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OUTLINE

Objectives
Glossary
Background Information
ACTIVITY 1: Dietary
 Management of Congenital
 Heart Disease
Major Considerations in Dietary
 Care
Formulas and Regular Foods
Managing Feeding Problems
Discharge Procedures
Nursing Implications
Progress Check on Activity 1
References

CHAPTER

26

Diet Therapy and Congenital Heart Disease

Time for completion

Activities: 1 hour

Optional examination: ½ hour



OBJECTIVES

Upon completion of this chapter, the student should be able to do the following:

1. Describe the effects of congenital heart disease upon the nutritional status of children.
2. List three reasons for growth retardation in a child with congenital heart disease.
3. Identify the four major nutritional problems to be considered for patients with congenital heart disease.
4. Explain the appropriate diet therapy for congenital heart disease, and give supporting rationale.
5. Describe formulas and supplements used for infants with congenital heart disease.
6. Evaluate the introduction of solid foods and precautions used when feeding.
7. Compare the feeding problems encountered in a child with a defective heart to those of normal children.
8. Describe methods of maintaining optimum nutritional status in the hospitalized child.
9. Teach parents and the child the principles of feeding and eating when congenital heart disease is present.
10. Describe appropriate discharge procedures.

GLOSSARY

Congenital: present at birth

Cyanotic: condition exhibiting bluish discoloration of the skin and mucous membranes due to excessive concentrations of reduced hemoglobin or extensive oxygen extraction.

Dehydration: excessive loss of water from body tissue, accompanied by imbalance of electrolytes, especially sodium, potassium, and chloride (dehydration is of particular concern among infants and young children).

Diuretic: a drug or other substance that promotes the formation and excretion of urine.

Milliequivalent (mEq): the number of grams of solute dissolved in one milliliter of normal solution.

Milliliter: a metric unit of measurement of volume.

Milliosmol (mosm): a unit of measure representing the concentration of an ion in solution.

Renal: of or pertaining to the kidney.

Respiration (breathing): exchange of carbon dioxide and oxygen in the lungs.

Respiratory distress: inability of the infant to make the exchange, characterized by rapid breathing, grunting on expiration, and other severe symptoms.

Solute: any substance dissolved in a solution.

BACKGROUND INFORMATION

Part of the information in this section has been modified from the fact sheets on congenital heart disease published and distributed by the National Institute of Health (www.nih.gov).

Congenital heart defects are problems with the heart's structure that are present at birth. These defects can involve the interior walls of the heart, valves inside the heart, or the arteries and veins that carry blood to the heart or out to the body. Congenital heart defects change the normal flow of blood through the heart because some part of the heart didn't develop properly before birth.

There are many different types of congenital heart defects. They range from simple defects with no symptoms to complex defects with severe, life-threatening symptoms. They include simple ones such as a hole in the interior walls of the heart that allows blood from the left and right sides of the heart to mix, or a narrowed valve that blocks the flow of blood to the lungs or other parts of the body.

Other defects are more complex. These include combinations of simple defects, problems with the blood vessels leading to and from the heart, and more serious abnormalities in how the heart develops.

Congenital heart defects are the most common type of birth defect, affecting 8 of every 1000 newborns. Each year, more than 35,000 babies in the United States are born with congenital heart defects. Most of these defects

are simple conditions that are easily fixed or need no treatment.

A small number of babies are born with complex congenital heart defects that need special medical attention soon after birth. Over the past few decades, the diagnosis and treatment of these complex defects has greatly improved.

As a result, almost all children with complex heart defects grow to adulthood and can live active, productive lives because their heart defects have been effectively treated.

Most people with complex heart defects continue to need special heart care throughout their lives. They may need to pay special attention to certain issues that their condition could affect, such as health insurance, employment, pregnancy and contraception, and preventing infection during routine health procedures. Today in the United States, about 1 million adults are living with congenital heart defects.

Many congenital heart defects have few or no symptoms. A doctor may not even detect signs of a heart defect during a physical exam.

Some heart defects do have symptoms. These depend on the number and type of defects and how severe the defects are. Severe defects can cause symptoms, usually in newborn babies. These symptoms can include:

- Rapid breathing
- Cyanosis (a bluish tint to the skin, lips, and fingernails)
- Fatigue (tiredness)
- Poor blood circulation

Congenital heart defects don't cause chest pain or other painful symptoms.

Abnormal blood flow through the heart caused by a heart defect will make a certain sound. Your doctor can hear this sound, called a heart murmur, with a stethoscope. However, not all murmurs are a sign of a congenital heart defect. Many healthy children have heart murmurs.

Normal growth and development depend on a normal workload for the heart and normal flow of oxygen-rich blood to all parts of the body. Babies with congenital heart defects may have cyanosis or tire easily when feeding. Sometimes they have both problems. As a result, they may not gain weight or grow as they should.

Older children may get tired easily or short of breath during exercise or activity. Many types of congenital heart defects cause the heart to work harder than it should. In severe defects, this can lead to heart failure, a condition in which the heart can't pump blood strongly throughout the body. Symptoms of heart failure include:

- Fatigue with exercise
- Shortness of breath
- A buildup of blood and fluid in the lungs
- A buildup of fluid in the feet, ankles, and legs

Congenital heart disease can retard a child's growth in a number of ways. First, it can cause the child to eat too little. The child may voluntarily reduce food intake in order to reduce the workload of the heart. Or, the child can become listless because of rapid respiration and a lack of oxygen, thus reducing the child's ability to eat an adequate amount of food. A second reason for growth retardation is a high body metabolic rate caused by the increased nutrient needs of the organs and tissues and elevated body temperature and thyroid activity. A third reason for growth retardation is a high loss of body nutrients owing to inadequate intestinal absorption, excessive urine output, and the presence of hemorrhages or open wounds. It is not known how a heart defect can cause all these clinical problems.

The only cure for congenital heart disease is successful surgery, performed during early or late infancy.

Although corrective surgery can be successful, the mortality rate is high for small children. However, if death is imminent because of heart failure, high-risk surgery is indicated. It is therefore of paramount importance that infants with heart disease are provided adequate nutrition so that surgery can be performed when their growth reaches a body weight of 30 to 50 pounds. This must be accomplished despite the diminished nutrient supply to cells because of the decreased oxygen supply that results from a defective heart.

ACTIVITY 1:

Dietary Management of Congenital Heart Disease

There are no standard recommendations for the nutritional care of children with congenital heart disease. Each patient requires an individualized plan designed by the physician and implemented by the dietitian with the assistance of the attending nurse. Therefore, the information in Activity 1 must be interpreted as such. Guided by your instructor, use the references at the end of this chapter to obtain more details and analyses.

MAJOR CONSIDERATIONS IN DIETARY CARE

There are four major considerations in feeding children with congenital heart disease. One is caloric need. Because of the expected retardation of growth caused by the clinical condition, the child's caloric need is higher than the RDAs. For example, if the RDA of calories for a normal child is 100 kcal/pound, the need for a patient with congenital heart disease may be 130 to 160 kcal/pound.

A second concern is renal load. The child may have difficulty handling any large renal load of solutes. A large renal load may be caused by excessive electrolytes or de-

hydration, which can result from an insufficient fluid intake.

The third consideration is food intolerance. A large amount of simple sugars may produce diarrhea, the fat in regular milk and food may cause steatorrhea, and food ingestion may cause abdominal discomfort.

The fourth major consideration is vitamin and mineral need. Vitamin and mineral deficiencies have been documented in infants with congenital heart disease. Because of the small quantity of food consumed, the child's intake of these nutrients must be carefully monitored.

FORMULAS AND REGULAR FOODS

An infant with congenital heart disease is usually fed a special formula, although regular foods are sometimes used. The formula should be high in calories but contain only the minimal amount of protein and electrolytes needed for growth without causing kidney overload. Some guidelines are as follows: 8%–10% of the daily calories should come from protein; 35%–65% from carbohydrate; and 35%–50% from fat. Infants under 4 months old should get 1.8–2.0 g of protein per 100 kcal, and infants 4–12 months old should receive 1.65–1.75 g of protein per 100 kcal.

Some clinicians prefer special low-electrolyte, low-protein formulas supplemented with fat or carbohydrate solution. The preparer adds supplements to these formulas, which are commercially available. Other clinicians recommend using formulas with 25–30 kcal/oz, and diluting accordingly. The solute load of such preparations must be calculated, and their effects on the child carefully monitored. Sometimes the prepared formulas are supplemented with a limited amount of solid foods that is not adequate to support growth by itself. Some clinicians have good experience with Wyeth's SMA and Ross's Similac PM 60/40 (Chapter 20).

If formulas are not used, the calorie and sodium contents, digestibility, and renal solute load of the foods fed to the child must be appropriate. Carbohydrate and fat do not affect the solute load. Clinical practice has established that 1 milliosmol (mosm) of solute is formed by 1 milliequivalent (mEq) of sodium, potassium, and chloride, and that 1 g of dietary protein provides about 4 mosm of renal solute load. If the infant is given regular food, the diet should begin with easily digested and accepted items such as fruit, with cereal or unsalted vegetables included later.

Certain precautions are important in feeding a child with congenital heart disease. If the child is given any high-caloric supplement, small amounts should be used, at least at the beginning, as large portions can produce diarrhea and reduce appetite. If the child is eating moderately to considerably less than the calculated amount, he or she is especially susceptible to folic acid deficiency. Since many nonprescription vitamin supplements for

children do not contain folic acid, it is important to obtain a proper preparation. The child may also require iron and calcium supplementation.

Table foods may be introduced when the child is over 5½ to 6½ months old. Very small servings of chopped, mashed, or pureed cereal, fruits, potato, and meat with vegetables can be served, all prepared without salt. The amount of meat should be limited to less than 1 oz a day if the child's condition is poor.

Sodium intake must be carefully considered. Most commercial strained baby foods, especially meat and vegetable items, contain a large amount of sodium and are usually not suitable. If they are used, their sodium contents must be ascertained and the effects monitored. Home-prepared baby foods must be properly selected and quantified and prepared without salt. The child's need for sodium is a delicate balance between too much, which is bad for the heart, and too little, which affects growth. For example, if the child suffers any clinical symptoms of heart failure, dietetic low-sodium formulas may be indicated. If diuretics are used to remove body sodium, all complications associated with their usage must be monitored and corrected. The child's intake of sodium should be less than 8 mEq per day.

Fluid intake should also be carefully monitored because children with heart disease can lose much water from fever, high environmental temperature, diarrhea, vomiting, and rapid respiration. Thus, children with congenital heart disease need more water than normal children of the same age. Both urine and solute level should be monitored to assure that patients drink enough fluid and are not overloaded with solutes. An acceptable urine solute load is 400 mosm per liter.

MANAGING FEEDING PROBLEMS

Feeding children with congenital heart disease also poses problems. A child may lose his or her appetite or become tired, thus reducing food intake. Of course, food intake may be inadequate owing to the regular feeding problems of normal children. For example, if the parents force a child to eat, the child may stubbornly refuse. The child may cry and become cyanotic, which can frighten some parents. If a child does not enjoy eating and the parents do not know what to do, the child's eating problems can be perpetuated.

Educating parents of children with congenital heart disease is important. The parents should become familiar with the basic eating pattern of a normal child and all associated feeding problems. They should also become familiar with managing a child with feeding problems that may be psychological. For example, they can learn to anticipate the problems, to be aware of their child using food as a weapon, to avoid overconcern for their child, to be consistent in their management, and to avoid being manipulated by the child.

In addition to learning how to cope with normal feeding problems, the parents should learn about feeding difficulties related to the heart condition, such as vomiting, gagging, and regurgitation. They should learn such techniques as massaging and stimulation of the child's gums, lips, and tongue to increase the child's sucking ability. They should also learn to evaluate the child's responses such as tiredness, resting, amount of formula consumed over a fixed period, and complexion after eating. At the same time, they should seek professional help to make sure that their child is adequately nourished.

DISCHARGE PROCEDURES

When a child with congenital heart disease is discharged from the hospital, certain procedures must be followed by the health professionals. The child's nutritional status must be studied periodically. The child's family background and daily routine, especially the eating pattern of the entire family, should be evaluated, and preparations should be made for meeting the child's nutritional needs (the role of the caretaker, the times when the child can be fed, the frequency of the child's visits to the clinic). The parental food preparer should be completely familiar with the nutritional and dietary care of the child. If the parents are unable to cope with the different methods of combining or preparing formulas, they should be taught easier feeding methods. A list of low-sodium, nondietetic products such as sugar, cereal, fruits, and vegetables should be provided. If diarrhea and steatorrhea occur, medium-chain triglycerides can be used and the consumption of simple sugars can be reduced.

NURSING IMPLICATIONS

Nursing responsibilities for treating a child with congenital heart disease are listed below:

1. Adjust the diet to the child's condition and capabilities.
2. Avoid extremes of temperature in the child's environment.
3. Maintain optimum nutrition with a well-balanced diet.
4. Discourage consumption of food with high salt content; do not add salt to any foods.
5. Encourage potassium-rich foods to prevent depletion.
6. If supplements are used, mix them in juice to hide their taste.
7. Request iron supplements as needed to correct anemia.
8. Provide consistent discipline from infancy to prevent behavior problems such as overdependency and manipulation.
9. Feed the child slowly; administer small and frequent meals.

10. Encourage the anorexic child to eat.
11. Delay self-feeding to minimize exertion.
12. Stay calm.

PROGRESS CHECK ON ACTIVITY 1

MATCHING

Match the factors in dietary care in the column at the left to the appropriate nutritional alteration at the right:

- | | |
|------------------------------------|------------------------------------|
| 1. renal overload/dehydration | a. 130–160 kcal per lb body weight |
| 2. high metabolic rate | b. monitor fluid intake |
| 3. poor food intake | c. low in sugar, moderate fat |
| 4. food intolerances/malabsorption | d. adjust diet |

MULTIPLE CHOICE

Circle the letter of the correct answer.

5. The effects of congenital heart disease on the nutritional status of a child include all but:
 - a. growth retardation.
 - b. esophageal varices.
 - c. lack of energy.
 - d. inadequate absorption.
6. Congenital heart disease can retard a child's growth by:
 - a. elevating body temperature.
 - b. increasing thyroid activity.
 - c. decreasing intestinal absorption.
 - d. all of the above.
7. Energy supplements suitable for infants with congenital heart defects include:
 - a. MCT oil and corn oil.
 - b. Karo syrup.
 - c. pablum and albumin.
 - d. a and b.
8. Guidelines for nutrient distribution for the infant with congenital heart disease should be in the range of:
 - a. 50% carbohydrate, 20% protein, 30% fat.
 - b. 35%–65% carbohydrate, 10% protein, 35%–50% fat.
 - c. 30% carbohydrate, 30% protein, 60% fat.
 - d. none of the above.
9. The electrolytes that must be closely monitored in the diet when congenital heart disease is present are:
 - a. sodium, chloride, and potassium.
 - b. calcium, iron, and iodine.

- c. carbohydrate, protein, and fat.
- d. phosphorus, magnesium, and calcium.

10. The child with congenital heart disease is especially susceptible to which of the following vitamin deficiencies?
 - a. ascorbic acid
 - b. linoleic acid
 - c. folic acid
 - d. amino acid

FILL-IN

11. Write a 1-day menu for a 6½-month-old child with congenital heart disease who has just been introduced to solid foods. _____

12. List five feeding problems of children with congenital heart disease, and ways to overcome them.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
13. List five ways the nurse/healthcare provider can maintain optimal nutrition in a child with congenital heart disease.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
14. Name three discharge procedures to be followed when a child with congenital heart disease is going home.
 - a. _____
 - b. _____
 - c. _____

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OUTLINE

Objectives
Glossary
Background Information
ACTIVITY 1: Food Allergy and Children
Symptoms and Management
Milk Allergy
Diagnosis and Treatment
Nursing Implications
Progress Check on Background Information and Activity 1
ACTIVITY 2: Common Offenders
Common Allergens
Other Food Allergens
Peanut Allergy and Deaths
Progress Check on Activity 2
ACTIVITY 3: Inspecting Foods to Avoid Allergic Reactions
Progress Check on Activity 3
References

CHAPTER

27

Diet Therapy and Food Allergy

Time for completion

Activities: 1½ hours

Optional examination: 1 hour



OBJECTIVES

Upon completion of this chapter the student should be able to do the following:

1. Identify the most common food allergens.
2. Differentiate between food allergy and food intolerance.
3. Describe the symptoms and management of food allergies.
4. Identify testing that is used to diagnose and confirm food allergies.
5. Name the most common food offenders and their expected symptoms.
6. Explain how nutritional status is affected by food allergies.
7. Educate children and their caregivers about the management of allergies while maintaining adequate nutrition.

GLOSSARY

Angioedema: swelling and spasm of the blood vessels, resulting in wheals.

Asthma: “panting,” respiratory spasm and wheezing in an attempt to get more air.

Bronchitis: inflammation of the mucous membranes of one of the tubes leading to the lung.

Challenge diet: a diet designed to elicit a reaction by deliberately feeding a person certain ingredients, assuming the person is reactive to them.

Dermatitis: inflammation of the skin with symptoms such as itching, redness, and so on.

Eczema: acute or chronic inflammation of skin and immediately underneath it, with symptoms such as pus, discharge, and itching.

Elimination diet: a diet with certain ingredients removed, assuming a person is reactive to such ingredients. The disappearance of symptoms assumes that the person is reactive to the missing ingredients.

Immunoglobulin (Ig): one of a family of proteins that are capable of forming antibodies.

Mastitis: inflammation of the breasts.

Purpura: a variety of symptoms; for example, hemorrhage into skin.

Urticaria: eruption of the skin with severe itching.

Wheals: *see* Urticaria.

BACKGROUND INFORMATION

Allergy refers to an excess sensitivity to substances or conditions such as food; hair; cloth; biological, chemical, or mechanical agents; emotional excitement; extremes of temperature; and so on. The hypersensitivity and abnormal reactions associated with allergies produce various symptoms in affected people. The substance that triggers an allergic reaction is called an allergen or antigen, and it may enter the body through ingestion, injection, respiration, or physical contact.

In food allergies, the offending substance is usually, though not always, a protein. After digestion, it is absorbed into the circulatory system, where it encounters the body's immunological system. If this is the first exposure to the antigen, there are no overt clinical signs. Instead, the presence of an allergen causes the body to form immunoglobulins (Ig): IgA, IgE, IgG, and IgM. The organs, tissues, and blood of all healthy people contain antibodies that either circulate or remain attached to the cells where they are formed. When the body encounters the antigen a second time, the specific antibody will complex with it. Because the resulting complexes may or may not elicit clinical manifestations, merely identifying a specific immunoglobulin in the circulatory system will not indicate whether a person is allergic to a specific food antigen.

The human intestine is coated by the antibody IgA, which protects a person from developing a food allergy. However, infants under 7 months old have a lower amount of intestinal IgA. The mucosa thus permits incompletely digested protein molecules to enter. These can then enter the circulation and cause antibodies to form.

Children can also develop a food allergy called the "delayed allergic reaction" or "hypersensitivity." The classic sign of this is the tension-fatigue syndrome. Children with the syndrome have a dull face, pallor, infraorbital

circles, and nasal stuffiness. A delayed food-allergy symptom is more difficult to diagnose than an immediate one.

Although food allergy is not age specific, it is more prevalent during childhood. Because a reaction to food can impose stress and interfere with nutrient ingestion, absorption, and digestion, the growth and development of children with food allergies can be delayed. Half of the adult patients with food allergy claim that they had a childhood allergy as well. Apparently, a childhood food allergy rarely disappears completely in an adult. If a newborn baby develops hypersensitivity in the first five to eight days of life, the pregnant mother was probably eating a large quantity of potentially offending foods, such as milk, eggs, chocolate, or wheat. The child becomes sensitized in the womb, and the allergic tendency may either continue into adult life or gradually decrease.

In clinical medicine, it is extremely important to differentiate food allergy from food intolerance. The former relates to the immunosystem of the body, while the latter is the direct result of maldigestion and malabsorption due to a lack of intestinal enzyme(s) or an indirect intestinal reaction because of psychological maladjustment.

ACTIVITY 1:

Food Allergy and Children

SYMPTOMS AND MANAGEMENT

About 2%–8% of all Americans have some form of food allergy. The clinical management of food allergy is controversial and has many problems. For instance, a food allergy is influenced by the amount of allergen consumed, whether the allergen is cooked or raw, and the cumulative effects from successive ingestions of the allergen. A person with a food allergy also tends to be allergic to one or more of the following: pollen, mold, wool, cosmetics, dust, and other inhalable items. Because these substances are so common, they are difficult to avoid.

Other difficulties in allergy management are as follows:

1. If a person is allergic to a food, even a very small amount can produce a reaction.
2. Some patients allergic to an item at one time are not allergic at another.
3. Some patients react to an allergen only when they are tired, frustrated, or emotionally upset.
4. Although protein is suspected to be the substance most likely to cause allergy, people can be allergic to almost any food chemical.

In managing patients with food allergy, there are two basic objectives. First, the offending substance must be identified. Patients should then be placed on a monitored antiallergic diet to assure adequate nutrient intake,

especially young patients whose growth and development may be adversely affected by the allergy.

The clinical reactions of patients allergic to a food vary from relatively mild ones such as skin rash, itchy eyes, or headache to more severe ones such as abdominal cramps, diarrhea, vomiting, and loss of appetite. Other symptoms include cough, asthma, bronchitis, purpura, urticaria, dermatitis, and various problems affecting the digestive tract (vomiting, colic, ulceration of colon, etc.). In children, undernutrition and arrested development may occur.

MILK ALLERGY

Many individuals of all ages develop an allergy as well as an intolerance to milk and milk products. The reaction may occur when a person is sick (e.g., with infection, alcoholism, surgery, or trauma); thus, dietitians and nurses should always check to see whether a patient can tolerate milk. If the intolerance is due to a reduced activity of lactase, proper dietary therapy can be implemented.

Someone allergic to milk must also avoid many foods containing milk products. Ingesting regular homogenized fresh milk can damage the digestive mucosa of some susceptible individuals, especially children. The damaged cells bleed continuously but only minute amounts of blood are lost. The result is occult blood loss in the stool and iron-deficiency anemia. Professionals do not agree about whether this phenomenon is an allergic reaction. In rare cases, penicillin used in cows to prevent or control mastitis may leave a residue in milk. Consequently, some individuals who are allergic to the penicillin may have an allergic reaction to the inoculated cow's milk.

Breastmilk is much preferred over cow's milk for feeding a baby in a family whose members have allergies. Cow's milk contains the protein beta-lactoglobulin, which may trigger an allergic reaction, while breastmilk does not. If an infant has symptoms of milk allergy, special formulas with soy or another protein source as a base can be safely substituted for milk.

However, breastfeeding does have one major problem when it is used to prevent an infant from having an allergic reaction to cow's milk. If the child is also allergic to substances such as cheese, crab, or chocolate, the mother can in effect feed them to her child via breastmilk if she ingests them herself. Therefore, the breastfed child may show allergic reactions.

DIAGNOSIS AND TREATMENT

Food allergies are difficult to test for and subsequently to diagnose and confirm. Furthermore, patients with an allergic reaction to one food may in reality be allergic to many others that contain a common ingredient. Or, when an infant is allergic to a formula, it is usually assumed

that the protein is responsible. In reality, it could be the vegetable oil base.

When food allergy is suspected in a child, the parents, nurse, and dietitian or nutritionist should work together to identify the culprit. The child's reactions to food coloring and additives (which are found in many processed foods) and salicylate-related chemicals should also be noted. Unless the culprit is one of the common offenders, it is difficult for the physician to make an accurate diagnosis because of the many different components in a child's diet.

The National Institute of Health and the Department of Health and Human Services has made the following recommendations about diagnosis of a food allergy.

After ruling out food intolerances and other health problems, your healthcare provider will use several steps to find out if you have an allergy to specific foods.

Detailed History

A detailed history is the most valuable tool for diagnosing food allergy. Your provider will ask you several questions and listen to your history of food reactions to decide if the facts fit a food allergy. The following are samples of such questions:

1. What was the timing of your reaction?
2. Did your reaction come on quickly, usually within an hour after eating the food?
3. Did allergy medicines help? Antihistamines should relieve hives, for example.
4. Is your reaction always associated with a certain food?
5. Did anyone else who ate the same food get sick? For example, if you ate fish contaminated with histamine, everyone who ate the fish should be sick.

Diet Diary

Sometimes your healthcare provider can't make a diagnosis solely on the basis of your history. In that case, you may be asked to record what you eat and whether you have a reaction. This diet diary gives more detail from which you and your provider can see if there is a consistent pattern in your reactions.

Elimination Diet

The next step some healthcare providers use is an elimination diet. In this step, which is done under your provider's direction, certain foods are removed from your diet. You don't eat a food suspected of causing the allergy, such as eggs. You then substitute another food in the case of eggs, another source of protein.

Your provider can almost always make a diagnosis if the symptoms go away after you remove the food from your diet. The diagnosis is confirmed if you then eat the food and the symptoms come back. You should do this

only when the reactions are not significant and only under healthcare provider direction.

Your provider can't use this technique, however, if your reactions are severe or don't happen often. If you have a severe reaction, you should not eat the food again.

Skin Test

If your history, diet diary, or elimination diet suggests a specific food allergy is likely, your healthcare provider will then use either the scratch or the prick skin test to confirm the diagnosis.

During a scratch skin test, your healthcare provider will place an extract of the food on the skin of your lower arm. Your provider will then scratch this portion of your skin with a needle and look for swelling or redness, which would be a sign of a local allergic reaction.

A prick skin test is done by putting a needle just below the surface of your skin of the lower arm. Then, a tiny amount of food extract is placed under the skin.

If the scratch or prick test is positive, it means that there is IgE on the skin's mast cells that is specific to the food being tested. Skin tests are rapid, simple, and relatively safe. You can have a positive skin test to a food allergen, however, without having an allergic reaction to that food. A healthcare provider diagnoses a food allergy only when someone has a positive skin test to a specific allergen and when the history of reactions suggests an allergy to the same food.

Blood Test

Your healthcare provider can make a diagnosis by doing a blood test as well. Indeed, if you are extremely allergic and have severe anaphylactic reactions, your provider can't use skin testing because causing an allergic reaction to the skin test could be dangerous. Skin testing also can't be done if you have eczema over a large portion of your body.

Your healthcare provider may use blood tests such as the RAST (radioallergosorbent test) and newer ones such as the CAP-RAST. Another blood test is called ELISA (enzyme-linked immunosorbent assay). These blood tests measure the presence of food-specific IgE in your blood. The CAP-RAST can measure how much IgE your blood has to a specific food. As with skin testing, positive tests do not necessarily mean you have a food allergy.

Double-Blind Oral Food Challenge

The final method healthcare providers use to diagnose food allergy is double-blind oral food challenge.

Your healthcare provider will give you capsules containing individual doses of various foods, some of which are suspected of starting an allergic reaction. Or your provider will mask the suspected food within other foods

known not to cause an allergic reaction. You swallow the capsules one at a time or swallow the masked food and are watched to see if a reaction occurs.

In a true double-blind test, your healthcare provider is also "blinded" (the capsules having been made up by another medical person). In that case your provider does not know which capsule contains the allergen.

The advantage of such a challenge is that if you react only to suspected foods and not to other foods tested, it confirms the diagnosis. You cannot be tested this way if you have a history of severe allergic reactions.

In addition, this testing is difficult because it takes a lot of time to perform and many food allergies are difficult to evaluate with this procedure. Consequently, many healthcare providers do not perform double-blind food challenges.

This type of testing is most commonly used if a healthcare provider thinks the reaction described is not due to a specific food and wishes to obtain evidence to support this. If your provider finds that your reaction is not due to a specific food, then additional efforts may be used to find the real cause of the reaction.

NURSING IMPLICATIONS

The nurse should be aware of the following principles when caring for children with allergies:

1. Diet therapy is used to identify allergic reactions and also to avoid these reactions.
2. Newborns of parents with allergies should be protected from potential allergens in breastmilk.
3. Breastmilk is the best food for a potentially allergic infant.
4. Pregnant women with a family history of allergies should avoid foods known to be allergens to reduce the risk of sensitizing the infant.
5. Solid foods should be introduced one at a time and evaluated over several days before adding another.
6. Delay introduction of solid foods in an infant's diet to reduce absorption of potential allergens in an immature GI tract.
7. Appropriate substitutions or supplementation of an allergic child's diet is essential to prevent malnutrition created by gaps in permitted foods.
8. Children who are allergic to eggs should never be immunized with vaccines grown on chick embryo.
9. Diabetic children allergic to pork are unable to use insulin made from hog pancreas.
10. Children with allergens should wear medical alert tags.
11. Allergens are usually (though not always) proteins.
12. Raw foods are more likely to be allergens than cooked ones.
13. Parents and children should read all labels carefully and be taught to look for hidden sources of the allergen.

14. Foods that cause immediate allergic reactions in susceptible individuals are eggs, seafood, nuts (especially peanuts), and berries.
15. Foods that cause delayed reactions are wheat, milk, legumes, corn, white potatoes, chocolate, and oranges (citrus).
16. Patients who are allergic to a specific food will react to other foods in the same family.
17. Foods that cause allergic responses may be reintroduced at a later time because children tend to outgrow food allergies.
18. Differentiate between food allergies and food intolerance. The treatments are very different.

PROGRESS CHECK ON BACKGROUND INFORMATION AND ACTIVITY 1

FILL-IN

1. Define allergy. _____

2. Name the substance(s) that trigger allergic reactions. _____

3. Describe how IgA, IgE, IgG, and IgM are formed in the body. _____

4. What is the delayed allergic reaction syndrome?

5. Describe the difference between a food allergy and a food intolerance. _____

6. Identify six major problems that arise in regard to management of food allergies.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
 - f. _____
7. Name the two basic diet objectives in allergy management.
 - a. _____
 - b. _____
8. Why is breastmilk preferred over cow's milk for feeding infants? _____

9. Identify the two types of tests available for diagnosing children.
 - a. _____
 - b. _____

ACTIVITY 2:

Common Offenders

Although a food allergy rarely constitutes a serious, life-threatening concern, it results in chronic illness for many sufferers. This problem can be significantly eliminated if one is alert to the most common allergens and the manifestations of allergic reaction.

COMMON ALLERGENS

Cow's Milk

The allergen in cow's milk is probably the most common. A susceptible person may be allergic to whole, skimmed, evaporated, or dried milk, as well as to milk-containing products such as ice cream, cheese, custard, cream and creamed foods, and yogurt. Milk allergy can range from a mild to a severe stage. As a result, for those with more severe form of milk allergy, even butter and bread can create a reaction. Symptoms can include either or both constipation and diarrhea, abdominal pain, nasal and bronchial congestion, asthma, headache, foul breath, sweating, fatigue, and tension.

Kola Nut Products

Chocolate (cocoa) and cola (a source of caffeine) are products obtained from the kola nut, as indicated in most health documents issued by government agencies, both state and federal. However, botanically, the kola nut associated with cocoa is common in South America and the kola nut associated with cola is common in Africa. An allergy to one almost always means an allergy to the other as well. Symptoms most commonly include headache, asthma, gastrointestinal allergy, nasal allergy, and eczema. As far as the patients and doctors are concerned, the question of the source (Africa or South America) of kola nut is moot.

Corn

Because corn syrup is widely used commercially, corn allergy can result from a wide variety of foods. Candy, chewing gum, prepared meats, cookies, rolls, doughnuts,

some breads, canned fruits, jams, jellies, some fruit juices, ice cream, and sweetened cereals often contain corn syrup. Additionally, whole corn, cornstarch, corn flour, corn oil, and cornmeal can cause allergic reactions to such foods as cereals, tortillas, tamales, enchiladas, soups, beer, whiskey, fish sticks, and pancake or waffle mixes.

Symptoms can be bizarre, ranging from allergic tension to allergic fatigue. Headache can take the form of migraine.

