lactose; sherbet, ice cream, frozen yogurt, milk chocolate, caramels, cream or chocolate candies
Fluids/Soup	Broth-based soups; soups made with water, soy milk or other nondairy substitutes Plain coffee, tea, soft drinks, beer, wine, distilled spirits	Cream soups, commercial soups containing milk or lactose Drink mixes containing milk or lactose
Others	Popcorn, pretzels, plain potato and corn chips; condiments without added milk	Cheese flavored crackers, cheese curls

Table 11.12 Suggested Menu Plan for Lactose Restricted Diet*

Breakfast	Lunch
½ c. orange juice 1 egg ½ c. oatmeal 1 slice whole wheat toast 1 tsp. jelly 1 tsp. soft margarine 1 c. lactose-free milk Hot beverage Sugar, pepper (optional)	2 oz. roasted chicken breast ½ c. mashed potatoes with gravy ½ c. mixed vegetables 1 oz. whole wheat roll 1 tsp. soft margarine 1 c. lactose-free milk Water

Table 11.12 (Continued)

Supper	Snack Ideas
2 oz. tuna on 2 slices whole wheat bread with 2 tsp mayonnaise 2 tomato slices 1 c. leafy greens salad 1 Tbsp. sunflower oil and vinegar dressing ½ c. fruit cocktail 1 c. lactose-free milk Water	½ c. cantaloupe ½ c. carrot sticks 3 c. popcorn

*Milk substitutes and milk-free foods as suggested above should be used where appropriate.

ADDITIONAL RESOURCES

- Burlant A. *Secrets of Lactose-Free Cooking*. New Hyde Park: Avery Publishing Group, 1996.
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 Inman-Felton AE. Overview of lactose maldigestion. *J Am Diet Assoc*. Chicago: ADA, 1999.
 Swagerty Jr DL, et al. Lactose intolerance. *Am Fam Phys*. 2002;65:9.

GLUTEN RESTRICTED DIET

Use

The Gluten Restricted Diet is used for people with celiac disease, gluten sensitivity, gluten intolerance, or dermatitis herpetiformis.

Adequacy

The suggested food plan includes foods in amounts that will provide the quantities of nutrients recommended by the National Academy of Sciences for adults. Patients may have malabsorption problems, therefore calorie, protein, vitamin, and mineral intake should be monitored with optimal energy and nutrient intake provided.

Diet Principles

1. This diet restricts gluten by avoiding foods, beverages, and medications containing wheat, rye, and barley. Gluten-free oats may be used if tolerated.
2. Grains and starches that may be used include corn, rice, potato, soy, tapioca, bean, sorghum, amaranth, buckwheat, quinoa, teff, millet, Montina, and nut flours. Oats must be certified from gluten-free source.

3. It is important to carefully read ingredient labels on all prepared foods to determine possible gluten content. Ingredients such as modified food starch, hydrolyzed or texturized vegetable proteins, soy sauce or soy sauce solids, and malt or malt flavoring may indicate gluten content from an unacceptable source. The source of food starch and modified starch is corn unless the label indicates it was made from wheat.
4. Care to avoid cross contamination in food preparation is essential.
5. When first diagnosed with celiac disease, many people are also lactose intolerant to some degree. This usually goes away as they avoid gluten and the gut heals. Refer to the Lactose Restricted Diet, which may greatly decrease symptoms. These patients can be encouraged to try lactose-containing foods after a few weeks of following a Gluten Restricted Diet.
6. A registered dietitian familiar with gluten restrictions can assist in diet planning and education to assure nutritional adequacy.

Table 11.13 Gluten Free

Food for the Day	Recommended	Avoid
Vegetables 1–4 cups	Vegetables may be raw or cooked; fresh, frozen, canned, dried/dehydrated, or 100% vegetable juices	Creamed or breaded vegetables; some canned baked beans
Fruits 1–2.5 cups	Fruits may be fresh, frozen, canned (in own juices or light syrup), dried (with no sugar added) or 100% fruit juice	Any fruit containing wheat flour used as a thickener
Grains 3–10 ounce-equivalents	Rice, wild rice; gluten-free breads, cereals, quick breads; gluten-free pasta, noodles Buckwheat, millet, popcorn, gluten-free oats	Any made with wheat, rye, oats, barley; triticale, spelt, wheat germ, wheat starch, graham, durum, semolina, couscous
Dairy products 2–3 cups	Fat-free or low-fat (1%) milk, low-fat or fat-free, nondairy milks (soy, almond, rice), low-fat yogurt Aged hard cheeses	Malted milk beverages
Protein foods 2–7 ounce-equivalents	Lean or very lean cuts of beef, skinless poultry, fish, dry beans or legumes, eggs (omega-3 enriched eggs), nuts, and seeds	Creamed or breaded meat, fish, poultry unless made with allowed flours; commercial products containing restricted grains; some canned meat products; processed lunch meats; cheese spreads

Table 11.13 (Continued)

Food for the Day	Recommended	Avoid
Oils, Solid Fats <i>Use sparingly</i>	Canola oil, flax seed oil, sesame oil, olive oil	Any salad dressings or mayonnaise containing restricted grains
Sweets/Desserts <i>Use sparingly</i>	Cakes, cookies, pastries made with gluten-free grains; sorbet and fruit ices; premium ice cream; gelatin; maple syrup, jam, jelly; marshmallows	Cakes, cookies, pastries made with restricted grains, ice cream cones; some puddings, ice cream with additional toppings
Fluids/Soup	Water and other fluids, such as coffee, tea, 100% fruit or vegetable juice Homemade broths and soups made with allowed ingredients	Flavored coffees; beer, soups thickened or made with restricted grains
Others	Popcorn; corn tortillas; some plain potato and corn chips	Condiments containing restricted grains

Table 11.14 Suggested Menu Plan for Gluten Restricted Diet

<p style="text-align: center;">Breakfast</p> <p>½ c. orange juice 1 egg ¾ c. rice or corn cereal 1 slice gluten-free bread or rusk 1 tsp. jelly 1 tsp. soft margarine 1 c. fat-free milk Hot beverage Sugar, pepper (optional)</p> <p style="text-align: center;">Lunch</p> <p>2 oz. baked chicken ½ c. mashed potatoes (made from fresh) ½ c. mixed vegetables 1 oz. gluten-free bread or roll 1 tsp. margarine or butter 1 c. fat-free milk Water</p>	<p style="text-align: center;">Supper</p> <p>2 oz. tuna on 2 slices gluten-free bread with 2 tsp gluten-free dressing 2 tomato slices 1 c. leafy greens salad 1 Tbsp. sunflower oil and vinegar dressing ½ c. fruit cocktail 1 c. fat-free milk Water</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. melon 1 oz. cheese and 2 rice cakes ½ c. carrot sticks</p>
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ADDITIONAL RESOURCES

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University of Iowa Hospitals and Clinics. Gluten-free Shopping List. Food and Nutrition Services.
Thompson T, & Brown M. *Easy Gluten-Free.* Chicago: ADA, 2010.

Websites

Celiac.com: www.celiac.com
Celiac Sprue Association/United States of America: www.csaceliacs.org
Gluten Intolerance Group: www.gluten.net
Tri-County Celiac Sprue Support Group: www.tccsg.com

PHENYLALANINE RESTRICTED DIET

Use

The phenylalanine restricted diet is used for people who lack the enzyme (phenylalanine hydroxylase) necessary to convert phenylalanine to tyrosine, causing a disorder called phenylketonuria (PKU). High amounts of phenylalanine are toxic to the brain and can cause mental retardation. Prior to newborn screening (most states started to screen in the 1960s), individuals with PKU were not identified until the brain damage had occurred. Even though a phenylalanine-restricted diet will not reverse the mental retardation that may have occurred, it may reduce some of the behavior problems these individuals may have. When newborn screening began, infants were placed on the diet at diagnosis and kept on the diet until 5 to 8 years of age when it was thought safe to go off the diet because the most rapid time of brain development was over. As more individuals have been off the diet for longer periods of time, it is apparent that high amounts of phenylalanine continue to be a brain toxin and can cause varying degrees of brain damage. Currently, individuals begin the diet at diagnosis and the recommendation is to continue the diet for life so brain damage does not occur.

Over the past few years, some new treatments for PKU have emerged. Tetrahydrobiopterin or BH₄ is a cofactor required for the enzyme phenylalanine hydroxylase to work optimally. A synthetic form of this cofactor marketed under the name of Kuvan was approved by the FDA in December 2007. Clinical trials indicate that Kuvan taken orally enhances the efficiency of phenylalanine hydroxylase in some individuals with PKU. This can lead to decreased serum phenylalanine levels or increased natural protein intake.

Another relatively new treatment is the use of large neutral amino acids (LNAA). These are thought to lower the phenylalanine in the brain by competing with phenylalanine to cross the blood-brain barrier. These can be used by

individuals who are off diet and find it difficult to return to a phenylalanine-restricted diet, but who wish to see if this improves their mood, memory, or behavior.

Adequacy

Depending on the type of the special metabolic formula used, the suggested food plan may provide the DRIs recommended by the National Academy of Sciences or may need to be supplemented with a multivitamin and calcium supplement.

Diet Principles

1. The diet eliminates all foods containing natural protein such as meat, fish, poultry, milk, yogurt, cheese, eggs, nuts, seeds, legumes, and peanut butter.
2. Foods containing aspartame are also eliminated because one of the byproducts of aspartame is phenylalanine. Sucralose and saccharin are allowed.
3. Adequate protein intake is achieved with the use of a metabolic formula that has the phenylalanine removed while the rest of the amino acids remain. Most of the metabolic formulas also provide fat, carbohydrate, vitamins, and minerals.
4. A prescribed amount of phenylalanine is allowed from natural food sources like fruits, vegetables, and grain products.
5. Low protein foods such as pastas, breads, and other baked goods are available to provide calories and variety to the diet without too much phenylalanine.
6. A registered dietitian familiar with the PKU diet should assist in diet planning and teaching to assure nutritional adequacy.

Table 11.15 Phenylalanine Restricted Diet

Food for the Day	Recommended	Avoid
Vegetables 1–4 cups	All fresh, frozen, canned	Baked beans and other legumes
Fruits 1–2.5 cups	Fresh, frozen, canned, dried, fruit juices	None
Grains Amount specified by registered dietitian	All that will fit within protein allotment. May need to use low protein grains	None
Dairy products	Special metabolic formula in the amount prescribed by registered dietitian	All regular milk, yogurt, cheese

(Continued)

Table 11.15 (Continued)

Food for the Day	Recommended	Avoid
Protein foods	None	All meat, poultry, fish, eggs, dried beans or peas or peanut butter
Oils, Solid Fats	All are allowed	None
Added Sugars	All that will fit into the protein allotment which may include gelatin, sorbets, fruit ices	Those too high in protein
Fluids	Water and other fluids, such as coffee, tea, fruit or vegetable juice, lemonade, regular soda	Beverages containing aspartame, regular milk

Table 11.16 Suggested Menu Plan for Phenylalanine Restricted Diet

<p style="text-align: center;">Breakfast</p> <p>Special metabolic formula ½ c. orange juice ½ c. cereal* 1 slice white toast* 1 tsp. jelly 1 tsp. soft margarine Coffee or tea Sugar, salt, pepper (optional)</p> <p style="text-align: center;">Lunch</p> <p>Special metabolic formula ½ c. mashed potatoes ½ c. vegetables 1 tsp. soft margarine ½ c. mandarin oranges ½ c. sorbet Water Coffee or tea Sugar, salt, pepper (optional)</p>	<p style="text-align: center;">Supper</p> <p>Special metabolic formula 2 tomato slices ½ c. buttered pasta* 1 c. leafy greens salad 1 Tbsp. salad dressing ½ c. fruit cocktail Water Coffee or tea Sugar, salt, pepper (optional)</p> <p style="text-align: center;">Snack Ideas</p> <p>½ c. cantaloupe Low protein baked items* Popsicles ½ c. carrot sticks Fruit drinks Candy with no protein Fruit snacks</p>
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*Regular or low protein depending on protein allotment

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Website

National PKU News: www.pkunews.org

GUIDELINES FOR PEPTIC ULCER, GASTROESOPHAGEAL REFLUX DISEASE, AND HIATAL HERNIA

Peptic Ulcer

There is no evidence that a bland diet plays a significant role in the treatment of gastrointestinal disorders. Historically, such a diet was recommended in the treatment of peptic ulcer disease, hiatal hernia, and gastroesophageal reflux disease (GERD). It is now known that most stomach ulcers are caused either by infection with a bacterium called *Helicobacter pylori* (*H. pylori*) or by use of pain medications such as aspirin, ibuprofen, and other nonsteroidal anti-inflammatory drugs (NSAIDs). Most *H. pylori*-related ulcers can be cured with antibiotics. NSAID-induced ulcers can be cured with time, stomach protective medications, antacids, and avoidance of NSAIDs.

No evidence supports the use of a traditional bland diet to decrease gastric acid secretion or increase the rate of healing. For this reason, the diet should be primarily one that is liberal and individualized because patients differ as to specific food intolerances. There are a few foods that can stimulate gastric secretion and possibly irritate the stomach. It is a limited list and should be based on patient tolerance along with lifestyle changes for the treatment of peptic ulcers. The following recommendations are made:

1. Avoid alcohol, drinks containing caffeine (e.g., coffee, tea, decaffeinated coffee and tea, cola type soda), chocolate, cigarette smoking, salicylates (aspirin), and other NSAID agents.
2. Avoid frequent meals and or bedtime snacks to prevent increased acid secretion.
3. Foods and seasonings that stimulate gastric acid secretion such as black pepper, garlic, cloves, and chili powder should be limited.

GERD and Hiatal Hernia

Hiatal hernia occurs when a portion of the stomach bulges up into the esophagus. This causes reflux of stomach contents, resulting in heartburn and a bitter or sour taste in the back of the throat. When this happens frequently it is called GERD. If left untreated, GERD can cause damage to the lining of the esophagus.

Lifestyle modifications, medications, and diet can manage the symptoms of this disease. The following recommendations are made:

1. Avoid foods and beverages that contribute to indigestion: chocolate, coffee, and other highly caffeinated beverages; peppermint; spearmint; high fat foods; tomato products; and alcoholic beverages. Some sources also suggest limiting citrus fruits if not well tolerated. Herbal teas that do not contain peppermint or spearmint are generally well tolerated.
2. Stop smoking to reduce the effect of tobacco on stomach acid production and relaxation of the esophageal muscles. Tobacco also inhibits saliva, which is the body's major buffer.
3. Reduce weight if obese.
4. Avoid eating 3 hours before sleep.
5. Raise the head of the bed by 6 inches.
6. Exercise for at least 30 minutes several times per week.
7. Avoid wearing tight fitting clothing.
8. Sit upright when eating.

Table 11.17 Suggested Menu Plan for Peptic Ulcer, GERD, and Hiatal Hernia

The menu plan for the General Diet should be used. Avoid items from the Foods Not Recommended list and consider lifestyle changes indicated. Adjust contents of meals and meal times to accommodate individual needs. Introduce new foods one at a time in small quantities to check for potential intolerance.

ADDITIONAL RESOURCES

Moskovitz DN, Saltzman J, Kim YI, et al. (2006) The aging gut. In: *Geriatric Nutrition the Health Professional's Handbook*, 3rd ed., (ed Chernoff R.), pp. 241–42. Sudberry, MA: James and Bartlett, 2006.

Websites

The Cleveland Clinic Digestive Disease Center: www.clevelandclinic.org/digestivedisease.

Mayo Clinic: www.mayoclinic.com/health/pepticulcer/DS00242

National Digestive Diseases Information Clearinghouse a service of the NIDDK: www.digestive.niddk.nih.gov.

KOSHER DIET

Use

Kosher dietary laws followed by some, but not all, adherents to Judaism originated over 2,000 years ago. These dietary laws derived from scholarly interpretations of passages found in the Old Testament of the Bible. The literal meaning of the word kosher is “fit or proper.” Kosher does not mean that the food has been “blessed” by the rabbi or other religious authority. It merely connotes that the food has been produced in accordance to relevant dietary laws. At its simplest, the kosher diet mandates a prohibition of the consumption of meat and dairy products at the same meal. It also precludes the cooking together of meat and dairy products. Kosher dietary laws require a complete separation of meat and dairy foods through the use of two separate sets (meat and dairy) of pots and pans, dishes, flatware, as well as cooking and serving utensils. It is also suggested that the individual refrain from eating dairy products for a period of several hours following the consumption of meat. Food products that have been certified as kosher by a local or national religious entity are labeled with a symbol (a variety of such symbols are used in different parts of the United States), which can usually be found on the front of the package label or near the ingredients(s) list. This symbol, called a *hekhsher* indicates that the food ingredients(s), the processes in producing the food, and the food processing plant itself have been inspected to ensure that all kosher dietary laws are being followed.