Eggs

Those with severe allergy to eggs can react to even their odor. Egg allergy can also cause reaction to vaccines, since they are often grown on chicken embryo. Allergic reactions are generally to such foods as eggs themselves, baked goods, candies, mayonnaise, creamy dressings, meat loaf, breaded foods, and noodles.

Symptoms can be widely varied, as with milk. Egg allergy often results in urticaria (hives) though, like chocolate, larger amounts are usually necessary to produce that symptom. Other symptoms include headache, gastrointestinal allergy, eczema, and asthma.

Peas (Legumes)

The larger family of plants that are collectively known as peas include peanuts, soybeans, beans, and peas. Peanuts tend to be the greatest offender, and dried beans and peas cause more difficulties than fresh ones. Products that can cause selected allergy reaction are honey (made from the offending plants) and licorice, a legume. Soybean allergy presents a problem similar to corn owing to its widespread use in the form of soybean concentrate or soybean oil.

Legume allergies can be quite severe, even resulting in shock. They commonly cause headache and can be especially troublesome for asthma patients, urticaria patients, and angioedema sufferers.

Citrus Fruits

Oranges, lemons, limes, grapefruit, and tangerines can cause eczema and hives, and often, asthma. They commonly cause canker sores (aphthous stomatitis). Although citrus fruit allergy does not cause allergy to artificial orange and lemon-lime drinks, if patients are allergic to citric acid in the fruits then they will also react to tart artificial drinks and may also react to pineapple.

Tomatoes

This fruit, commonly called a vegetable, can cause hives, eczema, and canker sores. It can also cause asthma. In addition to its natural form, it can be encountered in soups,

pizza, catsup, salads, meat loaf, and tomato paste or tomato juice.

Wheat and Other Grains

Wheat, rice, barley, oats, millet, and rye are known allergens, with wheat the most common of the group. Wheat occurs in many dietary products. All common baked goods, cream sauce, macaroni, noodles, pie crust, cereals, chili, and breaded foods contain wheat.

Reaction to wheat and its related grains can be severe. Asthma and gastrointestinal disturbances are the most common reactions.

Spices

Of various spices that can cause allergic reaction, cinnamon is generally the most potent. It can be found in catsup, chewing gum, candy, cookies, cakes, rolls, prepared meats, and pies. Bay leaf allergy generally occurs as well, since this spice is related to cinnamon. Pumpkin pie reactions are common owing to their high cinnamon content. Other spices most frequently mentioned as allergens are black pepper, white pepper, oregano, the mints, paprika, and cumin.

Artificial Food Colors

Although various artificial food colors have been implicated in such problems as hyperactive syndrome in children, as allergens the two most common offenders are amaranth (red dye) and tartrazine (yellow dye). Amaranth is most often encountered, but reactions to tartrazine tend to be more severe. Food colors occur in carbonated beverages, some breakfast drinks, bubble gum, flavored ice foods, gelatin desserts, and such medications as antibiotic syrups.

OTHER FOOD ALLERGENS

Any food is capable of producing an allergic reaction. However, those offenders often mentioned after the top 10 are pork and beef, onion and garlic, white potatoes, fish, coffee, shrimp, bananas, and walnuts and pecans.

Vegetables, other than those already mentioned, rarely cause allergic reactions. Fruits that usually are safe include cranberries, blueberries, figs, cherries, apricots, and plums. Chicken, turkey, lamb, and rabbit have proven to be the safest meats. Tea, olives, sugar, and tapioca are also relatively safe foods, although some herbal teas can cause unique difficulties.

PEANUT ALLERGY AND DEATHS

Peanut allergy is probably the most serious among children and teenagers. Two examples of death from peanut allergy are provided here.

Death of a Cadet in Australia

On June 6, 2008, the *Sydney Morning Herald* of Australia reported the following:

Nathan Francis, a 13-year-old cadet associated with the Australian Defense Force (ADF), died from eating a military ration pack meal. This occurred on March 30, 2007, when the teenager from Melbourne was participating in an army cadet unit west of Victoria. The meal contains peanuts as one of the ingredients. The boy suffered an allergic shock.

The Australia occupation health and safety authority claimed that the ADF was not offering adequate measures to provide health and safety protection for its cadets.

Death of a Teenager in Canada

On April 16, 2007, the *Victoria Times-Colonist* of British Columbia, Canada, reported the following:

Carley Kohnen, a 13-year-old, died at Summit Park, Victoria. She died from an anaphylactic shock brought about by an allergic reaction to a food ingredient she ate. In this case, while visiting a mall with some friends, she ate a burrito. She suffered from an allergy to dairy products and peanuts while they were on the way to the park. The offending ingredients were most likely from the burrito.

Normally, she carries an auto-injector just in case an allergic shock occurs. Unfortunately, she left it in her locker at school. Her shock required medical treatment immediately, and she died because there was very little time for help to arrive.

Unfortunately, severe food allergy is a problem with teenagers in Canada and the United States. Legal, medical, and educational authorities in both countries are considering the most effective ways to counteract such medical problems. In some situations, food with a peanut ingredient is banned from all public and private schools.

PROGRESS CHECK ON ACTIVITY 2

MULTIPLE CHOICE

Circle the letter of the correct answer.

- The most common offender to trigger allergies is:
 - wheat.
 - cow's milk.
 - corn.
 - eggs.
- The most common artificial food colors to trigger allergies in susceptible children include:
 - amaranth and tantrazine.
 - tyrosine and amaranth.
 - chlorophyll and rubella.
 - melanine and xanthine.

- Egg allergies can cause reaction to vaccines because:
 - egg yolk is a very common allergen in children.
 - egg forms a complex with the drug causing the reaction.
 - the vaccine is grown on a chicken embryo.
 - all of the above

TRUE/FALSE

Circle T for True and F for False.

- T F Allergic reactions to chocolate include asthma and eczema.
- T F Corn allergies do not develop from ingestion of corn syrup.
- T F People with severe allergies to eggs can react to their odor.
- T F Legume allergies are not usually as severe as milk allergies.
- T F Citrus allergy sufferers usually do not react to artificial citrus flavors.
- T F The most common grain allergen is wheat.
- T F The most potent spice allergen is ginger.

ACTIVITY 3:

Inspecting Foods to Avoid Allergic Reactions

Each year the Food and Drug Administration (FDA) receives reports of consumers who experienced adverse reactions following exposure to an allergenic substance in foods. Food allergies are abnormal responses of the immune system, especially the production of allergen-specific IgE antibodies to naturally occurring proteins in certain foods that most individuals can eat safely. Frequently such reactions occur because the presence of the allergenic substance in the food is not declared on the food label. Current regulations require that all added ingredients be declared on the label, yet there are a number of issues that have arisen in connection with undeclared allergens that are not clearly covered by label regulations.

To protect the consumers, both adults and children, the FDA has asked its food inspectors to pay attention to the following when inspecting an establishment that manufactures processed food products.

- Products that contain one or more allergenic ingredients, but the label does not declare the ingredient in the ingredient statement.
- Products that become contaminated with an allergenic ingredient due to the firm's failure to exercise adequate control procedures, for example, improper rework practices, allergen carryover due to use of common equipment and production sequencing, and inadequate cleaning.

3. Products that are contaminated with an allergenic ingredient due to the nature of the product or the process, for example, use of common equipment in chocolate manufacturing where interim wet cleaning is not practical and only dry cleaning and product flushing is used.
4. A product containing a flavor ingredient that has an allergenic component, but the label of the product only declares the flavor, for example, natural flavor. Under current regulations, firms are not required to declare the individual components of flavors, certain colors, and spices. However, firms are encouraged to specifically label allergenic components and ingredients that are in spices, flavors, and colors.
5. Products that contain a processing aid that have an allergenic component, but the label does not declare it. Processing aids that contain allergenic ingredients are not exempt from ingredient declaration.

FDA believes there is scientific consensus that the following foods can cause serious allergic reactions in some individuals and account for more than 90% of all food allergies:

- Peanuts
- Soybeans
- Milk
- Eggs
- Fish
- Crustacea (e.g., shrimp)
- Tree nuts
- Wheat

Each FDA food inspector is asked to pay special attention to the following:

1. **Product development:** Determine whether the firm identifies potential sources of allergens starting in the product development stage.
2. **Receiving:** Determine whether the firm uses allergenic ingredients and how they are stored.
3. **Equipment:** Try to inspect the equipment before processing begins and document the adequacy of clean up.
4. **Processing:** Determine what control measures, if any, are used by the firm to prevent the contamination of products that do not contain allergens.

The inspection is especially concerned about the labeling that will be checked as follows:

1. Determine if finished product label controls are employed; for example, how are labels delivered to the filling and/or packaging area?
2. Determine if product labels with similar appearances but different ingredients are controlled to ensure that the correct label is applied to correct product.
3. Determine if finished product packages are inspected prior to distribution to ensure that an allergen-

containing product is labeled properly, or that labels are inspected during production. Is that inspection documented?

4. Determine if secondary ingredients are incorporated in the final product ingredient statement, for example, the raw material mayonnaise, which contains eggs, oil, and vinegar.
5. Determine if the firm uses a statement such as “This product was processed on machinery that was used to process products containing (allergen)” or a statement such as “may contain (allergen)” if the firm uses shared equipment for products that contain and products that do not contain allergens. Any other such statement? Ask the firm why they believe they have to use the advisory statement.
6. Determine if the finished product label reflects any advisory statements that were on the raw material labels, for example, “This product was processed on machinery that was used to process products containing (allergen).”
7. Determine if the firm has a system to identify finished products made with rework containing allergenic ingredients. Does the final product label identify the allergens that may have been in the reworked product?

Although some labels do not state allergic ingredients, most do. Therefore, if your child has a food allergy, the best prevention method is to read the label of any food product that will be consumed by the child.

PROGRESS CHECK ON ACTIVITY 3

TRUE/FALSE

Circle T for True and F for False.

1. T F Food allergies are abnormal responses of the immune system, especially the production of allergen-specific IgE antibodies to naturally occurring proteins in certain foods that most individuals can eat safely.
2. T F Frequently food allergic reactions occur because the allergenic substance originates from the food itself.
3. T F The FDA inspector is especially concerned about the labeling of products with a statement such as “This product was processed on machinery that was used to process products containing (allergen)” or a statement such as “may contain (allergen).”

FILL-IN

4. Name the eight foods that the scientific community believes account for more than 90% of all food allergies:

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____
- g. _____
- h. _____

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OUTLINE

Objectives
Glossary
Background Information
Progress Check on Background Information
ACTIVITY 1: Phenylketonuria and Dietary Management
Treatment and Requirement
Lofenalac and Phenylalanine Food Exchange Lists
Special Considerations
Follow-up Care
Drug Therapy
Nursing Implications
Progress Check on Activity 1
References

CHAPTER

28

Diet Therapy and Phenylketonuria

Time for completion

Activities: 1 hour

Optional examination: ½ hour



OBJECTIVES

Upon completion of this chapter, the student should be able to do the following:

1. Explain the etiology of phenylketonuria (PKU).
2. Identify a method of diagnosing PKU.
3. Relate the symptoms of untreated PKU.
4. Describe the dietary management of PKU:
 - a. Requirements
 - b. Restrictions
 - c. Appropriate supplements
5. Evaluate the controversies regarding terminating diet therapy and restricted diet during pregnancy.
6. Discuss the responsibilities of the health team for follow-up care in monitoring the progress of a PKU child.
7. List health team interventions appropriate to successful dietary management of PKU children.
8. Provide information to caregivers on diet management, resources, and counseling as necessary.

GLOSSARY

Casein hydrolysate: principal protein of milk, partially digested.

Eczema: a superficial inflammatory process of the skin marked by redness, itching, scaling, sometimes weeping and oozing.

Electroencephalogram (EEG): the recording of changes in the electrical potential of the brain by evaluating the brain waves.

Fibrinogen: a protein in the blood necessary for clotting.

Mental retardation: significantly subaverage general intellectual functioning existing along with deficits in adaptive behavior, which manifests itself during the developmental period.

Phenylketonuria (PKU): an inborn error of amino acid metabolism.

Plasma: fluid portion of the blood in which corpuscles are suspended.

Reticulosarcoma: a type of malignant tumor; a lymphoid neoplasm; also called “stem cell” lymphoma and “undifferentiated malignant” lymphoma.

Serum: plasma from which fibrinogen has been removed in the process of clotting.

BACKGROUND INFORMATION

Each of the 8 to 10 essential amino acids in the human body is metabolized via a unique pathway. Some infants are born with a defect in one of the enzyme systems that regulate one or more of these pathways. As a result, if the amino acid is not metabolized properly, certain products may accumulate in the blood or urine. If this occurs, an inborn error of metabolism for that particular amino acid results.

One example of faulty protein metabolism involves phenylalanine and tyrosine. Although both substances are essential amino acids, the body derives part of its tyrosine needs from phenylalanine with the help of a certain enzyme (phenylalanine hydroxylase). A newborn may have no or very low activity of this enzyme, and as a result the body is unable to change phenylalanine to tyrosine. Consequently the chemicals phenylalanine, phenylpyruvic acid, and other metabolites accumulate. If they exceed certain levels in the blood, they cross the brain barriers (membranes), and the child suffers mental retardation. It is currently believed that one in 25,000 live births in the United States inherits this disorder, commonly referred to as phenylketonuria (PKU), which causes a high level of phenylpyruvic acid in the urine. Immediately after birth the baby appears normal, but the child soon becomes slightly irritable and hyperactive. The urine has a musty odor.

If the disorder is not diagnosed and treated, the child will develop aggressive behavior, unstable muscular and

nervous systems, eczema, convulsions, and seizures. Since tyrosine is responsible for making pigments, its decreased supply results in decreased coloration, with such effects as decreased body pigmentation, blue eyes, a fair complexion, and blond hair in Caucasian patients. Some patients develop reticulosarcoma-like skin lesions. Severe mental retardation may result. The accumulation of chemicals in the blood interferes with the normal development of the central nervous system and the brain. Some young children show abnormal electroencephalograms. In spite of all these adverse symptoms, the child shows a normal birth weight.

A method of diagnosing PKU in newborns was developed in the 1960s, and its use has since become widespread. The method, known as the Guthrie test, involves analyzing blood drawn from the child's heel. A normal infant's blood contains about 1 to 2 mg of phenylalanine/100 ml of plasma, while that of a PKU child is about 15 to 30 mg/100 ml plasma. However, a positive Guthrie test does not necessarily indicate PKU, because transient high blood phenylalanine may occur in some infants; thus, additional tests are required for confirmation.

The Guthrie test is normally done before the baby is removed from the nursery, 2 to 5 days after birth. At 1 month of age, the test is repeated, especially for babies who show high blood phenylalanine during the first blood screening. A blood level of over 4 mg phenylalanine/100 ml plasma may indicate that additional tests are needed. A level of 20 mg/100 ml positively indicates PKU.

All states and U.S. territories screen for PKU, whether voluntary or mandatory. Babies are screened before discharge from the hospital. Although the principles of the test are the same as it was discovered in 1960, the technique of analysis is faster, easier, and more accurate.

PROGRESS CHECK ON BACKGROUND INFORMATION

MULTIPLE CHOICE

Circle the letter of the correct answer.

- PKU may be defined as an inborn error of metabolism because:
 - amino acids have a separate pathway from other nutrients.
 - there is a defect in the enzyme system that regulates certain amino acids.
 - the amino acids accumulate in the urine.
 - the mother's diet was very low in amino acids.
- The absent or limited enzyme that causes the symptoms of PKU to develop is:
 - lactase-galactase.
 - gliadin.
 - phenylalanine hydroxylase.
 - phenylpyruvic acid.

3. The level of phenylalanine in a normal baby's blood is _____/100 ml plasma, while in that of a PKU baby it is _____/100 ml plasma.
 - a. 1–2 mg; 15–30 mg
 - b. 12–15 mg; 30–40 mg
 - c. 30–40 mg; 65–75 mg
 - d. 10–20 mg; 50–100 mg
4. The most prominent symptom of untreated PKU is:
 - a. aggressive behavior.
 - b. decreased skin coloration/skin lesions.
 - c. convulsions.
 - d. severe mental retardation.
5. The diagnostic test for PKU is done:
 - a. one month after birth.
 - b. two to five days after birth.
 - c. at birth.
 - d. any time before the first year.

TRUE/FALSE

Circle T for True and F for False.

6. T F A positive reaction to a Guthrie test always indicates that a baby has PKU.
7. T F It is voluntary in the United States that all states screen new babies for PKU.

ACTIVITY 1:

Phenylketonuria and Dietary Management

TREATMENT AND REQUIREMENT

The dietary management for PKU children consists of rigidly restricting phenylalanine intake. This special, low-phenylalanine diet starts immediately after diagnosis. If treatment starts after retardation has already occurred, normal mental ability may not return completely, but there will be no further deterioration and no recurrence of symptoms. Although the intake of phenylalanine must be restricted, these children still need a minimal amount of the amino acid for growth and development, in addition to an adequate supply of all other essential nutrients.

A newborn child needs about 65 to 90 mg of phenylalanine per kilogram of body weight, while a 2-year-old needs 20 to 25 mg. Thus, an infant should be provided with enough phenylalanine to maintain a level of 2–6 mg/dl of blood, based on tolerance, or 60 mg/kg/day. The protein should be 3.0–3.5 g/kg and the caloric intake of at least 110 cal/kg. Any formula used should have at least 90% of phenylalanine removed; meaning 90% of protein for the infant should come from specialized infant formula. If a particular level of intake raises serum levels to abnormally high concentrations, the level must be lowered. Conversely, the serum level must not be allowed to fall below acceptable limits.

LOFENALAC AND PHENYLALANINE FOOD EXCHANGE LISTS

Since phenylalanine is an essential amino acid, it is found in most animal products, including milk, which is the main nutritional component of an infant's diet; thus, milk has to be specially processed to remove part or all of the phenylalanine. For many years most practitioners have used the commercial powder Lofenalac (Mead Johnson). It is a special low-protein powder containing casein hydrolysate with about 95% of the phenylalanine removed. It is also supplemented with vitamins and minerals. Although Lofenalac is still widely used, Mead Johnson has developed several new products with some modifications. For ease of discussion, we will continue to use Lofenalac as an illustration and a product of choice.

There are also formulas that are age related: Analog, Maxamaid, and Maximum, from Scientific Hospital Supplies; and the 1993 Metabolic Formula System from Ross Laboratories.

Because Lofenalac contains less than 1% phenylalanine, it cannot support normal growth and development of a child. As a result, specified amounts of natural foods are commonly provided to increase the child's phenylalanine intake, such as evaporated or whole milk. As the child grows, additional solid foods are given. Close monitoring of the child's nutrient intake is essential. Table 28-1 compares the phenylalanine, calorie, and protein content of Lofenalac with that of evaporated and whole milk. Table 28-2 describes the phenylalanine, energy, and protein intake for a PKU patient under 1 year old.

TABLE 28-1 Calorie, Phenylalanine, and Protein Contents of Lofenalac and Milk

Food	Amount	Kilocalories	Protein (g)	Phenylalanine (g)
Lofenalac	10 g	45.4	1.5	0.008
Milk				
Evaporated	29–30 g (1 oz)	44.0	2.2	106
Whole	29–30 g (1 oz)	19.7	1.1	51

TABLE 28-2 Suggested Phenylalanine, Energy, and Protein Intakes per Day for PKU Patients under One Year Old

Amount of Nutrient Needed per Kilogram Body Weight				Lofenalac		Milk (oz)	
Age (months)*	Phenylalanine (mg)	Protein (g)	Kilocalories	Protein Provided by Product to Child's Need (%)	Measures [†] Permitted per Kilogram Body Weight	Whole	Evaporated
0–2½	85	4.4	125	85	2½–3	2–4	1–3
2½–6½	65	3.3	115	85	2–2½	2–4	1–2½
6½–9½	45	2.5	105	90	1½–2	1½–2½	½–1½
9½–12	32	2.5	105	90	1½–2	½–1½	½–1

Note: the child may or may not need additional foods. See text.

*The separation between age groups is not exact.

[†]One measure equals 1 tbsp, containing about 10 g of powder.

An example: a one-month-old child is permitted 2 to 4 oz whole milk (or 1 to 3 oz evaporated milk) and 2½ to 3 measures of Lofenalac per kilogram body weight per day.

To provide the PKU child with regular food, the phenylalanine, protein, and calorie contents of regular foods must be known. As a result, young children's foods are grouped into exchange lists, each of which contains food items that contribute equivalent amounts of phenylalanine.

Currently, both U.S. Public Health Service and private medical centers use the dietary guidelines for management of PKU. Dietary management has two purposes: an appropriate substitute for milk (especially for the infant) and guidelines for adding solid foods. Lofenalac is the milk substitute most generally used in the United States. It contains approximately 5% phenylalanine. Other products that are phenylalanine free can be used by older children and pregnant mothers. This allows them a wider variety of foods before they reach the limits of the phenylalanine allowance in their diet.

Caregivers, nurses, and physicians must bear the primary responsibility for providing and continuing care so that the child with PKU will grow and develop normally. This requires a coordinated effort of understanding the absolute necessity of following the diet carefully. Patience is very important as counseling, guidance, and education are provided. Teaching guides and materials are available to help in planning and follow-up. Home health nurses may provide follow-up care and reinforcement. Social services and support groups are also good adjuncts to assist in the vigilance required.

SPECIAL CONSIDERATIONS

When feeding a patient with PKU, several considerations should be kept in mind. First, calories and taste should be varied. Second, special low-protein products are available and can also be used to advantage. Request a list from dietitians or nurses. Third, patients should avoid meat and dairy products (except the permitted milk).

Fourth, the feeding regimen must be consistent with the age and development of the child, and the food quantity and texture must be adjusted to the child's eating ability. Fifth, the nutritional adequacy of the child's diet should be constantly evaluated, using the RDAs/DRIs as a guide. Table 28-3 lists some common baby foods along with their nutritional values, and Table 28-4 offers a child's sample menu.

One of the most controversial issues in treating a child with PKU is the uncertainty about when to terminate dietary restrictions. Some children are put on a normal diet at the age of five, when further mental progress may require additional phenylalanine. Other clinicians keep the child on a phenylalanine-restricted diet indefinitely. There is no known age when the diet can be safely discontinued. Developmental problems occur in older children and adolescents who have discontinued the diet.

It should be noted that if a restrictive diet is discontinued, the child and family go through a very important transition period. The parents and the child will need time and patience to adapt to this sudden exposure to meat and a whole variety of other foods.

Successful management of PKU babies over the years has allowed them to attain normal growth and develop into healthy adults. Now the young women are having babies of their own. The pregnant woman with PKU is at high risk, but the fetal risks are even higher. The major hazards to the fetus are congenital deformities and mental retardation. Untreated PKU during a pregnancy also leads to higher rates of stillbirth and/or prematurity.

In the United States, thousands of women of child-bearing age have had their PKU successfully treated. Most discontinued their special diet in childhood when their doctors determined that it was safe to do so.

If these young women are eating a normal diet, their blood phenylalanine levels are very high when they become pregnant. During pregnancy, high blood levels of

TABLE 28-3 Contents of Calories, Protein, and Phenylalanine in Some Selected Foods

Food	Phenylalanine (mg)	Protein (g)	Kilocalories
Gerber's strained and junior vegetables			
Carrots, 5 tbsp	15	0.5	21
Sweet potatoes, 1½ tbsp	15	0.3	15
Gerber's strained and junior fruits			
Applesauce, 7 tbsp	10	0.2	81
Apricots with tapioca, 8 tbsp	10	0.5	88
Orange-pineapple juice, 11 tbsp	10	0.8	41
Peaches, 3 tbsp	10	0.3	35
Gerber's baby cereals			
Barley cereal, 1¼ tbsp	18	0.4	11
Rice with mixed fruit (in jar), 1¼ tbsp	18	0.3	13
Rice with strawberries, 2¼ tbsp	18	0.5	21
Total	124	3.8	326

phenylalanine in the mother can cause serious problems in the fetus such as mental retardation, a small head size at birth, heart defects, and low birth weight.

Fortunately, most of the clinical problems can be prevented in babies of women with PKU if proper precautions are taken by these pregnant women:

1. Resume their special diets at least three months before pregnancy and continue the diet throughout pregnancy.
2. Undergo weekly blood tests throughout pregnancy to monitor blood phenylalanine levels assuming that high levels will be treated by the obstetrician.

Obviously, undiagnosed PKU in a pregnant woman can pose a risk to her baby. Careful screening and counseling is necessary for identified PKU-potential mothers. Their pregnancies should be carefully planned, and they should be on a restricted phenylalanine diet. Since PKU diets are low in protein, their diet must be strictly constructed and monitored by a clinical dietitian throughout the pregnancy. Low-phenylalanine formulas and food products become the mainstay of the diet.

Many authorities strongly recommend that PKU children, especially girls, remain on their diets throughout life. In this way, some of the dangers of pregnancy can be minimized.

FOLLOW-UP CARE

The health team must monitor progress after a child is placed on a phenylalanine-restricted diet. During the first few weeks of the diet, the child's blood should be tested twice a week. After the child has been on the diet for a brief period and his or her clinical condition has improved and stabilized, blood tests should be performed

TABLE 28-4 Sample Menu Plan for a 9-Month-Old Child with PKU

Breakfast

Lofenalac formula, 6 oz
Rice with strawberries, Gerber's baby cereal, 2¼ tbsp
Carrots, Gerber's strained and junior vegetables, 5 tbsp

Midmorning Feeding

Peaches, Gerber's strained and junior fruit, 3 tbsp

Lunch

Lofenalac formula, 6 oz
Cereal, barley, Gerber's baby cereal, 1¼ tbsp
Apricots with tapioca, Gerber's strained and junior fruit, 8 tbsp
Orange-pineapple juice, Gerber's strained and junior fruit, 5 tbsp

Midafternoon Feeding

Applesauce, 7 tbsp

Dinner

Lofenalac formula, 6 oz
Rice with mixed fruit (in jar), Gerber's baby cereal, 1¼ tbsp
Sweet potatoes, Gerber's strained and junior vegetables, 1½ tbsp

Bedtime Feeding

Lofenalac formula, 6 oz
Orange-pineapple juice, Gerber's strained and junior fruit, 6 tbsp

weekly until the child is 1 year old. Later, the toddler's blood should be tested once every 2 to 3 weeks. When all symptoms have disappeared and the child has adapted to the diet, the blood tests can be done monthly.

The dietary supply and blood levels of phenylalanine are strongly correlated with the height and weight gains of the child. If children get an insufficient amount of phenylalanine, they will become lethargic, have stunted growth, and lose their appetite. More severe effects include mental retardation, clinical deterioration (fever, coma), and even death. Also, when children with PKU become sick or have infections, blood phenylalanine may rise to unacceptable levels.

DRUG THERAPY

In December 2007, the U.S. Food and Drug Administration approved Kuvan (sapropterin dihydrochloride), the first drug of its kind approved to slow the effects of PKU. The drug has different effects on babies with PKU. It is estimated that it is effective in about 1 out of every 12,000 to 15,000 live births in the United States.

Kuvan must be used in combination with a phenylalanine-restricted diet. A patient can override the effects of Kuvan by not following a restricted diet. Patients being treated with Kuvan must have their blood phenylalanine levels monitored frequently by their physicians or other healthcare professional to ensure their levels are in the normal range.

NURSING IMPLICATIONS

Nursing responsibilities for treating a child with PKU are as follows:

- Be aware that dietary management is the only treatment for children with PKU.
- The diet for PKU must meet two criteria:
 - It must meet the child's nutritional needs for growth and development.
 - It must maintain phenylalanine levels within a safe range.
- The diet therapy is very strict and presents difficulties to the families or caregivers.
- Lofenalac and Phenyl-Free are very expensive; financial aid may be required. Funding sources should be furnished to the parents.
- Frequent monitoring of urinary and blood levels of phenylalanine are necessary.
- Careful dietary records as well as height and weight records must be maintained to monitor diet adequacy.
- While brain damage is irreversible, diet therapy will limit its progress.
- Restricting phenylalanine in older children with PKU is beneficial in improving behavior and motor ability, as well as decreasing eczema. Poor bone growth and impaired mental abilities have also been documented in those whose diets were discontinued early.
- The meaning of the treatment must be explained to the health team and the parents. Successful control of PKU requires that the family learn to:
 - plan the baby's diet.
 - monitor food intake.
 - take blood samples.
 - keep accurate records of intake and state of health.
 - cope with normal developmental stages.
- Therapeutic communication is necessary to allow parents to voice feelings of guilt, fear, and frustration and to attain a healthy outlook.
- Provide information on:
 - signs of inadequate phenylalanine intake: anorexia, vomiting, listlessness.
 - situations that require increased amounts of phenylalanine, such as during periods of rapid growth and during febrile illnesses.
 - possible deficiencies in other nutrients: intake of manganese, zinc, and niacin may be low when the primary protein source is synthetic.
- Closely monitor hemoglobin levels, since protein is severely restricted.
- Lofenalac provides 454 calories, 15 g protein, 60 g carbohydrate, and 18 g fat per 100 mg powder.
- Special products such as low-protein flour, cookies, pasta, and other bakery items can be purchased to augment this severe diet and increase carbohydrate intake.
- Recognize that primary diet teaching may require the services of a specialist, and the nurse may prefer to reinforce the teaching and encourage compliance.
- Counsel family members that the current practice is long-term dietary management so that they will be prepared for the process.
- When solid foods are added to the child's diet (at about 6 months of age) parents and caregivers will need a low-phenylalanine food exchange list.

PROGRESS CHECK ON ACTIVITY 1

MULTIPLE CHOICE

Circle the letter of the correct answer.

- The objectives of dietary management of the child with phenylketonuria (PKU) include:
 - lowering phenylalanine content to the minimum requirement for growth by calculating the diet for phenylalanine content.
 - removing all milk and milk products from the diet.
 - removing all protein foods from the diet.
 - all of the above.

2. From the following list of lunch menus, choose the one most appropriate for a PKU youngster who is 2-½ years old:
 - a. 2 tbsp roast beef, ½ slice bread, ¼ c green beans, ½ banana, ½ c Lofenalac
 - b. 1 hard-boiled egg, raw carrot sticks, 2 Ritz crackers, 1 pear half, ½ c Lofenalac
 - c. ¼ c sliced beets, ¼ c green beans, 3 tbsp boiled potato, ½ c Lofenalac vanilla pudding with whipped topping, apple juice
 - d. 4 potato chips, 1 graham cracker with butter, ½ c Lofenalac vanilla pudding, 8 oz cola
3. In which of the following persons with PKU could the diet be safely liberalized?
 - a. pregnant female
 - b. 20-year-old male
 - c. 4-year-old female
 - d. 2-year-old male
4. The young parents of an infant consistently forget to give the child the required milk allowance in addition to his Lofenalac. The following may be expected:
 - a. The child will become allergic to milk.
 - b. The child's growth and development will be retarded.
 - c. The child will develop a lactose intolerance.
 - d. The child will become hyperactive.
5. If dietary treatment starts after mental retardation occurs, the following may be expected:
 - a. The brain will continue its deterioration.
 - b. No further deterioration will take place.
 - c. The mental retardation will be reversed and the child will become normal.
 - d. Physical growth will be retarded.
6. Phenylalanine may not be omitted from the infant's diet because:
 - a. as an essential amino acid, it must be supplied by diet or the infant will fail to develop.
 - b. the electrolytes of the body will be in negative balance.
 - c. it must be in the diet to produce tyrosine.
 - d. the child will get bradycardia.
7. The diet of the PKU child must be calculated for:
 - a. phenylalanine, tyrosine, and histamine.
 - b. protein, carbohydrate, and fat.
 - c. phenylalanine, protein, and calories.
 - d. calcium, iron, and ascorbic acid.
8. Techniques that promote compliance when feeding a PKU child include:
 - a. varying taste by using allowed flavorings and seasonings.
 - b. using low-protein grain products for variety.
 - c. adjusting quantity and texture to child's eating ability.
 - d. all of the above.