Adequacy

The suggested food plan includes food in the amounts that will provide the DRIs recommended by the National Academy of Sciences for adults.

Diet Principles

1. This diet follows kosher dietary laws by not combining meat products and dairy products (or its derivatives).
2. Only kosher foods are used in meal preparation. These products are identified by a kosher symbol on the label. If there is no symbol, it is not kosher with the exception of fresh fruits and vegetables. It is important to read the ingredient list on all prepared foods to determine if that product may be used for either a meat or a dairy meal. Care to avoid cross-contamination in food preparation is essential.
3. A kosher animal chews its cud, has split hooves, and includes: cows, goats, sheep, deer, bison, and antelope; all being slaughtered in accordance with religious laws.
4. A kosher fowl includes chickens, domestic geese, turkeys, and doves.

5. A kosher fish must have both fins and scales and includes cod, flounder, haddock, halibut, herring, mackerel, pickerel, pike, salmon, trout, tuna, and whitefish. No “scavenger” species or shellfish are allowed.
6. Any egg from a kosher fowl is considered kosher.
7. A kosher dairy product is a milk product from a kosher animal. A dairy food cannot contain any meat or nonkosher products. Dairy foods include milk, butter, yogurt, cheese, cream cheese, and milk derivatives such as sodium caseinate and lactose.
8. Pareve foods are neutral and can be served with either a dairy or meat meal. These foods include raw fruits, vegetables, grains, eggs, pasta, and juice.
9. Fish is considered pareve and may be served with meat or dairy but preferably a dairy meal.
10. A registered dietitian familiar with the kosher diet can assist in diet planning and education to assure nutritional adequacy.

Table 11.18 Kosher Diet

Food for the Day	Recommended	Avoid
Vegetables 1–4 cups	Fresh vegetables All canned, frozen, and vegetable juices identified as kosher	Nonkosher vegetable products or juice No cream sauces over vegetables are allowed when served with a <i>meat</i> meal
Fruits 1–2.5 cups	Fresh fruit All canned, frozen and fruit juices identified as kosher	Any fruit (except fresh) not identified as kosher
Grains 3–10 ounce-equivalents	All baked goods prepared in a kosher kitchen	Any bakery item not prepared using kosher practices Any item containing lard
Dairy products 2–3 cups	Kosher cheese and other milk products including butter, yogurt, cottage cheese, cream cheese, sour cream and soy milk	All dairy products when meat is served Nonkosher cheese
Protein foods 2–7 ounce-equivalents	Kosher beef, lamb, mutton, venison, buffalo or antelope. Kosher chicken, duck, goose, pheasant or turkey Kosher deli meats, hot dogs Fish with fins and scales Eggs from kosher fowl	Any nonkosher meat or poultry. Pork. Rabbit All shellfish (clams, crab, lobster, oysters, shrimp and mussels) Eel, frog, shark, octopus Eggs with blood spots or eggs from nonkosher fowl

Table 11.18 (Continued)

Food for the Day	Recommended	Avoid
Oils, Solid Fats <i>Use sparingly</i>	Kosher margarines including soy margarine Nondairy creamers Kosher mayonnaise, vegetable oil Olives Gravy made with kosher meat	Butter unless served with a dairy meal Nonkosher mayonnaise, salad dressings, and vegetable oils Milk-containing gravy with meat meal
Added Sugars, Others	Kosher alcohol, beer and wine Coffee, tea, powdered drink mixes, carbonated beverages Kosher cakes, cookies, candy, chocolate, jam and jellies Kosher pudding and ice cream Sherbet with dairy meals only Any prepared food mixtures prepared under kosher standards Honey, pepper, salt, sugar, sugar substitutes, and syrup	Dark beer Animal fats (bacon, grease, lard) Nonkosher desserts Nonkosher soups Gelatin or products made with gelatin unless identified as kosher Marshmallows

Table 11.19 Suggested Menu Plan for Kosher Diet

Breakfast	Lunch
½ c. orange juice 1 egg ½ c. oatmeal 1 slice whole wheat toast 1 tsp. jelly 1 tsp. soft margarine 1 c. fat-free milk Hot beverage Sugar, pepper (optional)	2 oz. kosher roasted chicken ½ c. mashed potatoes (<i>no mill</i> —may use nondairy creamer) with gravy ½ c. mixed vegetables 1 oz. whole wheat roll 1 tsp. soft margarine ½ c. mandarin oranges NO MILK Water, Coffee or Tea

Table 11.19 (Continued)

Supper	Snack Ideas
2 oz. tuna on 2 slices whole wheat bread with 2 tsp mayonnaise 2 tomato slices 1 c. leafy greens salad 1 Tbsp. salad dressing ½ c. fruit cocktail 1 c. fat-free milk Water	½ c. cantaloupe ½ c. carrot sticks 2 kosher cookies 1 c. yogurt

ADDITIONAL RESOURCES

Mr. Stephen P. Blend, Executive Director, Iowa Jewish Senior Life Center, 900 Polk Boulevard, Des Moines, IA 50312

Website

Judaism 101: www.jewfaq.org/kashruth.htm

Study Guide Questions

- A. List at least three uses for the High Nutrient Diet.
- B. List at least three ways in which calories, protein, and vitamins can be added without increasing portion size for the High Nutrient Diet.
- C. Modify the General menu planned in Chapter 2 to increase protein and calorie content with little change in portion size for the High Nutrient Diet.
- D. Using the Small Portions guidelines, modify a General diet daily meal plan for small portions.

- E.** When planning Vegetarian Diets why should the following be given special consideration?
- Protein
 - Calcium
 - Iron
 - Vitamin B₁₂
- F.** Define the following and list two common examples of each:
- Food allergy
 - Food intolerance
- G.** List at least three prepared foods that may contain lactose.
- H.** List at least three grains and starches that may be used for the Gluten Restricted Diet.
- I.** When reading food labels, what ingredients listed would indicate possible gluten content? (Hint: modified food starch)
- J.** Describe in detail at least three diet principles associated with phenylketonuria (PKU).
- K.** List at least three lifestyle changes that may be helpful for patients with peptic ulcers or gastroesophageal reflux disease (GERD).
- L.** Discussion question: Describe communication methods in ensuring staff are aware of critical diet restrictions such as lactose or gluten.

Study Guide Suggested Responses can be found in Appendix 18.

Dining Assistance/ Special Needs

12

FINGER FOOD DIET

Use

The Finger Food Diet is intended for people with Alzheimer's disease, other dementia or cognitive impairment, or certain neuromuscular disorders.

Adequacy

The diet, if carefully chosen from suggested foods, meets the Dietary Reference Intakes (DRIs) recommended by the National Academy of Sciences for adults. The General Diet should form the basis of this diet, with only such modifications as to prompt self-feeding and promote independence.

Diet Principles

1. Patients who resist being fed, are combative, or have difficulty manipulating utensils may increase their caloric intake and stabilize their weight if presented with most of their food in finger food form, bite size pieces.
2. Patients may benefit from this eating approach to decrease frustration, enhance dignity and self-esteem, and increase morale and motivation. Improvement in appetite may also occur.
3. The patient's acceptance of finger foods may determine the appropriateness in relation to dignity. The patient's diet can be adjusted to promote the highest degree of independence for feeding themselves.

4. The encouragement to self-feed may lead to greater mobility in otherwise inactive individuals, resulting in enhanced strength and coordination and expanded range of motion.
5. Patients may benefit from a feeding assistant providing verbal cues or demonstrating eating behavior with fingers.
6. Foods offered should be nutrient dense and should be good sources of fiber.
7. Pacing and restlessness in some individuals may elevate energy expenditure beyond that estimated by conventional calculation. Finger foods that can be consumed on the go will help some patients increase their energy intake.
8. Adequate fluid intake should be encouraged. Ample opportunities to drink liquids should be provided.
9. Patients on consistency altered diets will need further modifications to some of the suggested foods listed in the Tables 12.1 and 12.2.

Table 12.1 Finger Food

Food for the Day	Recommended
Vegetables 1–4 cups	Bite-size cooked vegetables, baked or steamed potatoes, cherry tomatoes, vegetable juice served in a mug
Fruits 1–2.5 cups	Cut-up fresh fruits, grapes, drained chunk canned fruits, dried fruit, fruit molded in firm gelatin, fruit juice served in a mug
Grains 3–10 ounce-equivalents	Breads, buns, muffins, biscuits, crackers, pita bread, tortillas, pancakes, French toast, waffles, bite-size dry cereal without milk, cooked cereal with milk served in a mug, cereal bars, granola bars
Dairy products 2–3 cups	Any fluid milk (may be served in mugs), cheese sticks, cubes, or slices, custard pie
Protein foods 2–7 ounce-equivalents	Tender cut-up meats; roasts, meat loaf, patties, cutlets, nuggets, fish, fish sticks, sausage, luncheon meats, omelets, deviled eggs, firmly cooked eggs, burritos, foods that can easily be made into sandwiches or put on tortilla or pita bread
Oils, Solid Fats	Nuts, peanut butter, table spreads, salad dressings, mayonnaise, sweet or sour cream, creamers and toppings, applied as appropriate before serving Gravies and sauces can be served in a side dish for dipping
Added Sugars	Cookies, cake, donuts, turnovers, bar cookies, ice cream bars, ice cream sandwiches, finger gelatin, pudding served in ice cream cone
Soups	Strained or blended soups served in a mug
Fluids	Any (may be served in mugs)

Table 12.2 Suggested Menu Plan for Finger Food Diet

<p style="text-align: center;">Breakfast</p> <ul style="list-style-type: none"> 1 orange, divided into sections 1 hard boiled egg, firm ½c. bite-size shredded wheat 1 slice whole wheat toast, quartered 1 tsp. jelly 1 tsp. soft margarine 1 c. nonfat milk Hot beverage Sugar, pepper (optional) <p style="text-align: center;">Lunch</p> <ul style="list-style-type: none"> 2 oz. baked chicken, cubed ½c. boiled potato, cut up ½c. mixed vegetables, drained 1 oz. whole wheat roll 1 tsp. soft margarine 1 c. nonfat milk Water 	<p style="text-align: center;">Supper</p> <ul style="list-style-type: none"> Tuna salad sandwich, quartered 2 tomato slices 1 c. carrot and celery sticks 1 Tbsp. salad dressing ½c. fruit cocktail, drained 1 c. nonfat milk Water <p style="text-align: center;">Snack Ideas</p> <ul style="list-style-type: none"> ½c. melon slices 3 c. popcorn 1 oz. cheese cubes
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Tips

Serving food in large bowls instead of on plates, and offering spoons instead of forks may be helpful. The use of adaptive equipment such as plate stabilizers, plate guards, weighted utensils, rocking knives, nose cups, spouted cups, and cups or mugs with handles may be useful in certain instances.

Cutting foods such as meats, cheese, fruits, and vegetables into strips or wedges provides an easy way to grasp the foods that allows easy self-feeding. Foods cut into bite-size cubes are easy to pick up with the fingers.

An occupational therapist consultation may prove beneficial. Individuals should be assessed for the need for and ability to use adaptive equipment.

ADDITIONAL RESOURCES

Websites

Alzheimer's Association. Eating. 2005. Available at: www.alz.org.

GUIDELINES FOR INDIVIDUALS WITH DEMENTIA

Individuals with dementia are at risk for weight loss and poor nutritional intake. (1) Feeding strategies have, therefore, been integral in the care of the dementia patient. Energy and nutrient intakes can be increased in some patients with the appropriate interventions. (2,3,4,5) Caregivers need to be flexible and allow as much time as needed at the mealtime. Patients should be encouraged to do as much for themselves as possible but also provided with adequate assistance and support to be successful. Feeding assistance should be tailored to each individual. Families can offer important information about food preferences and possible feeding strategies.

The following is a nonexclusive list of feeding guidelines to consider at mealtimes to promote safe oral intake and a positive feeding environment. It is compiled from several references. (6,7,8)

1. Maintain an upright, vertical position in a chair or wheelchair with feet supported on the floor, on foot rests, or a foot stool. The patient should ideally be sitting at a 90-degree angle with the floor or may be slightly leaned forward. If the patient must be fed in bed or Geri chair, adjust the chair or bed to achieve as close to the desired vertical position as possible. Pillows are helpful for proper alignment and positioning. An upright position should be maintained for at least 30 minutes after meals to prevent reflux. Avoid tilting of the head to lower the risk of aspiration. Caregivers should sit at eye level to promote a chin tuck swallow.
2. Provide foods that stimulate appetite by their appearance, smell, and taste. Identify the food as you give it. Make positive remarks, such as “Doesn’t this look good?!” or “That smells good!” Enhance the flavor of food with condiments and seasonings for sensory stimulation and to improve food acceptance. Try offering one food item and beverage at a time; the patient may benefit from a reduction in decision making. Try alternating warm and cold foods when feeding. Regularly provide the patient’s favorite foods. Fortified, nutrient-dense foods and supplements may be provided as appropriate.
3. Foster independence by providing finger foods, cueing, providing appropriate assistive devices (divided plate, large handle utensils, foods served in separate bowls), or practicing the hand-over-hand technique. Feeding a patient the first few bites of food may “prime” self-feeding behavior, after which the spoon can be handed to the patient.
4. Focus on the patient to keep him or her on task. Avoid inappropriate conversation and arguing. Be accepting and patient. Reality orientation may be counterproductive with advanced dementia. Limit distractions and control noise through efficient meal service, serving only one or two foods at a time on plain (no patterns) dishes of bright colors to help the patient

distinguish between the food and the dish. Play only soft music or no music at all. Use the simplest of table settings. Serving smaller groups of patients at a time may help achieve a calmer dining room atmosphere. A consistent seating arrangement can provide familiarity and lessen anxiety. Eating with a group at a table can keep the patient more focused.

5. Observe and report signs of chewing and swallowing difficulties (i.e., coughing, throat clearing, gurgling, abnormal rate of eating, excessive chewing or no chewing at all, pocketing food, spilling food/liquids from the mouth, and recurring pneumonia). These may require changes in food texture or thickened liquids. Foods with combination textures—such as chunky soups or dry cereal with milk—and foods that are crumbly and fall apart easily, such as corn, peas, and rice, are the most difficult to form into a bolus and swallow safely. Offer small bites and sips, alternate liquids and solids to promote a safe swallow. Be sure food has been completely swallowed before offering a beverage. Straws should not be used unless approved by the speech or occupational therapist. For some patients, the use of a straw forcefully propels the liquid to the back of the throat before the normal swallow reflex is triggered.
6. Do not feed with a syringe. Syringe feeding rapidly forces liquefied food to the back of the throat and increases the risk of aspiration. In addition, syringe feeding does not promote dignity for the individual.
7. Allow plenty of time to eat. If a meal cannot be consumed in 30 to 45 minutes, consider serving smaller meals and adding nutritious snacks. Longer mealtimes may tire the patient leading to inadequate intake. Eating at nontraditional times and places may be necessary to maintain good nutrition and hydration.

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1. Thomas DR, Kamel HK, Morley JE. Nutritional deficiencies in long-term care. Part II: management of protein energy malnutrition and dehydration. *Supplement to Annals of Long Term Care*. 2004;12:2, 8–14.
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NUTRITION FOR INDIVIDUALS WITH DEVELOPMENTAL DISABILITIES

Developmental disabilities include varied diagnoses, including congenital anomalies, neuromuscular dysfunction, genetic or metabolic syndromes, chronic health conditions, and behavioral disorders. Baer and other have developed a table for types of nutrition problems often seen with individual disorders. (1)

Individualization

People with the same diagnosis may have different dietary needs. Standard nutrition guidelines (i.e., age, gender specific) can be applied and individualized to meet nutritional needs. (2)

Energy Requirements

Calorie requirements for those with developmental disabilities may be as much as 25–50% lower than the general population. (3) Conditions that cause short stature, limited activity or mobility require energy needs be based on height (kcal/cm) rather than weight (kcal/kg). (3,4) Special guidelines for normal growth and weight maintenance may apply to specific diagnoses. (6) General guidelines range from 12–15 calories per centimeter of body height, and 10 calories or less per centimeter of body height is required to promote weight loss. (7) Documenting and monitoring weight status is important to further determine individual calorie needs. Some specialized growth charts for children with disabilities are available to use in assessing growth and weight gain. Syndrome associations usually provide access to growth charts (i.e. National Down Syndrome Society). (5)

Macronutrient Composition

In most cases carbohydrate, protein, and fat distribution does not differ from recommendations made for the general population. In specific metabolic disorders, special low-protein or low-fat diets are required. (2)

Vitamins/Minerals

Diagnosis-specific conditions may require prescribed vitamin or mineral supplementation (i.e., cystic fibrosis, congenital heart disorders and rheumatoid arthritis). For individuals on long-term medications (seizure drugs) or for those

that have eliminated entire food groups (allergies, autism), supplementation of vitamins and minerals may be indicated. For both macronutrients and micronutrients, Dietary Reference Intakes (DRIs) standards are used for age and sex for nutritional assessment. (2)

Feeding Problems

Feeding problems are common for individuals with neuromuscular conditions. Dysphagia (oral motor dysfunction), nasopharyngeal reflux, constipation, esophageal dysmotility, gastroesophageal reflux, and delayed gastric emptying are common causes of feeding problems. An individual with abnormal muscle movement may never progress to normal food textures, but therapy for delayed feeding skills may help improve dietary intake. Significant food refusals may be an indicator of various problems (sensory, pain, etc.) and should be evaluated by an interdisciplinary feeding team. (8,9)

Behavioral Feeding Concerns

Individuals who are not verbal may use behavior as communication. Medical causes of pain should be resolved (e.g., gastroesophageal reflux) prior to psychological intervention. Behavior problems can also occur when caregiver expectations for self-feeding or diet textures are higher than cognitive and motor abilities of the individual. (5)

Enteral Feedings

Dependency upon formula or high calorie liquid supplements—either in combination with oral food intake or as the primary source of nutrition—is common. With low calorie needs, standard formulas may require protein or micronutrient supplementation. Additional water may be necessary to maintain adequate fluid volume. Fiber-containing formulas promote good bowel management in individuals with neuromuscular conditions. (10)

Alternative Nutrition

Families or individuals with disabilities and chronic health conditions are vulnerable to nutrition misinformation and unsubstantiated health claims. Nutrition assessment should evaluate the special dietary regimens and supplements along with possible drug or nutrient interactions. (10,11).

Physical Activity

People with disabilities are less likely to engage in regular physical activity increasing their risk for additional chronic health conditions. Nonambulatory conditions increase risk of obesity, pressure sores, osteoporosis, and cardiovascular, metabolic syndrome, and respiratory problems. Daily exercise and physical activity is recommended almost every day to improve physical and functional fitness of an individual. (12)

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Additional Resources

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Position of the American Dietetic Association: Providing nutrition services for children with special health needs. *J Am Diet Assoc.* 2010;110:296–307.

Washington State Department of Health. *Nutrition Interventions for Children with Special Health Care Needs*. Publication No. 961–158, March 2001.

Websites

Iowa's Title V Program for CSHCN: www.uihealthcare.com/depts/state/chsc/index.html

Iowa's University Center for Excellence on Disabilities: www.healthcare.uiowa.edu/cdd/multiple/iuce/ucedd.asp

National Center for Physical Activity and Disability: www.ncpad.org/index.php
The National Down Syndrome Society: www.ndss.org/content.cfm
The Surgeon General's Call to Action to Improve the Health and Wellness of
Persons with Disabilities: www.surgeongeneral.gov/library/disabilities/

Study Guide Questions

- A. List two foods in each food group that would be appropriate for a Finger Food Diet.**
- B. Describe in detail six guidelines for feeding individuals with dementia.**
- C. List five types of adaptive equipment that may be utilized to maintain a patient's independence in dining.**
- D. Discussion question: In observing dining assistance for residents with dementia, how can the dining atmosphere be enhanced to encourage independence in dining and promotion of oral intake?**

Study Guide Suggested Responses can be found in Appendix 18.

Appendices

Appendix 1 Dietary Reference Intakes (DRIs): Recommended Intakes for Individuals, Vitamins

Food and Nutrition Board, Institute of Medicine, National Academies

Life Stage Group	Vitamin A (µg/d) ^a	Vitamin C (mg/d)	Vitamin D (µg/d) ^{b,c}	Vitamin E (mg/d) ^d	Vitamin K (µg/d)	Thiamin (mg/d)	Riboflavin (mg/d)	Niacin (mg/d) ^e	Vitamin B ₆ (mg/d)	Folate (µg/d) ^f	Vitamin B ₁₂ (µg/d)	Pantothenic Acid (mg/d)	Biotin (µg/d)	Choline (mg/d) ^g
Infants														
0 to 6 mo	400*	40*	15	4*	2.0*	0.2*	0.3*	2*	0.1*	65*	0.4*	1.7*	5*	125*
6 to 12 mo	500*	50*	15	5*	2.5*	0.3*	0.4*	4*	0.3*	80*	0.5*	1.8*	6*	150*
Children														
1–3y	300	15	15	6	30*	0.5	0.5	6	0.5	150	0.9	2*	8*	200*
4–8y	400	25	15	7	55*	0.6	0.6	8	0.6	200	1.2	3*	12*	250*
Males														
9–13y	600	45	15	11	60*	0.9	0.9	12	1.0	300	1.8	4*	20*	375*
14–18y	900	75	15	15	75*	1.2	1.3	16	1.3	400	2.4	5*	25*	550*
19–30y	900	90	15	15	120*	1.2	1.3	16	1.3	400	2.4	5*	30*	550*
31–50y	900	90	15	15	120*	1.2	1.3	16	1.3	400	2.4	5*	30*	550*
51–70y	900	90	15	15	120*	1.2	1.3	16	1.7	400	2.4^h	5*	30*	550*
>70y	900	90	20	15	120*	1.2	1.3	16	1.7	400	2.4^h	5*	30*	550*
Females														
9–13y	600	45	15	11	60*	0.9	0.9	12	1.0	300	1.8	4*	20*	375*
14–18y	700	65	15	15	75*	1.0	1.0	14	1.2	400ⁱ	2.4	5*	25*	400*
19–30y	700	75	15	15	90*	1.1	1.1	14	1.3	400ⁱ	2.4	5*	30*	425*
31–50y	700	75	15	15	90*	1.1	1.1	14	1.3	400ⁱ	2.4	5*	30*	425*
51–70y	700	75	15	15	90*	1.1	1.1	14	1.5	400	2.4^h	5*	30*	425*
>70y	700	75	20	15	90*	1.1	1.1	14	1.5	400	2.4^h	5*	30*	425*
Pregnancy														
14–18y	750	80	15	15	75*	1.4	1.4	18	1.9	600^j	2.6	6*	30*	450*
19–30y	770	85	15	15	90*	1.4	1.4	18	1.9	600^j	2.6	6*	30*	450*
31–50y	770	85	15	15	90*	1.4	1.4	18	1.9	600^j	2.6	6*	30*	450*

Lactation														
14–18y	1,200	115	15	19	75*	1.4	1.6	17	2.0	500	2.8	7*	35*	550*
19–30y	1,300	120	15	19	90*	1.4	1.6	17	2.0	500	2.8	7*	35*	550*
31–50y	1,300	120	15	19	90*	1.4	1.6	17	2.0	500	2.8	7*	35*	550*

Note: This table (taken from the DR! reports, see www.nap.edu) presents Recommended Dietary Allowances (RDAs) in **bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). An RDA is the average daily dietary intake level; sufficient to meet the nutrient requirements of nearly all (97–98%) healthy individuals in a group. It is calculated from an Estimated Average Requirement (EAR). If sufficient scientific evidence is not available to establish an EAR, and thus calculate an RDA, an AI is usually developed. For healthy breastfed infants, an AI is the mean intake. The AI for other life stage and gender groups is believed to cover the needs of all healthy individuals in the groups, but lack of data or uncertainty in the data prevent being able to specify with confidence the percentage of individuals covered by this intake.

^aAs retinol activity equivalents (RAEs). 1 RAE, 1 µg retinol, 12 µg β-carotene, 24 µg α-carotene, or 24 µg β-cryptoxanthin. The RAE for dietary provitamin A carotenoids is twofold greater than retinol equivalents (RE), whereas the RAE for preformed vitamin A is the same as RE.

^bAs cholecalciferol. 1 µg cholecalciferol = 40 IU vitamin D.

^cUnder the assumption of minimal sunlight.

^dAs α-tocopherol. α-Tocopherol includes RRR-α-tocopherol, the only form of α-tocopherol that occurs naturally in foods, and the 2R-stereoisomeric forms of α-tocopherol (RRR-, RSR-, RRS-, and RSS-α-tocopherol) that occur in fortified foods and supplements. It does not include the 2S-stereoisomeric forms of α-tocopherol (SRR-, SSR-, SRS-, and SSS-α-tocopherol), also found in fortified foods and supplements.

^eAs niacin equivalents (NE). 1 mg of niacin = 60 mg of tryptophan; 0–6 months = preformed niacin (not NE).

^fAs dietary folate equivalents (DFE). 1 DFE = 1 µg food folate = 0.6 µg of folic acid from fortified food or as a supplement consumed with food = 0.5 µg of a supplement taken on an empty stomach.

^gAlthough AIs have been set for choline, there are few data to assess whether a dietary supply of choline is needed at all stages of the life cycle, and it may be that the choline requirement can be met by endogenous synthesis at some of these stages.

^hBecause 10 to 30% of older people may malabsorb food-bound B₁₂, it is advisable for those older than 50 years to meet their RDA mainly by consuming foods fortified with B₁₂ or a supplement containing B₁₂.

ⁱIn view of evidence linking folate intake with neural tube defects in the fetus, it is recommended that all women capable of becoming pregnant consume 400 µg from supplements or fortified foods in addition to intake of food folate from a varied diet.

^jIt is assumed that women will continue consuming 400 µg from supplements or fortified food until their pregnancy is confirmed and they enter prenatal care, which ordinarily occurs after the end of the periconceptional period the critical time for formation of the neural tube.

Sources: *Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride* (1997); *Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B₆, Folate, Vitamin B₁₂, Pantothenic Acid, Biotin, and Choline* (1998); *Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids* (2000); *Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc* (2001); *Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate* (2005); and *Dietary Reference Intakes for Calcium and Vitamin D* (2011). These reports may be accessed via www.nap.edu.

Appendix 2 Dietary Reference Intakes (DRIs): Recommended Intakes for Individuals, Elements

Food and Nutrition Board, Institute of Medicine, National Academies

Life Stage Group	Calcium (mg/d)	Chromium (µg/d)	Copper (µg/d)	Fluoride (mg/d)	Iodine (µg/d)	Iron (mg/d)	Magnesium (mg/d)	Manganese (mg/d)	Molybdenum (µg/d)	Phosphorus (mg/d)	Selenium (µg/d)	Zinc (mg/d)	Potassium (g/d)	Sodium (g/d)	Chloride (g/d)
Infants															
0 to 6 mo	200*	0.2*	200*	0.01*	110*	0.27*	30*	0.003*	2*	100*	15*	2*	0.4*	0.12*	0.18*
6 to 12 mo	260*	5.5*	220*	0.5*	130*	11	75*	0.6*	3*	275*	20*	3	0.7*	0.37*	0.57*
Children															
1–3y	700	11*	340	0.7*	90	7	80	1.2*	17	460	20	3	3.0*	1.0*	1.5*
4–8y	1,000	15*	440	1*	90	10	130	1.5*	22	500	30	5	3.8*	1.2*	1.9*
Males															
9–13y	1,300	25*	700	2*	120	8	240	1.9*	34	1,250	40	8	4.5*	1.5*	2.3*
14–18y	1,300	35*	890	3*	150	11	410	2.2*	43	1,250	55	11	4.7*	1.5*	2.3*
19–30y	1,000	35*	900	4*	150	8	400	2.3*	45	700	55	11	4.7*	1.5*	2.3*
31–50y	1,000	35*	900	4*	150	8	420	2.3*	45	700	55	11	4.7*	1.5*	2.3*
51–70y	1,000	30*	900	4*	150	8	420	2.3*	45	700	55	11	4.7*	1.3*	2.0*
> 70y	1,200	30*	900	4*	150	8	420	2.3*	45	700	55	11	4.7*	1.2*	1.8*
Females															
9–13y	1,300	21*	700	2*	120	8	240	1.6*	34	1,250	40	8	4.5*	1.5*	2.3*
14–18y	1,300	24*	890	3*	150	15	360	1.6*	43	1,250	55	9	4.7*	1.5*	2.3*

19–30y	1,000	25*	900	3*	150	18	310	1.8*	45	700	55	8	4.7*	1.5*	2.3*
31–50y	1,000	25*	900	3*	150	18	320	1.8*	45	700	55	8	4.7*	1.5*	2.3*
51–70y	1,200	20*	900	3*	150	8	320	1.8*	45	700	55	8	4.7*	1.3*	2.0*
> 70y	1,200	20*	900	3*	150	8	320	1.8*	45	700	55	8	4.7*	1.2*	1.8*
Pregnancy															
14–18y	1,300	29*	1,000	3*	220	27	400	2.0*	50	1,250	60	12	4.7*	1.5*	2.3*
19–30y	1,000	30*	1,000	3*	220	27	350	2.0*	50	700	60	11	4.7*	1.5*	2.3*
31–50y	1,000	30*	1,000	3*	220	27	360	2.0*	50	700	60	11	4.7*	1.5*	2.3*
Lactation															
14–18y	1,300	44*	1,300	3*	290	10	360	2.6*	50	1,250	70	13	5.1*	1.5*	2.3*
19–30y	1,000	45*	1,300	3*	290	9	310	2.6*	50	700	70	12	5.1*	1.5*	2.3*
31–50y	1,000	45*	1,300	3*	290	9	320	2.6*	50	700	70	12	5.1*	1.5*	2.3*

NOTE: This table (taken from the DR! reports, see www.nap.edu) presents Recommended Dietary Allowances (RDAs) in bold type and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). An RDA is the average daily dietary intake level; sufficient to meet the nutrient requirements of nearly all (97–98%) healthy individuals in a group. It is calculated from an Estimated Average Requirement (EAR). If sufficient scientific evidence is not available to establish an EAR, and thus calculate an RDA, an AI is usually developed. For healthy breastfed infants, an AI is the mean intake. The AI for other life stage and gender groups is believed to cover the needs of all healthy individuals in the groups, but lack of data or uncertainty in the data prevent being able to specify with confidence the percentage of individuals covered by this intake.

SOURCES: *Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride* (1997); *Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B₆, Folate, Vitamin B₁₂, Pantothenic Acid, Biotin, and Choline* (1998); *Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids* (2000); and *Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc* (2001); *Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate* (2005); and *Dietary Reference Intakes for Calcium and Vitamin D* (2011). These reports may be accessed via www.nap.edu.

Appendix 3

Dietary Reference Intakes (DRIs): Tolerable Upper Intake Levels (UL), Vitamins

Food and Nutrition Board, Institute of Medicine, National Academies:

Reprinted with permission from <http://www.iom.edu/Activities/Nutrition/SummaryDRIs/DRI-Tables.aspx>, January 2011, by the National Academy of Sciences, Courtesy of the National Academies Press, Washington, D.C.

Life Stage Group	Vitamin A (µg/d) ^a	Vitamin C (mg/d)	Vitamin O (µg/d)	Vitamin E (mg/d) ^{b,c}	Vitamin K	Thiamin	Riavin	Niacin (mg/d) ^c	Vitamin B ₆ (mg/d)	Folate (µg/d) ^c	Vitamin B ₁₂	Pantothenic Acid	Biotin	Choline (g/d)	Carotenoids ^d
Infants															
0 to 6 mo	600	ND ^e	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6 to 12 mo	600	ND	38	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Children															
1–3y	600	400	63	200	ND	ND	ND	10	30	300	ND	ND	ND	1.0	ND
4–8y	900	650	75	300	ND	ND	ND	15	40	400	ND	ND	ND	1.0	ND
Males															
9–13y	1,700	1,200	100	600	ND	ND	ND	20	60	600	ND	ND	ND	2.0	ND
14–18y	2,800	1,800	100	800	ND	ND	ND	30	80	800	ND	ND	ND	3.0	ND
19–30y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND
31–50y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND
51–70y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND
>70y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND
Females															
9–13y	1,700	1,200	100	600	ND	ND	ND	20	60	600	ND	ND	ND	2.0	ND
14–18y	2,800	1,800	100	800	ND	ND	ND	30	80	800	ND	ND	ND	3.0	ND
19–30y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND
31–50y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND
51–70y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND
>70y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND

Pregnancy															
14–18y	2,800	1,800	100	800	ND	ND	ND	30	80	800	ND	ND	ND	3.0	ND
19–30y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND
31–50y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND
Lactation															
14–18y	2,800	1,800	100	800	ND	ND	ND	30	80	800	ND	ND	ND	3.0	ND
19–30y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND
31–50y	3,000	2,000	100	1,000	ND	ND	ND	35	100	1,000	ND	ND	ND	3.5	ND

NOTE: A Tolerable Upper Intake Level (UL) is the highest level of daily nutrient intake that is likely to pose no risk of adverse health effects to almost all individuals in the general population. Unless otherwise specified, the UL represents total intake from food, water, and supplements. Due to a lack of suitable data, ULs could not be established for vitamin K, thiamin, riboflavin, vitamin B₁₂, pantothenic acid, biotin, and carotenoids. In the absence of a UL, extra caution may be warranted in consuming levels above recommended intakes. Members of the general population should be advised not to routinely exceed the UL. The UL is not meant to apply to individuals who are treated with the nutrient under medical supervision or to individuals with predisposing conditions that modify their sensitivity to the nutrient.