9. Insufficient phenylalanine will result in which of the following symptoms?
 - a. stunted growth
 - b. anorexia, lethargy
 - c. mental retardation
 - d. all of the above

TRUE/FALSE

Circle T for True and F for False.

10. T F Feeding must be consistent with age and development.
11. T F Nutritional adequacy must be constantly evaluated.
12. T F Meat and milk are not used in the diet plan for PKU, except for a small quantity of evaporated milk daily.
13. T F PKU is a self-limiting disorder—the child will “grow out of it” as he or she grows up.

FILL-IN

14. List five steps necessary to the planning of an adequate diet for PKU.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
15. Describe three ways to vary calories and taste in a PKU diet without unbalancing it.
 - a. _____
 - b. _____
 - c. _____

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OUTLINE

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CHAPTER

29

Diet Therapy for Constipation, Diarrhea, and High-Risk Infants

Time for completion

Activities: 1 hour

Optional examination: ½ hour



OBJECTIVES

Upon completion of this chapter the student should be able to do the following:

1. Describe the normal patterns and characteristics of bowel movements in infants and young children.
2. Identify deviations from normal when:
 - a. constipation is the problem.
 - b. diarrhea is the problem.
3. Identify the major causes of constipation and diarrhea.
4. List the major purposes of diet therapy for constipation and diarrhea in infants and children.
5. Identify the types of feedings necessary to meet the goals of diet therapy in these disorders.
6. Describe the strategies the health professional would teach caregivers to prevent further problems.
7. Name the categories of high-risk infants requiring specialized nutritional therapy.

8. Describe the types of feedings necessary to meet the individual needs of each infant.
9. Exhibit proficiency in the selection of formulas and recommended feeding methods.
10. Teach all caregivers the pertinent facts they must know in order to adequately nourish their high-risk infant.

GLOSSARY

Benign: not malignant, not recurrent.

Electrolyte: a chemical substance that, when dissolved in water or melted, dissociates into electrically charged particles (ions).

Fiber (dietary): that portion of undigested foods that cannot be broken down by enzymes, so it passes through the intestine and colon undigested.

Immune (immunological): highly resistant to a disease because of developed antibodies, or development of immunologically competent cells, or both.

Meconium: mucilaginous material in the intestine of the full-term fetus.

Mucilage: aqueous solution of a gummy substance.

Osmolarity: concentrating a solution in terms of osmoles of solutes per liter of solution (osmolality).

Osmosis: passage of a solvent from a solution of lesser to one of greater solute concentration when separated by a membrane.

Prematurity: underdevelopment; born or interrupted before maturity or occurring before the proper time.

Residue: that which remains in the intestine after the removal of other substances; a remainder.

Suppository: a medicated mass used for introduction into the rectum, urethra, or vagina.

BACKGROUND INFORMATION

Space limitation has excluded chapters covering diet therapy for a number of other clinical disorders of infancy and childhood. This chapter remedies the situation by providing student activities to cover three important clinical subjects not yet discussed: constipation, diarrhea, and high-risk infants.

The student should use the references provided at the end of this chapter to obtain more details to supplement the activities provided.

ACTIVITY 1:

Constipation

BACKGROUND INFORMATION

Patterns of bowel movements among children and infants vary. If a child is active, passes a soft to slightly

compact stool, gains weight progressively, shows normal development, and is free from any known clinical disorder, the mother has no reason to worry.

A newborn may have a constipation problem that is most likely the result of plugging by meconium. Constipation in an older infant is usually due to a change in the type of feeding. An anatomical defect may also be a cause, but this is rare. There are several ways to recognize the presence of constipation in a young infant:

1. A change in the stool (number, consistency, texture, appearance)
2. Pain in the infant when defecating
3. Distended abdomen with or before every bowel movement
4. Very black or bloody stools

The constipation of many newborns disappears shortly after discharge from the hospital. If this does not occur, the mother should consult her pediatrician.

INFANTS

Constipation in a baby may be caused by a change in diet. Some babies develop constipation when breastfeeding is replaced with formula (homemade or commercial). Characteristic signs include the face turning red, straining, and the legs turned upward while defecating, even though the child may pass a soft stool. The doctor will evaluate the child after being informed of the symptoms. The doctor first looks for any obstruction that may require special medical attention. If no obstruction is found, the mother should be advised of the benign nature of the constipation and told that the child's bowel habits will return to normal after it adapts to the new formula. Actually, the stools of some infants change from soft to hard even if they are not constipated.

Other babies develop constipation when they are switched from liquid or strained food to solid food. The signs of such constipation vary. In some infants, a day with normal bowel movements is followed by one with none. In others, the passing of hard stools is accompanied by crying and intense straining. Many of these cases are of unknown origin. A typical cause is excessive water absorption (reabsorption) by the colon, resulting in dry stools and constipation. The anal passage may be stretched, causing pain and bleeding if there is an open wound. The child passes red stools, which are easily observed on toilet paper. The management of this form of constipation consists of a reduction in milk intake and an increased intake of juices, fruits, and fluids. Some clinicians may prescribe enemas, laxatives, and suppositories, such as a glycerin suppository. The dosage and frequency of application of these drugs must be determined with care.

Home remedies have no scientific evidence; however, adding sugar to the gut will draw water in to increase

osmotic load and will create softer stools. No studies have examined how much sugar would be needed.

Infants older than 6 months may benefit from drinking prune juice or increasing appropriate high-fiber foods such as whole grain breads and cereals, fruit, vegetables, and cooked legumes.

YOUNG CHILDREN

Constipation in children under 4 or 5 years old is of two types: psychological and anatomical. The latter refers to a defect in the muscles regulating the defecation process. In some children under 2 years old, any initial sign of constipation can create a psychological barrier to defecation. When children start passing hard stools, they experience some pain, so they subsequently strain to retain the stools in order to reduce the pain. The accumulated feces become larger and harder, causing more pain in subsequent defecations. Some parents report that their children turn red in the face, strain, and arch their backs during bowel movement. Although toilet trained, they soil their pants frequently and are reluctant to go to the bathroom. Some parents complain that these children are lazy. In this case, the parental attitudes make the constipation problem worse. This psychological barrier to bowel movement can be difficult to overcome.

On the other hand, constipation in some children results from fecal impaction, which may develop for a number of reasons. For instance, children between the ages of five and eight may develop constipation because they consider visiting the bathroom a waste of time. How are older children with a constipation problem managed? The basic principles are similar to those for an adult. If the parents consult a physician, the doctor may need to study the problem and advise the parents about what actions to take.

As a start, the parents may help the child initiate a good bowel movement by using an enema. The dose, which may be large at the beginning, may be used until a defecation pattern of three to five times a day is established. Mineral oil is not recommended for young children. The child should be put on a conditioning schedule, such as 10 to 20 minutes daily on the toilet. The child should also be encouraged to have bowel movements as frequently as possible. At the same time, milk intake may be reduced to 60%–80% of normal, and the intake of fruits, juices, and bran cereals increased. A diet high in fiber and fluid should be designed for future use to aid in regulation.

NURSING IMPLICATIONS

Healthcare personnel should do the following:

1. Be aware of the signs and symptoms of constipation in the infant.
2. Be prepared to counsel parents about the possible reasons for constipation in their child.
3. Consult the physician regarding the diagnosis of constipation in any given infant before educating the parents.
4. Expect that signs of constipation may be different for individual infants.
5. Teach the caregivers the necessity of precision of dosage and monitoring of any drugs prescribed by a physician.
6. If the infant is on solid food, food sources that relieve constipation in adults will also, in smaller proportions, help the child to defecate.
7. Be alert for psychological problems that prevent defecation in the young child.
8. Assist the caregivers to help the child initiate regular bowel habits.

PROGRESS CHECK ON ACTIVITY 1

MULTIPLE CHOICE

Circle the letter of the correct answer.

1. All except which of these characteristics indicate that a child is not constipated?
 - a. steady weight gain
 - b. good appetite
 - c. one to three bowel movements daily
 - d. active
2. Newborns' constipation problems are most likely the result of a(n):
 - a. change in feeding.
 - b. anatomical defect.
 - c. clinical disorder.
 - d. change in routine.
3. Safe food(s) that may be used to combat constipation in infants include:
 - a. prune juice.
 - b. 1 tsp sugar/4 oz of formula.
 - c. strained apricots.
 - d. all of the above.
4. Recommended treatment for dry, hard stools in an infant is to:
 - a. increase formula feedings.
 - b. increase fluids.
 - c. increase laxative intake.
 - d. increase activity level.
5. Two types of constipation common in children under 5 years old are:
 - a. physiological and psychological.
 - b. anatomical and environmental.
 - c. psychological and anatomical.
 - d. environmental and physiological.

FILL-IN

6. Fecal impaction in children is usually the result of:
- _____
- _____
7. Name four ways a parent may assist the child to initiate regular elimination habits.
- a. _____
- b. _____
- c. _____
- d. _____
8. Name five nursing responsibilities in dealing with the problem of constipation in the infant and young child.
- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

Chronic diarrhea may be a symptom of a disease. In general, diarrhea is classified as acute or chronic according to its stool, profile, cause, or site of clinical defect. There are a number of common causes of diarrhea in infants and children:

1. It can be due to a specific clinical disorder.
2. Bacterial contamination of formulas or foods can cause food poisoning.
3. Some youngsters develop diarrhea because of intestinal reactions to certain foods such as sugars, fats (too little or too much), milk, and eggs.

TREATMENT AND CAUTION

The initial management of diarrhea in children involves two steps. The clinician's first and major objective is to restore fluid and electrolyte balance by oral or IV therapy, since a child is highly susceptible to dehydration. Subsequently, the clinician determines if the child can be managed adequately by oral nourishment without parenteral feeding, which requires hospitalization.

If a child's diarrhea is accompanied by mild to moderate dehydration with persistent vomiting, hospitalization for parenteral fluid therapy is indicated. In general, it is feasible to provide oral fluids and electrolytes for children with mild diarrhea or children recovering from severe diarrhea. If diarrhea is mild to moderate and the patient shows normal clinical signs otherwise and is not dehydrated, most physicians prescribe outpatient therapy consisting of an oral hypotonic solution of glucose and electrolytes.

In caring for an infant with diarrhea, the major concern is supplying an adequate supply of fluid and electrolytes. Some readily available regular and commercial solutions are listed in Table 29-2. Because milk contains too many electrolytes, especially sodium, most clinicians do not recommend it at the beginning of treatment. All other solutions listed in the table may be initially fed to a child with diarrhea. To prevent gas from being trapped and the accompanying discomfort, some soda drinks can be decarbonated. Gelatin should be made in half strength

ACTIVITY 2:

Diarrhea

FECAL CHARACTERISTICS AND CAUSES OF DIARRHEA

The stools of infants change with age and development, as indicated in Table 29-1. It is important for parents to recognize a child's normal feces. Children with diarrhea have an abnormally frequent evacuation of watery (and sometimes greasy and/or bloody) stools. Diarrhea is frequent among infants and children and can be a very distressing condition. In chronic cases, it may last for weeks or months, while the child continues to grow normally.

TABLE 29-1 Fecal Characteristics of Infants

Age (months)	Diet	Fecal Characteristics			Number of Bowel Movements Daily
		pH	Color	Texture	
0-4	Home or commercial formulas	6-8	Pale yellow to light brown	Compressed, solid	2-3
	Breast milk	< 6	Yellow to golden	Like cream or ointment	2-4
4-12	Regular foods and/or milk	Variable	Intensified yellow	Harder	1-3
Over 12	Regular foods and/or milk	Variable	Similar to adult, i.e., highly variable (yellow to black)	Similar to adult, i.e., highly variable (soft to very hard)	Similar to adult, i.e., highly variable (1-4)

to avoid aggravating dehydration. Kool-Aid and unflavored gelatin should not be used, since they contain few electrolytes.

After about two days of fluid and electrolyte support as described, the diarrhea should subside somewhat. At this stage, the child should be given a diluted regular infant formula, for example, one fourth, one third, or even one half of normal strength. Additional calories are supplied by adding corn syrup (1 tsp per 3 oz of formula) or using a supplemental feeding of strained baby cereals and fruits.

Recent concern has been expressed about the common practice of eliminating milk, eggs, and wheat to reduce diarrhea in a young patient. Although some pediatric patients benefit from this treatment, the attending physician must be alert to (1) potential undernutrition that may occur if the elimination diet is prolonged, and (2) the possibility that the child has celiac disease (see Chapter 26). An elimination diet may mask this disorder.

The initial treatment for diarrhea in children over 1 year old consists of giving clear liquids such as diluted broth, fruit juices, soft drinks, gelatin dessert, and popsicles. After the diarrhea has subsided, a low-residue diet may be used. Subsequent management is the same as that for an adult (see Chapter 17). Once the condition has stabilized, a regular diet appropriate to the child's age can be implemented.

NURSING IMPLICATIONS

Healthcare personnel should do the following:

- Be able to recognize normal fecal characteristics of infants.
- Differentiate between acute and chronic diarrhea.
- Develop care plans to meet the individual child's problems:
 - Replace fluid and electrolytes.
 - Restore adequate nutrition orally or parenterally.
- Be familiar with common beverages and foods that can be used for treating diarrhea.
- Alert the physician to observed potential problems if the child is on an elimination diet for a prolonged period.
- Select a low-residue diet as the diet therapy of choice after acute symptoms have subsided.

PROGRESS CHECK ON ACTIVITY 2

FILL-IN

- On what three bases is diarrhea classified as acute or chronic?
 - _____
 - _____
 - _____
- Name three common causes of diarrhea in children.
 - _____
 - _____
 - _____
- Describe the two steps in the dietary management of children with diarrhea.
 - _____
 - _____

TABLE 29-2 Calorie, Sodium, and Potassium Contents of Some Preparations for Treating Diarrhea

Beverage	mg Sodium/100 ml	mg Potassium/100 ml	kcal/100 ml
Milk, whole	50	144	62
Milk, skim	52	145	36
Apple juice, canned or bottled	1	101	47
Grape juice, canned or bottled	2	116	66
Orange juice, from concentrate	1	202	49
7-Up	10	Trace	40
Coca-Cola	1	52	44
Pepsi-Cola	15	3	46
Ginger ale	8	Trace	35
Root beer	13	2	41
Flavored gelatin	54	Trace	59
Pedialyte	69	78	20
Lytren	69	98	30

- 4.* Name three beverages with a high-sodium content suitable for the treatment of diarrhea.
- _____
 - _____
 - _____
- 5.* Name three beverages with a high-potassium content suitable for the treatment of diarrhea.
- _____
 - _____
 - _____
6. Name two well-known commercial preparations suitable for the treatment of diarrhea.
- _____
 - _____
7. Describe three ways to increase caloric content of a recovering child's food intake. Assume the child is 6 months old.
- _____
 - _____
 - _____

*See answer sheet (Table 29-2)

ACTIVITY 3:

High-Risk Infants

BACKGROUND INFORMATION

Five major categories of infants are considered high risk at birth: those of low birth weight, those born prematurely with complications, those delivered by diabetic mothers, those who are critically ill, and those with birth defects. These newborns are unable to function properly as normal infants and need special help.

Drug use during pregnancy, especially the use of the so-called recreational drugs, causes many birth defects and developmental problems. Cocaine (crack) use is related to prematurity, placenta detachment, intrauterine growth retardation, and low birth weight (LBW). The infant may be paralyzed, have uncontrolled jerking movement, and/or have permanent physical and mental retardation. The use of opiates and barbiturates produce an addicted infant who must go through the painful, sometimes fatal withdrawal process. Amphetamine use causes behavioral abnormalities and central nervous system damage.

The most widely used drug during pregnancy is alcohol, and it is a leading cause of mental retardation. It is especially devastating to the fetus in the first trimester and leads to fetal alcohol syndrome (FAS) in the infant.

The classic symptoms of FAS are facial abnormalities, brain damage, and physical and mental retardation. While the subclinical effects from the fetal alcohol effect (FAE) are not as readily identified, prenatal consumption of alcohol produces children with some brain damage, learning disabilities, and behavior problems, which make school and social situations very difficult for the child. One of the major criteria for survival is proper nutrition, without which the child may die.

There is considerable controversy over what constitutes a low birth weight or prematurity. In this text, a premature infant is defined as one born before the 37th or 38th week of gestation. Standard charts show the expected infant weight at different gestational ages. If weight is unacceptably low for gestational age, the infant is small for date (SFD) or small for gestational age (SGA). These infants have suffered intrauterine retardation but may be either full term or premature. A low birth weight (LBW) infant weighs 2500 g (5½ lb) or less. These infants may be premature, small for gestational age, and/or small for date. They account for 60%–70% of all cases of newborn mortality after birth; about 5%–10% of live births are of low birth weight. Infants weighing less than 1500 g (3.3 lb) at birth are considered to have very low birth weight (VLBW).

NUTRIENT NEEDS

The caloric need of the high-risk infant is definitely higher than that of a normal infant: about 100 to 130 kcal/kg/d. This is about three to four times that of an adult and twice that of a normal infant.

The estimated protein need of the high-risk child is 3 to 4 g/kg/d. Excessive protein is undesirable, since it can increase blood amino acids and nitrogen; however, a premature infant may require the essential amino acids tyrosine and cystine.

A high-risk infant needs a large amount of fluid for a number of reasons. First, the child has a high body water content. Second, the ambient temperature may be too high, causing increased evaporation for the small patient. Vomiting or diarrhea, if present, may result in a loss of intestinal fluid. The child's kidney is unable to concentrate urine, resulting in more fluid loss. If the child undergoes any form of treatment that causes body evaporation, such as photo or radiant heat therapy, its need for fluid will be further increased.

One way to assure that a child gets enough fluid is to measure the intake and output of fluid, monitor overt clinical signs of dehydration, and analyze urine osmolality, using blood sodium and nitrogen levels as guides. Extra fluid may be given orally (water, milk, or 10% glucose) or intravenously (10% glucose).

High-risk infants have special needs for calcium, iron, and vitamin K. If the intake of these nutrients is inadequate, appropriate supplementation is needed.

INITIAL FEEDINGS

The first feeding should be given to a high-risk infant several hours after birth, when the child is given fluid and calories. A normal-term infant receives the first feeding two to four hours after birth, as does a baby weighing at least 1500 g with a gestational age of 33 or 34 weeks and without any complications such as respiratory difficulty and infection. In general, this latter baby receives smaller but more frequent feedings than a normal child.

If an infant has complications, weighs less than 1500 g, and has a gestational age of less than 33 weeks, the feeding practice is more cautious and varies with the infant and the doctor's evaluation. Depending on the practitioner, the child may be fed in one of two ways. In one, only 10% glucose is given intravenously with no other nourishment until the infant stabilizes, usually 3 days later, at which time oral or tube feedings or total parenteral nutrition is used. Some practitioners prefer direct oral feeding within the first 12 to 24 hours. If oral feeding is not feasible, total parenteral nutrition is started at the beginning of the second day.

USE OF BREASTMILK OR FORMULAS

The decision of whether to nurse or formula-feed a high-risk infant depends partly on the degree of risk. Babies of nearly normal size may respond well to breastmilk. Breastmilk permits satisfactory growth for infants weighing more than 1500 g, especially because of the quality of fat and protein, the solute load, and immunological protection provided. In some circumstances, breastmilk produces less necrotizing enterocolitis than formulas. The mother should be actively encouraged to breastfeed if the child can suck and weighs over 2000 g. If the child is unable to breastfeed, the mother can provide milk by expressing breast milk either manually or with a breast pump. Advice from a lactation consultant should be sought. The milk is then given to the child by tube, gavage, bottle, or dropper. This procedure can also strengthen the mother's emotional attachment to the child. The milk should be fresh, unheated, unrefrigerated, and less than 8 to 10 hours old.

Although breastmilk has certain advantages, it does not provide enough protein to enable some high-risk infants to grow. To supplement the low supply of protein in breast milk, a breastfed child can be given some concentrated or standard formulas. Neither regular formulas nor breastmilk alone is adequate for growth for most high-risk infants.

There are no readily available "standard" formulas for low-birth-weight or high-risk infants, since their requirements for nutrients are unknown. The best guide is to use the estimated nutrient needs as described earlier. However, most standard formulas are high in protein,

calories, and calcium. The smaller the child, the more unsatisfactory these formulas are. Some clinicians propose that the formula should contain 80–100 kcal/100 ml and 2.6–3.0 g of protein/100 kcal (ideally 2.8 g).

Some clinics and hospitals use defined-formula diets containing glucose, amino acids, minerals, vitamins, and medium-chain triglycerides (or no fat). Some infants respond favorably when fed these diets, while others do not. The major problems with these defined-formula diets are their high solute load and excessive nitrogen. Since infant response to any method of feeding varies, the high-risk baby's growth must be closely monitored. In addition to the type of formula chosen, its dilution must be carefully considered. The concentration, calories, protein, and fluid of a high-risk baby's formula should all be sufficient but within the eating and digestive capacity of the child. Whereas a normal child is usually provided about 67 kcal/100 ml (20 kcal/oz) of milk, a high-risk infant needs about 80–100 kcal/100 ml (25–30 kcal/oz) of milk. And although a normal child drinks about 100 ml/kg of milk, a high-risk infant may need as much as 200 ml/kg. If the formula is too concentrated, the excessive osmotic load can be harmful to the gastrointestinal tract and the kidney.

The decision to use breastmilk or infant formulas is determined by many factors including the clinical condition of the infant and the potential benefits and concerns offered by each feeding method. The following gives one advantage and one disadvantage of each method of feeding.

- Human milk—The nutrients are readily absorbed. Milk volume production may be inadequate to nourish the infant.
- Formulas for premature infants—Protein is at a higher concentration than in a standard infant formula to meet the patient's higher protein need. The amount of feeding must be increased slowly for the very low birth weight infant.
- Premature discharge or transition formulas—Formulas have the nutrient composition that is between the concentrated premature formulas and the standard infant formula. The infant should weigh at least 1.8 kg when this formula is prescribed.
- Standard discharged infant formulas—Prescribed for infants reaching certain clinical criteria. It is inadequate for a premature infant.
- Elemental infant formulas—It is specifically designed for infants with intestinal disorders, and its nutrient contents are inadequate for premature infants.
- Soy formulas—This should not be used unless prescribed by attending physician.

PREMATURE BABIES: AN ILLUSTRATION

A general discussion has been presented on the nutritional supports for high-risk infants including premature

babies. This section provides specifics for a premature infant.

The attending physician routinely places a newly born premature infant in the neonatal intensive care unit (NICU) of the hospital with three objectives:

1. Carefully monitor fluid and electrolytes (sodium, potassium, etc.) balance and nutritional status, with proper intervention when indicated.
2. The use of an incubator or a medical warmer minimizes caloric needs.
3. When the environmental air is moist and warm, the body temperature fluctuates less with a minimal loss of body water.

The clinical condition of a premature baby will lead to the following feeding problems:

1. Inability to coordinate sucking, breathing, and swallowing interferes with proper bottle or breastfeeding.
2. The small patient may suffer disorders of the circulatory and respiratory systems, leading to decreased oxygen levels, gagging, blood infection, and so on. As a result, the baby may be unable to receive oral feeding through the nipple.
3. Preemies are most likely small and sick. Their nutrition and fluid requirements have to be met by using the following progressive methods:
 - a. Initially, intravenous feeding is used.
 - b. The next stage uses enteral or tube feedings. The baby is given the nourishment slowly.
 - c. Oral feeding is not used until clinical conditions permit. At this stage, bottle or breastfeeding may be used. Most infants prefer a bottle with a large hole in the nipple.

After a baby is fed, sleep or a satisfactory rest is a good sign, accompanied daily by 1–6 bowel movements and 5–9 urinations (wet diapers with or without stool). The health team is always alert to the following:

1. Constant vomiting can be serious.
2. Stools watery or bloody is another warning.

One major clinical concern is fluid balance in a premature baby from the following perspectives:

1. The loss of water through skin and respiratory routes is higher in a preterm than a full-term baby.
2. The premature baby's urinary system, especially the kidneys, is unable to regulate the proper amount of water lost.
3. A decrease or an increase of body water may result.

The health team takes precaution as follows:

1. The patient's urine is monitored to assure balance of fluid intake and output.
2. Body electrolytes are monitored by scheduled testings for their blood levels.

The storage of nutrients of a preterm infant is not adequate for normal sustenance because the accumulation of nutrients in the womb has been shortened. Nutritional supplements become a necessity. Apart from the previous discussion on the use of breastmilk or formulas for high-risk infants, a discussion on specific recommendations in feeding a premature infant with breastmilk or commercial formulas is described below:

1. Breastmilk is usually recommended if the infant's clinical conditions permit. There is some evidence that breastmilk may prevent sudden infant death syndrome and may minimize infections. A supplement should provide additional calories, protein, vitamins, and selected minerals such as calcium and iron. Some label this supplement as "human milk fortified." This supplementation may have to be continued at home after discharge.
2. Commercial and customized formulas are available for those infants not suitable for feeding with breastmilk. The nutritional contents of most of them are satisfactory. Again, a supplement may be needed to provide extra nutrients such as vitamins and minerals. This may have to be continued at home after discharge.
3. When the infant's clinical conditions permit, he or she will be fed standard infant formulas. The health team may provide extra guidelines once it is decided to use a standard formula.

The caloric needs of premature infants to achieve the proper growth rate are estimated as follows:

1. Those without major health problems may need 90–130 calories/kg/day.
2. Those with serious health problems may need 150–185 calories/kg/day.

The health team evaluates the baby's weight gain according to the following:

1. The infant is weighed every day after birth.
2. Most infants lose weight (water) during the few days after birth.
3. Weight gain starts after the initial loss of weight.
4. The pattern of weight gain is predictable according to body size, prematurity, and clinical status. For example, the baby may gain $\frac{1}{8}$ to $\frac{1}{4}$ oz (~ 6 g) daily for a baby 25 weeks old. For a large baby, 34 weeks old, weight gain can be 20 g or $\frac{7}{10}$ oz daily.
5. Health teams use different criteria to determine a satisfactory weight gain for the baby confined in a hospital. Most use the average goal of 0.2–0.3 oz gain per lb body weight per day.
6. It is a standard practice that if the record shows a steady weight gain, the health team will recommend a date of hospital discharge. Otherwise, the infant is not discharged.

NURSING IMPLICATIONS

Health personnel should do the following:

1. Be alert to the five major categories of infants at risk at birth and be prepared to provide the specialized nutrition needed on an individual basis.
2. Recognize the physiological feeding problems of a high-risk infant:
 - a. Protein deficit and risk of overload
 - b. Increased fluid needs: fluctuating body temperature, inability to concentrate urine
 - c. Need for increased calories
 - d. Graduated vitamin and mineral needs
3. Be proficient in the use of feeding methods recommended by the practitioner.
4. Encourage mothers of high-risk infants to breastfeed unless mother or baby has medical problems.
5. Be familiar with the types and dilutions of formulas suitable for high-risk infants, depending upon their size and weight.
6. Closely monitor infant response to feedings.
7. Be prepared to teach all caregivers the proper feeding techniques, prescribed formulas, signs, and symptoms of acceptance and any other pertinent facts.
8. Follow up for further evaluation.

PROGRESS CHECK ON ACTIVITY 3

MULTIPLE CHOICE

Circle the letter of the correct answer.

1. The SGA infant is:
 - a. full term but underweight.
 - b. premature but small for date.
 - c. either full term or premature.
 - d. any child who weighs less than 6 lb.
2. LBW infants account for _____ % of all live births.
 - a. 60–70
 - b. 20–30
 - c. 1–2
 - d. 5–10
3. Caloric needs of the high-risk infant are:
 - a. twice those of a normal infant.
 - b. three to four times those of a normal infant.
 - c. approximately six times those of a normal infant.
 - d. the same as those of the normal infant; they have little movement.
4. High-risk infants need large amounts of fluid for all except which of these reasons?
 - a. They require extra essential amino acids.
 - b. They have a larger body water content than normal infants.

- c. Their kidneys can't concentrate urine.
- d. They have increased water evaporation.

5. First feedings for high-risk infants include:
 - a. TPN.
 - b. fluid with extra calories.
 - c. 10% glucose IVs.
 - d. no food or fluid until stabilized.

FILL-IN

6. What are the criteria for breastfeeding a high-risk infant? _____

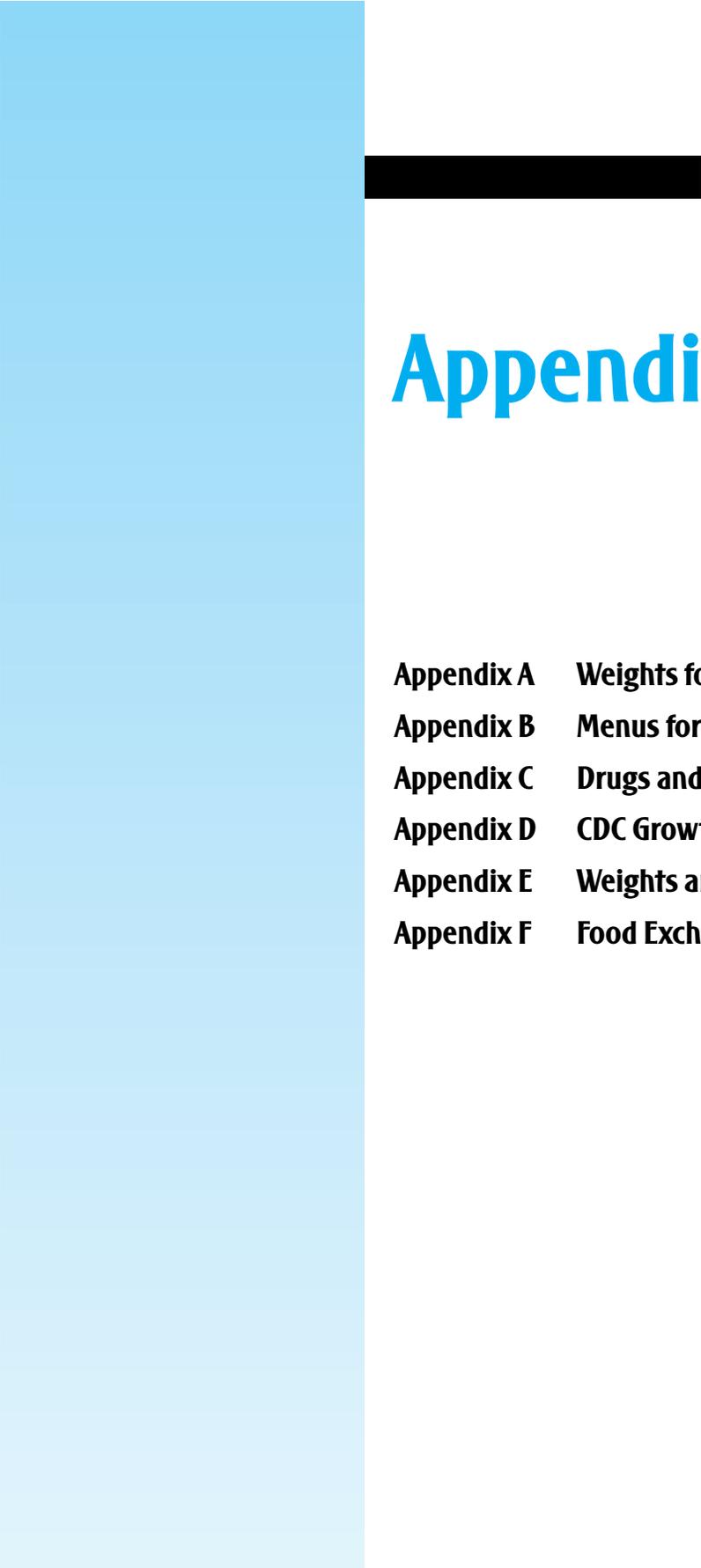
7. Describe the procedure for feeding breastmilk to an infant who cannot nurse. _____

8. Describe the four most appropriate guides for meeting nutrient needs of high-risk infants.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
9. What is a defined formula? _____

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Appendices

- Appendix A** Weights for Adults
- Appendix B** Menus for a Healthy Diet
- Appendix C** Drugs and Nutrition
- Appendix D** CDC Growth Charts
- Appendix E** Weights and Measures
- Appendix F** Food Exchange Lists

Weights for Adults

TABLE A-1 Body Mass Index for Adults: Principles and Applications

What is BMI?