^aAs preformed vitamin A only.

^bAs α -tocopherol; applies to any form of supplemental α -tocopherol.

^cThe ULs for vitamin E, niacin, and folate apply to synthetic forms obtained from supplements, fortified foods, or a combination of the two.

^d β -carotene supplements are advised only to serve as a provitamin A source for individuals at risk of vitamin A deficiency.

^eND, Not determinable due to lack of data of adverse effects in this age group and concern with regard to lack of ability to handle excess amounts. Source of intake should be from food only to prevent high levels M intake.

SOURCES: *Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride* (1997); *Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B₆, Folate, Vitamin B₁₂, Pantothenic Acid, Biotin, and Choline* (1998); *Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids* (2000); *Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc* (2001); and *Dietary Reference Intakes for Calcium and Vitamin D* (2011). These reports may be accessed via www.nao.edu.

Appendix 4 Dietary Reference Intakes (DRIs): Tolerable Upper Intake Levels (UL), Elements

Food and Nutrition Board, Institute of Medicine, National Academies:

Reprinted with permission from <http://www.iom.edu/Activities/Nutrition/SummaryDRIs/DRI-Tables.aspx>, January 2011, by the National Academy of Sciences, Courtesy of the National Academies Press, Washington, D.C.

Life Stage Group	Arsenic	Boron	Calcium	Chromium	Copper	Fluoride	Iodine	Iron	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Selenium	Silicon ^c	Vanadium	Zinc	Sodium	Chloride
	(mg/d)	(mg/d)	(mg/d)		(µg/d)	(mg/d)	(µg/d)	(mg/d)	(mg/d) ^b	(mg/d)	(µg/d)	(mg/d)	(g/d)	(µg/d)		(mg/d) ^d	(mg/d)	(g/d)	(g/d)
Infants																			
0 to 6 mo	ND ^e	ND	1,000	ND	ND	0.7	ND	40	ND	ND	ND	ND	ND	45	ND	ND	4	ND	ND
6 to 12 mo	ND	ND	1,000	ND	ND	0.9	ND	40	ND	ND	ND	ND	ND	60	ND	ND	5	ND	ND
Children																			
1–3y	ND	3	2,500	ND	1,000	1.3	200	40	65	2	300	0.2	3	90	ND	ND	7	1.5	2.3
4–8y	ND	6	2,500	ND	3,000	2.2	300	40	110	3	600	0.3	3	150	ND	ND	12	1.9	2.9
Males																			
9–13y	ND	11	3,000	ND	5,000	10	600	40	350	6	1,100	0.6	4	280	ND	ND	23	2.2	3.4
14–18y	ND	17	3,000	ND	8,000	10	900	45	350	9	1,700	1.0	4	400	ND	ND	34	2.3	3.6
19–30y	ND	20	2,500	ND	10,000	10	1,100	45	350	11	2,000	1.0	4	400	ND	1.8	40	2.3	3.6
31–50y	ND	20	2,500	ND	10,000	10	1,100	45	350	11	2,000	1.0	4	400	ND	1.8	40	2.3	3.6
51–70y	ND	20	2,000	ND	10,000	10	1,100	45	350	11	2,000	1.0	4	400	ND	1.8	40	2.3	3.6
>70y	ND	20	2,000	ND	10,000	10	1,100	45	350	11	2,000	1.0	3	400	ND	1.8	40	2.3	3.6
Females																			
9–13y	ND	11	3,000	ND	5,000	10	600	40	350	6	1,100	0.6	4	280	ND	ND	23	2.2	3.4
14–18y	ND	17	3,000	ND	8,000	10	900	45	350	9	1,700	1.0	4	400	ND	ND	34	2.3	3.6
19–30y	ND	20	2,500	ND	10,000	10	1,100	45	350	11	2,000	1.0	4	400	ND	1.8	40	2.3	3.6
31–50y	ND	20	2,500	ND	10,000	10	1,100	45	350	11	2,000	1.0	4	400	ND	1.8	40	2.3	3.6
51–70y	ND	20	2,000	ND	10,000	10	1,100	45	350	11	2,000	1.0	4	400	ND	1.8	40	2.3	3.6
>70y	ND	20	2,000	ND	10,000	10	1,100	45	350	11	2,000	1.0	3	400	ND	1.8	40	2.3	3.6

Pregnancy																			
14–18y	ND	17	3,000	ND	8,000	10	900	45	350	9	1,700	1.0	3.5	400	ND	ND	34	2.3	3.6
19–30y	ND	20	2,500	ND	10,000	10	1,100	45	350	11	2,000	1.0	3.5	400	ND	ND	40	2.3	3.6
31–50y	ND	20	2,500	ND	10,000	10	1,100	45	350	11	2,000	1.0	3.5	400	ND	ND	40	2.3	3.6
Lactation																			
14–18y	ND	17	3,000	ND	8,000	10	900	45	350	9	1,700	1.0	4	400	ND	ND	34	2.3	3.6
19–30y	ND	20	2,500	ND	10,000	10	1,100	45	350	11	2,000	1.0	4	400	ND	ND	40	2.3	3.6
31–50y	ND	20	2,500	ND	10,000	10	1,100	45	350	11	2,000	1.0	4	400	ND	ND	40	2.3	3.6

NOTE: A Tolerable Upper Intake Level (UL) is the highest level of daily nutrient intake that is likely to pose no risk of adverse health effects to almost all individuals in the general population. Unless otherwise specified, the UL represents total intake from food, water, and supplements. Due to a lack of suitable data, ULs could not be established for vitamin K, thiamin, riboflavin, vitamin B₁₂, pantothenic acid, biotin, and carotenoids. In the absence of a UL, extra caution may be warranted in consuming levels above recommended intakes. Members of the general population should be advised not to routinely exceed the UL. The UL is not meant to apply to individuals who are treated with the nutrient under medical supervision or to individuals with predisposing conditions that modify their sensitivity to the nutrient.

^aAlthough the UL was not determined for arsenic, there is no justification for adding arsenic to food or supplements.

^bThe ULs for magnesium represent intake from a pharmacological agent only and do not include intake from food and water.

^cAlthough silicon has not been shown to cause adverse effects in humans, there is no justification for adding silicon to supplements.

^dAlthough vanadium in food has not been shown to cause adverse effects in humans, there is no justification for adding vanadium to food and vanadium supplements should be used with caution. The UL is based on adverse effects in laboratory animals and this data could be used to set a UL for adults but not children and adolescents.

^eND, Not determinable due to lack of data of adverse effects in this age group and concern with regard to lack of ability to handle excess amounts. Source of intake should be from food only to prevent high levels of intake.

SOURCES: *Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride* (1997); *Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B₆, Folate, Vitamin B₁₂, Pantothenic Acid, Biotin, and Choline* (1998); *Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids* (2000); *Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc* (2001); *Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate* (2005); and *Dietary Reference Intakes for Calcium and Vitamin D* (2011). These reports may be accessed via www.nap.edu.

Appendix 5

Body Mass Index

Table (kg/m²)

Body Mass Index Table (kg/m ²) or (lb/in ² X 703)															
Normal							Overweight					Obese			
BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
Height (inches)															
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180
63	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186
64	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192
65	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198
66	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204
67	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211
68	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216
69	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223
70	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229
71	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236
72	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242
73	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250
74	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256
75	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264
76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271

Source: Adapted from *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report*.

National Heart, Blood and Lung Institute, part of the National Institutes of Health and U.S. Department of Health & Human Services

BMI Calculator: <http://www.nhlbisupport.com/bmi>

Body Mass Index Table (kg/m²) or (lb/in² X 703)

Obese						Extreme Obesity														
34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Body Weight (pounds)																				
162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258
168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267
174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276
180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285
186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295
191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304
197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314
204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334
217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344
223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354
230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365
236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376
243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386
250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397
257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408
264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420
272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431
279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443

Appendix 6

Fiber Content of Selected Foods

Food Description	Content per Standard Food Portion*
Beans (navy, pinto, black, kidney, lima, white), cooked, ½ cup	6.3–9.6
Fortified ready-to-eat cereals (various)	0.2–8.8
Peas, split, cooked, ½ cup	8.2
Beans, baked, canned, plain, ½ cup	5.2
Soybeans, mature cooked, ½ cup	5.2
Peas, green, frozen, cooked, ½ cup	4.4
Potato, baked, flesh and skin, 1 potato	4.4
Vegetables, mixed, frozen, cooked, ½ cup	4.0
Raspberries, raw, ½ cup	4.0
Pumpkin, canned, ½ cup	3.6
Spinach, frozen, cooked, ½ cup	3.5
Almonds, 1 ounce	3.5
Sauerkraut, canned, ½ cup	3.4
Spaghetti, whole-wheat, cooked, ½ cup	3.1
Pears, raw, 1 pear	2.6

*Fiber, total dietary (g) content of selected foods sources per standard food portion.
 Source: U.S. Department of Agriculture, Agricultural Research Service. 2010. USDA National Nutrient Database for Standard Reference, Release 23. For a comprehensive list of selected foods containing fiber, refer to Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnrc/ndl>

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Appendix 7

Calcium Content of Selected Foods

Food Description	Content per Standard Food Portion*
Fortified ready-to-eat cereals (various)	250–1,000
Cheese, ricotta, part skim milk, ½ cup	335
Yogurt, plain, low-fat, 8-oz container	415
Yogurt, fruit, low-fat, 8-oz container	345
Cheese, mozzarella, part skin milk, 1 ½ ounces	311
Cheese, cheddar, 1 ½ ounces	306
Milk, nonfat, 1 cup	299
Milk, whole, 1 cup	276
Milk, chocolate, reduced fat, 1 cup	273
Tofu, firm, prepared with calcium sulfate and magnesium chloride, ½ cup	253
Orange juice, calcium fortified, ½ cup	250
Cheese, cottage, lowfat, 2% milkfat, 1 cup	206
Fish, salmon, pink, canned, solids with bond and liquid, 3 ounces	181
Collards, frozen, cooked, ½ cup	179
Spinach, frozen, cooked, ½ cup	145

*Calcium, Ca (mg) Content of Selected Foods Sources per Standard Food Portion
 Source: U.S. Department of Agriculture, Agricultural Research Service. 2010. USDA National Nutrient Database for Standard Reference, Release 23. For a comprehensive list of selected foods containing calcium, refer to Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnrc/ndl>

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Appendix 8

Iron Content of Selected Foods

Food Description	Content per Standard Food Portion*
Fortified ready-to-eat cereals (various), $\frac{3}{4}$ –1 cup	9.05–0.175
Beans, baked, canned, with pork and tomato sauce, $\frac{1}{2}$ cup	4.10
Lentils, cooked, $\frac{1}{2}$ cup	3.29
Beans (white, kidney, lima, black, pinto), cooked, $\frac{1}{2}$ cup	3.92–1.79
Beef, ground, 85% lean meat, cooked, 2 ounces	1.50
Pork, shoulder, arm picnic, cooked, 2 ounces	1.50
Nuts, almonds, 1 ounce (24 nuts)	1.05
Egg, whole, cooked, scrambled, 1 large	0.80
Chicken, canned, no broth, 2 ounces	0.65
Fish, tuna, white, canned in water, 2 ounces	0.54

*Iron, Fe (mg) Content of Selected Foods Sources per Standard Food Portion.

Source: U.S. Department of Agriculture, Agricultural Research Service. 2010. USDA National Nutrient Database for Standard Reference, Release 23. For a comprehensive list of selected foods containing iron, refer to Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnrc/ndl>

Appendix 9

Folate Content of Selected Foods

Food Description	Content per Standard Food Portion
Fortified ready-to-eat cereals (various), $\frac{3}{4}$ –1 cup	710–161
Pretzels, hard, plain, salted, 10 pretzels	172
Lentils, cooked, $\frac{1}{2}$ cup	179
Beans (pinto, black, kidney), $\frac{1}{2}$ cup	147–115
Spinach, frozen, cooked, $\frac{1}{2}$ cup	115
Noodles, egg, cooked, enriched, $\frac{1}{2}$ cup	111
Soybeans, green, cooked, $\frac{1}{2}$ cup	100
Broccoli, cooked, $\frac{1}{2}$ cup	84
Macaroni, cooked, enriched, $\frac{1}{2}$ cup	84
Rice, white, long-grain, prepared, $\frac{1}{2}$ cup	98
Orange juice, unsweetened, diluted, $\frac{1}{2}$ cup	55
Bread, wheat, 1 slice	25

*Folate, DFE ($\mu\text{g}/\text{d}$) Content of Selected Foods Sources per Standard Food Portion
 Source: U.S. Department of Agriculture, Agricultural Research Service. 2010. USDA National Nutrient Database for Standard Reference, Release 23. For a comprehensive list of selected foods containing folate, refer to Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnrc/ndl>

Appendix 10

Magnesium Content of Selected Foods

Food Description	Content per Standard Food Portion*
Seeds, pumpkin and squash seed kernels, roasted, 1 oz (142 seeds)	156
Muffin, oat bran, 1 muffin	89
Spinach, frozen, cooked, ½ cup	78
Nuts, almonds, 1 ounce (24 nuts)	76
Soybeans, mature cooked, ½ cup	74
Beans, white, black, lima, navy, pinto, cooked, ½ cup	67–43
Soymilk, original, unfortified, 1 cup	61
Potato, baked, flesh and skin, 1 potato	57
Yogurt, plain, skim milk, 8-oz container	43
Rice, brown, long-grain, cooked, ½ cup	42

*Magnesium, Mg (mg) Content of Selected Foods Sources per Standard Food Portion.
 Source: U.S. Department of Agriculture, Agricultural Research Service. 2010. USDA National Nutrient Database for Standard Reference, Release 23. For a comprehensive list of selected foods containing magnesium, refer to Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnr/ndl>

Appendix 11

Potassium Content of Selected Foods

Food Description	Content per Standard Food Portion
Potato, baked, flesh and skin, 1 potato	1081
Tomato products, canned, paste, ¼ cup	664
Yogurt, plain, skim milk, 8-oz container	579
Tomato products, canned, puree, ½ cup	549
Beans (lima, kidney, navy, kidney, black), ½ cup	477–305
Banana, raw, 1 banana	422
Sweet potato, canned, vacuum pack, ½ cup	398
Milk, skim, 1 cup	382
Prune juice, ½ cup	354
Beans, baked, canned, with pork and sweet sauce, ½ cup	326
Tuna, yellowfin, cooked, 2 ounces	323
Potatoes, mashed, home-prepared, whole milk added, ½ cup	311
Spinach, frozen, cooked, ½ cup	287
Tomato juice, canned, ½ cup	278
Beets, cooked, ½ cup	260
Orange juice, frozen concentrate, unsweetened, diluted, ½ cup	237

*Potassium, K (mg) Content of Selected Foods Sources per Standard Food Portion.

Source: U.S. Department of Agriculture, Agricultural Research Service. 2010. USDA National Nutrient Database for Standard Reference, Release 23. For a comprehensive list of selected foods containing potassium, refer to Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnrc/ndl>

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Appendix 12

Vitamin A Content of Selected Foods

Food Description	Content per Standard Food Portion*
Braunschweiger (a liver sausage), pork, 2 slices	2393
Sweet potato, cooked, baked in skin, 1 potato	1403
Carrots, cooked, ½ cup	665
Spinach, frozen, cooked, ½ cup	573
Collards, frozen, cooked, ½ cup	489
Kale, frozen, cooked, ½ cup	478
Vegetables, mixed, canned, ½ cup	475
Carrots, raw, ½ cup	460
Cereals, oats, instant, fortified, plain, prepared with water, 1 packet	329
Squash, winter, butternut, frozen, cooked, ½ cup	268
Melons, cantaloupe, raw, ½ cup	135

*Vitamin A, RAE (µg) Content of Selected Foods Sources per Standard Food Portion.
 Source: U.S. Department of Agriculture, Agricultural Research Service. 2010. USDA National Nutrient Database for Standard Reference, Release 23. For a comprehensive list of selected foods containing vitamin A, refer to Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnrc/ndl>

Appendix 13

Vitamin B₁₂ Content of Selected Foods

Food Description	Content per Standard Food Portion*
Braunschweiger (a liver sausage), pork, 2 slices	1.39
Soup, clam chowder, New England, canned, prepared with equal volume low-fat milk, 6 ounces	9.00
Fish, salmon, sockeye, cooked, dry heat, ½ fillet	8.99
Crustaceans, crab, Alaska king, cooked, moist heat, 2 ounces	6.52
Cereals ready-to-eat, assorted brands and varieties, ¾ cup–1 1/3 cup	0.00–6.05
Beef, ground, 85% lean meat/15% fat, patty, cooked, 2 ounces	1.49
Fish, tuna, yellowfin, 2 ounces	1.33
Milk, nonfat, 1 cup	1.23
Egg, whole, cooked, hard-boiled, 1 large	0.56

*Vitamin B₁₂ (µg) Content of Selected Foods Sources per Standard Food Portion.
 Source: U.S. Department of Agriculture, Agricultural Research Service. 2010. USDA National Nutrient Database for Standard Reference, Release 23. For a comprehensive list of selected foods containing vitamin B₁₂, refer to Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnrc/ndl>

Appendix 14

Vitamin C Content of Selected Foods

Food Description	Content per Standard Food Portion*
Peaches, frozen, sliced, sweetened, ½ cup	118
Peppers, sweet, red, raw, ½ cup	95
Kiwifruit, green, raw, 1 medium	71
Oranges, raw, 1 orange	70
Cranberry juice cocktail, bottled, ½ cup	54
Strawberries, frozen, sweetened, sliced, ½ cup	53
Broccoli, cooked, boiled, ½ cup	51
Strawberries, raw, 1 cup	49
Brussels sprouts, cooked, ½ cup	48
Orange juice, includes from concentrate, ½ cup	42
Pineapple, raw, all varieties, ½ cup	37
Sweet potato, canned, vacuum pack, ½ cup	34

Vitamin C, total ascorbic acid (mg) Content of Selected Foods Sources per Standard Food Portion

Nutrient values from Agricultural Research Service (ARS) Nutrient Database for Standard Reference, Release 22. For a comprehensive list of selected foods containing vitamin C, refer to website <http://www.nal.usda.gov/fnic/foodcomp/search/>

Appendix 15

Vitamin D Content of Selected Foods

Food Description	Content per Standard Food Portion*
Fish, salmon, pink, canned, solids with bone and liquid, 2 ounces	310
Fish, salmon, sockeye, cooked, dry heat, 2 ounces	298
Fish, tuna, light, canned in oil, drained solids, 2 ounces	153
Milk, whole, 3.25% milkfat, with added vitamin D, 1 cup	124
Milk, reduced fat, fluid, 2% milkfat, with added vitamin A and vitamin D, 1 cup	120
Milk, nonfat, fluid, with added vitamin A and vitamin D (fat free or skim), 1 cup	115
Fish, tuna, light, canned in water, 2 ounces	103
Cereals, ready-to-eat, assorted brands and varieties, $\frac{3}{4}$ cup–1 $\frac{1}{3}$ cup	0–104
Puddings, chocolate, dry mix, instant, prepared with 2% milk, $\frac{1}{2}$ cup	49
Egg, whole, cooked, scrambled, 1 large	44
Egg substitute, liquid, $\frac{1}{4}$ cup	41

*Vitamin D (IU) Content of Selected Foods Sources per Standard Food Portion.
 Source: U.S. Department of Agriculture, Agricultural Research Service. 2010. USDA National Nutrient Database for Standard Reference, Release 23. For a comprehensive list of selected foods containing vitamin D, refer to Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnrc/ndl>

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Appendix 16

Vitamin E Content of Selected Foods

Food Description	Content per Standard Food Portion*
Cereals ready-to-eat, assorted brands and varieties, $\frac{3}{4}$ cup–1 $\frac{1}{3}$ cup	0.004–13.50
Seeds, sunflower seed kernels, dry roasted, $\frac{1}{4}$ cup	8.35
Nuts, almonds, 1 oz (24 nuts)	7.43
Oil, safflower, salad or cooking, oleic, over 70% (primary safflower oil of commerce), 1 tbsp	4.64
Spinach, frozen, cooked, $\frac{1}{2}$ cup	3.36
Nuts, mixed nuts, dry roasted, with peanuts, 1 oz	3.10

*Vitamin E (alpha-tocopherol) (mg) Content of Selected Foods Sources per Standard Food Portion.

Source: U.S. Department of Agriculture, Agricultural Research Service. 2010. USDA National Nutrient Database for Standard Reference, Release 23. For a comprehensive list of selected foods containing vitamin E, refer to Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnrc/ndl>.

Appendix 17

Choose Your Foods: Exchange Lists for Diabetes*

THE FOOD LISTS

The following chart shows the amount of nutrients in 1 serving from each list.

Table A.1

Food List	Carbohydrate (grams)	Protein (grams)	Fat (grams)	Calories
Carbohydrates				
Starch: breads, cereals and grains, starchy vegetables, crackers, snacks, and beans, peas, and lentils	15	0–3	0–1	80
Fruits	15	—	—	60
Milk				
Fat-free, low-fat, 1%	12	8	0–3	100
Reduced-fat, 2%	12	8	5	120
Whole	12	8	8	160
Sweets, Desserts, and Other Carbohydrates	15	varies	varies	varies
Nonstarchy Vegetables	5	2	—	25

(Continued)

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Table A.1 (Continued)

Food List	Carbohydrate (grams)	Protein (grams)	Fat (grams)	Calories
Meat and Meat Substitutes				
Lean	—	7	0–3	45
Medium-fat	—	7	4–7	75
High-fat	—	7	8+	100
Plant-based proteins	varies	7	varies	varies
Fats	—	—	5	45
Alcohol	varies	—	—	100

Starch

Cereals, grains, pasta, breads, crackers, snacks, starchy vegetables, and cooked beans, peas, and lentils are starches. In general, 1 starch is:

- ½ cup of cooked cereal, grain, or starchy vegetable.
- ⅓ cup of cooked rice or pasta.
- 1 oz of a bread product, such as one slice of bread.
- ¾ oz to 1 oz of most snack foods (some snack foods may also have extra fat).

Nutrition Tips

- A choice on the **Starch** list has 15 grams of carbohydrate, 0–3 grams of protein, 0–1 grams of fat, and 80 calories.
- For maximum health benefits, eat three or more servings of whole grains each day. A serving of whole grain is about ½ cup of cooked cereal or grain, 1 slice of whole-grain bread, or 1 cup of whole-grain cold breakfast cereal.

Selection Tips

- Choose low-fat starches as often as you can.
- Starchy vegetables, baked goods, and grains prepared with fat count as 1 starch and 1 fat.
- For many starchy foods (bagels, muffins, dinner rolls, buns), a general rule of thumb is 1 oz equals 1 serving. Always check the size you eat. Because of their large size, some foods have a lot more carbohydrate (and calories) than you might think. For example, a large bagel may weight 4 oz and equal 4 carbohydrate servings.
- For specific information, read the Nutrition Facts panel on the food label.

Bread

Table A.2 Bread

Food	Serving Size
Bagel, large (about 4 oz)	¼ (1 oz)
Biscuit, 2 ½ inches across	1
Bread	
reduced-calorie	2 slices (1 ½ oz)
white, whole-grain, pumpernickel, rye, unfrosted raisin	1 slice (1 oz)
Chapatti, small, 6 inches across	1
Cornbread, 1 ¾ inch cube	1 (1 ½ oz)
English muffin	½
Hot dog bun or hamburger bun	½ (1 oz)
Naan, 8 inches by 2 inches	¼
Pancake, 4 inches across, ¼ inch thick	1
Pita, 6 inches across	½
Roll, plain, small	1 (1 oz)
Stuffing, bread	⅓ cup
Taco shell, 5 inches across	2
Tortilla, corn, 6 inches across	1
Tortilla, flour, 6 inches across	1
Tortilla, flour, 10 inches across	⅓ tortilla
Waffle, 4-inch square or 4 inches across	1

Cereals and Grains

Table A.3 Cereals and Grains

Food	Serving Size
Barley, cooked	⅓ cup
Bran, dry	
oat	¼ cup
wheat	½ cup
Bulgur (cooked)	½ cup
Cereals	
bran	½ cup
cooked (oats, oatmeal)	½ cup
puffed	1 ½ cups
shredded wheat, plain	½ cup
sugar-coated	½ cup
unsweetened, ready-to-eat	¾ cup
Couscous	⅓ cup

(Continued)

Table A.3 (Continued)

Food	Serving Size
Granola	
low-fat	¼ cup
regular	¼ cup
Grits, cooked	½ cup
Kasha	½ cup
Millet, cooked	⅓ cup
Muesli	¼ cup
Pasta, cooked	⅓ cup
Polenta, cooked	⅓ cup
Quinoa, cooked	⅓ cup
Rice, white or brown, cooked	⅓ cup
Tabbouleh (tabouli), prepared	½ cup
Wheat germ, dry	3Tbsp
Wild rice, cooked	½ cup

Starchy Vegetables

Table A.4 Starchy Vegetables

Food	Serving Size
Cassava	⅓ cup
Corn	½ cup
on cob, large	½ cob (5 oz)
Hominy, canned	¾ cup
Mixed vegetables with corn, peas, or pasta	1 cup
Parsnips	½ cup
Peas, green	½ cup
Plantain, ripe	⅓ cup
Potato	
baked with skin	¼ large (3 oz)
boiled, all kinds	½ cup or ½ medium (3 oz)
mashed, with milk and fat	½ cup
French fried (oven-baked)	1 cup (2 oz)
Pumpkin, canned, no sugar added	1 cup
Spaghetti/pasta sauce	½ cup
Squash, winter (acorn, butternut)	1 cup
Succotash	½ cup
Yam, sweet potato, plain	½ cup

Crackers and Snacks

Table A.5 Crackers and Snacks

Food	Serving Size
Animal crackers	8
Crackers	
round-butter type	6
saltine-type	6
sandwich-style, cheese or peanut butter filling	3
whole-wheat regular	2–5 (¾ oz)
whole-wheat lower fat or crisp breads	2–5 (¾ oz)
Graham cracker, 2 ½-inch square	3
Matzoh	¾ oz
Melba toast, about 2-inch by 4-inch piece	4 pieces
Oyster crackers	20
Popcorn	3 cups
with butter	3 cups
no fat added	3 cups
lower fat	3 cups
Pretzels	¾ oz
Rice cakes, 4 inches across	2
Snack chips	
fat-free or baked (tortilla, potato), baked pita chips	15–20 (¾ oz)
regular (tortilla, potato)	9–13 (¾ oz)

Beans, Peas, and Lentils

The choices on this list count as 1 starch + 1 lean meat.

Table A.6 Beans, Peas, and Lentils

Food	Serving Size
Baked beans	⅓ cup
Beans, cooked (black, garbanzo, kidney, lima, navy, pinto, white)	½ cup
Lentils, cooked (brown, green, yellow)	½ cup
Peas, cooked (black-eyed, split)	½ cup
Refried beans, canned	½ cup

Fruits

Fresh, frozen, canned, and dried fruits and fruit juices are on this list. In general, 1 fruit choice is:

- ½ cup of canned or fresh fruit or unsweetened fruit juice
- 1 small fresh fruit (4 oz)
- 2 tablespoons of dried fruit

Nutrition Tips

- A choice on the **Fruits** list has 15 grams of carbohydrate, 0 grams of protein, 0 grams of fat, and 60 calories.
- Fresh, frozen, and dried fruits are good sources of fiber. Fruit juices contain very little fiber. Choose fruits instead of juices whenever possible.
- Citrus fruits, berries, and melons are good sources of vitamin C.

Selection Tips

- Use a food scale to weigh fresh fruits. Practice builds portion skills.
- The weight listed includes skin, core, seeds, and rind.
- Read the Nutrition Facts on the food label. If 1 serving has more than 15 grams of carbohydrate, you may need to adjust the size of the serving.
- Portion sizes for canned fruits are for the fruit and a small amount of juice (1 to 2 tablespoons).
- Food labels for fruits may contain the words “no sugar added” or “unsweetened.” This means that no table sugar (sucrose) has been added; it *does not* mean the food contains no sugar.
- Fruit canned in “extra light syrup” has the same amount of carbohydrate per serving as the “no sugar added” or the “juice pack.” All canned fruits on the **Fruits** list are based on one of these three types of pack. Avoid fruit canned in heavy syrup.

Fruit

The weight listed includes skin, core, seeds, and rind.

Table A.7 Fruit

Food	Serving Size
Apple, unpeeled, small	1 (4 oz)
Apples, dried	4 rings
Applesauce, unsweetened	½ cup
Apricots	
canned	½ cup
dried	8 halves
fresh	4 whole (5 ½ oz)
Banana, extra small	1 (4 oz)
Blackberries	¾ cup
Blueberries	¾ cup
Cantaloupe, small	⅓ melon or 1 cup cubed (11 oz)
Cherries	
sweet, canned	½ cup
sweet fresh	12 (3 oz)

Table A.7 (Continued)

Food	Serving Size
Dates	3
Dried fruits (blueberries, cherries, cranberries, mixed fruit, raisins)	2 Tbsp
Figs	
dried	1 ½
fresh	1 ½ large or 2 medium (3 ½ oz)
Fruit cocktail	½ cup
Grapefruit	
large	½ (11 oz)
sections, canned	¾ cup
Grapes, small	17 (3 oz)
Honeydew melon	1 slice or 1 cup cubed (10 oz)
Kiwi	1 (3 ½ oz)
Mandarin oranges, canned	¾ cup
Mango, small	½ fruit (5 ½ oz) or ½ cup
Nectarine, small	1 (5 oz)
Orange, small	1 (6 ½ oz)
Papaya	½ fruit or 1 cup cubed (8 oz)
Peaches	
canned	½ cup
fresh, medium	1 (6 oz)
Pears	
canned	½ cup
fresh, large	½ (4 oz)
Pineapple	
canned	½ cup
fresh	¾ cup
Plums	
canned	½ cup
dried (prunes)	3
small	2 (5 oz)
Raspberries	1 cup
Strawberries	1 ¼ cup whole berries
Tangerines, small	2 (8 oz)
Watermelon	1 slice or 1 ¼ cups cubes (13 ½ oz)

Fruit Juice

Table A.8 Fruit Juice

Food	Serving Size
Apple juice/cider	½ cup
Fruit juice blends, 100% juice	⅓ cup
Grape juice	⅓ cup
Grapefruit juice	½ cup
Orange juice	½ cup
Pineapple juice	½ cup
Prune juice	⅓ cup

Milk

Different types of milk and milk products are on this list. However, two types of milk products are found in other lists:

- Cheeses are on the **Meat and Meat Substitutes** list (because they are rich in protein).
- Cream and other dairy fats are on the **Fats** list.

Milks and yogurts are grouped in three categories (fat-free/low-fat, reduced-fat, or whole) based on the amount of fat they have. The following chart shows you what 1 milk choice contains:

Table A.9

	Carbohydrate (grams)	Protein (grams)	Fat (grams)	Calories
Fat-free (skim), low-fat (1%)	12	8	0–3	100
Reduced-fat (2%)	12	8	5	120
Whole	12	8	8	160

Nutrition Tips

- Milk and yogurt are good sources of calcium and protein.
- The higher the fat content of milk and yogurt, the more saturated fat and cholesterol it has.
- Children over the age of 2 and adults should choose lower-fat varieties such as skim, 1%, or 2% milks or yogurts.

Selection Tips

- 1 cup equals 8 fluid oz or ½ pint.
- If you choose 2% or whole-milk foods, be aware of the extra fat.