Body Mass Index or BMI (WT/HT²), based on an individual's height and weight, is a helpful indicator of obesity and underweight in adults.

Determine BMI

BMI can be determined by looking it up on one or more tables, using a hand-held calculator, or using the Internet Web calculator. Only the tables are presented in this Appendix.

Application

BMI compares weight to body fat but cannot be interpreted as a certain percentage of body fat. The relation between fatness and BMI is influenced by age and gender. For example, women are more likely to have a higher percent of body fat than men for the same BMI. At the same BMI, older people have more body fat than younger adults.

BMI is used to screen and monitor a population to detect risk of health or nutritional disorders. In an individual, other data must be used to determine if a high BMI is associated with increased risk of disease and death for that person. BMI alone is not diagnostic.

How does BMI relate to health among adults?

A healthy BMI for adults is between 18.5 and 24.9. BMI ranges are based on the effect body weight has on disease and death.

A high BMI is predictive of death from cardiovascular disease. Diabetes, cancer, high blood pressure and osteoarthritis are also common consequences of overweight and obesity in adults. Obesity itself is a strong risk factor for premature death.

BMI Cutpoints for Adults

We interpret BMI values for adults with one fixed number, regardless of age or sex, using the following guidelines:

- Underweight BMI less than 18.5
- Overweight BMI of 25.0 to 29.9
- Obese BMI of 30.0 or more

For more information about overweight among adults, see: *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*. Bethesda, MD: NHLBI, 1998.

Source: United States Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. Division of Nutrition and Physical Activity.

TABLE A-2 Body Mass Index Table (First Part)**Body Mass Index Table**

To use the table, find the appropriate height in the left-hand column labeled Height. Move across to a given weight. The number at the top of the column is the BMI at that height and weight. Pounds have been rounded off.

BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Height (inches)	Body Weight (pounds)																
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191
63	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197
64	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204
65	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210
66	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216
67	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223
68	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230
69	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236
70	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243
71	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250
72	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258
73	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265
74	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272
75	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279
76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287

TABLE A-3 Body Mass Index Table (Second Part)

Body Mass Index Table

To use the table, find the appropriate height in the left-hand column labeled Height. Move across to a given weight. The number at the top of the column is the BMI at that height and weight. Pounds have been rounded off.

BMI	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Height (inches)	Body Weight (pounds)																		
58	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258
59	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267
60	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276
61	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285
62	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295
63	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304
64	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314
65	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
66	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334
67	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344
68	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354
69	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365
70	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376
71	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386
72	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397
73	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408
74	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420
75	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431
76	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443

Menus for a Healthy Diet

TABLE B-1 TLC Sample Menu: Traditional American Cuisine, Male, 25–49 Years

Breakfast

- Oatmeal (1 cup)
 - Fat-free milk (1 cup)
 - Raisins (¼ cup)
- English muffin (1 medium)
 - Soft margarine (2 tsp)
 - Jelly (1 Tbsp)
- Honeydew melon (1 cup)
- Orange juice, calcium fortified (1 cup)
- Coffee (1 cup) with fat-free milk (2 Tbsp)

Lunch

- Roast beef sandwich
 - Whole-wheat bun (1 medium)
 - Roast beef, lean (2 oz)
 - Swiss cheese, low fat (1 oz slice)
 - Romaine lettuce (2 leaves)
 - Tomato (2 medium slices)
 - Mustard (2 tsp)
- Pasta salad (1 cup)
 - Pasta noodles (¾ cup)
 - Mixed vegetables (¼ cup)
 - Olive oil (2 tsp)
- Apple (1 medium)
- Iced tea, unsweetened (1 cup)

Dinner

- Orange roughy (3 oz) cooked with olive oil (2 tsp)
 - Parmesan cheese (1 Tbsp)
- Rice (1½ cup) → *For a higher fat alternative, substitute 1/3 cup of unsalted peanuts, chopped (to sprinkle on the frozen yogurt) for 1 cup of the rice.
- Corn kernels (½ cup)
 - Soft margarine (1 tsp)
- Broccoli (½ cup)
 - Soft margarine (1 tsp)
- Roll (1 small)
 - Soft margarine (1 tsp)
- Strawberries (1 cup) topped with low-fat frozen yogurt (½ cup)
- Fat-free milk (1 cup)

Snack

- Popcorn (2 cups) cooked with canola oil (1 Tbsp)
- Peaches, canned in water (1 cup)
- Water (1 cup)

Nutrient Analysis

Calories	2523
Cholesterol (mg)	139
Fiber (g)	32
Soluble (g)	10
Sodium (mg)	1800
Carbohydrates, % calories	57

Total fat, % calories	28
Saturated fat, % calories	6
Monounsaturated fat, % calories	14
Polyunsaturated fat, % calories	6
Trans fat (g)	5
Omega 3 fat (g)	0.4
Protein, % calories	17

***Higher Fat Alternative**

Total fat, % calories	34
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No salt is added in recipe preparation or as seasoning.

The sample menu meets or exceeds the Daily Reference Intake (DRI) for nutrients.

TABLE B-2 TLC Sample Menu: Traditional American Cuisine, Female, 25–49 Years**Breakfast**

Oatmeal (1 cup)
 Fat-free milk (1 cup)
 Raisins (¼ cup)
 Honeydew melon (1 cup)
 Orange juice, calcium fortified (1 cup)
 Coffee (1 cup) with fat-free milk (2 Tbsp)

Lunch

Roast beef sandwich
 Whole-wheat bun (1 medium)
 Roast beef, lean (2 oz)
 Swiss cheese, low fat (1 oz slice)
 Romaine lettuce (2 leaves)
 Tomato (2 medium slices)
 Mustard (2 tsp)
 Pasta salad (½ cup)
 Pasta noodles (¼ cup)
 Mixed vegetables (¼ cup)
 Olive oil (1 tsp)
 Apple (1 medium)
 Iced tea, unsweetened (1 cup)

Dinner

Orange roughy (2 oz) cooked with olive oil (2 tsp)
 Parmesan cheese (1 Tbsp)
 Rice (1 cup) → *For a higher fat alternative, substitute 2 Tbsp of unsalted peanuts, chopped (to sprinkle on the frozen yogurt) for ½ cup of the rice.
 Soft margarine (1 tsp)
 Broccoli (½ cup)
 Soft margarine (1 tsp)
 Strawberries (1 cup) topped with low-fat frozen yogurt (½ cup)
 Water (1 cup)

Snack

Popcorn (2 cups) cooked with canola oil (1 Tbsp)
 Peaches, canned in water (1 cup)
 Water (1 cup)

Nutrient Analysis

Calories	1795	Total fat, % calories	27
Cholesterol (mg)	115	Saturated fat, % calories	6
Fiber (g)	28	Monounsaturated fat, % calories	14
Soluble (g)	9	Polyunsaturated fat, % calories	6
Sodium (mg)	1128	Trans fat (g)	2
Carbohydrates, % calories	57	Omega 3 fat (g)	0.4
		Protein, % calories	19

***Higher Fat Alternative**

Total fat, % calories	33
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No salt is added in recipe preparation or as seasoning.
 The sample menu meets or exceeds the Daily Reference Intake (DRI) for nutrients.

Source: National Cholesterol Education Program, Adult Treatment Panel III Report, 2001. National Institutes of Health, Washington, D.C.

TABLE B-3 TLC Sample Menu: Southern Cuisine, Male, 25–49 Years**Breakfast**

Bran cereal (¾ cup)
 Banana (1 medium)
 Fat-free milk (1 cup)
 Biscuit, made with canola oil (1 medium)
 Jelly (1 Tbsp)
 Soft margarine (2 tsp)
 Honeydew melon (1 cup)
 Orange juice, calcium fortified (1 cup)
 Coffee (1 cup) with fat-free milk (2 Tbsp)

Lunch

Chicken breast (3 oz), sautéed with canola oil (2 tsp)
 Collard greens (½ cup)
 Chicken broth, low sodium (1 Tbsp)
 Black-eyed peas (½ cup)
 Corn on the cob (1 medium) —————▶ *For a higher fat alternative, substitute ¼ cup of unsalted almond slices for the corn on the cob. Sprinkle the almonds on the rice.
 Soft margarine (1tsp)
 Rice, cooked (1 cup)
 Soft margarine (1 tsp)
 Fruit cocktail, canned in water (1 cup)
 Iced tea, unsweetened (1 cup)

Dinner

Catfish (3 oz) coated with flour and baked with canola oil (½ Tbsp)
 Sweet potato (1 medium)
 Soft margarine (2 tsp)
 Spinach (½ cup)
 Vegetable broth, low sodium (2 Tbsp)
 Corn muffin (1 medium), made with fat-free milk and egg substitute
 Soft margarine (1 tsp)
 Watermelon (1 cup)
 Iced tea, unsweetened (1 cup)

Snack

Bagel (1 medium)
 Peanut butter, reduced fat, unsalted (1 Tbsp)
 Fat-free milk (1 cup)

Nutrient Analysis

Calories	2504
Cholesterol (mg)	158
Fiber (g)	52
Soluble (g)	10
Sodium (mg)	2146
Carbohydrates, % calories	59

Total fat, % calories	30
Saturated fat, % calories	5
Monounsaturated fat, % calories	13
Polyunsaturated fat, % calories	9
Trans fat (g)	6
Protein, % calories	18

***Higher Fat Alternative**

Total fat, % calories	34
-----------------------	----

No salt is added in recipe preparation or as seasoning.

The sample menu meets or exceeds the Daily Reference Intake (DRI) for nutrients.

Source: National Cholesterol Education Program, Adult Treatment Panel III Report, 2001. National Institutes of Health, Washington, D.C.

TABLE B-4 TLC Sample Menu: Southern Cuisine, Female, 25–49 Year**Breakfast**

- Bran cereal (¾ cup)
- Banana (1 medium)
- Fat-free milk (1 cup)
- Biscuit, low sodium and made with canola oil (1 medium)
- Jelly (1 Tbsp)
- Soft margarine (1 tsp)
- Honeydew melon (½ cup)
- Coffee (1 cup) with fat-free milk (2 Tbsp)

Lunch

- Chicken breast (2 oz) cooked with canola oil (2 tsp)
- Corn on the cob (1 medium) —————→ *For a higher fat alternative, substitute ¼ cup of unsalted almond slices for the corn on the cob. Sprinkle the almonds on the rice.
- Soft margarine (1 tsp)
- Collards greens (½ cup)
- Chicken broth, low sodium (1 Tbsp)
- Rice, cooked (½ cup)
- Fruit cocktail, canned in water (1 cup)
- Iced tea, unsweetened (1 cup)

Dinner

- Catfish (3 oz), coated with flour and baked with canola oil (½ Tbsp)
- Sweet potato (1 medium)
- Soft margarine (2 tsp)
- Spinach (½ cup)
- Vegetable broth, low sodium (2 Tbsp)
- Corn muffin (1 medium), made with fat-free milk and egg substitute
- Soft margarine (1 tsp)
- Watermelon (1 cup)
- Iced tea, unsweetened (1 cup)

Snack

- Graham crackers (4 large)
- Peanut butter, reduced fat, unsalted (1 Tbsp)
- Fat-free milk (½ cup)

Nutrient Analysis

Calories	1823	Total fat, % calories	30
Cholesterol (mg)	131	Saturated fat, % calories	5
Fiber (g)	43	Monounsaturated fat, % calories	14
Soluble (g)	8	Polyunsaturated fat, % calories	8
Sodium (mg)	1676	Trans fat (g)	3
Carbohydrates, % calories	59	Omega 3 fat (g)	0.4
		Protein, % calories	18

***Higher Fat Alternative**

Total fat, % calories	35
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No salt is added in recipe preparation or as seasoning.
The sample menu meets or exceeds the Daily Reference Intake (DRI) for nutrients.

Source: National Cholesterol Education Program, Adult Treatment Panel III Report, 2001. National Institutes of Health, Washington, D.C.

TABLE B-5 TLC Sample Menu: Asian Cuisine, Male, 25–49 Years**Breakfast**

- Scrambled egg whites (¾ cup liquid egg substitute)
 Cooked with fat-free cooking spray → *For a higher fat alternative, cook egg whites with 1 Tbsp of canola oil.
 English muffin (1 whole)
 Soft margarine (2 tsp)
 Jam (1 Tbsp)
 Strawberries (1 cup)
 Orange juice, calcium fortified (1 cup) → **If using higher fat alternative, eliminate orange juice.
 Coffee (1 cup) with fat-free milk (2 Tbsp)

Lunch

- Tofu Vegetable stir-fry
 Tofu (3 oz)
 Mushrooms (½ cup)
 Onion (¼ cup)
 Carrots (½ cup)
 Swiss chard (1 cup)
 Garlic, minced (2 Tbsp)
 Peanut oil (1 Tbsp)
 Soy sauce, low sodium (2½ tsp)
 Rice, cooked (1 cup)
 Vegetable egg roll, baked (1 medium)
 Orange (1 medium)
 Green tea (1 cup)

Dinner

- Beef stir-fry
 Beef tenderloin (3 oz)
 Soybeans, cooked (¼ cup)
 Broccoli, cut in large pieces (½ cup)
 Carrots, sliced (½ cup)
 Peanut oil (1 Tbsp)
 Soy sauce, low sodium (2 tsp)
 Rice, cooked (1 cup)
 Watermelon (1 cup)
 Almond cookies (2 cookies)
 Fat-free milk (1 cup)

Snack

- Chinese noodles, soft (1 cup)
 Peanut oil (2 tsp)
 Banana (1 medium)
 Green tea (1 cup)

Nutrient Analysis

Calories	2519	Total fat, % calories	28
Cholesterol (mg)	108	Saturated fat, % calories	5
Fiber (g)	37	Monounsaturated fat, % calories	11
Soluble (g)	15	Polyunsaturated fat, % calories	9
Sodium (mg)	2268	Trans fat (g)	3
Carbohydrates, % calories	57	Protein, % calories	18

***Higher Fat Alternative**

Total fat, % calories	32
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No salt is added in recipe preparation or as seasoning.

The sample menu meets or exceeds the Daily Reference Intake (DRI) for nutrients.

**Because canola oil adds extra calories, the orange juice is left out of the menu.

Source: National Cholesterol Education Program, Adult Treatment Panel III Report, 2001. National Institutes of Health, Washington, D.C.

TABLE B-6 TLC Sample Menu: Asian Cuisine, Female, 25–49 Years**Breakfast**

- Scrambled egg whites (½ cup liquid egg substitute)
 Cooked with fat-free cooking spray → *For a higher fat alternative, cook egg whites with 1 Tbsp of canola oil.
- English muffin (1 whole)
 Soft margarine (2 tsp)
 Jam (1 Tbsp)
 Strawberries (1 cup)
- Orange juice, calcium fortified (1 cup) → **If using higher fat alternative, eliminate orange juice.
- Coffee (1 cup) with fat-free milk (2 Tbsp)

Lunch

- Tofu Vegetable stir-fry
 Tofu (3 oz)
 Mushrooms (½ cup)
 Onion (¼ cup)
 Carrots (½ cup)
 Swiss chard (½ cup)
 Garlic, minced (2 Tbsp)
 Peanut oil (1 Tbsp)
 Soy sauce, low sodium (2½ tsp)
- Rice, cooked (½ cup)
 Orange (1 medium)
 Green tea (1 cup)

Dinner

- Beef stir-fry
 Beef tenderloin (3 oz)
 Soybeans, cooked (¼ cup)
 Broccoli, cut in large pieces (½ cup)
 Peanut oil (1 Tbsp)
 Soy sauce, low sodium (2 tsp)
- Rice, cooked (½ cup)
 Watermelon (1 cup)
 Almond cookie (1 cookie)
 Fat-free milk (1 cup)

Snack

- Chinese noodles, soft (½ cup)
 Peanut oil (1 tsp)
 Green tea (1 cup)

Nutrient Analysis

Calories	1829	Total fat, % calories	28
Cholesterol (mg)	74	Saturated fat, % calories	6
Fiber (g)	26	Monounsaturated fat, % calories	11
Soluble (g)	10	Polyunsaturated fat, % calories	9
Sodium (mg)	1766	Trans fat (g)	3
Carbohydrates, % calories	56	Protein, % calories	18

***Higher Fat Alternative**

Total fat, % calories	33
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No salt is added in recipe preparation or as seasoning.
 The sample menu meets or exceeds the Daily Reference Intake (DRI) for nutrients.

**Because canola oil adds extra calories, the orange juice is left out of the menu.

Source: National Cholesterol Education Program, Adult Treatment Panel III Report, 2001. National Institutes of Health, Washington, D.C.

TABLE B-7 TLC Sample Menu: Mexican-American Cuisine, Male, 25–49 Years**Breakfast**

Bean tortilla

Corn tortilla (2 medium)

Pinto beans (½ cup)

Onion (¼ cup), tomato, chopped (¼ cup)

Jalapeno pepper (1 medium)

Sauté with canola oil (1 tsp)

Papaya (1 medium)

Orange juice, calcium fortified (1 cup)

Coffee (1 cup) with fat-free milk (2 Tbsp)

*For a higher fat alternative, cook beans with canola oil (1 Tbsp).

**If using higher fat alternative, reduce papaya serving to ½ medium fruit.

Lunch

Stir-fried beef

Sirloin steak (3 oz)

Garlic, minced (1 tsp)

Onion, chopped (¼ cup)

Tomato, chopped (¼ cup)

Potato, diced (¼ cup)

Salsa (¼ cup)

Olive oil (2 tsp)

Mexican rice

Rice, cooked (1 cup)

Onion, chopped (¼ cup)

Tomato, chopped (¼ cup)

Jalapeno pepper (1 medium)

Carrots, diced (¼ cup)

Cilantro (2 Tbsp)

Olive oil (1 Tbsp)

Mango (1 medium)

Blended fruit drink (1 cup)

Fat-free milk (1 cup)

Mango, diced (¼ cup)

Banana, sliced (¼ cup)

Water (¼ cup)

Dinner

Chicken fajita

Corn tortilla (2 medium)

Chicken breast, baked (3 oz)

Onion, chopped (2 Tbsp)

Green pepper, chopped (¼ cup)

Garlic, minced (1 tsp)

Salsa (2 Tbsp)

Canola oil (2 tsp)

Avocado salad

Romaine lettuce (1 cup)

Avocado slices, dark skin, California type (1 small)

Tomato, sliced (¼ cup)

Onion, chopped (2 Tbsp)

Sour cream, low fat (1½ Tbsp)

Rice pudding with raisins (¾ cup)

Water (1 cup)

Snack

Plain yogurt, fat free, no sugar added (1 cup)

Mixed with peaches, canned in water (½ cup)

Water (1 cup)

Nutrient Analysis

Calories	2535
Cholesterol (mg)	158
Fiber (g)	48
Soluble (g)	17
Sodium (mg)	2118
Carbohydrates, % calories	58

Total fat, % calories	28
Saturated fat, % calories	5
Monounsaturated fat, % calories	17
Polyunsaturated fat, % calories	5
Trans fat (g)	<1
Protein, % calories	17

***Higher Fat Alternative**

Total fat, % calories	33
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No salt is added in recipe preparation or as seasoning.

The sample menu meets or exceeds the Daily Reference Intake (DRI) for nutrients.

**Because the peanuts add extra calories, the papaya serving is reduced in the menu.

Source: National Cholesterol Education Program, Adult Treatment Panel III Report, 2001. National Institutes of Health, Washington, D.C.

TABLE B-8 TLC Sample Menu: Mexican-American Cuisine, Female, 25–49 Years**Breakfast**

- Bean tortilla
 - Corn tortilla (1 medium)
 - Pinto beans (¼ cup)
 - Onion (2 Tbsp), tomato, chopped (2 Tbsp), jalapeno pepper (1 medium)
 - Sauté with canola oil (1 tsp)
- Papaya (1 medium) → **If using higher fat alternative, eliminate papaya.
- Orange juice, calcium fortified (1 cup)
- Coffee (1 cup) with fat-free milk (2 Tbsp)

Lunch

- Stir-fried beef
 - Sirloin steak (2 oz)
 - Garlic, minced (1 tsp)
 - Onion, chopped (¼ cup)
 - Tomato, chopped (¼ cup)
 - Potato, diced (¼ cup) → *For a higher fat alternative, substitute ½ cup of unsalted peanut halves for the potatoes.
 - Salsa (¼ cup)
 - Olive oil (1½ tsp)
- Mexican rice (½ cup)
 - Rice, cooked (½ cup)
- Onion, chopped (2 Tbsp)
- Tomato, chopped (2 Tbsp)
- Jalapeno pepper (1 medium)
- Carrots, diced (2 Tbsp)
- Cilantro (1 Tbsp)
- Olive oil (2 tsp)
- Mango (1 medium)
 - Blended fruit drink (1 cup)
 - Fat-free milk (1 cup)
 - Mango, diced (¼ cup)
 - Banana, sliced (¼ cup)
 - Water (¼ cup)

Dinner

- Chicken fajita
 - Corn tortilla (1 medium)
 - Chicken breast, baked (2 oz)
 - Onion, chopped (2 Tbsp)
 - Green pepper, chopped (2 Tbsp)
 - Garlic, minced (1 tsp)
 - Salsa (1½ Tbsp)
 - Canola oil (1 tsp)
- Avocado salad
 - Romaine lettuce (1 cup)
 - Avocado slices, dark skin, California type (½ small)
 - Tomato, sliced (¼ cup)
 - Onion, chopped (2 Tbsp)
 - Sour cream, low fat (1½ Tbsp)
- Rice pudding with raisins (½ cup)
- Water (1 cup)
- Snack**
 - Plain yogurt, fat free, no sugar added (1 cup)
 - Mixed with peaches, canned in water (½ cup)
 - Water (1 cup)

Nutrient Analysis

Calories	1821
Cholesterol (mg)	110
Fiber (g)	35
Soluble (g)	13
Sodium (mg)	1739
Carbohydrates, % calories	61

Total fat, % calories	26
Saturated fat, % calories	4
Monounsaturated fat, % calories	15
Polyunsaturated fat, % calories	4
Trans fat (g)	<1
Protein, % calories	17

***Higher Fat Alternative**

Total fat, % calories	34
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No salt is added in recipe preparation or as seasoning.
The sample menu meets or exceeds the Daily Reference Intake (DRI) for nutrients.

**Because the peanuts add extra calories, the papaya is left out of the menu.

Source: National Cholesterol Education Program, Adult Treatment Panel III Report, 2001. National Institutes of Health, Washington, D.C.

Drugs and Nutrition

ALLERGIES

Antihistamines are used to relieve or prevent the symptoms of colds, hay fever, and allergies. They limit or block histamine, which is released by the body when we are exposed to substances that cause allergic reactions. Antihistamines are available with and without a prescription (over-the-counter). These products vary in their ability to cause drowsiness and sleepiness.

Antihistamines

Some examples are:

Over the Counter:

brompheniramine / DIMETANE, BROMPHEN
chlorpheniramine / CHLOR-TRIMETON
diphenhydramine / BENADRYL
clemastine / TAVIST

Prescription:

fexofenadine / ALLEGRA
loratadine / CLARITIN (now available over the
counter)
cetirizine / ZYRTEC
astemizole / HISMANAL

Interaction

Food: It is best to take prescription antihistamines on an empty stomach to increase their effectiveness.

Alcohol: Some antihistamines may increase drowsiness and slow mental and motor performance. Use caution when operating machinery or driving.

ARTHRITIS AND PAIN

Analgesic / Antipyretic

They treat mild to moderate pain and fever. An example is: acetaminophen / TYLENOL, TEMPRA

Interactions

Food: For rapid relief, take on an empty stomach because food may slow the body's absorption of acetaminophen.

Alcohol: Avoid or limit the use of alcohol because chronic alcohol use can increase your risk of liver damage or stomach bleeding. If you consume three

or more alcoholic drinks per day talk to your doctor or pharmacist before taking these medications.

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

NSAIDs reduce pain, fever, and inflammation.

Some examples are:

aspirin / BAYER, ECOTRIN
ibuprofen / MOTRIN, ADVIL
naproxen / ANAPROX, ALEVE, NAPROSYN
ketoprofen / ORUDIS
nabumetone / RELAFEN

Interaction

Food: Because these medications can irritate the stomach, it is best to take them with food or milk.

Alcohol: Avoid or limit the use of alcohol because chronic alcohol use can increase your risk of liver damage or stomach bleeding. If you consume three or more alcoholic drinks per day talk to your doctor or pharmacist before taking these medications. Buffered aspirin or enteric coated aspirin may be preferable to regular aspirin to decrease stomach bleeding.

Corticosteroids

They are used to provide relief to inflamed areas of the body. Corticosteroids reduce swelling and itching, and help relieve allergic, rheumatoid, and other conditions.

Some examples are:

methylprednisolone / MEDROL
prednisone / DELTASONE
prednisolone / PEDIAPRED, PRELONE
cortisone acetate / CORTEF

Interaction

Food: Take with food or milk to decrease stomach upset.

Narcotic Analgesics

Narcotic analgesics are available only with a prescription. They provide relief for moderate to severe pain.

Codeine can also be used to suppress cough. Some of these medications can be found in combination with non-narcotic drugs such as acetaminophen, aspirin, or cough syrups. Use caution when taking these medications: take them only as directed by a doctor or pharmacist because they may be habit forming and can cause serious side effects when used improperly.

Some examples are:

codeine combined with acetaminophen / **TYLENOL #2, #3, & #4**
 morphine / **ROXANOL, MS CONTIN**
 oxycodone combined with acetaminophen / **PERCOCET, ROXICET**
 meperidine / **DEMEROL**
 hydrocodone with acetaminophen / **VICODIN, LORCET**

Interaction

Alcohol: Avoid alcohol because it increases the sedative effects of the medications. Use caution when motor skills are required, including operating machinery and driving.

ASTHMA

Bronchodilators

Bronchodilators are used to treat the symptoms of bronchial asthma, chronic bronchitis, and emphysema. These medicines open air passages to the lungs to relieve wheezing, shortness of breath, and troubled breathing.

Some examples are:

theophylline / **SLO-BID, THEO-DUR, THEO-DUR 24, UNIPHYL,**
 albuterol / **VENTOLIN, PROVENTIL, COMBIVENT**
 epinephrine / **PRIMATENE MIST**

Interactions

Food: The effect of food on theophylline medications can vary widely. High-fat meals may increase the amount of theophylline in the body, while high-carbohydrate meals may decrease it. It is important to check with your pharmacist about which form you are taking because food can have different effects depending on the dose form (e.g., regular release, sustained release or sprinkles). For example, food has little effect on Theo-Dur and Slo-Bid, but food increases the absorption of Theo-24 and Uniphyll which can result in side effects of nausea, vomiting, headache, and irritability. Food can also decrease absorption of products like Theo-Dur Sprinkles for children.

Caffeine: Avoid eating or drinking large amounts of foods and beverages that contain caffeine (e.g., chocolate, colas, coffee, and tea) because both oral bronchodilators and caffeine stimulate the central nervous system.

Alcohol: Avoid alcohol if you're taking theophylline medications because it can increase the risk of side effects such as nausea, vomiting, headache and irritability.

CARDIOVASCULAR DISORDERS

There are numerous medications used to treat cardiovascular disorders such as high blood pressure, angina, irregular heart beat, and high cholesterol. These drugs are often used in combination to enhance their effectiveness. Some classes of drugs can treat several conditions. For example, beta blockers can be used to treat high blood pressure, angina, and irregular heart beats. Check with your doctor or pharmacist if you have questions on any of your medications. Some of the major cardiovascular drug classes are:

Diuretics

Sometimes called “water pills,” diuretics help eliminate water, sodium, and chloride from the body. There are different types of diuretics.

Some examples are:

furosemide / **LASIX**
 triamterene / hydrochlorothiazide / **DYAZIDE, MAXZIDE**
 hydrochlorothiazide / **HYDRODIURIL**
 triamterene / **DYRENIUM**
 bumetamide / **BUMEX**
 metolazone / **ZAROXOLYN**

Interaction

Food: Diuretics vary in their interactions with food and specific nutrients. Some diuretics cause loss of potassium, calcium, and magnesium. Triamterene, on the other hand, is known as a “potassium-sparing” diuretic. It blocks the kidneys’ excretion of potassium, which can cause hyperkalemia (increased potassium). Excess potassium may result in irregular heartbeat and heart palpitations. When taking triamterene, avoid eating large amounts of potassium-rich foods such as bananas, oranges and green leafy vegetables, or salt substitutes that contain potassium.

Beta Blockers

Beta blockers decrease the nerve impulses to the heart and blood vessels. This decreases the heart rate and the workload of the heart.

Some examples are:

atenolol / **TENORMIN**
 metoprolol / **LOPRESSOR**
 propranolol / **INDERAL**
 nadolol / **CORGARD**

Interaction

Alcohol: Avoid drinking alcohol with propranolol / INDERAL because the combination lowers blood pressure too much.

Nitrates

Nitrates relax blood vessels and lower the demand for oxygen by the heart.

Some examples are:

isosorbide dinitrate / ISORDIL, SORBITRATE
nitroglycerin / NITRO, NITRO-DUR, TRANSDERM-NITRO

Interaction

Alcohol: Avoid alcohol because it may add to the blood vessel-relaxing effect of nitrates and result in dangerously low blood pressure.

Angiotensin Converting Enzyme (ACE) Inhibitors

ACE inhibitors relax blood vessels by preventing angiotensin II, a vasoconstrictor, from being formed.

Some examples are:

captopril / CAPOTEN
enalapril / VASOTEC
lisinopril / PRINIVIL, ZESTRIL
quinapril / ACCUPRIL
moexipril / UNIVASC

Interactions

Food: Food can decrease the absorption of captopril and moexipril. So take captopril and moexipril one hour before or two hours after meals. ACE inhibitors may increase the amount of potassium in your body. Too much potassium can be harmful. Make sure to tell your doctor if you are taking potassium supplements or diuretics (water pills) that may increase the amount of potassium in your body. Avoid eating large amounts of foods high in potassium such as bananas, green leafy vegetables, and oranges.

HMG-CoA Reductase Inhibitors

Otherwise known as “statins,” these medications are used to lower cholesterol. They work to reduce the rate of production of LDL (bad cholesterol). Some of these drugs also lower triglycerides. Recent studies have shown that pravastatin can reduce the risk of heart attack, stroke, or miniature stroke in certain patient populations.

Some examples are:

atorvastatin / LIPITOR
cerivastatin / BAYCOL

fluvastatin / LESCOL
lovastatin / MEVACOR
pravastatin / PRAVACHOL
simvastatin / ZOCOR

Interactions

Alcohol: Avoid drinking large amounts of alcohol because it may increase the risk of liver damage.

Food: Lovastatin (Mevacor) should be taken with the evening meal to enhance absorption.

Anticoagulants

Anticoagulants help to prevent the formation of blood clots.

An example is:

warfarin / COUMADIN

Interactions

Food: Vitamin K produces blood-clotting substances and may reduce the effectiveness of anticoagulants. So limit the amount of foods high in vitamin K (such as broccoli, spinach, kale, turnip greens, cauliflower, and brussel sprouts).

High doses of vitamin E (400 IU or more) may prolong clotting time and increase the risk of bleeding. Talk to your doctor before taking vitamin E supplements.