Milk and Yogurts

Table A.10 Milk and Yogurts

Food	Serving Size	Count as
Fat-free or low-fat (1%)		
Milk, buttermilk, acidophilus milk, Lactaid	1 cup	1 fat-free milk
Evaporated milk	½ cup	1 fat-free milk
Yogurt, plain or flavored with an artificial sweetener	⅔ cup (6 oz)	1 fat-free milk
Reduced-fat (2%)		
Milk, acidophilus milk, kefir, Lactaid	1 cup	1 reduced-fat milk
Yogurt, plain	⅔ cup (6 oz)	1 reduced-fat milk
Whole		
Milk, buttermilk, goat's milk	1 cup	1 whole milk
Evaporated milk	½ cup	1 whole milk
Yogurt, plain	8 oz	1 whole milk

Dairy-Like Foods

Table A.11 Dairy-Like Foods

Food	Serving Size	Count as
Chocolate milk		
fat-free	1 cup	1 fat-free milk + 1 carbohydrate
whole	1 cup	1 whole milk + 1 carbohydrate
Eggnog, whole milk	½ cup	1 carbohydrate + 2 fats
Rice drink		
flavored, low-fat	1 cup	2 carbohydrates
plain, fat-free	1 cup	1 carbohydrate
Smoothies, flavored, regular	10 oz	1 fat-free milk + 2 ½ carbohydrates
Soy milk		
light	1 cup	1 carbohydrate + ½ fat
regular, plain	1 cup	1 carbohydrate + 1 fat
Yogurt		
and juice blends	1 cup	1 fat-free milk + 1 carbohydrate
low carbohydrate (less than 6 grams carbohydrate per choice) with fruit, low-fat	⅔ cup (6 oz)	½ fat-free milk
	⅔ cup (6 oz)	1 fat-free milk + 1 carbohydrate

Note: Coconut milk is on the **Fats** list.

Sweets, Desserts, and Other Carbohydrate

You can substitute food choices from this list for other carbohydrate-containing foods (such as those found on the **Starch**, **Fruit**, or **Milk** lists) in your meal plan, even though these foods have added sugars or fat.

Nutrition Tips

- A carbohydrate choice has 15 grams of carbohydrate, variable grams of protein, variable grams of fat, and variable calories.
- The foods on this list do not have as many vitamins, minerals, and fiber as the choices on the **Starch**, **Fruits**, or **Milk** lists. When choosing sweets, desserts, and other carbohydrate foods, you should also eat foods from other food lists to balance out your meals.
- Many of these foods do not equal a single choice. Some will also count as one or more fat choices.
- If you are trying to lose weight, choose foods from this list less often.
- The serving sizes for these foods are small because of their fat content.

Selection Tips

- Read the Nutrition Facts on the food label to find the serving size and nutrient information.
- Many sugar-free, fat-free, or reduced-fat products are made with ingredients that contain carbohydrate. These types of food usually have the same amount of carbohydrate as the regular foods they are replacing. Talk with your registered dietitian and find out how to fit these foods into your meal plan.

Beverages, Soda, and Energy/Sports Drinks

Table A.12 Beverages, Soda, and Energy-Sports Drinks

Food	Serving Size	Count as
Cranberry juice cocktail	½ cup	1 carbohydrate
Energy drink	1 can (8.3 oz)	2 carbohydrates
Fruit drink or lemonade	1 cup (8 oz)	2 carbohydrates
Hot chocolate		
regular	1 envelope added to 8 oz water	1 carbohydrate + 1 fat
sugar-free or light	1 envelope added to 8 oz water	1 carbohydrate
Soft drink (soda), regular	1 can (12 oz)	2 ½ carbohydrates
Sports drink	1 cup (8 oz)	1 carbohydrate

Brownies, Cake, Cookies, Gelatin, Pie, and Pudding

Table A.13 Brownies, Cake, Cookies, Gelatin, Pie, and Pudding

Food	Serving Size	Count as
Brownie, small, unfrosted	1 ¼-inch square, ⅞ inch high (about 1 oz)	1 carbohydrate + 1 fat
Cake		
angel food, unfrosted	½ of cake (about 2 oz)	2 carbohydrates
frosted	2-inch square (about 2 oz)	2 carbohydrates + 1 fat
unfrosted	2-inch square (about 2 oz)	1 carbohydrate + 1 fat
Cookies		
chocolate chip	2 cookies (2 ¼ inches across)	1 carbohydrate + 2 fats
gingersnap	3 cookies	1 carbohydrate
sandwich, with crème filling	2 small (about ⅔ oz)	1 carbohydrate + 1 fat
sugar-free	3 small or 1 large (¾–1 oz)	1 carbohydrate + 1–2 fats
vanilla wafer	5 cookies	1 carbohydrate + 1 fat
Cupcake, frosted	1 small (about 1 ¾ oz)	2 carbohydrates + 1–1 ½ fats
Fruit cobbler	½ cup (3 ½ oz)	3 carbohydrates + 1 fat
Gelatin, regular	½ cup	1 carbohydrate
Pie		
commercially prepared fruit, 2 crusts	⅙ of 8-inch pie	3 carbohydrates + 2 fats
pumpkin or custard	⅙ of 8-inch pie	1 ½ carbohydrates + 1 ½ fats
Pudding		
regular (made with reduced-fat milk)	½ cup	2 carbohydrates
sugar-free or sugar- and fat-free (made with fat-free milk)	½ cup	1 carbohydrate

Candy, Spreads, Sweets, Sweeteners, Syrups, and Toppings

Table A.14 Candy, Spreads, Sweets, Sweeteners, Syrups, and Toppings

Food	Serving Size	Count as
Candy bar, chocolate/peanut	2 “fun size” bars (1 oz)	1 ½ carbohydrates + 1 ½ fats
Candy, hard	3 pieces	1 carbohydrate
Chocolate “kisses”	5 pieces	1 carbohydrate + 1 fat

(Continued)

Table A.14 (Continued)

Food	Serving Size	Count as
Coffee creamer		
dry, flavored	4 tsp	½ carbohydrate + ½ fat
liquid, flavored	2 Tbsp	1 carbohydrate
Fruit snacks, chewy (pureed fruit concentrate)	1 roll (¾ oz)	1 carbohydrate
Fruit spreads, 100% fruit	1 ½ Tbsp	1 carbohydrate
Honey	1 Tbsp	1 carbohydrate
Jam or jelly, regular	1 Tbsp	1 carbohydrate
Sugar	1 Tbsp	1 carbohydrate
Syrup		
chocolate	2 Tbsp	2 carbohydrates
light (pancake type)	2 Tbsp	1 carbohydrate
regular (pancake type)	1 Tbsp	1 carbohydrate

Condiments and Sauces

Table A.15 Condiments and Sauces

Food	Serving Size	Count as
Barbeque sauce	3 Tbsp	1 carbohydrate
Cranberry sauce, jellied	¼ cup	1 ½ carbohydrates
Gravy, canned or bottled	½ cup	½ carbohydrate + ½ fat
Salad dressing, fat-free, low-fat, cream-based	3 Tbsp	1 carbohydrate
Sweet and sour sauce	3 Tbsp	1 carbohydrate

Doughnuts, Muffins, Pastries, and Sweet Breads

Table A.16 Doughnuts, Muffins, Pastries, and Sweet Breads

Food	Serving Size	Count as
Banana nut bread	1-inch slice (1 oz)	2 carbohydrates + 1 fat
Doughnut		
cake, plain	1 medium (1 ½ oz)	1 ½ carbohydrates + 2 fats
yeast type, glazed	3 ¾ inches across (2 oz)	2 carbohydrates + 2 fats
Muffin (4 oz)	¼ muffin (1 oz)	1 carbohydrate + ½ fat
Sweet roll or Danish	1 (2 ½ oz)	2 ½ carbohydrates + 2 fats

Frozen Bars, Frozen Desserts, Frozen Yogurt, and Ice Cream

Table A.17 Frozen Bars, Frozen Desserts, Frozen Yogurt, and Ice Cream

Food	Serving Size	Count as
Frozen pops	1	½ carbohydrate
Fruit juice bars, frozen, 100% juice	1 bar (3 oz)	1 carbohydrate
Ice cream		
fat-free	½ cup	1 ½ carbohydrates
light	½ cup	1 carbohydrate + 1 fat
no sugar added	½ cup	1 carbohydrate + 1 fat
regular	½ cup	1 carbohydrate + 2 fats
Sherbet, sorbet	½ cup	2 carbohydrates
Yogurt, frozen		
fat-free	⅓ cup	1 carbohydrate
regular	½ cup	1 carbohydrate + 0–1 fat

Granola Bars, Meal Replacement Bars/Shakes, and Trail Mix

Table A.18 Granola Bars, Meal Replacement Bars/Shakes, and Trail Mix

Food	Serving Size	Count as
Granola or snack bar, regular or low-fat	1 bar (1 oz)	1 ½ carbohydrates
Meal replacement bar	1 bar (1 ⅓ oz)	1 ½ carbohydrates + 0–1 fat
Meal replacement bar	1 bar (2 oz)	2 carbohydrates + 1 fat
Meal replacement shake, reduced calorie	1 can (10–11 oz)	1 ½ carbohydrates + 0–1 fat
Trail mix		
candy/nut-based	1 oz	1 carbohydrate + 2 fats
dried fruit-based	1 oz	1 carbohydrate + 1 fat

Nonstarchy Vegetables

Vegetable choices include vegetables in this **Nonstarchy Vegetables** list and the **Starchy Vegetables** list found within the **Starch** list. Vegetables with small amounts of carbohydrate and calories are on the **Nonstarchy Vegetables** list. Vegetables contain important nutrients. Try to eat at least 2 to 3 nonstarchy vegetable choices each day (as well as choices from the **Starchy Vegetables** list). In general, 1 nonstarchy vegetable choice is:

- ½ cup of cooked vegetables or vegetable juice
- 1 cup of raw vegetables

If you eat 3 cups or more of raw vegetables or 1 ½ cups of cooked vegetables in a meal, count them as 1 carbohydrate choice.

Nutrition Tips

- A choice on this list (½ cup cooked or 1 cup raw) equals 5 grams of carbohydrate, 2 grams of protein, 0 grams of fat, and 25 calories.
- Fresh or frozen vegetables have less added salt than canned vegetables. Drain and rinse canned vegetables to remove some salt.
- Choose dark green and dark yellow vegetables each day. Spinach, broccoli, romaine, carrots, chilies, squash, and peppers are great choices.
- Brussels sprouts, broccoli, cauliflower, greens, peppers, spinach, and tomatoes are good sources of vitamin C.
- Eat vegetables from the cruciferous family several times each week. Cruciferous vegetables include bok choy, broccoli, brussels sprouts, cabbage, cauliflower, collards, kale, kohlrabi, radishes, rutabaga, turnip, and watercress.

Selection Tips

- Canned vegetables and juices are also available without added salt.
- A 1-cup portion of broccoli is a portion about the size of a regular light bulb.
- Starchy vegetables such as corn, peas, winter squash, and potatoes that have more calories and carbohydrates are on the Starchy Vegetables section in the **Starch** list.
- The tomato sauce referred to in this list is different from spaghetti/pasta sauce, which is on the Starchy Vegetables list.

Nonstarchy Vegetables

Table A.19 Nonstarchy Vegetables

Amaranth or Chinese spinach	Kohlrabi
Artichoke	Leeks
Artichoke hearts	Mixed vegetables (without corn, peas, or pasta)
Asparagus	Mung bean sprouts
Baby corn	Mushrooms, all kinds, fresh
Bamboo shoots	Okra
Beans (green, wax, Italian)	Onions
Bean sprouts	Oriental radish or daikon
Beets	Pea pods
Borscht	Peppers (all varieties)

Table A.19 (Continued)

Broccoli	Radishes
Brussels sprouts	Rutabaga
Cabbage (green, bok choy, Chinese)	Sauerkraut
Carrots	Soybean sprouts
Cauliflower	Spinach
Celery	Squash (summer, crookneck, zucchini)
Chayote	Sugar pea snaps
Coleslaw, packaged, no dressing	Swiss chard
Cucumber	Tomato
Eggplant	Tomatoes, canned
Gourds (bitter, bottle, luffa, bitter melon)	Tomato sauce
Green onions or scallions	Tomato/vegetable juice
Greens (collard, kale, mustard, turnip)	Turnips
Hearts of palm	Water chestnuts
Jicama	Yard-long beans

Meat and Meat Substitutes

Meat and meat substitutes are rich in protein. Foods from this list are divided into four groups based on the amount of fat they contain. These groups are lean meat, medium-fat meat, high-fat meat, and plant-based proteins. The following chart shows you what one choice includes.

Table A.20

	Carbohydrate (grams)	Protein (grams)	Fat (grams)	Calories
Lean meat	—	7	0–3	45
Medium-fat meat	—	7	4–7	75
High-fat meat	—	7	8+	100
Plant-based protein	varies	7	varies	varies

Nutrition Tips

- Read labels to find foods low in fat and cholesterol. Try for 5 grams of fat or less per serving.
- Read labels to find “hidden” carbohydrate. For example, hot dogs actually contain a lot of carbohydrate. Most hot dogs are also high in fat, but are often sold in lower-fat versions.
- Whenever possible, choose lean meats.
 - Select grades of meat that are the leanest.
 - Choice grades have a moderate amount of fat.
 - Prime cuts of meat have the highest amount of fat.

- Fish such as herring, mackerel, salmon, sardines, halibut, trout, and tuna are rich in omega-3 fats, which may help reduce risk for heart disease. Choose fish (not commercially fried fish fillets) 2 or more times each week.
- Bake, roast, broil, grill, poach, steam, or boil instead of frying.

Selection Tips

- Trim off visible fat or skin.
- Roast, broil, or grill meat on a rack so the fat will drain off during cooking.
- Use a nonstick spray and a nonstick pan to brown or fry foods.
- Some processed meats, seafood, and soy products contain carbohydrate. Read the food label to see if the amount of carbohydrate in the serving size you plan to eat is close to 15 grams. If so, count it as 1 carbohydrate choice and 1 or more meat choice.
- Meat or fish that is breaded with cornmeal, flour, or dried bread crumbs contains carbohydrate. Count 3 Tbsp of one of these dry grains as 15 grams of carbohydrate.

Lean Meats and Meat Substitutes

Table A.21 Lean Meats and Meat Substitutes

Food	Amount
Beef: Select or Choice grades trimmed of fat: ground round, roast (chuck, rib, rump), round, sirloin, steak (cubed, flank, porterhouse, T-bone), tenderloin	1 oz
Beef jerky	1 oz
Cheeses with 3 grams of fat or less per oz	1 oz
Cottage cheese	¼ cup
Egg substitutes, plain	¼ cup
Egg whites	2
Fish, fresh or frozen, plain: catfish, cod, flounder, haddock, halibut, orange roughy, salmon, tilapia, trout, tuna	1 oz
Fish, smoked: herring or salmon (lox)	1 oz
Game: buffalo, ostrich, rabbit, venison	1 oz
Hot dog with 3 grams of fat or less per oz (8 dogs per 14 oz package)	1
<i>Note: May be high in carbohydrate.</i>	
Lamb: chop, leg, or roast	1 oz
Organ meats: heart, kidney, liver	1 oz
<i>Note: May be high in cholesterol.</i>	
Oysters, fresh or frozen	6 medium

Table A.21 (Continued)

Food	Amount
Pork, lean	
Canadian bacon	1 oz
rib or loin chop/roast, ham, tenderloin	1 oz
Poultry, without skin: Cornish hen, chicken, domestic duck or goose (well-drained of fat), turkey	1 oz
Processed sandwich meats with 3 grams of fat or less per oz: chipped beef, deli thin-sliced meats, turkey ham, turkey kielbasa, turkey pastrami	1 oz
Salmon, canned	1 oz
Sardines, canned	2 medium
Sausage with 3 grams of fat or less per oz	1 oz
Shellfish: clams, crab, imitation shellfish, lobster, scallops, shrimp	1 oz
Tuna, canned in water or oil, drained	1 oz
Veal, lean chop, roast	1 oz

Medium-Fat Meat and Meat Substitutes

Table A.22 Medium-Fat Meat and Meat Substitutes

Food	Amount
Beef: corned beef, ground beef, meatloaf, Prime grades trimmed of fat (prime rib), short ribs, tongue	1 oz
Cheeses with 4–7 grams of fat per oz: feta, mozzarella, pasteurized processed cheese spread, reduced-fat cheeses, string	1 oz
Egg	1
<i>Note: High in cholesterol, so limit to 3 per week</i>	
Fish, any fried product	1 oz
Lamb: ground, rib roast	1 oz
Pork: cutlet, shoulder roast	1 oz
Poultry: chicken with skin; dove, pheasant, wild duck, or goose; fried chicken; ground turkey	1 oz
Ricotta cheese	2 oz or ¼ cup
Sausage with 4–7 grams of fat per oz	1 oz
Veal, cutlet (no breading)	1 oz

High-Fat Meat and Meat Substitutes

These foods are high in saturated fat, cholesterol, and calories and may raise blood cholesterol levels if eaten on a regular basis. Try to eat 3 or fewer servings from this group per week.

Table A.23 High-Fat Meat and Meat Substitutes

Food	Amount
Bacon	
pork	2 slices (16 slices per lb or 1 oz each, before cooking)
turkey	3 slices (½ oz each before cooking)
Cheese, regular: American, bleu, brie, cheddar, hard goat, Monterey jack, queso, and Swiss	1 oz
Hot dog: beef, pork, or combination (10 per lb-sized package)	1
Hot dog: turkey or chicken (10 per lb-sized package)	1
Pork: ground, sausage, spareribs	1 oz
Processed sandwich meats with 8 grams of fat or more per oz: bologna, pastrami, hard salami	1 oz
Sausage with 8 grams fat or more per oz: bratwurst, chorizo, Italian, knockwurst, Polish, smoked, summer	1 oz

Plant-Based Proteins

Because carbohydrate content varies among plant-based proteins, you should read the food label.

Table A.24 Plant-Based Proteins

Food	Serving Size	Count as
"Bacon" strips, soy-based	3 strips	1 medium-fat meat
Baked beans	⅓ cup	1 starch + 1 lean meat
Beans, cooked: black, garbanzo, kidney, lima, navy, pinto, white	½ cup	1 starch + 1 lean meat
"Beef" or "sausage" crumbles, soy-based	2 oz	½ carbohydrate + 1 lean meat
"Chicken" nuggets, soy-based	2 nuggets (1 ½ oz)	½ carbohydrate + 1 medium-fat meat
Edamame	½ cup	½ carbohydrate + 1 lean meat
Falafel (spiced chickpea and wheat patties)	3 patties (about 2 inches across)	1 carbohydrate + 1 high-fat meat
Hot dog, soy-based	1 (1 ½ oz)	½ carbohydrate + 1 lean meat
Hummus	⅓ cup	1 carbohydrate + 1 high-fat meat

Table A.24 (Continued)

Food	Serving Size	Count as
Lentils, brown, green, or yellow	½ cup	1 carbohydrate + 1 lean meat
Meatless burger, soy-based	3 oz	½ carbohydrate + 2 lean meats
Meatless burger, vegetable-and starch-based	1 patty (about 2 ½ oz)	1 carbohydrate + 2 lean meats
Nut spreads: almond butter, cashew butter, peanut butter, soy nut butter	1 Tbsp	1 high-fat meat
Peas, cooked: black-eyed and split peas	½ cup	1 starch + 1 lean meat
Refried beans, canned	½ cup	1 starch + 1 lean meat
“Sausage” patties, soy-based	1 (1 ½ oz)	1 medium-fat meat
Soy nuts, unsalted	¾ oz	½ carbohydrate + 1 medium-fat meat
Tempeh	¼ cup	1 medium-fat meat
Tofu	4 oz (½ cup)	1 medium-fat meat
Tofu, light	4 oz (½ cup)	1 lean meat

Fats

Fats are divided into three groups, based on the main type of fat they contain:

- **Unsaturated fats** (omega-3, monounsaturated, and polyunsaturated) are primarily vegetable and are liquid at room temperature. These fats have good health benefits.
 - **Omega-3 fats** are a type of polyunsaturated fat and can help lower triglyceride levels and the risk of heart disease.
 - **Monounsaturated fats** also help lower cholesterol levels and may help raise HDL (good) cholesterol levels.
 - **Polyunsaturated fats** can help lower cholesterol levels.
- **Saturated fats** have been linked with heart disease. They can raise LDL (bad) cholesterol levels and should be eaten in small amounts. Saturated fats are solid at room temperature.
- **Trans fats** are made in a process that changes vegetable oils into semisolid fats. These fats can raise blood cholesterol levels and should be eaten in small amounts. Partially hydrogenated and hydrogenated fats are types of manmade *trans* fats and should be avoided. *Trans* fats are also found naturally occurring in some animal products such as meat, cheese, butter, and dairy products.

Nutrition Tips

- A choice on the **Fats** list contains 5 grams of fat and 45 calories.
- All fats are high in calories. Limit serving sizes for good nutrition and health.
- Limit the amount of fried foods you eat.
- Nuts and seeds are good sources of unsaturated fats if eaten in moderation. They have small amounts of fiber, protein, and magnesium.
- Good sources of omega-3 fatty acids include:
 - Fish such as albacore tuna, halibut, herring, mackerel, salmon, sardines, and trout.
 - Flaxseeds and English walnuts.
 - Oils such as canola, soybean, flaxseed, and walnut.

Selection Tips

- Read the Nutrition Facts on food labels for serving sizes. One fat choice is based on a serving size that has 5 grams of fat.
- The food label also lists total fat grams, saturated fat, and *trans* fat grams per serving. When most of the calories come from saturated fat, the food is part of the Saturated Fats list.
- When selecting fats, consider replacing saturated fats with monounsaturated fats and omega-3 fats. Talk with your RD about the best choices for you.
- When selecting regular margarine, choose those that list liquid vegetable oil as the first ingredient. Soft or tub margarines have less saturated fat than stick margarines and are a healthier choice. Look for *trans* fat-free soft margarines.
- When selecting reduced-fat or lower-fat margarines, look for liquid vegetable oil (*trans* fat-free). Water is usually the first ingredient.

Fats and oils have mixtures of unsaturated (polyunsaturated and monounsaturated) and saturated fats. Foods on the **Fats** list are grouped together based on the major type of fat they contain. In general, 1 fat choice equals:

- 1 teaspoon of regular margarine, vegetable oil, or butter
- 1 tablespoon of regular salad dressing

Unsaturated Fats—Monounsaturated Fats

Table A.25 Unsaturated Fats-Monounsaturated Fats

Food	Serving Size
Avocado, medium	2 Tbsp (1 oz)
Nut butters (<i>trans</i> fat-free): almond butter, cashew butter, peanut butter (smooth or crunchy)	1 ½ tsp

Table A.25 (Continued)

Food	Serving Size
Nuts	
almonds	6 nuts
Brazil	2 nuts
cashews	6 nuts
filberts (hazelnuts)	5 nuts
macadamia	3 nuts
mixed (50% peanuts)	6 nuts
peanuts	10 nuts
pecans	4 halves
pistachios	16 nuts
Oil: canola, olive, peanut	1 tsp
Olives	
black (ripe)	8 large
green, stuffed	10 large

Polyunsaturated Fats

Table A.26 Polyunsaturated Fats

Food	Serving Size
Margarine: lower-fat spread (30–50% vegetable oil, <i>trans</i> fat-free)	1 Tbsp
Margarine: stick, tub (<i>trans</i> fat-free), or squeeze (<i>trans</i> fat-free)	1 tsp
Mayonnaise	
reduced-fat	1 Tbsp
regular	1 tsp
Mayonnaise-style salad dressing	
reduced-fat	1 Tbsp
regular	2 tsp
Nuts	
Pignolia (pine nuts)	1 Tbsp
walnuts, English	4 halves
Oil: corn, cottonseed, flaxseed, grape seed, safflower, soybean, sunflower	1 tsp
Oil: made from soybean and canola oil- Enova	1 tsp
Plant stanol esters	
light	1 Tbsp
regular	2 tsp

(Continued)

Table A.26 (Continued)

Food	Serving Size
Salad dressing	
reduced-fat	2 Tbsp
<i>Note: May be high in carbohydrate.</i>	
regular	1 Tbsp
Seeds	
flaxseed, whole	1 Tbsp
pumpkin, sunflower	1 Tbsp
sesame seeds	1 Tbsp
Tahini or sesame paste	2 tsp

Saturated Fats

Table A.27 Saturated Fats

Food	Serving Size
Bacon, cooked, regular or turkey	1 slice
Butter	
reduced-fat	1 Tbsp
stick	1 tsp
whipped	2 tsp
Butter blends made with oil	
reduced-fat or light	1 Tbsp
regular	1 ½ tsp
Chitterlings, boiled	2 Tbsp (½ oz)
Coconut, sweetened, shredded	2 Tbsp
Coconut milk	
light	⅓ cup
regular	1 ½ Tbsp
Cream	
half and half	2 Tbsp
heavy	1 Tbsp
light	1 ½ Tbsp
whipped	2 Tbsp
whipped, pressurized	¼ cup
Cream cheese	
reduced-fat	1 ½ Tbsp (¾ oz)
regular	1 Tbsp (½ oz)

Table A.27 (Continued)

Food	Serving Size
Lard	1 tsp
Oil: coconut, palm, palm kernel	1 tsp
Salt pork	¼ oz
Shortening, solid	1 tsp
Sour cream	
reduced-fat or light	3 Tbsp
regular	2 Tbsp

Similar Foods in Other Lists

- Bacon and peanut butter, when used in smaller amounts, are counted as fat choices. When used in larger amounts, they are counted as high-fat meat choices (see the **Meat and Meat Substitutes** list).
- Fat-free salad dressings are on the Sweets, Desserts, and Other Carbohydrates list.
- Look for whipped topping and fat-free products, such as margarines, salad dressings, mayonnaise, sour cream, and cream cheese, on the **Free Foods** list.

Free Foods

A “free” food is any food or drink choice that has less than 20 calories and 5 grams or less of carbohydrate per serving.

Selection Tips

- Most foods on this list should be limited to 3 servings (as listed here) per day. Spread out the servings throughout the day. If you eat all 3 servings at once, it could raise your blood glucose level.
- Food and drink choices listed here without a serving size can be eaten whenever you like.

Low Carbohydrate Foods

Table A.28 Low Carbohydrate Foods

Food	Serving Size
Cabbage, raw	½ cup
Candy, hard (regular or sugar-free)	1 piece
Carrots, cauliflower, or green beans, cooked	¼ cup

(Continued)

Table A.28 (Continued)

Food	Serving Size
Cranberries, sweetened with sugar substitute	½ cup
Cucumber, sliced	½ cup
Gelatin dessert, sugar-free unflavored	
Gum	
Jam or jelly, light or no sugar added	2 tsp
Rhubarb, sweetened with sugar substitute	½ cup
Salad greens	
Sugar substitute (artificial sweeteners)	
Syrup, sugar-free	2 Tbsp

Modified Fat Foods with Carbohydrate

Table A.29 Modified Fat Foods with Carbohydrate

Food	Serving Size
Cream cheese, fat-free	1 Tbsp (½ oz)
Creamers nondairy, liquid	1 Tbsp
nondairy, powdered	2 tsp
Margarine spread fat-free	1 Tbsp
reduced-fat	1 tsp
Mayonnaise fat-free	1 Tbsp
reduced-fat	1 tsp
Mayonnaise-style salad dressing fat-free	1 Tbsp
reduced-fat	1 tsp
Salad dressing fat-free or low-fat	1 Tbsp
fat-free, Italian	2 Tbsp
Sour cream, fat-free or reduced-fat	1 Tbsp
Whipped topping light or fat-free	2 Tbsp
regular	1 Tbsp

Condiments

Table A.30 Condiments

Food	Serving Size
Barbeque sauce	2 tsp
Catsup (ketchup)	1 Tbsp
Honey mustard	1 Tbsp
Horseradish	
Lemon juice	
Miso	1 ½ tsp
Mustard	
Parmesan cheese, freshly grated	1 Tbsp
Pickle relish	1 Tbsp
Pickles	
dill	1 ½ medium
sweet, bread and butter	2 slices
sweet, gherkin	¾ oz
Salsa	¼ cup
Soy sauce, light or regular	1 Tbsp
Sweet and sour sauce	2 tsp
Sweet chili sauce	2 tsp
Taco sauce	1 Tbsp
Vinegar	
Yogurt, any type	2 Tbsp

Table A.31 Free Snacks

Free Snacks

These foods in these serving sizes are perfect free-food snacks

- | | |
|------------------------------------|----------------------------------|
| • 5 baby carrots and celery sticks | • 1 frozen cream pop, sugar-free |
| • ¼ cup blueberries | • ½ oz lean meat |
| • ½ oz sliced cheese, fat-free | • 1 cup light popcorn |
| • 10 goldfish-style crackers | • 1 vanilla wafer |
| • 2 saltine-type crackers | |

Drinks/Mixes

Any food on this list-without a serving size listed- can be consumed in any moderate amount.

Table A.32 Drinks/Mixes

• Bouillon broth, consommé	• Diet soft drinks, sugar-free
• Bouillon or broth, low-sodium	• Drink mixes, sugar-free
• Carbonated or mineral water	• Tea, unsweetened or with sugar substitute
• Club soda	• Tonic water, diet
• Cocoa powder, unsweetened (1 Tbsp)	• Water
• Coffee, unsweetened or with sugar substitute	• Water, flavored, carbohydrate free

Seasonings

Any food on this list can be consumed in any moderate amount.

Table A.33 Seasonings

Flavoring extracts (for example, vanilla, almond, peppermint)	• Pimento
• Garlic	• Spices
• Herbs, fresh or dried	• Hot pepper sauce
• Nonstick cooking spray	• Wine, used in cooking
	• Worcestershire sauce

Combination Foods

Many of the foods we eat are mixed together in various combinations, such as casseroles. These “combination” foods do not fit into any one choice list. This is a list of choices for some typical combination foods. This list will help you fit these foods into your meal plan. Ask your registered dietitian for nutrient information about other combination foods you would like to eat, including your own recipes.

Entrees

Table A.34 Entrees

Food	Serving Size	Count as
Casserole type (tuna noodle, lasagna, spaghetti with meatballs, chili with beans, macaroni and cheese)	1 cup (8 oz)	2 carbohydrates + 2 medium-fat meats
Stews (beef/other meats and vegetables)	1 cup (8 oz)	1 carbohydrate + 1 medium-fat meat + 0–3 fats
Tuna salad or chicken salad	½ cup (3 ½ oz)	½ carbohydrate + 2 lean meats + 1 fat

Frozen Meals/Entrees

Table A.35 Frozen Meals/Entrees

Food	Serving Size	Count as
Burrito (beef and bean)	1 (5oz)	3 carbohydrates + 1 lean meat + 2 fats
Dinner-type meal	generally 14–17 oz	3 carbohydrates + 3 medium-fat meats + 3 fats
Entrée or meal with less than 340 calories	About 8–11 oz	2-3 carbohydrates + 1-2 lean meats
Pizza		
cheese/vegetarian, thin crust	¼ of a 12 inch (4 ½-5 oz)	2 carbohydrates + 2 medium-fat meats
meat topping, thin crust	¼ of a 12 inch (5 oz)	2 carbohydrates + 2 medium-fat meats + 1 ½ fats
Pocket sandwich	1 (4 ½ oz)	3 carbohydrates + 1 lean meat + 1–2 fats
Pot pie	1 (7 oz)	2 ½ carbohydrates + 1 medium-fat meat + 3 fats

Salads (Deli-Style)

Table A.36 Salads (Deli-Style)

Food	Serving Size	Count as
Coleslaw	½ cup	1 carbohydrate + 1 ½ fats
Macaroni/pasta salad	½ cup	2 carbohydrates + 3 fats
Potato salad	½ cup	1 ½–2 carbohydrates + 1–2 fats

Soups

Table A.37 Soups

Food	Serving Size	Count as
Bean, lentil, or split pea	1 cup	1 carbohydrate + 1 lean meat
Chowder (made with milk)	1 cup (8 oz)	1 carbohydrate + 1 lean meat + 1 ½ fats
Cream (made with water)	1 cup (8 oz)	1 carbohydrate + 1 fat
Instant	6 oz prepared	1 carbohydrate
with beans or lentils	8 oz prepared	2 ½ carbohydrates + 1 lean meat

(Continued)

Table A.37 (Continued)

Food	Serving Size	Count as
Miso soup	1 cup	½ carbohydrate + 1 fat
Oriental noodle	1 cup	2 carbohydrates + 2 fats
Rice (congee)	1 cup	1 carbohydrate
Tomato (made with water)	1 cup (8 oz)	1 carbohydrate
Vegetable beef, chicken noodle, or other broth-type	1 cup (8 oz)	1 carbohydrate

Fast Foods

The choices in the **Fast Foods** list are not specific fast food meals or items but are estimates based on popular foods. You can get specific nutrition information for almost every fast food or restaurant chain. Ask the restaurant or check its website for nutrition information about your favorite fast foods.