INFECTIONS**Antibiotics and Antifungals**

Many different types of drugs are used to treat infections caused by bacteria and fungi. Some general advice to follow when taking any such product is:

- Tell your doctor about any skin rashes you may have had with antibiotics or that you get while taking this medication. A rash can be a symptom of an allergic reaction, and allergic reactions can be very serious.
- Tell your doctor if you experience diarrhea.
- If you are using birth control, consult with your health care provider because some methods may not work when taken with antibiotics.
- Be sure to finish all your medication even if you are feeling better.
- Take with plenty of water.

Antibacterials**Penicillin**

Some examples are:

penicillin V / VEETIDS
amoxicillin / TRIMOX, AMOXIL
ampicillin / PRINCIPEN, OMNIPEN

Interaction

Food: Take on an empty stomach, but if it upsets your stomach, take it with food.

Quinolones

Some examples are:

ciprofloxacin / CIPRO
levofloxacin / LEVAQUIN
ofloxacin / FLOXIN
trovafloxacin / TROVAN

Interactions

Food: Take on an empty stomach one hour before or two hours after meals. If your stomach gets upset, take it with food. However, avoid calcium-containing products like milk, yogurt, vitamins or minerals containing iron, and antacids because they significantly decrease drug concentration.

Caffeine: Taking these medications with caffeine-containing products (e.g., coffee, colas, tea, and chocolate) may increase caffeine levels, leading to excitability and nervousness.

Cephalosporins

Some examples are:

cefaclor / CECLOR, CECLOR CD
cefadroxil / DURICEF
cefixime / SUPRAX
cefprozil / CEFZIL
cephalexin / KEFLEX, KEFTAB

Interaction

Food: Take on an empty stomach one hour before or two hours after meals. If your stomach gets upset, take with food.

Macrolides

Some examples are:

azithromycin / ZITHROMAX
clarithromycin / BIAXIN
erythromycin / E-MYCIN, ERY-TAB, ERYC
erythromycin + sulfisoxazole / PEDIAZOLE

Interaction

Food: Take on an empty stomach one hour before or two hours after meals. If your stomach gets upset, take with food.

Sulfonamides

An example is:

sulfamethoxazole + trimethoprim / BACTRIM, SEPTRA

Interaction

Food: Take on an empty stomach one hour before or two hours after meals. If your stomach gets upset, take with food.

Tetracyclines

Some examples are:

tetracycline / ACHROMYCIN, SUMYCIN
doxycycline / VIBRAMYCIN
minocycline / MINOCIN

Interaction

Food: Take on an empty stomach one hour before or two hours after meals. If your stomach gets upset, take with food. However, it is important to avoid taking tetracycline / ACHROMYCIN, SUMYCIN with dairy products, antacids and vitamins containing iron because these can interfere with the medication's effectiveness.

Nitroimidazole

An example is:

metronidazole / FLAGYL

Interaction

Alcohol: Avoid drinking alcohol or using medications that contain alcohol or eating foods prepared with alcohol while you are taking metronidazole and for at least three days after you finish the medication. Alcohol may cause nausea, abdominal cramps, vomiting, headaches, and flushing.

Antifungals

Some examples are:

fluconazole / DIFLUCAN
griseofulvin / GRIFULVIN
ketoconazole / NIZORAL
itraconazole / SPORANOX

Interactions

Food: It is important to avoid taking these medications with dairy products (milk, cheeses, yogurt, ice cream), or antacids.

Alcohol: Avoid drinking alcohol, using medications that contain alcohol, or eating foods prepared with alcohol while you are taking ketoconazole/ NIZORAL and for at least three days after you finish the medication. Alcohol may cause nausea, abdominal cramps, vomiting, headaches, and flushing.

MOOD ORDERS**Depression, Emotional, and Anxiety Disorders**

Depression, panic disorder, and anxiety are a few examples of mood disorders—complex medical conditions with varying degrees of severity. When using medications to treat mood disorders it is important to follow your doctor's instructions. Remember to take your dose as

directed even if you are feeling better, and do not stop unless you consult your doctor. In some cases it may take several weeks to see an improvement in symptoms.

Monomine Oxidase (MAO) Inhibitors

Some examples are:

phenelzine / NARDIL
 tranylcypromine / PARNATE

Interactions

MAO Inhibitors have many dietary restrictions, and people taking them need to follow the dietary guidelines and physician's instructions very carefully. A rapid, potentially fatal increase in blood pressure can occur if foods or alcoholic beverages containing tyramine are consumed while taking MAO Inhibitors.

Alcohol: Do not drink beer, red wine, other alcoholic beverages, non-alcoholic and reduced-alcohol beer and red-wine products.

Food: Foods high in tyramine that should be avoided include:

- American processed, cheddar, blue, brie, mozzarella and Parmesan cheese; yogurt, sour cream.
- Beef or chicken liver; cured meats such as sausage and salami; game meat; caviar; dried fish.
- Avocados, bananas, yeast extracts, raisins, sauerkraut, soy sauce, miso soup.
- Broad (fava) beans, ginseng, caffeine-containing products (colas, chocolate, coffee, and tea).

Anti-Anxiety Drugs

Some examples are:

lorazepam / ATIVAN
 diazepam / VALIUM
 alprazolam / XANAX

Interactions

Alcohol: May impair mental and motor performance (e.g., driving, operating machinery).

Caffeine: May cause excitability, nervousness, and hyperactivity and lessen the anti-anxiety effects of the drugs.

Antidepressant Drugs

Some examples are:

paroxetine / PAXIL
 sertraline / ZOLOFT
 fluoxetine / PROZAC

Interactions

Alcohol: Although alcohol may not significantly interact with these drugs to affect mental or motor

skills, people who are depressed should not drink alcohol.

Food: These medications can be taken with or without food.

STOMACH CONDITIONS

Conditions like acid reflux, heartburn, acid indigestion, sour stomach, and gas are very common ailments. The goal of treatment is to relieve pain, promote healing, and prevent the irritation from returning. This is achieved by either reducing the acid the body creates or protecting the stomach from the acid. Lifestyle and dietary habits can play a large role in the symptoms of these conditions. For example, smoking cigarettes and consuming products that contain caffeine may make symptoms return.

Histamine Blockers

Some examples are:

cimetidine / TAGAMET or TAGAMET HB
 famotidine / PEPCID or PEPCID AC
 ranitidine / ZANTAC or ZANTAC 75
 nizatidine / AXID OR AXID AR

Interactions

Alcohol: Avoid alcohol while taking these products. Alcohol may irritate the stomach and make it more difficult for the stomach to heal.

Food: Can be taken with or without regard to meals.
Caffeine: Caffeine products (e.g., cola, chocolate, tea, and coffee) may irritate the stomach.

DRUG-TO-DRUG INTERACTIONS

Not only can drugs interact with food and alcohol, they can also interact with each other. Some drugs are given together on purpose for an added effect, like codeine and acetaminophen for pain relief. But other drug-to-drug interactions may be unintended and harmful. Prescription drugs can interact with each other or with over-the-counter (OTC) drugs, such as acetaminophen, aspirin, and cold medicine. Likewise, OTC drugs can interact with each other.

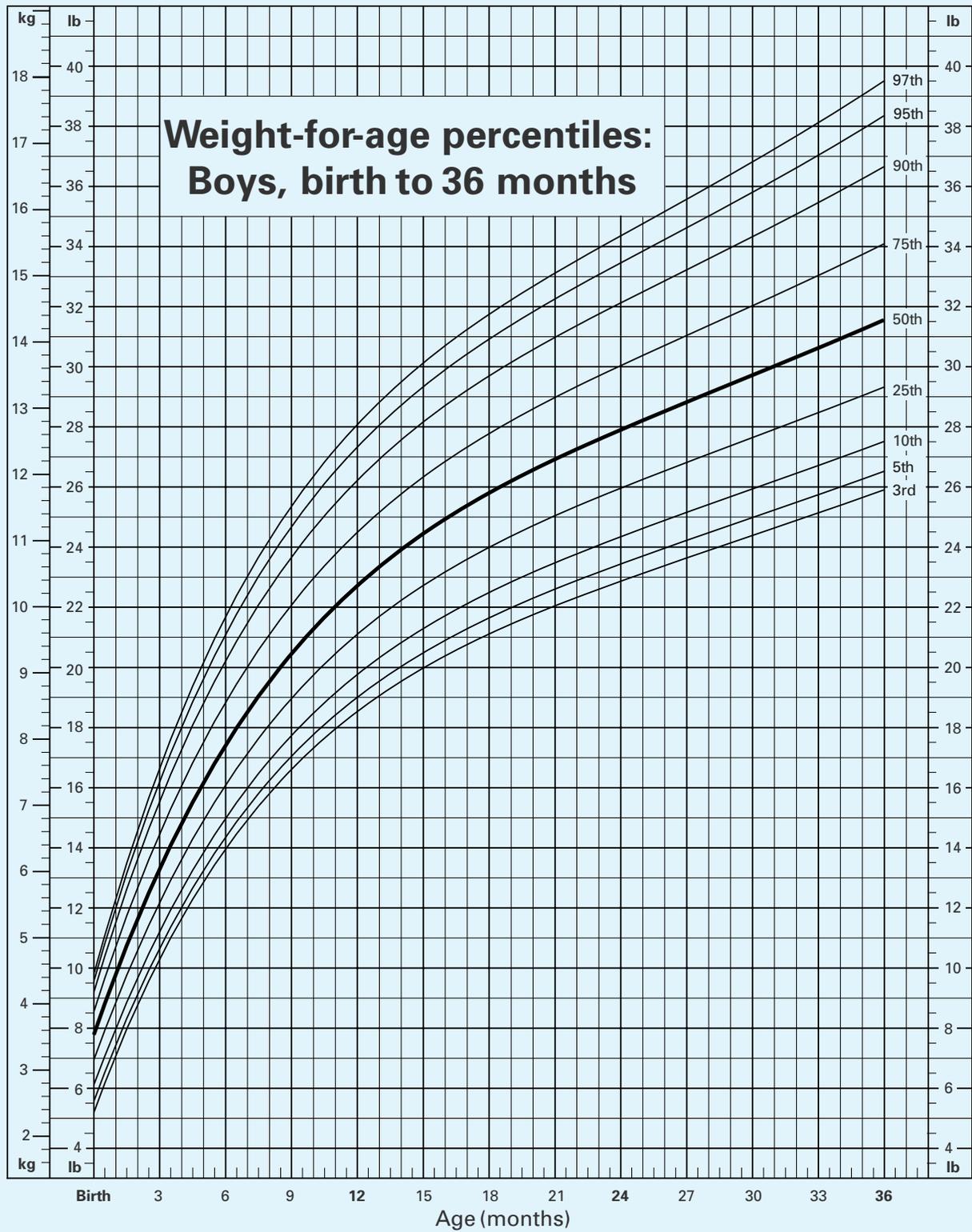
Sometimes the effect of one drug may be increased or decreased. For example, tricyclic antidepressants such as amitriptyline (ELAVIL), or nortriptyline (PAMELOR) can decrease the ability of clonidine (CATAPRES) to lower blood pressure. In other cases, the effects of a drug can increase the risk of serious side effects. For example, some antifungal medications such as itraconazole (SPORANOX) and ketoconazole (NIZORAL) can interfere with the way some cholesterol-lowering medications are broken down by the body. This can increase the risk of a serious side effects.

Doctors can often prescribe other medications to reduce the risk of drug-drug interactions. For example, two cholesterol-lowering drugs—pravastatin (PRAVA-CHOL) and fluvastatin (LESCOL)—are less likely to in-

teract with antifungal medications. Be sure to tell your doctor about all medications—prescription and OTC—that you are taking.

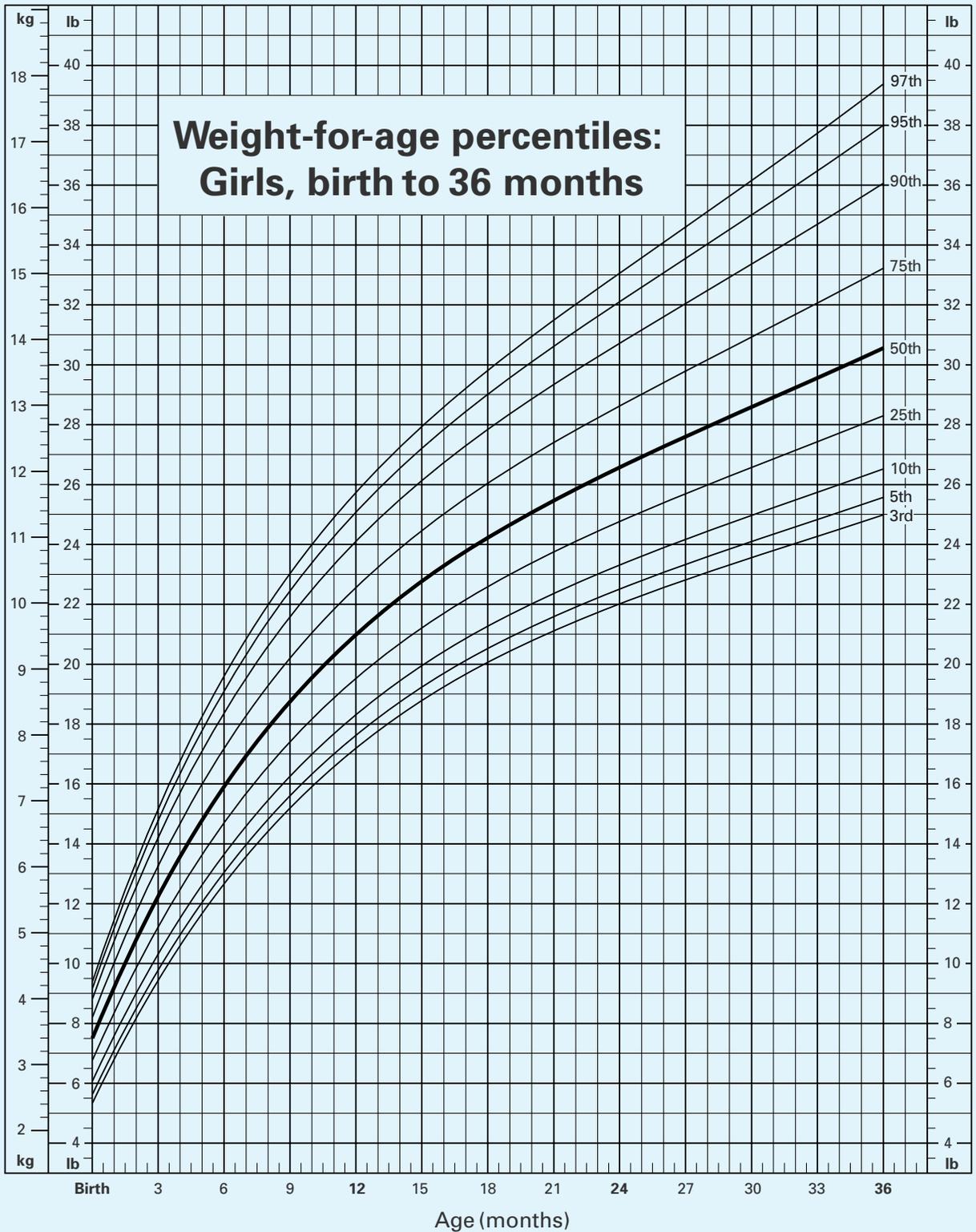
CDC Growth Charts

TABLE D-1 Boys: Birth to 36 Months Weight-for-Age



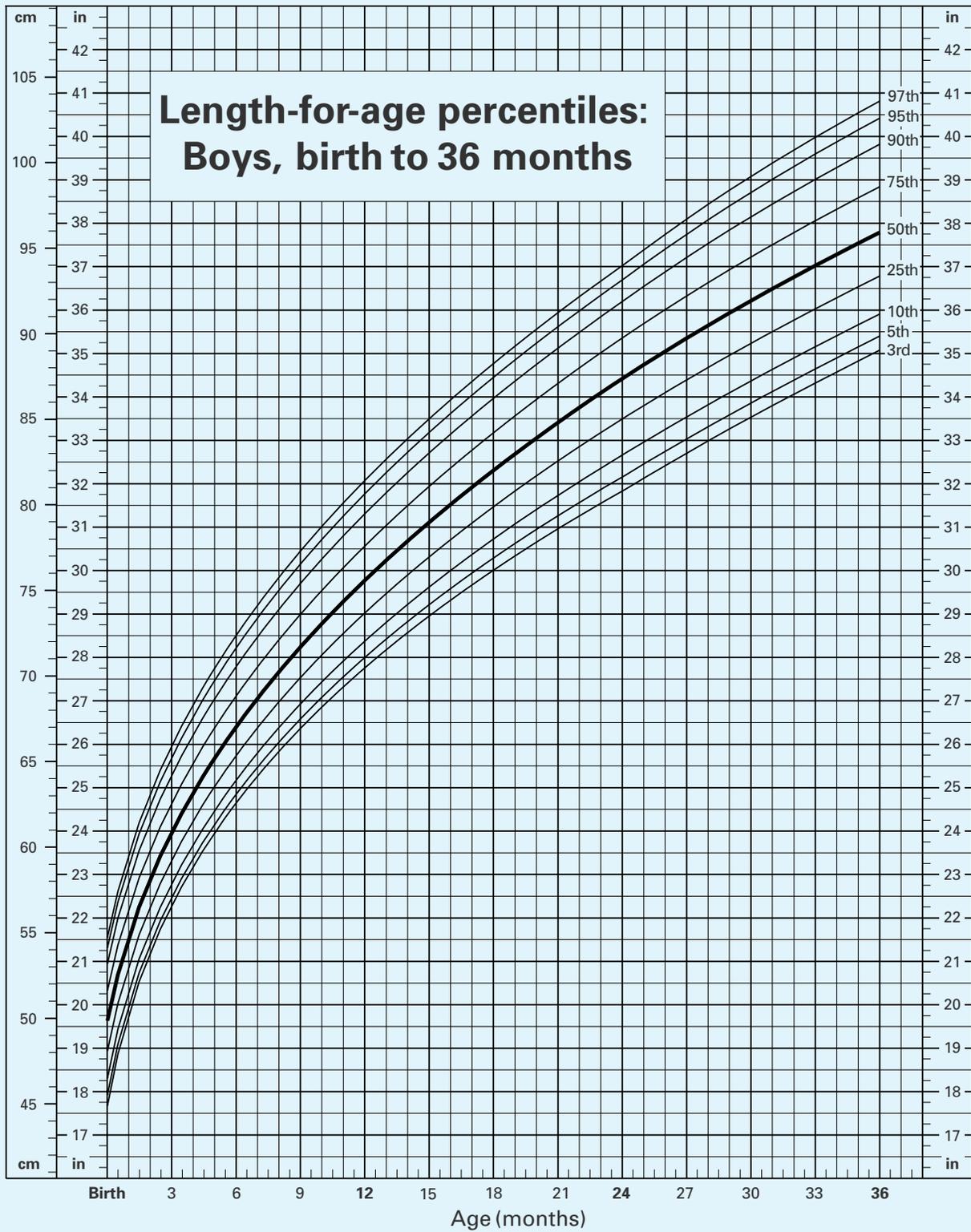
Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-2 Girls: Birth to 36 Months Weight-for-Age



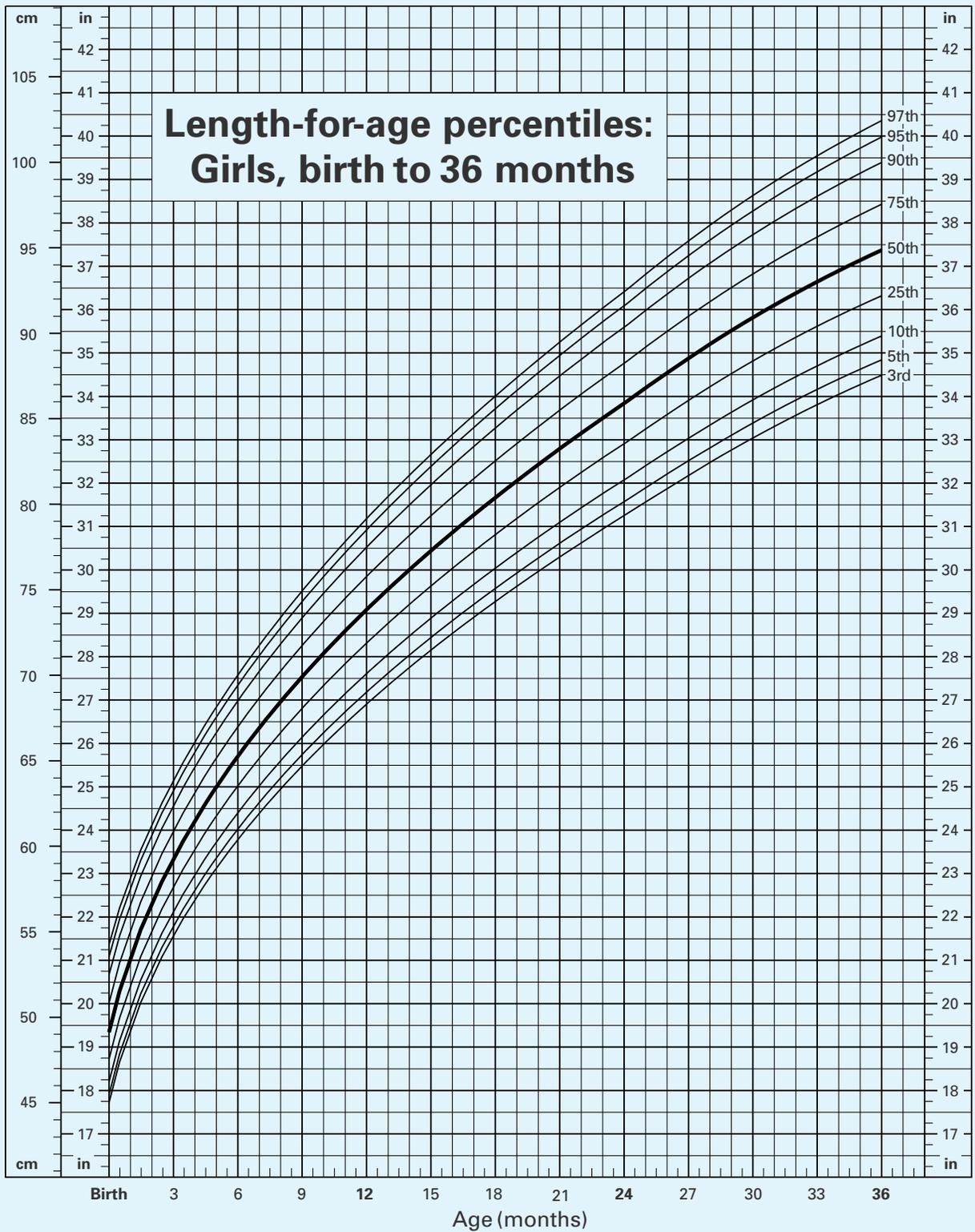
Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-3 Boys: Birth to 36 Months Length-for-Age



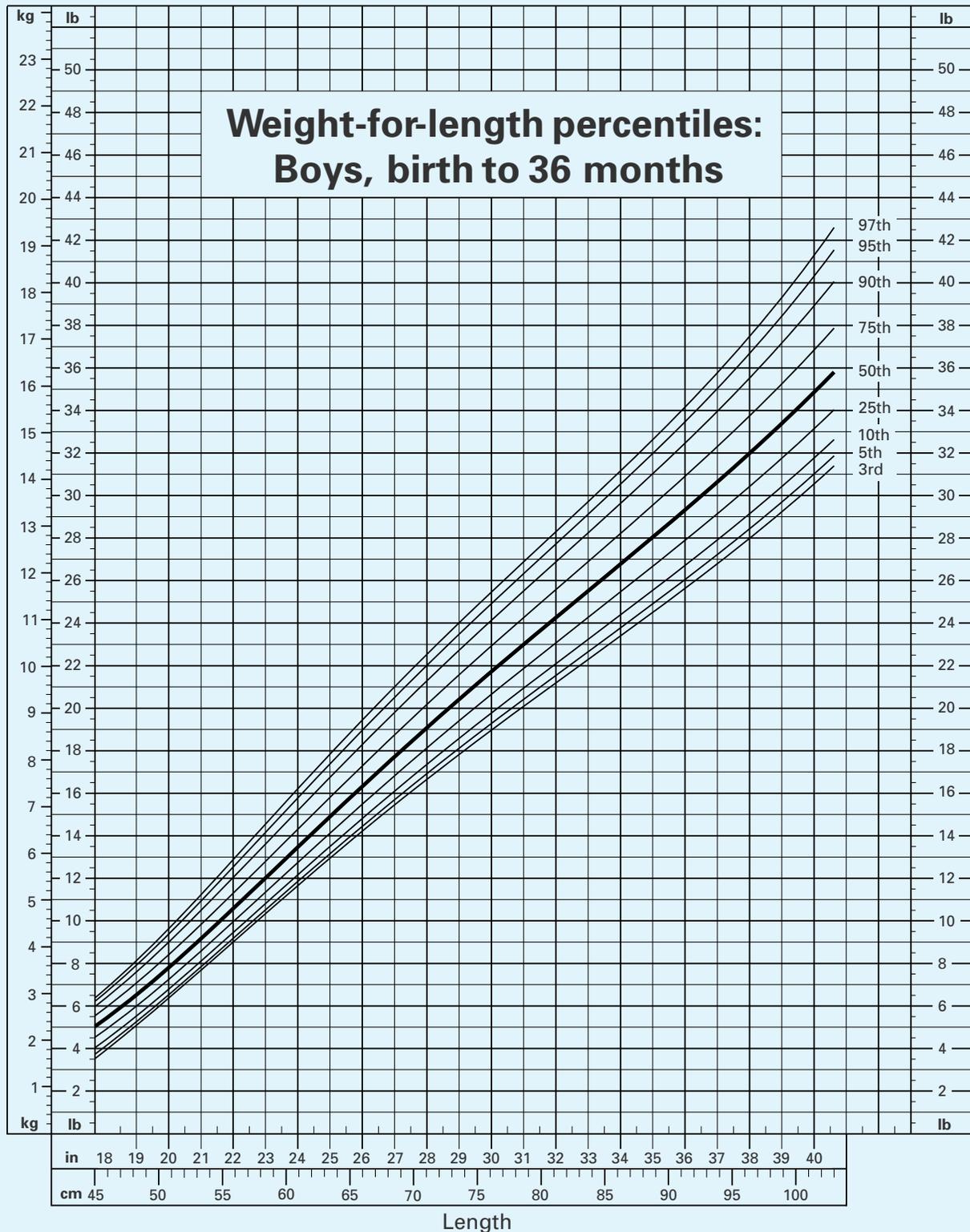
Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-4 Girls: Birth to 36 Months Length-for-Age



Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-5 Boys: Birth to 36 Months Weight-for-Length

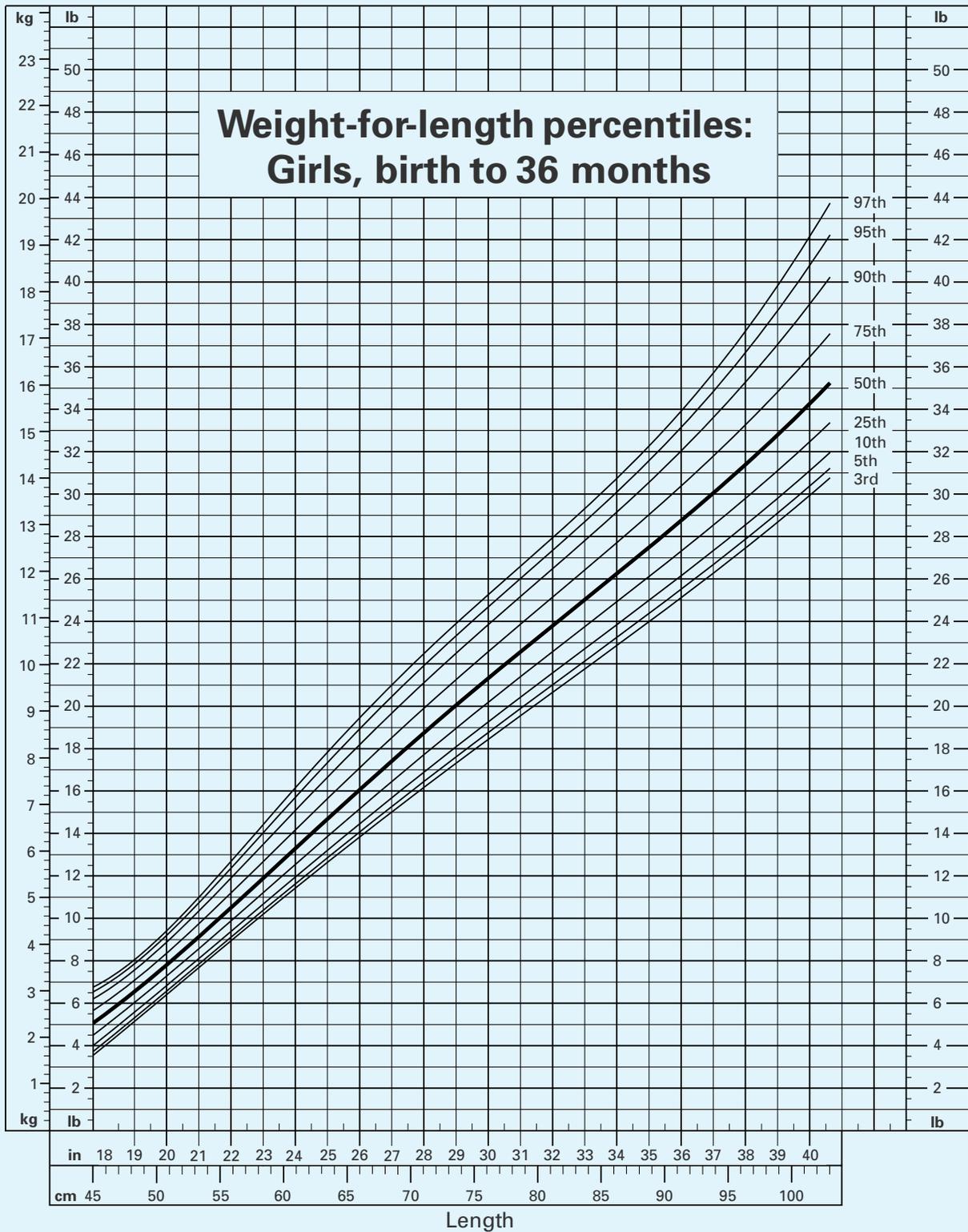


Revised and corrected June 8, 2000.



Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-6 Girls: Birth to 36 Months Weight-for-Length

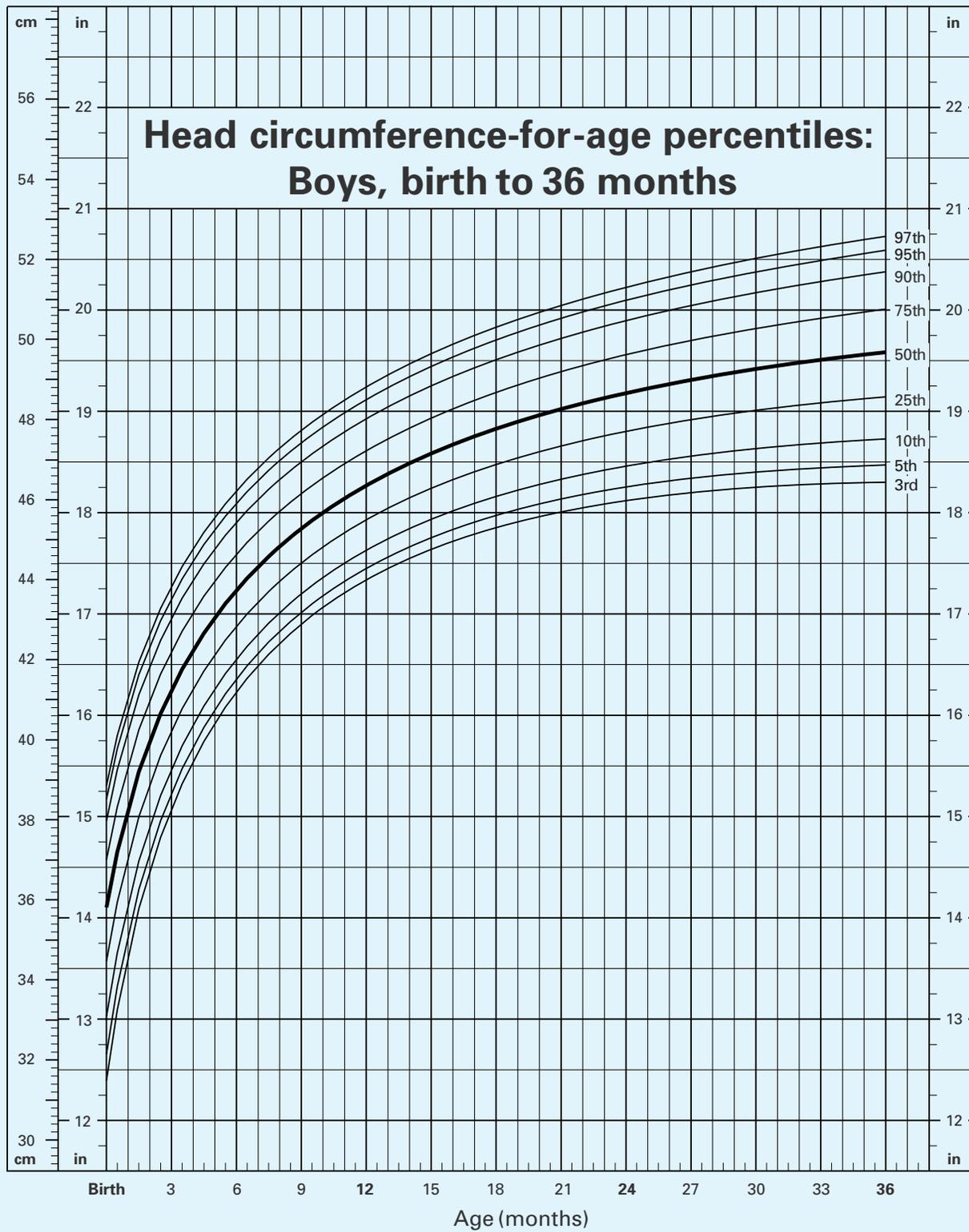


Revised and corrected June 8, 2000.



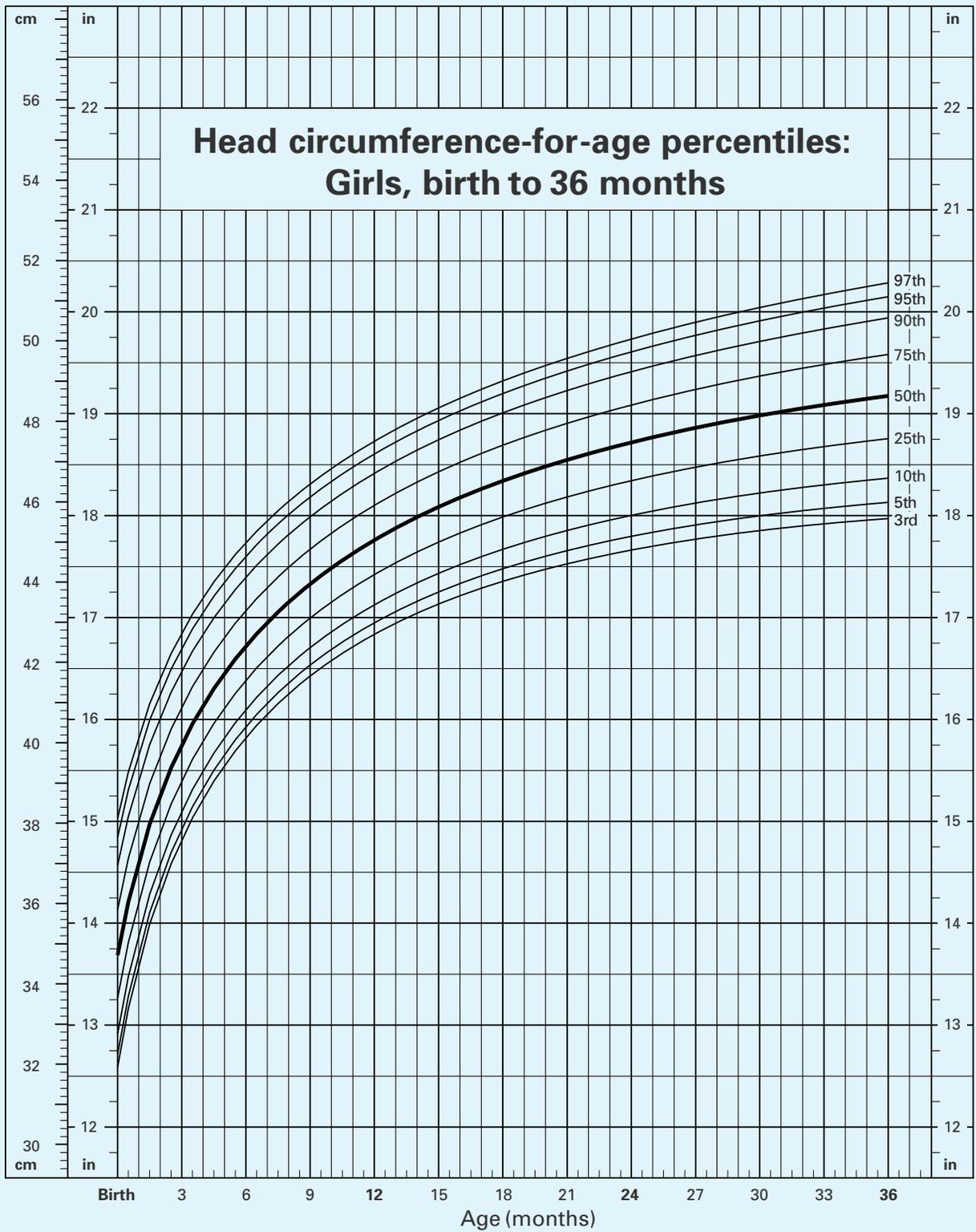
Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-7 Boys: Birth to 36 Months Head Circumference-for-Age



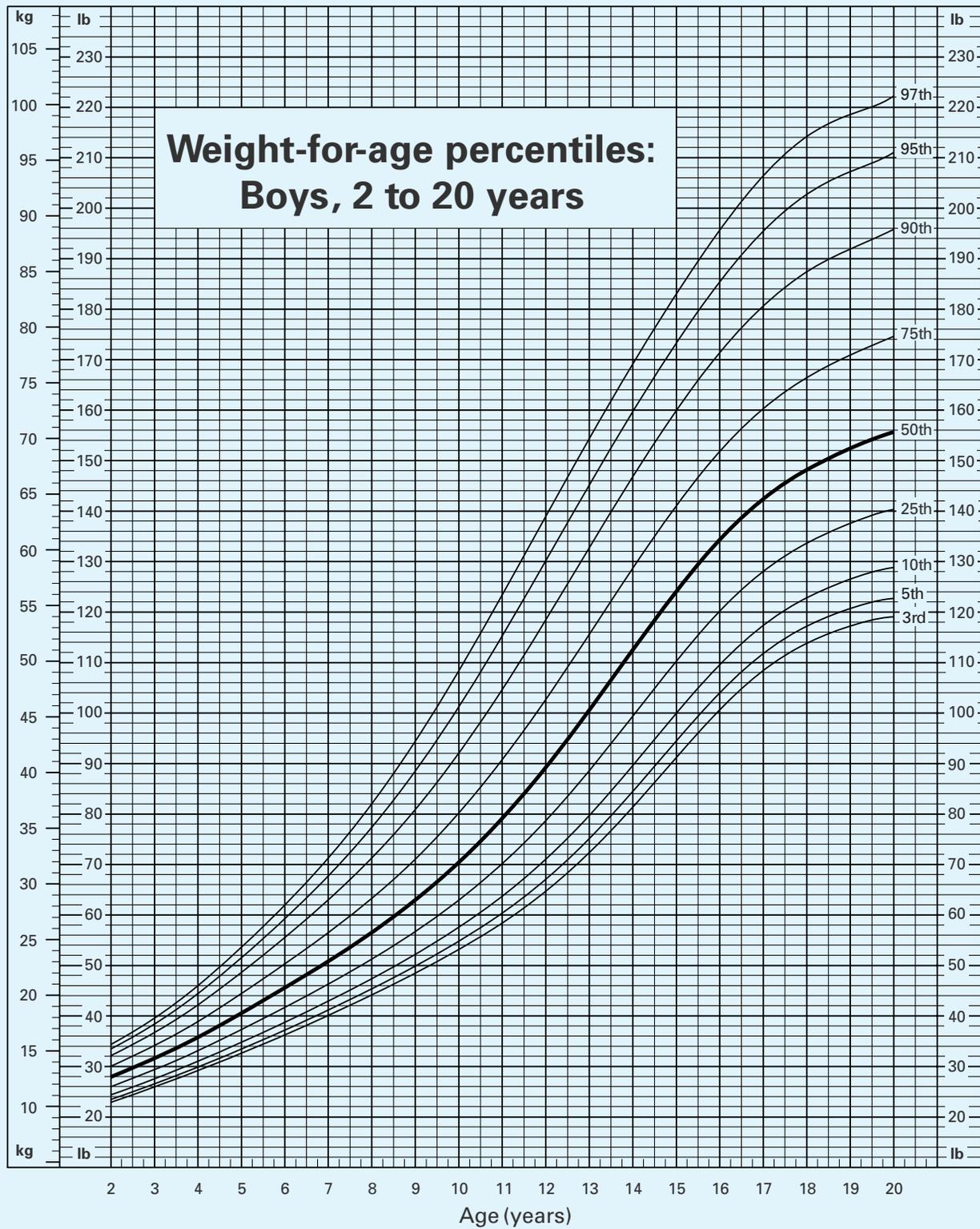
Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-8 Girls: Birth to 36 Months Head Circumference-for-Age



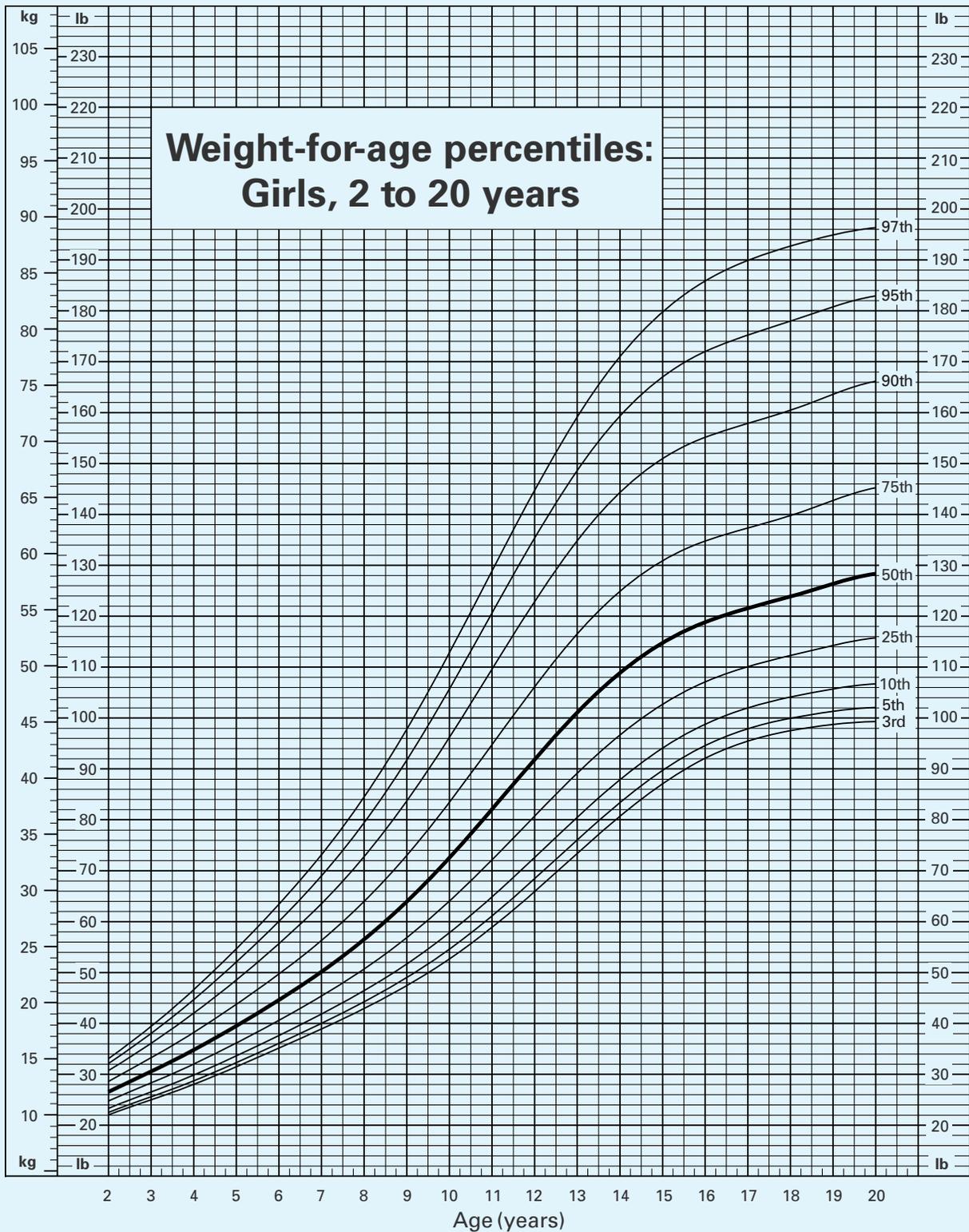
Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-9 Boys: 2 to 20 Years Weight-for-Age



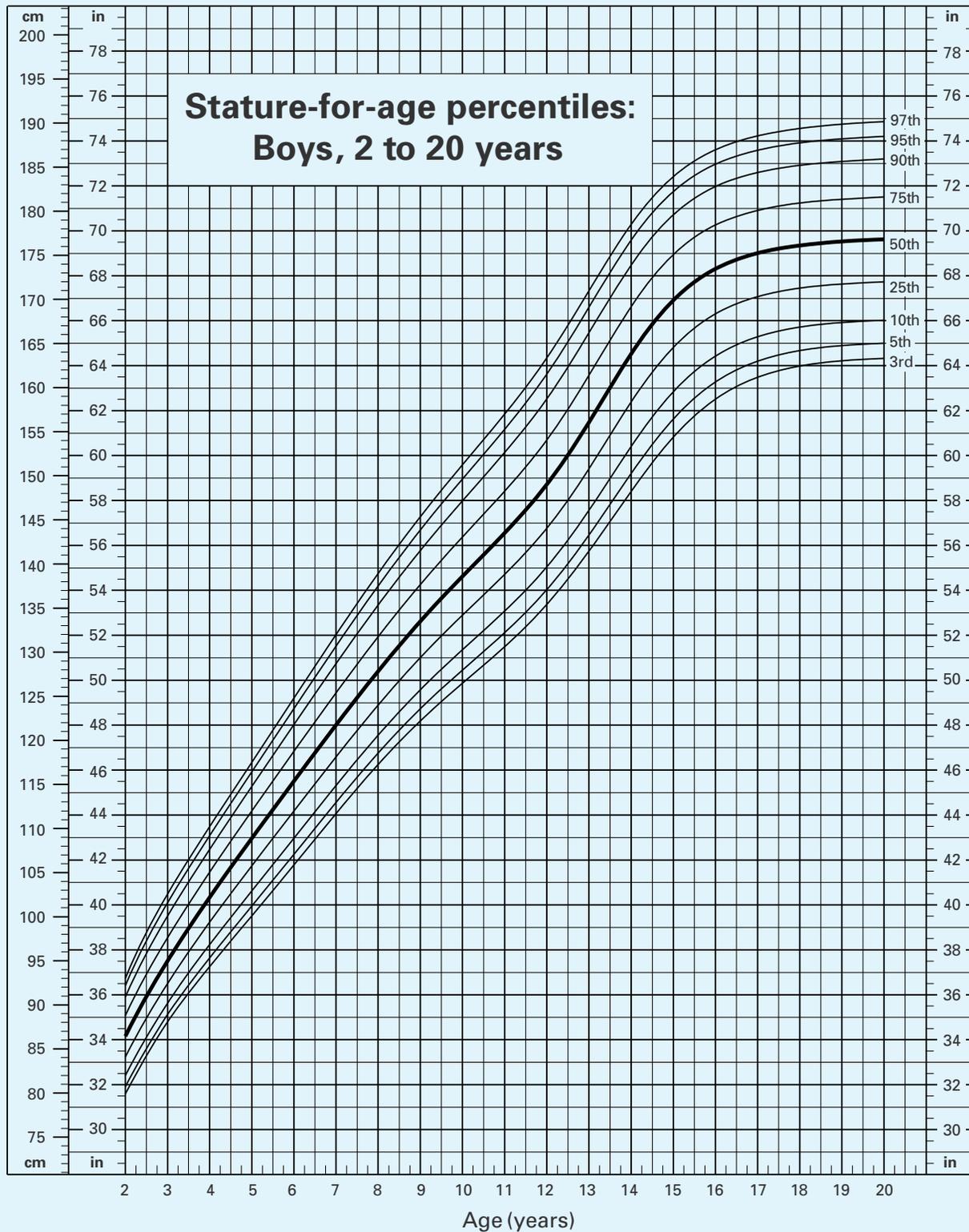
Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-10 Girls: 2 to 20 Years Weight-for-Age



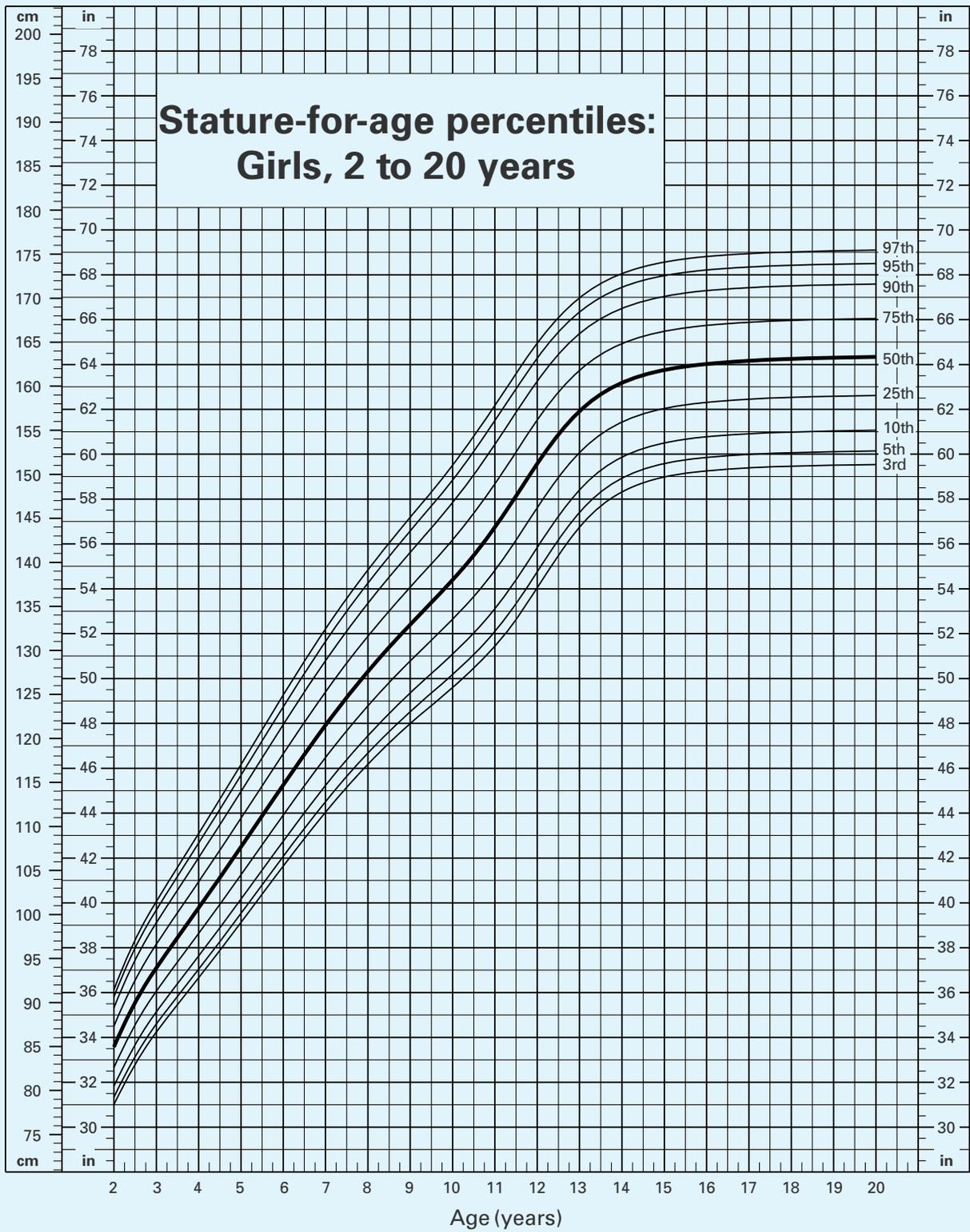
Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-11 Boys: 2 to 20 Years Stature-for-Age



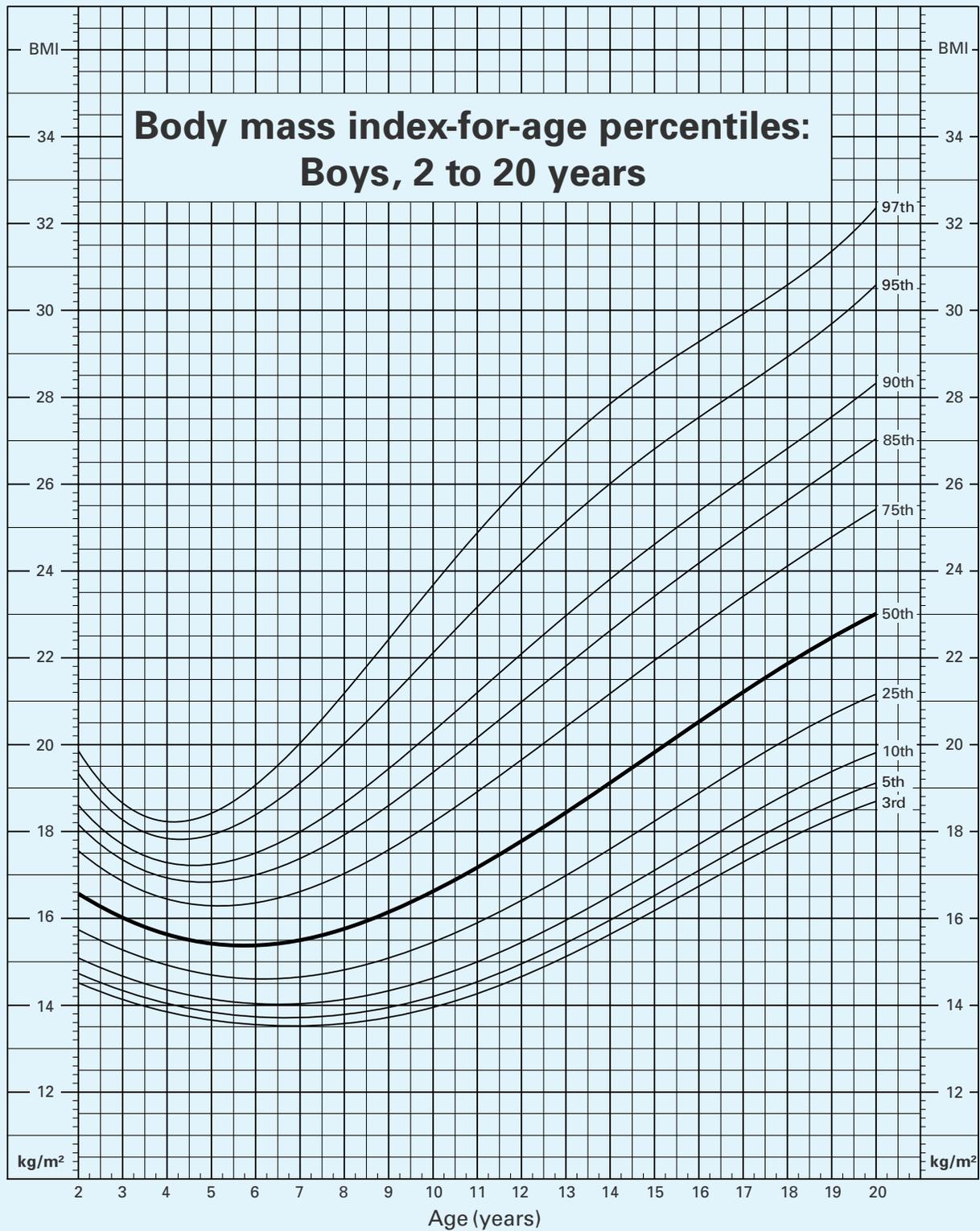
Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-12 Girls: 2 to 20 Years Stature-for-Age



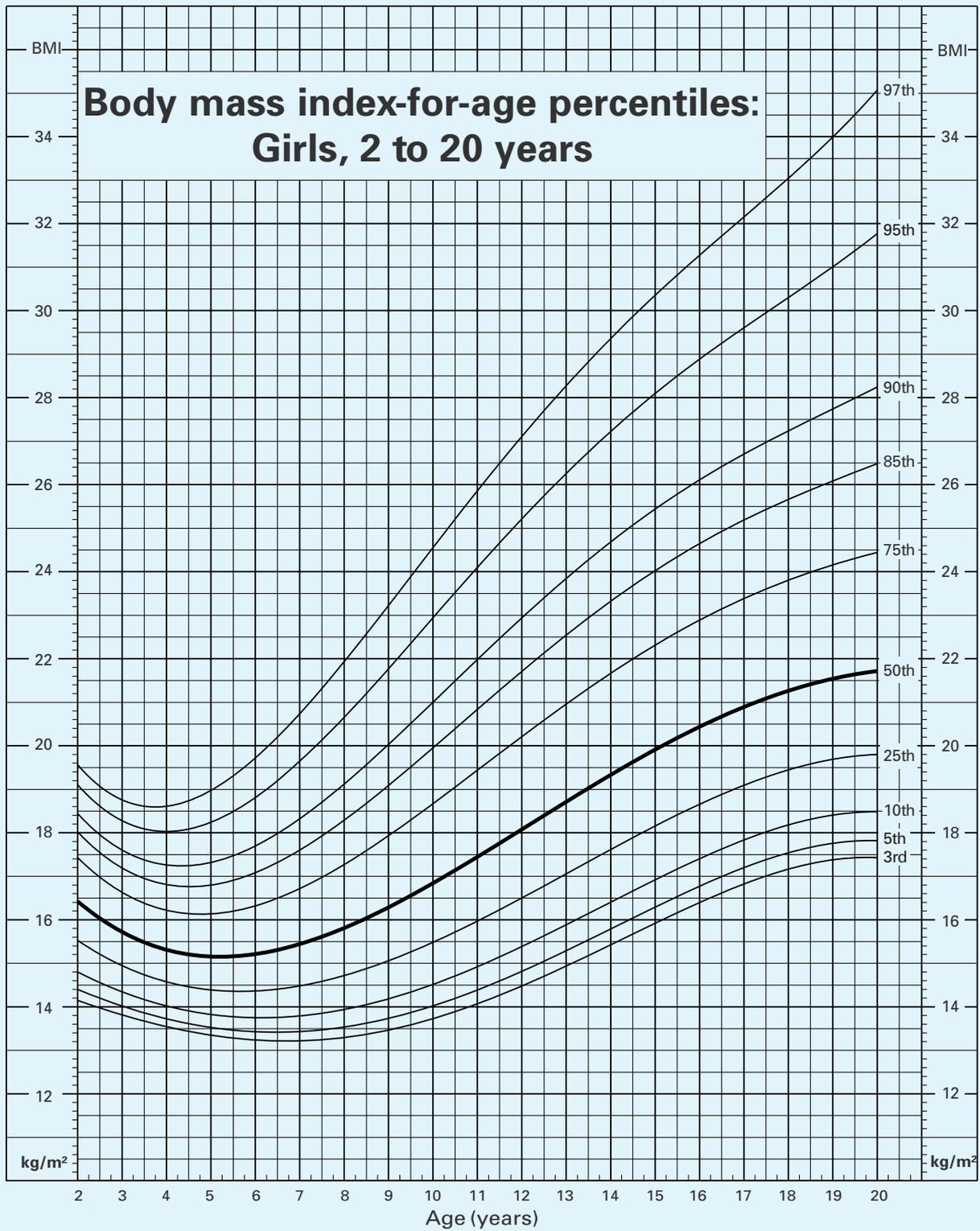
Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-13 Boys: 2 to 20 Years Body Mass Index-for-Age



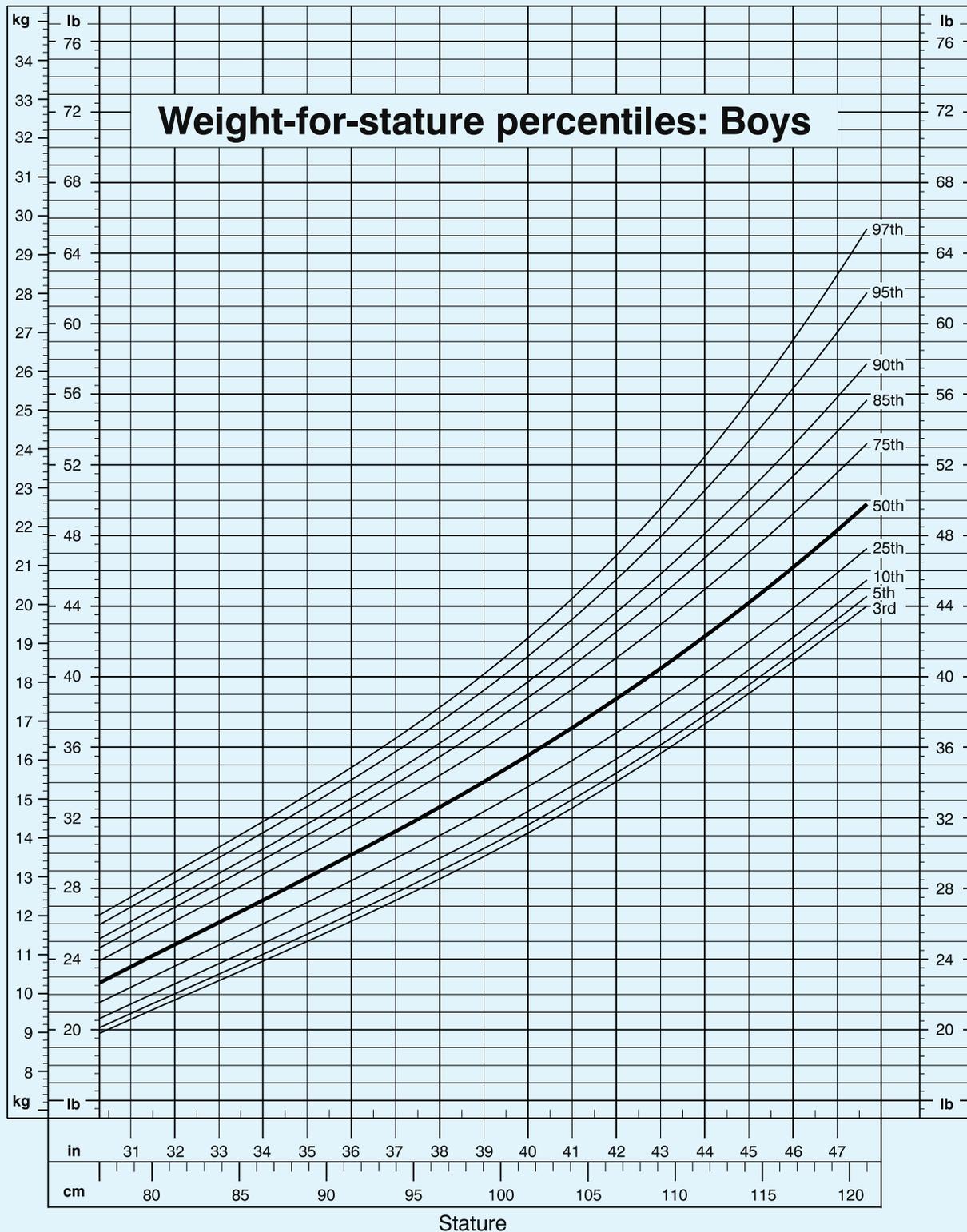
Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-14 Girls: 2 to 20 Years Body Mass Index-for-Age



Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-15 Boys: 2 to 5 Years Weight-for-Stature

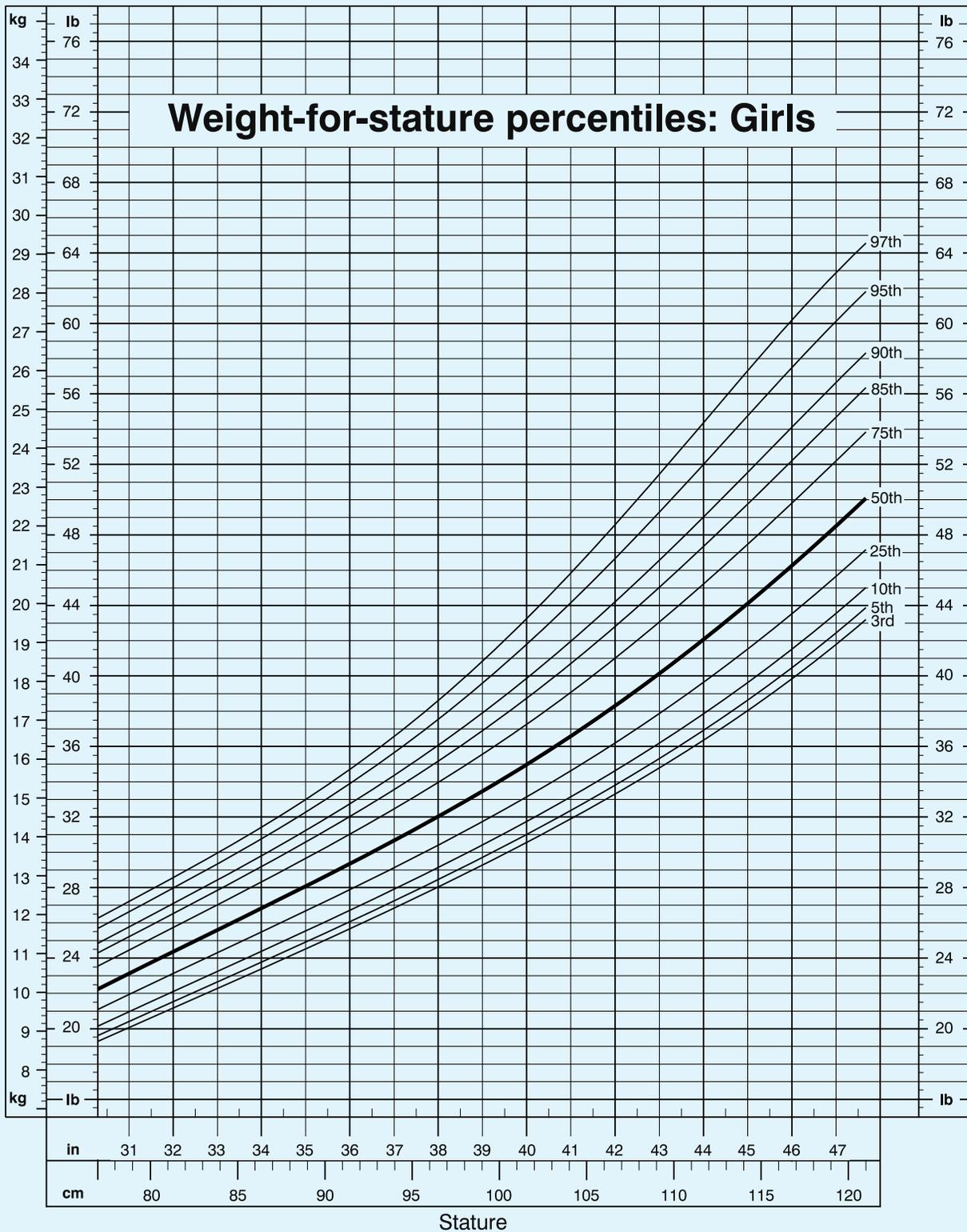


Revised and corrected December 4, 2000.



Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

TABLE D-16 Girls: 2 to 5 Years Weight-for-Stature



Revised and corrected December 4, 2000.



Source: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

Weights and Measures

TABLE E-1 Common Weights and Measures

Measure	Equivalent	Measure	Equivalent
3 tsp	1 tbsp	1 fl oz	28.35 g
2 tbsp	1 oz	½ c	120 g
4 tbsp	¼ c	1 c	240 g
8 tbsp	½ c	1 lb	454 g
16 tbsp	1 c		
	1 g	1 ml	
2 c	1 pt	1 tsp	5 ml
4 c	1 qt	1 tbsp	15 ml
4 qt	1 gal	1 fl oz	30 ml
1 tsp	5 g	1 c	240 ml
1 tbsp	15 g	1 pt	480 ml
1 oz	28.35 g	1 qt	960 ml
	1 L	1000 ml	

TABLE E-2 Weights and Measures Conversions

U.S. System to Metric		Metric to U.S. System	
U.S. Measure	Metric Measure	Metric Measure	U.S. Measure
Length		Length	
1 in	25.0 mm	1 mm	0.04 in
1 ft	0.3 m	1 m	3.3 ft
Mass		Mass	
1 g	64.8 mg	1 mg	0.015 g
1 oz	28.35 g	1 g	0.035 oz
1 lb	0.45 kg	1 kg	2.2 lb
1 short ton	907.1 kg	1 metric ton	1.102 short tons
Volume		Volume	
1 cu in	16.0 cm ³	1 cm ³	0.06 in ³
1 tsp	5.0 ml	1 mL	0.2 tsp
1 tbsp	15.0 ml	1 mL	0.07 tbsp
1 fl oz	30.0 ml	1 mL	0.03 oz
1 c	0.24 L	1 L	4.2 c
1 pt	0.47 L	1 L	2.1 pt
1 qt (liq)	0.95 L	1 L	1.1 qt
1 gal	0.004 m ³	1 m ³	264.0 gal
1 pk	0.009 m ³	1 m ³	113.0 pk
1 bu	0.04 m ³	1 m ³	28.0 bu
Energy		Energy	
1 cal	4.18 J	1 J	0.24 cal

Temperature

To convert Celsius degrees into Fahrenheit, multiply by $\frac{9}{5}$ and add 32.

To convert Fahrenheit degrees into Celsius, subtract 32 and multiply by $\frac{5}{9}$. For example:

$$30^{\circ}\text{C} = (30 \times \frac{9}{5} + 32)^{\circ}\text{F} = (54 + 32)^{\circ}\text{F} = 86^{\circ}\text{F} \quad 90^{\circ}\text{F} = (90 - 32) \times \frac{5}{9}^{\circ}\text{C} = 58 \times \frac{5}{9}^{\circ}\text{C} = 32.2^{\circ}\text{C}$$

Food Exchange Lists

SOURCE AND CREDITS

The information in this appendix has been derived from the September 2007 edition of the Food Exchanges Lists for Diabetes and is used with the permission of the American Dietetic Association. For ease of reference, it will be referred to as the Lists throughout this appendix.

When professionals apply the tables in this appendix, they follow the comprehensive guidelines presented in the original booklet. Students and nonprofessionals should not apply the tables in this appendix without the supervision of one or both of the following:

1. The instructor using this book
2. A registered dietitian

For the permission to include the data in this appendix, the publisher and the authors express their appreciation to:

1. The American Diabetes Association, Inc., and the American Dietetic Association
2. Those individual professionals who reviewed and updated the original document:
 - Madelyn L Wheeler, MS, RD, FADA
 - Anne Daly, MS, RD
 - Alison Evert, MS, RD
 - Marion Franz, MS, RD
 - Patti Geil, MS, RD
 - Lea Ann Holzmeister, RD
 - Karmeen Kulkami, MS, RD
 - Emily Loghmani, MS, RD
 - Tami A. Ross, RD

As discussed in Chapter 18, the principles of using the List are the same for the 2003 and 2007 editions. However, the 2007 list contains more than 700 foods and the levels of the major nutrients are also provided for each food. In view of the size of the Lists, it will not be reproduced here. Instead, a number of selected foods are presented.

BACKGROUND

Planning is based on this specifically prepared nutrient database of almost 700 foods. The serving sizes of the foods in each list (starches, fruits, milks, vegetables, meats, fats, etc.) reflect the mean macronutrient and energy values for each of the groups in this database.

Foods included are those commonly eaten by a majority of individuals in the United States. Many are core foods in the U.S. food supply, while some foods represent ethnic or other eating preferences (e.g., vegetarian). In almost all instances, the foods from each list are based on commercially prepared products rather than homemade recipes, because of the extreme variability of the latter. Wherever possible, nutrition values represent generic rather than name brand, or are an average of several nationally available name brands. Some foods may be in the database in more than one form. Vegetables, for example, are fresh raw as well as fresh or frozen cooked, and canned. Some foods are in two lists (e.g., beans, peas, and lentils), and some are in two lists but in different serving sizes (peanut butter, for example).

The first column of each of the tables indicates the source of the nutrient data.

1. The most common source of energy and nutrient values for foods is the United States Department of Agriculture (USDA) Nutrient Database for Standard Reference.^a It is the foundation for most food composition databases in the public and private sectors and is identified by the USDA 5-digit number beginning with a 0, 1, 2, or 4.
2. Some foods are from the USDA's Food and Nutrient Database for Dietary Studies^b and are identified by a 5-digit number starting with 5, 7, or 9.
3. The other main source is an average of nutrition facts from food labels of similar foods and is designated "Label."
4. Occasionally nutrition information was obtained from a recipe and is designated "Recipe." Recipes used for the List are on file with this data.

^aUSDA, Agricultural Research Service, 2006. USDA National Nutrient Database for Standard Reference, Release 19. Nutrient Data Laboratory Home Page. <http://www.ars.usda.gov/ba/bhnrc/ndl>. Accessed August 17, 2007.

^bUSDA Food and Nutrient Database for Dietary Studies, 1.0. (2004). Beltsville, MD: Agricultural Research Service, Food Surveys Research Group. http://www.barc.usda.gov/bhnrc/foodsurvey/fields_intro.html. Accessed August 17, 2007.

The food names and serving size columns cross-reference the same designations in the List. The fourth column, grams per serving, is the metric weight of the portion, providing more definition for words such as “medium,” as well as providing specifics for those who are doing carbohydrate gram counting as a meal planning method. The rest of the columns represent the energy and nutrients used in the Nutrition Facts portion of food labels. Polyunsaturated and monounsaturated fatty acids are included because of the configuration of the fat list. The following abbreviations are used:

SFA = saturated fatty acids
 trans = trans-fatty acids
 PUFA = polyunsaturated fatty acids
 MUFA = monounsaturated fatty acids
 chol = cholesterol
 sod = sodium
 carb = carbohydrate
 pro = protein
 ETOH = 200 proof alcohol

LIST CATEGORIES

The Lists include the following:

Starch list
 Bread
 Cereals and grains
 Crackers and snacks
 Starchy vegetables
 Beans, peas, and lentils
 Sweets, desserts, and other carbohydrates list
 Beverages, sodas, and energy/sports drinks
 Brownies, cake, cookies, gelatin, pie, and pudding
 Candy, spreads, sweets, sweeteners, syrups, and toppings
 Condiments and sauces
 Doughnuts, muffins, pastries, and sweet breads
 Frozen bars, frozen desserts, frozen yogurt, and ice cream
 Granola bars, meal replacement bars/shakes, and trail mix
 Fruit list
 Fruits
 Fruit juices
 Vegetables (nonstarchy) list
 Meat and meat substitutes list
 Lean meat
 Medium-fat meat
 High-fat meat
 Plant-based proteins (for beans, peas, and lentils, see starch list)
 Milk list
 Fat-free and low-fat milk
 Reduced fat

Whole milk
 Dairy-like foods
 Fat list
 Monounsaturated fats list
 Polyunsaturated fats list
 Saturated fats list
 Fast-foods list
 Breakfast sandwiches
 Main dishes/entrees
 Oriental
 Pizzas
 Sandwiches
 Salads
 Sides/appetizers
 Desserts
 Combination foods list
 Entrees
 Frozen entrees/meals
 Salads (deli style)
 Soups
 Free foods list
 Low carbohydrate foods
 Modified-fat foods with carbohydrate
 Condiments
 Free snacks
 Drinks/mixes
 Alcohol list

Table F-1 presents an example of nutrient data for each of the entries above.

MEASUREMENT, NUTRIENTS, AND LISTS

To apply information in the lists in this appendix, we need the two groups of data presented in Tables F-2 and F-3.

The following provides some example of foods in the Lists including name of food, serving size, and exchanges. It is important to realize that none of the nutrient data in Table F-1 is presented. If the levels of sodium and fat are important to the patient a healthcare provider will provide details about the nutrient data of the foods. For details, your instructors can provide assistance.

Starch List

Serving size for one exchange for some examples in this list is:

1. $\frac{1}{2}$ c of cooked cereal, grain, or starchy vegetable
2. $\frac{1}{2}$ c of cooked rice or pasta
3. 1 oz of a bread product, such as 1 slice of bread
4. $\frac{3}{4}$ to 1 oz of most snack foods (some snack foods may also have added fat)

One starch exchange equals 15 g of carbohydrate, 3 g of protein, 0–1 g of fat, and 80 calories.

TABLE F-1 An Example of Nutrient Data for Each List and Sub-list from the 2007 Food Exchange Lists

Source Food ^a	Serving Size	Grams per serving	Cal	Fat (g)	SFA (g)	Trans (g)	PUFA (g)	MUFA (g)	Chol (mg)	Sod (mg)	Carb (g)	Fiber (g)	Sugars (g)	Pro (g)
Starch														
<i>Breads</i>														
18069 Bread, white	1 sl	28	69	1.2	0.3	ND	0.5	0.2	0	134	12.4	0.6	1.0	2.0
<i>Cereals</i>														
08065 Rice krispies	0.75 c	20	77	0.3	0.1	ND	0.1	0.1	0	191	17.4	0.1	1.8	1.2
<i>Grains/Rice/Pasta</i>														
20121 Spaghetti, cooked, firm	0.33 c	48	85	0.3	0	ND	0.1	0	0	0	13.1	0.8	0.6	2.2
<i>Crackers/Snacks</i>														
19050 Tortilla chips	0.75 oz	21	82	0.8	0	ND	0	0	0	111	18.0	3.0	0.1	2.2
<i>Starchy vegetables</i>														
11367 Potato, white, peeled, cooked	3 oz	85	73	0.1	0	0	0	0	0	4	17.0	1.5	1.4	1.5
<i>Beans/Peas/Lentils</i>														
16038 Beans, navy, cooked	½ c	91	129	0.5	0.1	ND	0.2	0	0	1	23.9	5.8	2.0	7.9
Sweets, Desserts and other carbohydrates														
<i>Beverages, Sodas, and Energy/Sports Drinks</i>														
Label Sports drink	1 c	237	50	0	0	0	0	0	0	110	14.0	0	14	0
<i>Brownie, Cake, Cookies, Gelatin, Pie, and Pudding</i>														
Brownie, small, unfrosted	1 (1-½ sq. ½" high)	28	115	4.6	1.2	ND	0.6	2.5	5	88	18.1	0.6	10.4	1.4
<i>Candy, Spreads, Sweets, Sweeteners, Syrups, and Toppings</i>														
19129 Syrup, pancake type, regular jelly	1 T	20	50	0	0	0	0	0	0	34	13.2	0	9.5	0
<i>Condiments and Sauces</i>														
06150 Barbecue sauce, bottled	3 T	52	79	0.2	0	0	0.1	0	0	587	19.0	0.3	13.7	0
<i>Doughnuts, Muffins, Pastries, and Sweet Breads</i>														
Doughnut, yeast type, glazed	1 (3-¾" diameter)	60	239	11.5	3.3	ND	1.7	6.0	18	232	30.4	1.3	11.7	3.7
<i>Frozen Bars, Frozen Desserts, Frozen Yogurt, and Ice Cream</i>														
Label Ice cream	½ c	72	165	10.0	4.5	ND	0.4	2.7	23	102	15.0	0	1.5	3.0
<i>Granola Bars, Meal Replacement Bars/Shakes, and Trail Mix</i>														
19015 Granola bar	1 bar (1 oz)	28	134	5.6	1.0	ND	3.4	1.2	0	83	18.3	1.5	6.5	2.9
<i>Fruits</i>														
<i>Fresh/Canned/Dried Fruits</i>														
09266 Pineapple, fresh	0.75 c	116	56	0.1	0	0	0	0	0	1	14.7	1.6	10.8	0.6
<i>Fruit juices</i>														
09294 Prune juice	0.33 c	84	59	0	0	0	0	0	0	3	14.7	0.9	11.3	0.5
Vegetables														
<i>11283 Onions, fresh, cooked</i>														
Meats and Meat Substitutes														
<i>Lean Meats</i>														
05220 Turkey breast (cutlet), no skin, roasted	1 oz	28	38	0.2	0.1	ND	0.1	0	23	15	0	0	0	8.5
<i>Medium Fat Meats</i>														
13150 Beef, short ribs, cooked	1 oz	28	84	5.1	2.2	ND	0.2	2.3	26	16	0	0	0	8.7
<i>High Fat Meats</i>														
07064 Pork sausage, cooked	1 oz	28	104	8.8	3.1	ND	1.1	3.9	23	366	0.3	0	0.3	5.6
<i>Plant-Based Proteins (for Beans, Peas, and Lentils, see Starch List)</i>														
16126 Tofu, firm	4 oz (½ c)	114	80	4.7	1.0	ND	2.0	1.4	0	14	1.9	1.0	0.7	9.3

^aThe "source food" is indicated by:
 • an identification number followed by the name of a food; OR
 • the word label followed by the name of a food
 The meaning of these two items is explained under the section background for the Food Exchange Lists.

continues

TABLE F-1 (continued)

Source Food ^a	Serving Size	Grams per serving	Cal	Fat (g)	SFA (g)	Trans (g)	PUFA (g)	MUFA (g)	Chol (mg)	Sod (mg)	Carb (g)	Fiber (g)	Sugars (g)	Pro (g)	
Milk															
<i>Fat-free milks/low-fat milks</i>															
01088 Buttermilk, low-fat (1%)	1 c	245	98	2.2	1.3	0	0.1	0.6	10	257	11.7	0	11.7	8.1	
<i>Reduced-fat milk</i>															
01079 Milk, reduced-fat (2%)	1 c	244	130	5.0	3.0	0	0.2	1.4	20	130	12.0	0	12.0	8.1	
<i>Whole milks</i>															
01077 Milk, whole	1 c	244	150	8.0	5.0	0.2	0.5	2.0	33	120	12.0	0	12.0	8.0	
<i>Dairy-like foods</i>															
Label Yogurt and juice blend	1 c	236	115	4.1	0.5	0.0	2.5	1.0	0	55	34.0	0	32.0	3.0	
Fats															
<i>Monounsaturated fats</i>															
16098 Peanut butter	1.5 T	8	48	4.2	0.8	0.0	1.2	2.0	0	40	1.5	0.5	0.6	2.0	
<i>Polysaturated fats</i>															
04510 Oil, safflower	1 t	4	40	4.5	0.3	ND	3.4	0.6	0	0	0	0	0	0	
<i>Saturated fats</i>															
04002 Bacon grease	1 t	4	39	4.3	2.0	ND	0.5	1.9	4	0	0	0	0	0	
Fast foods															
<i>Breakfast sandwiches</i>															
Label Sausage biscuit sandwich	1 biscuit	137	493	34.0	10.0	4.5	3.3	14.2	28	1136	34.0	0.7	3.0	13.0	
<i>Main Dishes/Entrees</i>															
Label Chicken nuggets	1 serving; ~6 nuggets	93	263	16.5	3.3	0.8	5.4	6.8	38	624	14.7	0	0	14.7	
<i>Oriental</i>															
Label Fried rice, no meat	½ c	98	173	5.9	1.1	0	2.6	1.5	47	376	24.0	1.5	0	5.4	
<i>Pizzas</i>															
Label Cheese/pepperoni pizza, regular crust	1 sl (¼, 14" pizza)	117	321	13.6	5.6	0.1	2.4	4.3	32	795	34.7	1.6	4.0	14.0	
<i>Sandwiches</i>															
21118 Hot dog with bun, plain	1	98	242	14.5	5.1	ND	1.7	6.9	44	670	18.0	1.0	2.7	10.4	
<i>Salads</i>															
21052 Salad, side (no dressing or cheese)	1 serving	138	22	0.1	0	0	0	0	0	36	4.4	0.8	3.0	1.7	
<i>Sides/Appetizers</i>															
Label Onion rings, Breaded, fried French fries	3 oz serving	94	340	18.0	3.8	3.7	0.8	7.5	1	608	40.0	1.0	4.0	4.0	
<i>Desserts</i>															
Label Milkshake, any flavor	1 small serving; ~12 oz	363	500	12.5	10.0	1.7	0.6	3.5	47	230	85.0	1.3	38.0	13.7	
Combination foods															
<i>Entrees</i>															
22570 Lasagna with meat and sauce	1 c	227	293	11.4	5.0	ND	0.6	3.7	43	776	27.9	3.4	10.7	19.4	
<i>Frozen Entrees/Meals</i>															
Label Pot pie, double crust	1 pie (7 oz)	198	390	21.3	6.7	ND	4.5	8.9	54	778	39.3	2.7	1.3	9.7	
<i>Salads (Deli-Style)</i>															
Label Coleslaw, deli style	½ c	100	130	7.0	1.0	ND	4.1	1.5	5	160	16.0	2.0	14.0	1.0	
<i>Soups</i>															
06402 Soup, bean	1 c	247	116	1.5	0	ND	0.5	0.5	0	1198	19.8	4.4	3.3	5.6	
Free foods															
<i>Low carbohydrate foods</i>															
<i>Modified fat foods with carbohydrate</i>															
<i>Condiments</i>															
<i>Free snacks</i>															
<i>Drinks/mixes</i>															
06150 Barbecue sauce	2 t	12	1	0	0	0	0	0	0	130	4.2	0.1	3.0	0	
01069 Creamer, non-dairy, powder	1 T	4	22	1.4	1.3	ND	0	0	0	7	2.2	0	2.2	0.2	
<i>Free food size</i>															
18228 Saltine-type crackers, free food size	2 crackers	6	26	0.7	0.1	0.2	0.1	0.4	0	64	4.3	0.2	0	0.8	
11457 Spinach, fresh, raw	1 c	30	7	0	0	0	0	0	0	24	1.1	0.7	0.1	0.9	
14355 Tea, brewed	1 c														
Alcohol															
14096 Wine, red (14.0% alcohol)	5 fl oz	148	106	0	0	0	0	0	0	7	2.5	0	2.5	0.3	

TABLE F-2 Common Measurements

3 tsp = 1 tbsp	4 oz = ½ c
4 tbsp = ¼ c	8 oz = 1 c
5-⅓ tbsp = ⅓ c	1 c = ½ pint

One starch exchange equals 15 g of carbohydrate, 3 g of protein, 0–1 g of fat, and 80 calories.

Bread

Bagel, 4 oz	¼ (1 oz)
Bread, reduced-calorie	2 slices (1-½ oz)
Bread, white, whole wheat, pumpernickel, rye	1 slice (1 oz)
Bread sticks, crisp, 4 in. × ½ in.	4 (⅔ oz)
English muffin	½
Hot dog bun or hamburger bun	½ (1 oz)
Naan, 8 × 2 in.	¼
Pancake, 4 in. across, ¼ in. thick	1
Pita, 6 in. across	½
Roll, plain, small	1 (1 oz)
Raisin bread, unfrosted, 1 slice	1 slice (1 oz)
Tortilla, corn, 6 in. across	1
Tortilla, flour, 6 in. across	1
Tortilla, flour, 10 in. across	2 ½
Waffle, 4 in. square or across, reduced-fat	1

Cereals and Grains

Bran cereals	½ c
Bulgur	½ c
Cereals, cooked	½ c
Cereals, unsweetened, ready-to-eat	¾ c
Cornmeal (dry)	3 tbsp
Couscous	⅓ c
Flour (dry)	3 tbsp
Granola, low-fat	¼ c
Grape-Nuts	¼ c
Grits	½ c
Kasha	½ c
Millet	¼ c
Muesli	¼ c
Oats	½ c
Pasta	⅓ c
Puffed cereal	1 ½ c
Rice, white or brown	⅓ c
Shredded Wheat	½ c
Sugar-frosted cereal	½ c
Wheat germ	3 tbsp

One starch exchange equals 15 g of carbohydrate, 3 g of protein, 0–1 g of fat, and 80 calories.

TABLE F-3 The Amount of Macronutrients in One Serving of Each Food Represented in Each Food Group or List

Groups/Lists	Carbohydrate (grams)	Protein (grams)	Fat (grams)	Calories
Carbohydrate Group				
Starch	15	3	0–1	80
Sweets, desserts, and other carbohydrates list	15	varies	varies	varies
Fruit	15	—	—	60
Vegetables (non-starchy)	5	2	—	25
Meat and meat substitutes				
Lean	—	7	0–3	35–55
Medium-fat	—	7	5	75
High-fat	—	7	8	100
Plant-based protein	varies	varies	varies	varies
Milk				
Fat-free and low-fat	12	8	0–3	90
Reduced-fat	12	8	5	120
Whole	12	8	8	150
Dairy-like foods	varies	varies	varies	varies
Fats	—	—	5	45
Fast foods	varies	varies	varies	varies
Combination foods	varies	varies	varies	varies
Free food	varies	varies	varies	varies

Crackers and Snacks

Animal crackers	8
Graham cracker, 2 1-in. square	3
Matzoh	$\frac{3}{4}$ oz
Melba toast	4 slices
Oyster crackers	24
Popcorn (popped, no fat added, or low-fat microwave)	3 c
Pretzels	$\frac{3}{4}$ oz
Rice cakes, 4 in. across	2
Saltine-type crackers	6
Snack chips, fat-free or baked (tortilla, potato)	15–20 ($\frac{3}{4}$ oz)
Whole wheat crackers, no fat added	2–5 ($\frac{3}{4}$ oz)

Starchy Vegetables

Baked beans	$\frac{1}{3}$ c
Corn	$\frac{1}{2}$ c
Corn on cob, large	$\frac{1}{2}$ cob (5 oz)
Mixed vegetables with corn, peas, or pasta	1 c
Peas, green	$\frac{1}{2}$ c
Plantain	$\frac{1}{2}$ c
Potato, boiled	$\frac{1}{2}$ c or $\frac{1}{2}$ medium (3 oz)
Potato, baked with skin	$\frac{1}{4}$ large (3 oz)
Potato, mashed	$\frac{1}{2}$ c
Squash, winter (acorn, butternut, pumpkin)	1 c
Yam, sweet potato, plain	$\frac{1}{2}$ c

Beans, Peas, and Lentils

Count as 1 starch exchange, plus 1 very lean meat exchange.

Beans and peas (garbanzo, pinto, kidney, white, split, black-eyed)	$\frac{1}{2}$ c
Lima beans	$\frac{2}{3}$ c
Lentils	$\frac{1}{2}$ c
Miso	3 tbsp

Sweets, Desserts, and Other Carbohydrates List

In general one exchange equals 15 grams of carbohydrate, or 1 starch, or 1 fruit, or 1 milk. In view of the wide variety of foods covered in this list, exchanges per serving will vary. In the following, foods are selected from different groups within the list and the possible exchanges per serving are indicated. Note each food contributes multiple types of exchanges.

Fruit List

In general, one fruit exchange is:

1. 1 small fresh fruit (4 oz)
2. $\frac{1}{2}$ c of canned or fresh fruit or fruit juice
3. $\frac{1}{4}$ c of dried fruit

One fruit exchange equals 15 g of carbohydrate and 60 calories. The weight includes skin, core, seeds, and rind.

TABLE F-4 Number of Exchanges Represented by Each Serving of Selected Foods

Food	Serving Size	Exchanges per Serving
Angel food cake, unfrosted	½ cake (about 2 oz)	2 carbohydrates
Brownie, small, unfrosted	2 in. square (about 1 oz)	1 carbohydrate, 1 fat
Cake, unfrosted	2 in. square (about 1 oz)	1 carbohydrate, 1 fat
Cake, frosted	2 in. square (about 2 oz)	2 carbohydrates, 1 fat
Cookie or sandwich cookie with creme filling	2 small (about ⅓ oz)	1 carbohydrate, 1 fat
Cookies, sugar-free	3 small or 1 large (¾–1 oz)	1 carbohydrate, 1–2 fats
Cranberry sauce, jellied	¼ c	½ carbohydrates
Cupcake, frosted	1 small (about 2 oz)	2 carbohydrates, 1 fat
Doughnut, plain cake	1 medium (½ oz)	½ carbohydrates, 2 fats
Doughnut, glazed	¾ in. across (2 oz)	2 carbohydrates, 2 fats
Energy, sport, or breakfast bar	1 bar (⅓ oz)	½ carbohydrates, 0–1 fat
Energy, sport, or breakfast bar	1 bar (2 oz)	2 carbohydrates, 1 fat
Fruit cobbler	½ c (3–⅓ oz)	3 carbohydrates, 1 fat
Fruit juice bars, frozen, 100% juice	1 bar (3 oz)	1 carbohydrate
Fruit snacks, chewy (pureed fruit concentrate)	1 roll (¾ oz)	1 carbohydrate
Fruit spreads, 100% fruit	1–½ Tbs	1 carbohydrate
Gelatin, regular	½ c	1 carbohydrate
Gingersnaps	3	1 carbohydrate
Granola or snack bar, regular or low-fat	1 bar (1 oz)	½ carbohydrates
Honey	1 tbsp	1 carbohydrate
Ice cream	½ c	1 carbohydrate, 2 fats
Ice cream, light	½ c	1 carbohydrate, 1 fat
Ice cream, low-fat	½ c	½ carbohydrates
Ice cream, fat-free, no sugar added	½ c	1 carbohydrate
Jam or jelly, regular	1 tbsp	1 carbohydrate
Milk, chocolate, whole	1 c	2 carbohydrates, 1 fat
Pie, fruit, 2 crusts	⅓ of 8 in. commercially prepared pie	3 carbohydrates, 2 fats
Pie, pumpkin or custard	⅓ of 8 in. commercially prepared pie	2 carbohydrates, 2 fats
Pudding, regular (made with reduced-fat milk)	½ c	2 carbohydrates
Pudding, sugar-free or sugar-free and fat-free (made with fat-free milk)	½ c	1 carbohydrate
Reduced-calorie meal replacement (shake)	1 can (10–11 oz)	½ carbohydrates, 0–1 fat
Rice milk, low-fat or fat-free, plain	1 c	1 carbohydrate
Rice milk, low-fat, flavored	1 c	½ carbohydrates
Salad dressing, fat-free	¼ c	1 carbohydrate
Sherbet, sorbet	½ c	2 carbohydrates
Spaghetti or pasta sauce, canned	½ c	1 carbohydrate, 1 fat
Sports drinks	8 oz (about 1 c)	1 carbohydrate
Sugar	1 tbsp	1 carbohydrate
Sweet roll or Danish	1 (2–½ oz)	2–½ carbohydrates, 2 fats
Syrup, light	2 tbsp	1 carbohydrate
Syrup, regular	1 tbsp	1 carbohydrate
Syrup, regular	¼ c	4 carbohydrates
Vanilla wafers	5	1 carbohydrate, 1 fat
Yogurt, frozen	½ c	1 carbohydrate, 0–1 fat
Yogurt, frozen, fat-free	⅓ c	1 carbohydrate
Yogurt, low-fat with fruit	1 c	3 carbohydrates, 0–1 fat

Fruit

Apple, unpeeled, small	1 (4 oz)
Applesauce, unsweetened	½ c
Apples, dried	4 rings
Apricots, fresh	4 whole (5-½ oz)
Apricots, dried	8 halves
Apricots, canned	½ c
Banana, small	1 (4 oz)
Blackberries	¾ c
Blueberries	¾ c
Cantaloupe, small	⅓ melon (11 oz) or 1 c cubes
Cherries, sweet, fresh	12 (3 oz)
Cherries, sweet, canned	½ c
Dates	3
Figs, fresh	½ large or 2 medium (3-½ oz)
Figs, dried	1 ½
Fruit cocktail	½ c
Grapefruit, large	½ (11 oz)
Grapefruit sections, canned	¾ c
Grapes, small	17 (3 oz)
Honeydew melon	1 slice (10 oz) or 1 c cubes
Kiwi	1 (3-½ oz)
Mandarin oranges, canned	¾ c
Mango, small	½ fruit (5-½ oz) or ½ c
Nectarine, small	1 (5 oz)
Orange, small	1 (6-½ oz)
Papaya	½ fruit (8 oz) or 1 c cubes
Peach, medium, fresh	1 (4 oz)
Peaches, canned	½ c
Pear, large, fresh	½ (4 oz)
Pears, canned	½ c
Pineapple, fresh	¾ c
Pineapple, canned	½ c
Plums, small	2 (5 oz)
Plums, canned	½ c
Plums, dried (prunes)	3
Raisins	2 tbsp
Raspberries	1 c
Strawberries	1-¼ c whole berries
Tangerines, small	2 (8 oz)
Watermelon	1 slice (13-½ oz) or 1-¼ c cubes

Fruit Juice

Apple juice/cider	½ c
Cranberry juice cocktail	½ c

Cranberry juice cocktail, reduced-calorie	1 c
Fruit juice blends, 100% juice	⅓ c
Grape juice	⅓ c
Grapefruit juice	½ c
Orange juice	½ c
Pineapple juice	½ c
Prune juice	⅓ c

Vegetable (Nonstarchy) List

In general, one vegetable exchange is:

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

One vegetable exchange (½ c cooked or 1 c raw) equals 5 g of carbohydrate, 2 g of protein, 0 g of fat, and 25 calories.