Breakfast Sandwiches

Table A.38 Breakfast Sandwiches

Food	Serving Size	Count as
Egg, cheese, meat, English muffin	1 sandwich	2 carbohydrates + 2 medium-fat meats
Sausage biscuit sandwich	1 sandwich	2 carbohydrates + 2 high-fat meats + 3 ½ fats

Main Dishes/Entrees

Table A.39 Main Dishes/Entrees

Food	Serving Size	Count as
Burrito (beef and beans)	1 (about 8 oz)	3 carbohydrates + 3 medium-fat meats + 3 fats
Chicken breast, breaded and fried	1 (about 5 oz)	1 carbohydrate + 4 medium-fat meats
Chicken drumstick, breaded and fried	1 (about 2 oz)	2 medium-fat meats
Chicken nuggets	6 (about 3 ½ oz)	1 carbohydrate + 2 medium-fat meats + 1 fat
Chicken thigh, breaded and fried	1 (about 4 oz)	½ carbohydrate + 3 medium-fat meats + 1 ½ fats
Chicken wings, hot	6 (5 oz)	5 medium-fat meats + 1 ½ fats

Oriental

Table A.40 Oriental

Food	Serving Size	Count as
Beef/chicken/shrimp with vegetables in sauce	1 cup (about 5 oz)	1 carbohydrate + 1 lean meat + 1 fat
Egg roll, meat	1 (about 3 oz)	1 carbohydrate + 1 lean meat + 1 fat
Fried rice, meatless	½ cup	1 ½ carbohydrates + 1 ½ fats
Meat and sweet sauce (orange chicken)	1 cup	3 carbohydrates + 3 medium-fat meats + 2 fats
Noodles and vegetables in sauce (chow mein, lo mein)	1 cup	2 carbohydrates + 1 fat

Pizza

Table A.41 Pizza

Food	Serving Size	Count as
Pizza		
cheese, pepperoni, regular crust	⅓ of a 14 inch (about 4 oz)	2 ½ carbohydrates + 1 medium-fat meat + 1 ½ fats
cheese/vegetarian, thin crust	¼ of a 12 inch (about 6 oz)	2 ½ carbohydrates + 2 medium-fat meats + 1 ½ fats

Sandwiches

Table A.42 Sandwiches

Food	Serving Size	Count as
Chicken sandwich, grilled	1	3 carbohydrates + 4 lean meats
Chicken sandwich, crispy	1	3 ½ carbohydrates + 3 medium-fat meats + 1 fat
Fish sandwich with tartar sauce	1	2 ½ carbohydrates + 2 medium-fat meats + 2 fats
Hamburger large with cheese	1	2 ½ carbohydrates + 4 medium-fat meats + 1 fat
regular	1	2 carbohydrates + 1 medium-fat meat + 1 fat

(Continued)

Table A.42 (Continued)

Food	Serving Size	Count as
Hot dog with bun	1	1 carbohydrate + 1 high-fat meat + 1 fat
Submarine sandwich		3 carbohydrates + 2 lean meats
less than 6 grams fat	6-inch sub	3 ½ carbohydrates + 2 medium-fat
regular	6-inch sub	meats + 1 fat
Taco, hard or soft shell (meat and cheese)	1 small	1 carbohydrate + 1 medium-fat meat + 1 ½ fats

Salads

Table A.43 Salads

Food	Serving Size	Count as
Salad, main dish (grilled chicken type, no dressing or croutons)	Salad	1 carbohydrate + 4 lean meats
Salad, side, no dressing or cheese	Small (about 5 oz)	1 vegetable

Sides/Appetizers

Table A.44 Sides/Appetizers

Food	Serving Size	Count as
French fries, restaurant style	small	3 carbohydrates + 3 fats
	medium	4 carbohydrates + 4 fats
	large	5 carbohydrates + 6 fats
Nachos with cheese	small (about 4 ½ oz)	2 ½ carbohydrates + 4 fats
Onion rings	1 serving (about 3 oz)	2 ½ carbohydrates + 3 fats

Desserts

Table A.45 Desserts

Food	Serving Size	Count as
Milkshake, any flavor	12 oz	6 carbohydrates + 2 fats
Soft-serve ice cream cone	1 small	2 ½ carbohydrates + 1 fat

Alcohol

Nutrition Tips

- In general, 1 alcohol choice (½ oz absolute alcohol) has about 100 calories.

Selection Tips

- If you choose to drink alcohol, you should limit it to 1 drink or less per day for women, and 2 drinks or less per day for men.
- To reduce your risk of low blood glucose (hypoglycemia), especially if you take insulin or a diabetes pill that increases insulin, always drink alcohol with food.
- While alcohol, by itself, does not directly affect blood glucose, be aware of the carbohydrate (for example, in mixed drinks, beer, and wine) that may raise your blood glucose.
- Check with your registered dietitian if you would like to fit alcohol into your meal plan.

Table A.46 Alcohol

Alcoholic Beverage	Serving Size	Count as
Beer		
light (4.2%)	12 fl oz	1 alcohol equivalent + ½ carbohydrate
regular (4.9%)	12 fl oz	1 alcohol equivalent + 1 carbohydrate
Distilled spirits: vodka, rum, gin, whisky 80 or 86 proof	1 ½ fl oz	1 alcohol equivalent
Liqueur, coffee (53 proof)	1 fl oz	1 alcohol equivalent + 1 carbohydrate
Sake	1 fl oz	½ alcohol equivalent
Wine		
dessert (sherry)	3 ½ fl oz	1 alcohol equivalent + 1 carbohydrate
dry, red or white (10%)	5 fl oz	1 alcohol equivalent

Appendix 18

Study Guide

Suggested Responses

The following are suggested responses to Study Guide Questions in this book. Many questions have several acceptable answers. Responses comparable to those given here should be considered correct.

CHAPTER 1

- A. Website: www.mypyramid.gov.
- B. Fruits, Vegetables, Grains, Protein foods, and Dairy.
- C. Dark-green vegetables: 1.5 cups per week
Red and orange vegetables: 5.5 cups per week.
Beans and peas (legumes): 1.5 cups per week.
Starchy vegetables: 5 cups per week.
Other vegetables: 4 cups per week.
- D. 8 oz seafood per week.
- E. Obesity.

CHAPTER 2

- A. 1. The diet should incorporate the principles of the *Dietary Guidelines for Americans*; 2. The quantity of food selected from each food group should vary depending on the energy needs and preferences of the individual;

3. Select a variety of foods within each food group; 4. The diet should be nutrient dense, provide color, and be pleasing in texture and flavor.
- B. Iron, folate, zinc, protein, calcium, vitamin D, and fiber.
 - D. Benefits to infant nutrition: gastrointestinal function, host defense, and the potential beneficial influence on neurodevelopment and chronic diseases of childhood.
 - D. Honey should be avoided; avoid water contaminated from lead pipes, nitrates, or bacteria; avoid foods that children could choke on.
 - E. Make mealtime enjoyable; children make food choices and determine how much is consumed; include snacks of high nutrient content, after 2 years of age high fat foods should be consumed in moderation.
 - F. Changes in economic, functional, physiological, and psychosocial conditions.
 - G. Implement a general diet if at all possible; keep the diet as liberal as possible even for diabetes, high cholesterol, and weight management; use vitamin supplementation if nutrition assessment confirms these are necessary; obesity may be managed with simple diet modifications; consider previous food habits and patterns; meet individual daily caloric needs; offer adequate protein to meet the DRIs or higher; individualize diet to promote glycemic control; ensure adequate calcium and vitamin D intake; include key micronutrients as recommended; promote fluid intake; adjust diet textures to meet chewing and swallowing needs; promote cooking techniques that maintain nutrient density; utilize finger foods as needed; serve foods at regular meal times; encourage social contact; consider factors such as depression and alcohol use in promoting adequate nutrition.
 - H. See Food Guide Pyramid for Older Adults to plan a menu based on 1,800 calories per day.
 - I. Consider how foods might be fortified to increase nutrient density in the daily diet as compared to the use of liquid supplements.

CHAPTER 3

- A. Stroke, head or neck injury, cancer, cerebral palsy, dementia, or other illness as a result of aging.
- B. A physician, a swallowing therapist (speech language pathologist or occupational therapist), a dietitian, and a nurse all play a part in assessing a patient's needs for dietary interventions that keep the patient safe and adequately nourished. Assessment includes swallowing abilities, fatigue, nutrient intake, need for adaptive equipment, and tolerance to food and fluid texture modifications.
- C. See Principles of Consistency Alteration.
- D. Thin, Nectar-like, Honey-like, and Spoon-thick.

- E. Modify the diet plan written for Chapter 2.
- F. Measure out the total number of portions of required pureed servings based on the planned therapeutic diet. Add the appropriate liquid or thickeners to obtain the appropriate consistency, flavor, and nutrient density. Divide the total volume by the number of original servings pureed, utilizing a standard portioning utensil to serve.

Portion sizes of foods often change in volume after they have been pureed.
- G. Consider adding ingredients that enhance the original flavor, including condiments that would be served for patients on a general diet. In addition, consider how the appearance of the texture-modified foods might be enhanced by the appropriate shapes and garnishing.

CHAPTER 4

- A. Clear liquid diets may be prescribed for preoperative or postoperative patients (before and after surgery); for patients with an acute gastrointestinal illness to prevent dehydration; or in conditions when it is necessary to minimize fecal residue, such as bowel preparation for surgery or a gastrointestinal procedure. It also has been used to reintroduce foods following a period with no oral intake when poor tolerance or aspiration is anticipated.
- B. Juices, gelatin, broth, popsicles, tea, and coffee.
- C. See the *Food for the Day* table in Chapter 4 for the Full Liquid Diet.
- D. Consider the total calories in fortified liquids might meet overall energy and nutrient needs.

CHAPTER 5

- A. Overweight is BMI 25 kg/m^2 or greater; obese is BMI 30 kg/m^2 or greater.
- B. Type 2 diabetes, cardiopulmonary disease, stroke, hypertension, gallbladder disease, osteoarthritis, sleep apnea, and some forms of cancer.
- C. See Table 5.3 for examples such as whole grain bread, whole grain cereal, low-fat milk, fresh fruits and vegetables, low-fat yogurt, lean meat choices.
- D. Consider current food and beverage products available to promote choices while providing nutrient density in reduced calories for weight management.

CHAPTER 6

- A. Type 1 diabetes is an autoimmune disease that affects the pancreas in a way that it does not make insulin.

Type 2 diabetes is a disease that progressively results in the cells being able to use insulin inefficiently.

Gestational diabetes occurs only during pregnancy.

- B. Diet, exercise, and weight management.
- C. Maintaining as near normal blood glucose levels as possible; achieving optimal serum lipid levels; providing adequate energy to achieve and maintain a reasonable body weight in adults and to support growth during pregnancy and childhood; preventing and treating short- and long-term complications; improving overall health through optimal nutrition.
- D. (1) Starches, (2) Fruits and fruit juices, (3) Milk and milk products, and (4) Sweets, desserts, and other carbohydrates.
- E. One carbohydrate choice is equal to 15 grams.
- F. Refer to the Meal Plans to plan a 1-day menu with the carbohydrate exchanges listed at each meal and snack.
- G. Feeling shaky, sweaty, tired, hungry, crabby, confused, rapid heart rate, blurred vision or headaches, numbness or tingling in the mouth and lips; in severe cases, loss of consciousness.
- H. See Chapter 2 for liberalized diet justifications.

CHAPTER 7

- A. 300mg of cholesterol and 30% or less calories from fat and 2,400mg sodium.
- B. See list of Diet Principles in Chapter 7.
- C. Diseases of the gallbladder, liver, or pancreas; disturbances in digestion or fat absorption; diet management of high blood cholesterol and other blood lipids
- D. 40–50 grams of fat per day
- E. See list of eight Diet Principles in Chapter 7
- F. Consider modifying recipes to include lean meat, reduced fat cheese, rinsing ground beef, trimming visible fat from meats prior to cooking, and removing skin from poultry.

CHAPTER 8

- A. Increase in potassium, calcium, magnesium and fiber. Decrease in sodium.
- B. Control blood pressure, edema and hypertension.
- C. See *Food for the Day* table for No Added Salt Diet.
- D. 2,000mg per day.
- E. Refer to the diet planned in Chapter 2 and modify for a Low Sodium Diet.

- F. Consider how low sodium and fresh spices may be used in food preparation to enhance the flavor of low sodium diets. For elderly patients, individual spices are less confusing to taste palettes than spice blends.

CHAPTER 9

- A. Potassium, sodium, phosphorus, and protein.
- B. Registered Dietitian.
- C. Eggs, dairy products, poultry, fish, and meat.
- D. To ensure that protein is used for tissue growth and repair rather than for energy needs.
- E. $\frac{1}{2}$ cup milk and phosphorus.
- F. Gelatin, ice cream, popsicles, and soup.
- G. Potassium because the sodium may have been replaced by potassium.
- H. Consider a patient's unique food preferences in adding calories, typically through moderately increased carbohydrate and fat in foods while still limiting other required restrictions.

CHAPTER 10

- A. Obesity, cardiovascular disease, type 2 diabetes, colonic diverticulosis, and constipation.
- B. 25–30 grams dietary fiber.
- C. Abdominal discomfort, bloating, cramping, and diarrhea.
- D. Constipation or impaction in the colon.
- E. Constipation; diverticular disease.
- F. Use High Fiber Diet *Food for the Day* table to evaluate.
- G. Consider higher fiber breads, cereals and other whole grains. Incorporate added fiber into baked goods. Various recipes for dietary fiber bars or puddings are available to promote bowel health while reducing the need for bowel medications.

CHAPTER 11

- A. Debilitating disease, surgery, healing of pressure ulcers, prevention of malnutrition in individuals with cognitive impairment, lack of appetite, or inability to eat normal portions of food.
- B. Add nonfat dry skim milk powder, milk, cheeses and other dairy ingredients to dishes, replace margarine with peanut butter, replace dry beans for potatoes, and add an additional egg to recipes.

- C. Refer to the diet planned in Chapter 2 and modify foods that can be enhanced or fortified as noted in B.
- D. See Small Portion guidelines to modify daily meal plan developed in Chapter 2.
- E. Protein: plant proteins alone can provide enough amino acids when a variety of plant proteins are eaten and total caloric intakes are met.
 - Calcium: calcium intakes lower than recommended do not seem to cause health problems provided vitamin D intake or exposure to sunlight is adequate.
 - Iron: iron in plants is not as readily absorbed as iron in meats. To increase iron absorption, foods high in vitamin C should be offered at the same meal.
 - Vitamin B₁₂: only animal products contain B₁₂, vegans in particular need a reliable source of B₁₂ (i.e., fortified cereals and soy beverages, brewer's yeast, vitamin supplements).
- F. A food allergy is an abnormal response to a food triggered by the body's immune system. A food intolerance is when eating a certain food or foods triggers a negative physiological response, but the immune system is not affected in the same way.
- G. Commercial breads and baked goods, instant potatoes, soup and breakfast drink mixes, margarine, cold cut meats (other than kosher), salad dressings, pudding, caramels, chocolate, mixes for pancakes, and biscuits.
- H. Corn, rice, potato, soy, tapioca, bean, sorghum, amaranth, buckwheat, quinoa, teff, millet, Montina™ and nut flours, and oats if certified as gluten-free.
- I. Modified food starch, hydrolyzed or texturized vegetable proteins, soy sauce, soy sauce solids, and malt or malt flavoring.
- J. See list of six Diet Principles for Phenylalanine Restricted Diet.
- K. Avoid foods that contribute to indigestion, avoid smoking, reduce weight, avoid eating 3 hours before sleep, raise the head of the bed 6 inches, exercise for at least 30 minutes several times per week, avoid tight-fitting clothing, and sit upright when eating.
- L. Consider how to clearly communicate to caregivers and all members of the healthcare team the key diet components unique to that patient. Printed food lists and planned therapeutic menus, reviewed by the Registered Dietitian, are critical.

CHAPTER 12

- A. See Chapter 12, Feeding Guidelines for Individuals with Dementia.
- B. Maintain appropriate positioning for dining; offer foods that stimulate appetite; foster independence; focus on the patient and promote a positive

- dining experience; observe and report signs of chewing and swallowing problems; avoid syringe feeding; allow ample time to eat; and allow dining at off-hours to individualize to that patient's schedule.
- C. Sip tip cups, plate guards, divided plates, scoop plates, straws, built-up utensils, curved-handled utensils, rubber place mats, and suction plates or bowls.
 - D. Consider and review guidelines in question B to incorporate into the unique dining setting.

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