Artichoke, cooked	½
Artichoke hearts, canned, drained	½
Asparagus, frozen, cooked	½ c
Beans (green, wax, Italian)	½ c
Bean sprouts, fresh, cooked	½ c
Beets, canned, drained	½ c
Broccoli, fresh, cooked	½ c
Brussels sprouts, frozen, cooked	½ c
Cabbage, fresh, cooked	½ c
Carrots, fresh, cooked, strips or slices	½ c
Cauliflower, frozen, cooked	½ c
Celery, fresh, raw, strips	1 c
Collard greens, fresh cooked	½ c
Cucumber, with peel,	1 c
Eggplant, fresh, cooked, 1-in. cubes	½ c
Green onions (spring) or scallions,	1 c
Kohlrabi, fresh, cooked	½ c
Leeks, fresh, cooked	½ c
Mixed vegetables (without corn, peas, or pasta)	½ c
Mushrooms, fresh	1 c
Okra, fresh, cooked	½ c
Onions, fresh	1 c
Pea pods (snow), fresh	1 c
Peppers, green bell, raw, slices	1 c
Radishes	1 c
Sauerkraut, canned, rinsed, drained	½ c
Spinach, canned, drained	½ c
Squash, summer, fresh, cooked	½ c
Tomatoes, canned, regular	½ c
Tomatoes, raw	1 c
Tomato sauce	½ c
Turnips, fresh, cooked, diced	½ c
Vegetable juice	½ c
Water chestnuts, canned, drained	½ c
Zucchini, raw, slices	1 c

Meat and Meat Substitutes List

Meat and meat substitutes that contain both protein and fat are on this list. In general, one meat exchange is:

- 1 oz of meat, fish, poultry, or cheese
- ½ c of beans, peas, or lentils

Lean Meat and Substitutes

One exchange equals 0 g of carbohydrate, 7 g of protein, 0–3 g of fat, and 35–50 calories.

Beef, chuck, pot roast, lean only, cooked	1 oz
Beef, frank steak, lean, cooked	1 oz
Beef, rib roast, lean, roasted	1 oz
Catfish, cooked	1 oz
Cheese, American, fat-free	1 slice
Cheese, mozzarella, fat-free	1 oz
Chicken breast, meat only, cooked	1 oz
Chicken, dark meat, no skin, roasted	1 oz
Clams, fresh, cooked	1 oz
Cod fillet, cooked	1 oz
Cottage cheese, creamed, 4.5% milk fat	0.25 c
Crab, steamed	1 oz
Flounder, cooked	1 oz
Egg white	2
Ham, boiled lean deli, sandwich type	1 oz
Ham, canned, fully cooked	1 oz
Hot dog or frankfurter	1 oz
Lamb leg, sirloin, roast, lean	1 oz
Liver, chicken, cooked	1 oz
Lobster, fresh, steamed	1 oz
Oysters, cooked	6 medium
Pork chop, cooked	1 oz
Rabbit, cooked	1 oz
Salmon, fresh, broiled or baked	1 oz
Sardines, packed in oil, drained	2 small
Sausage, smoked	1 oz
Scallops, fresh steamed	1 oz
Shrimp, fresh, cooked in water	1 oz
Steak, porterhouse, lean, broiled	1 oz
Steak, T-bone, lean, broiled	1 oz
Trout, cooked	1 oz
Tuna, fresh, cooked	1 oz
Turkey breast (cutlet), no skin, roasted	1 oz
Turkey ham	1 oz
Veal roast	1 oz

Medium-Fat Meat

One exchange equals 0 g of carbohydrate, 7 g of protein, 5 g of fat, and 50–75 calories.

Beef patty, ground regular, pan broiled (75% lean)	1 oz
Beef, prime rib, roasted	1 oz
Cheese, mozzarella (part skim milk)	1 oz

Cheese, string	1 oz
Chicken, meat and skin, fried, flour-coated	1 oz
Corned beef brisket, cooked	1 oz
Duck, wild, meat and skin, (not cooked)	1 oz
Egg, fresh	1
Fish, fried, cornmeal coating	1 oz
Lamb, ground, broiled	1 oz
Meatloaf	1 oz
Pork, Boston blade, roasted	1 oz
Sausage, hard	1 oz

Plant-Based Proteins

For beans, peas, and lentils, see starch list.

Since the contribution of one serving of each of the following foods may vary with the formulation for its manufacture, you instructor will provide assistance on this issue.

Breakfast patty, meatless (soy-based)	1 patty (1-½ oz)
Cashew butter, plain	1 tbsp
Frankfurter (hot dog), meatless (soy-based)	1 frankfurter (1-½ oz)
Meatless burger (soy-based)	1 patty (3 oz)
Meatless “beef” crumbles (soy-based)	2 oz
Peanut butter, smooth or crunchy	1 tbsp
Tofu, firm	4 oz (½ c)

Milk List

One milk exchange equals 12 g of carbohydrate and 8 g of protein.

Fat-Free and Low-Fat Milk

There are 0–3 g fat per serving.

Fat-free milk	1 c
1/2% milk	1 c
1% milk	1 c
Buttermilk, low-fat or fat-free	1 c
Evaporated fat-free milk	½ c
Fat-free dry milk	⅓ c dry
Soy milk, low-fat or fat-free	1 c
Yogurt, fat-free, flavored, sweetened with nonnutritive sweetener and fructose	⅔ c (6 oz)
Yogurt, plain fat-free	⅔ c (6 oz)

Reduced-Fat

There are 5 g fat per serving.

2% milk	1 c
Acidophilus milk, 2%	1 c

Whole Milk

There are 8 g fat per serving.

Whole milk	1 c
Evaporated whole milk	½ c
Yogurt, plain (made from whole milk)	¾ c

Dairy-Like Foods

Nutrient levels vary. Instructor will provide assistance.

Eggnog, whole milk	½ c
Soy milk, regular, plain	1 c
Yogurt with fruit, low-fat, container, 6 oz	1

Fat List

In general, one fat exchange is:

- 1 tsp of regular margarine or vegetable oil
- 1 tbsp of regular salad dressings

Monounsaturated Fats List

One fat exchange equals 5 g fat and 45 calories.

Avocado, medium	2 tbsp (1 oz)
Oil (canola, olive, peanut)	1 tsp
Olives: ripe (black)	8 large
green, stuffed	10 large
Nuts: almonds, cashews	6 nuts
mixed (50% peanuts)	6 nuts
peanuts	10 nuts
pecans	4 halves
Peanut butter, smooth or crunchy	½ tbsp
Sesame seeds	1 tbsp
Tahini or sesame paste	2 tsp

Polyunsaturated Fats List

One fat exchange equals 5 g fat and 45 calories.

Margarine: stick, tub, or squeeze lower-fat spread (30% to 50% vegetable oil)	1 tsp 1 tbsp
Mayonnaise: regular reduced-fat	1 tsp 1 tbsp
Nuts: walnuts, English	4 halves
Oil (corn, safflower, soybean)	1 tsp
Salad dressing: regular reduced-fat	1 tbsp 2 tbsp
Miracle Whip salad dressing: regular reduced-fat	2 tsp 1 tbsp
Seeds: pumpkin, sunflower	1 tbsp

Saturated Fats List

One fat exchange equals 5 g of fat and 45 calories.

Bacon, cooked	1 slice (20 slices/lb)
Bacon, grease	1 tsp
Butter: stick whipped reduced-fat	1 tsp 2 tsp 1 tbsp
Chitterlings, boiled	2 tbsp (½ oz)
Coconut, sweetened, shredded	2 tbsp
Coconut milk	1 tbsp
Cream, half and half	2 tbsp
Cream cheese: regular reduced-fat	1 tbsp (½ oz) 1-½ tbsp (¾ oz)
Shortening or lard	1 tsp
Sour cream: regular reduced-fat	2 tbsp 3 tbsp

Fast-Foods List

Because of variations in nutrient contents of fast foods, exchanges per serving are expressed in a combination, e.g., one serving of pizza (with meat) may provide 2-½ carbohydrate exchanges plus 2 medium-fat meat exchanges. Your instructor will provide you with guidance. The following food samples do not provide exchanges per serving.

Breakfast Sandwiches

Egg, cheese, meat, English muffin sandwich	1 sandwich
Sausage biscuit sandwich	1 biscuit

Main Dishes/Entrees

Burrito, beef and beans (fast food)	1 serving (about 8 oz)
Chicken breast, breaded and fried	1 serving (about 5 oz)
Chicken nuggets	1 serving (~6 nuggets)

Oriental

Beef, chicken, or shrimp with vegetable and sauce	1 c (about 5 oz)
Fried rice, no meat	0.5 c
Noodles and vegetables in sauce (chow/lo mein)	1 c

Pizzas

Cheese/pepperoni pizza, regular crust	1 slice (⅛ of a 14" pizza)
Cheese/vegetarian pizza, thin crust	1 slice (¼ of a 12" pizza)

Sandwiches

Hamburger, regular plain	1 sandwich
Hot dog with bun, plain	1 hot dog
Submarine sandwich	1 sub (6")
Taco, hard or soft shell	1 small

Salads

Salad, main dish (grilled chicken, no dressing)	1 serving
Salad, side (no dressing or cheese)	1 serving

Sides/Appetizers

French fries, restaurant style	1 large serving (about 7)
Nachos with cheese	1 small serving (about 4)
Onion rings, breaded, fried	1 serving (about 3 oz)

Desserts

Milkshake, any flavor	1 small (about 12 oz)
Soft-serve cone, regular	1

Combination Foods List

Many of the foods we eat are mixed together in various combinations. These combination foods do not fit into any one exchange list. Often it is hard to tell what is in a casserole dish or prepared food item. This is a list of exchanges for some typical combination foods. This list will help you fit these foods into your meal plan. Ask your instructor for information about other combination foods.

Entrees

Spaghetti, sauce, meatballs	1 c
Chili with beans	1 c
Macaroni and cheese	1 c (8 oz) 2 carbohydrates, 2 medium-fat meats
Tuna or chicken salad	½ c (3-½ oz) ½ carbohydrate, 2 lean meats, 1 fat

Frozen Entrees/Meals

Dinner-type meal, frozen	generally 14–17 oz 3 carbohydrates, 3 medium-fat meats, 3 fats
Meatless burger, vegetable and starch-based	3 oz 1 carbohydrate, 1 lean meat
Pizza, meat topping, thin crust	¼ of 10" (5 oz) 2 carbohydrates, 2 medium-fat meats, 2 fats

Pot pie	1 (7 oz) 2 ½ carbohydrates, 1 medium-fat meat, 3 fats
---------	--

Soups

Bean	1 c 1 carbohydrate, 1 very lean meat
Cream of mushroom (made with water)	1 c (8 oz) 1 carbohydrate, 1 fat
Split pea (made with water)	½ c (4 oz) 1 carbohydrate
Tomato (made with water)	1 c (8 oz) 1 carbohydrate

Free Foods List

A *free food* is any food or drink that contains less than 20 calories or less than 5 g of carbohydrate per serving. Foods with a serving size listed should be limited to 3 servings per day. Be sure to spread them out throughout the day. If you eat all 3 servings at one time, it could affect your blood glucose level. Foods listed without a serving size can be eaten as often as you like.

Low Carbohydrate Foods

Candy, hard, sugar-free, small size	1 candy
Gelatin dessert, sugar-free	½ c
Carrots, fresh cooked	¼ c
Chewing gum, regular	1 stick
Cucumber, with peel	½ c
Jam or jelly, low or reduced sugar	2 tsp
Sugar substitute (Splenda sucralose)	1 packet
Syrup, sugar-free	2 tbsp

Modified-Fat Foods with Carbohydrate

Cream cheese, fat-free	1 tbsp (½ oz)
Creamer, nondairy, liquid	1 tbsp
Creamers, nondairy, powdered	2 tsp
Mayonnaise, reduced-fat	1 tsp
Margarine spread, reduced-fat	1 tsp
Salad dressing, fat-free or low-fat	1 tbsp
Sour cream, fat-free, reduced-fat	1 tbsp
Whipped topping, regular	1 tbsp

Condiments

Catsup, tomato	1 tbsp
Horseradish	1 tbsp
Lemon juice	1 tbsp
Pickle relish	1 tbsp
Pickles, sweet (bread and butter)	2 slices
Salsa	¼ c
Soy sauce, regular or light	1 tbsp
Vinegar	1 tbsp

Free Snacks

Blueberries, fresh, free food size	¼ c
Cheese, fat-free, free food size	½ c
Lean meat, cooked, free food size	½ oz
Popcorn, light free food size	1 c
Vanilla wafers, free food size	1

Drinks/Mixes

Bouillon, broth, consomme	
Bouillon or broth, low-sodium	
Carbonated or mineral water	
Club soda	
Cocoa powder, unsweetened	1 tbsp
Coffee	
Diet soft drinks, sugar-free	
Drink mixes, sugar-free	
Tea	
Tonic water, sugar-free	

Seasonings

Be careful with seasonings that contain sodium or are salts, such as garlic or celery salt and lemon pepper.

Flavoring extracts
 Garlic
 Herbs, fresh or dried
 Pimento
 Spices
 Tabasco or hot pepper sauce
 Wine, used in cooking
 Worcestershire sauce

Alcohol

Beer, regular (4.9%)	1 can (12 oz)
Rum, 80 proof	1.5 fl oz
Wine, white	5 fl oz

Answers to Progress Checks

CHAPTER 1: INTRODUCTION TO NUTRITION

Activity 1: Dietary Allowances, Eating Guides, and Food Selection Systems

1. A unit of energy, commonly used to indicate release of energy from food.
2. State of complete physical, mental, and social well-being, not just absence of disease.
3. A chemical substance obtained from food and needed by the body for growth, maintenance, or repair.
4. Receiving and utilizing essential nutrients to maintain health and well-being.
5. A diet that supplies sufficient energy and essential nutrients in adequate amounts for health at any stage of life.
6. Guidelines to promote healthy eating habits (*Dietary Guidelines for Americans*).
7. Levels of nutrients recommended for daily consumption for healthy individuals according to age and gender.
8. Maximum intake by an individual that is not likely to have adverse effects in a specified group.
9. A set of four reference values used for assessing and planning diets for individuals and groups.
10. An estimate of average requirements when evidence is not available to establish RDAs.
11. Food and Nutrition Board
12. National Research Council
13. American Dietetic Association or American Diabetes Association (common usage: “the associations”)
14. Estimated Average Requirements
15. United States Department of Agriculture
16. American Heart Association
17. National Cholesterol Education Program
18. American Institute for Cancer Research
19. National Cancer Institute
20. Upper Limit
21. a
22. b
23. e
24. f
25. The Food Guide Pyramid is a visual representation of nutritional guidelines.
26. Coronary heart disease, strokes, hypertension, atherosclerosis, obesity, diabetes, and some cancers.
27. CHD, hypertension, obesity, and diabetes
28. The dietary guidelines designate recommended changes in lifestyle to promote good health, including weight management, physical activity, food safety, use of alcohol, and so on, whereas the pyramid concentrates on specific foods that meet the dietary recommendations and tips on how to implement the changes.
29. a) carbohydrate group, b) meat and meat substitutes, c) fat group.
30. Any three of the following: other carbohydrates, free foods list, combination food list, and fast food list.
31. RDA, Dietary Guidelines, and Food Guide Pyramid are three major sources of information.

Self-Study: Your individual answers will provide information for your personal health status.

Activity 2: Legislation and Health Promotion

1. 1 c
2. Number of servings
3. Fat, saturated fat, trans fat, cholesterol, or sodium
4. Dietary fiber, vitamin A, vitamin C, calcium, and iron

5. It is recommended that you stay below—eat “less than”—the Daily Reference Value nutrient amounts listed per day on the label.
6. If a serving of food is high or low in a nutrient
7. “Legal” conventional foods (natural or manufactured) that contain bioactive ingredients
8. Adding a bioactive ingredient especially one with nutritional value to a dietary or an OCT drug
9. According to scientists, limited evidence suggests an association between consumption of these fatty acids in fish and reduced risks of mortality from cardiovascular disease for the general population.
10. One claim, among others, is the positive effect of this vitamin on clinical disorders such as birth defects.
11. Some claims, among others, are that some chemicals in this tea can neutralize free radicals (responsible for aging) and may reduce risk of cancer.
12. One claim, among others, is that certain chemicals in this botanical or dietary supplement can improve memory and blood flow to the brain and may help cure Alzheimer’s disease.
13. Primary prevention of CHD in persons with high levels of LDL.
14. Intensive management of LDL cholesterol in persons with CHD.
15. Focus on primary prevention in persons with multiple risk factors. The three approaches are more intensive LDL lowering in certain groups of people; soluble fiber as a therapeutic dietary option, with strategies for promoting adherence to the diet; and treatment beyond LDL lowering in people with high triglycerides.
16. Define these acronyms:
 - a. National Institutes of Health
 - b. Coronary heart disease
 - c. Low-density lipoprotein
 - d. High-density lipoprotein
 - e. Food and Drug Administration
 - f. National Cholesterol Education Program
 - g. Adult treatment panel

CHAPTER 2: FOOD HABITS

Activity 1: Factors Affecting Food Consumption

- 1–3. Personal responses: Need to include factors that apply to your particular individual situation, such as where you live, your finances, emotions, traditions, seasonal considerations, and the like.

- | | | | |
|------|-------|-------|----------------|
| 4. F | 9. F | 14. b | 18. a, b, c, d |
| 5. T | 10. F | 15. d | 19. d |
| 6. T | 11. F | 16. b | 20. b |
| 7. F | 12. T | 17. b | 21. a, b, c, d |
| 8. F | 13. F | | |

Activity 2: Some Effects of Culture, Religion, and Geography on Food Behaviors

The student is responsible for submitting the answers. The instructor may wish to have the student discuss a client’s diet plan, or give a grade for this assignment.

CHAPTER 3: PROTEINS AND HEALTH

Activity 1: Protein as a Nutrient

1. If you are uncertain about your answers, look at the tables provided and/or discuss with your teachers.
 2. Because all essential amino acids (present in good quality protein) must be present at one time in the body or the body cannot utilize them to build body proteins.
 3. No. (However, it is relatively more common among low-income groups.)
- | | | | |
|------|------|------|-------|
| 4. c | 6. b | 8. d | 10. T |
| 5. b | 7. c | 9. T | |

Activity 2: Meeting Protein Needs and Vegetarianism

- | | | | |
|------|------|-------|-------|
| 1. a | 5. b | 9. a | 13. d |
| 2. b | 6. a | 10. b | 14. T |
| 3. a | 7. a | 11. b | |
| 4. a | 8. c | 12. a | |
15. A diet history with as much detail as possible. List of food likes, dislikes, and allergies. Mary’s present knowledge of nutritional needs and of food composition, especially protein. Her knowledge of complementary proteins and methods of food preparation. Type of vegetarianism practiced. History of pre-pregnancy eating and exercise habits.
 16. Protein: 30 g extra daily; must be high quality. There is also need for 300 more kcal per day as well as extra vitamins and minerals. See RDA chart.
 17. 40 g ($110 \text{ lb} \div 2.2 = 50 \text{ kg} \times 0.8 = 40.0$).
 18. Mary is underweight for her height, even if she is of small frame and very athletic. It will depend upon her physician’s decision, of course, but she probably needs to gain extra weight.

19. It will be more difficult, because plant proteins have lower biological values than animal. It will also be difficult to get enough calcium and fat-soluble vitamins as well as other essential nutrients contained in animal foods. Extra soy milk, fortified with vitamin B₁₂, should be consumed with each meal. Leafy green vegetables (without oxalates), sunflower seeds, and fortified soy milk for calcium should be part of the diet.
20. To spare protein for its primary function of building new cells.
21. Positive nitrogen balance. The body retains more nitrogen than it excretes during pregnancy.

CHAPTER 4: CARBOHYDRATES AND FATS: IMPLICATIONS FOR HEALTH

Activity 1: Carbohydrates: Characteristics and Effects on Health

1. 4 1 orange
2 1 c whole kernel corn
1 $\frac{1}{10}$ of a devil's food cake with icing (from a mix)
3 1 slice of wheat bread
5 $\frac{1}{2}$ c zucchini squash
3 $\frac{1}{3}$ c cooked oatmeal
2. Vegetables:
3 $\frac{1}{2}$ c green beans, cooked
3 $\frac{1}{2}$ c cooked carrots
2 1 baked potato
1 1 sweet potato
4 1 stalk broccoli
5 $\frac{1}{2}$ c lettuce, chopped
3. It is converted to fat and stored in adipose tissue.
4. Any 3 of these: promotes regular elimination, helps prevent diverticulitis, helps control appetite, binds bile salts to help lower cholesterol, slows carbohydrate absorption (important in diabetes), and helps prevent cancer.
5. Good sources include raw fruits and vegetables, bran, whole grains, legumes, oats, and seeds.
6. (1) Dental caries; and (2) diets of poor nutritional quality that are high in calories can result in obesity.
7. Because they increase the risk of ketosis, dehydration, diarrhea, and loss of muscle mass.
8. c ($1000 \div 4 = 250$)
9. b 15. a 21. b 27. c
10. b 16. b 22. c 28. a
11. b and d 17. c 23. a 29. b
12. b 18. d 24. c 30. a
13. b 19. e 25. b
14. a 20. d 26. a

Activity 2: Fats: Characteristics and Effects on Health

1. c
2. b
3. a
4. True
5. False
6. False
7. True
8. False
9. 140/90 mmHg or higher
10. less than 40 mg/dl
11. 40%
12. low-density lipoproteins
13. A lipoprotein is made up of fats (cholesterol, triglycerides, fatty acids, etc.), protein, and a small amount of other substances.
14. Coronary heart disease
15. Eicosapentaenoic acid
16. Docosahexaenoic acid

CHAPTER 5: VITAMINS AND HEALTH

Activity 1: The Water-Soluble Vitamins

- | | | | |
|------|-------|-------------|-------|
| 1. a | 6. b | 11. a and b | 16. d |
| 2. b | 7. d | 12. d | 17. a |
| 3. a | 8. c | 13. a | 18. a |
| 4. b | 9. c | 14. b | |
| 5. b | 10. d | 15. d | |

Activity 2: The Fat-Soluble Vitamins

- | | | | |
|------|------|-------|-------|
| 1. b | 5. d | 9. c | 13. d |
| 2. c | 6. a | 10. a | 14. c |
| 3. d | 7. d | 11. b | |
| 4. c | 8. d | 12. a | |

Progress Check on Chapter 5

- | | | | |
|------|-------|-------|-------|
| 1. c | 9. c | 17. b | 25. c |
| 2. a | 10. b | 18. a | 26. d |
| 3. d | 11. T | 19. a | 27. d |
| 4. e | 12. T | 20. b | 28. a |
| 5. b | 13. T | 21. a | 29. b |
| 6. d | 14. T | 22. b | 30. b |
| 7. e | 15. T | 23. b | |
| 8. a | 16. T | 24. a | |

CHAPTER 6: MINERALS, WATER, AND BODY PROCESSES

Progress Check on Chapter 6

- | | | | |
|-------|-------|-------|-------|
| 1. b | 17. a | 33. b | 49. F |
| 2. c | 18. d | 34. c | 50. T |
| 3. d | 19. c | 35. b | 51. F |
| 4. b | 20. b | 36. b | 52. T |
| 5. c | 21. b | 37. a | 53. T |
| 6. d | 22. a | 38. c | 54. T |
| 7. b | 23. b | 39. a | 55. T |
| 8. d | 24. b | 40. a | 56. T |
| 9. c | 25. c | 41. a | 57. T |
| 10. b | 26. c | 42. c | 58. T |
| 11. a | 27. b | 43. b | 59. T |
| 12. c | 28. a | 44. d | 60. e |
| 13. d | 29. b | 45. T | 61. a |
| 14. b | 30. c | 46. F | 62. c |
| 15. c | 31. c | 47. T | 63. b |
| 16. c | 32. a | 48. T | 64. d |

CHAPTER 7: MEETING ENERGY NEEDS

Activity 1: Energy Balance

- The basal metabolic rate.
 - Activity or voluntary energy expenditures.
 - The thermic effect of food.
- 89 kcal.
 $4 \times 4 = 16$ kcal protein
 $5 \times 9 = 45$ kcal fat
 $7 \times 4 = 28$ kcal carbohydrate
 Total 89 kcal
- Your caloric intake is in balance with your energy needs when you maintain the same weight. Excess calories are converted to fat and stored in adipose tissue (fat cells).
- Potatoes are grouped with bread and pasta (rich in carbohydrates) and as such contain only four calories per gram.
- Present intake:
 $12,600$ calories per week ($1,800 \times 7 = 12,600$)
 $3,500$ cal = 1 lb body fat \times 3 (desired weight loss)
 $= 10,500$ cal

$$\begin{array}{r} 12,600 \text{ cal} \\ -10,500 \text{ cal} \\ \hline 2,100 \text{ cal per week} \end{array}$$
 $2,100 \text{ cal per week} \div 7 \text{ days} = 300 \text{ calories per day}$
 - 300 calories per day are inadequate and represent semi-starvation.
- 1 c skim milk
 - $\frac{1}{2}$ c unsweetened fruit
 - 1 slice bread

- $\frac{1}{2}$ c. cooked vegetables
- 1 tsp solid fat or oil
- 1 oz lean meat

- c
 - a
 - b

Activity 2: The Effects of Energy Imbalance

- | | | |
|-------|----------------|----------|
| 1. F | 11. T | 21. b |
| 2. T | 12. T | 22. c |
| 3. T | 13. F | 23. a |
| 4. F | 14. T | 24. e |
| 5. F | 15. F | 25. a, b |
| 6. F | 16. F | 26. b |
| 7. T | 17. T | 27. c |
| 8. T | 18. T | 28. a |
| 9. F | 19. a, b, c, d | 29. c |
| 10. T | 20. b | |
- 700 calorie reduction plus 300 calories used in activity = 1,000 kcal per daily reduction;
 $1,000 \text{ kcal per day} \times 7 \text{ days per week} = 7,000$ kcal deficit per week;
 $7,000 \div 3,500$ (kcal in 1 lb body fat) = 2 lb per week.
 - $20 \text{ lb} \div 2 \text{ lb per week} = 10$ weeks.
 October 1 to December 7 = 10 weeks.
 The answer is yes.
 - $300 \text{ kcal burned} \times 7 \text{ days per week} = 2,100$ calories per week deficit;
 $2,100 \div 3,500 = .6$ lb per week
 - October 1 to December 7 = 10 weeks;
 $10 \text{ weeks} \times 0.6 \text{ lb per week} = 6.0$ lb loss in 10 weeks.
 No; it would take $33\frac{1}{3}$ weeks to lose 20 lb at 0.6 lb per week ($20 \text{ lb} \div 0.6 = 33\frac{1}{3}$).

Activity 3: Weight Control and Dieting

- | | |
|--------------------------------------|------|
| 1. d | 5. F |
| 2. c | 6. F |
| 3. c | 7. T |
| 4. (a) altered metabolism; | 8. T |
| (b) fluid and electrolyte imbalance; | |
| (c) nutrient deficits. | |

CHAPTER 8: NUTRITIONAL ASSESSMENT AND HEALTH CARE MODEL

Activity 1: Assessment of Nutritional Status

- Physical, anthropometric, laboratory, and historical data.
- The health education areas needed will depend on the problems you identified with your client in the Practices.

3. See Table 8-1.
4. See Table 8-3.
5. a 7. b 9. b
6. a 8. a 10. b

CHAPTER 9: NUTRITION AND THE LIFE CYCLE

Activity 1: Maternal and Infant Nutrition

- | | | | |
|------|-------|-------|-------|
| 1. c | 9. d | 17. c | 25. F |
| 2. c | 10. a | 18. a | 26. T |
| 3. b | 11. b | 19. d | 27. F |
| 4. c | 12. a | 20. c | 28. F |
| 5. b | 13. b | 21. b | 29. F |
| 6. a | 14. a | 22. d | 30. F |
| 7. b | 15. a | 23. c | |
| 8. b | 16. c | 24. T | |

Activity 2: Childhood and Adolescent Nutrition

- | | | | |
|------|-------|-------|-------|
| 1. b | 9. a | 17. d | 25. F |
| 2. a | 10. a | 18. d | 26. T |
| 3. d | 11. b | 19. T | 27. T |
| 4. b | 12. d | 20. T | 28. F |
| 5. d | 13. b | 21. F | 29. F |
| 6. c | 14. c | 22. F | |
| 7. c | 15. a | 23. T | |
| 8. d | 16. b | 24. T | |

30. Any four of these: milk, wheat, seafood, chocolate, egg white, citrus, nuts.

Activity 3: Adulthood and Nutrition

- | | | | |
|------|-------|-------|-------|
| 1. b | 8. d | 15. a | 22. F |
| 2. c | 9. a | 16. a | 23. T |
| 3. a | 10. c | 17. d | 24. T |
| 4. d | 11. d | 18. a | 25. F |
| 5. a | 12. d | 19. b | 26. T |
| 6. c | 13. c | 20. T | 27. T |
| 7. c | 14. d | 21. T | 28. F |
29. They may not have transportation or the stamina for lengthy shopping trips.
 30. Reduced BMR; reduced activity level.
 31. Remain the same.
 32. a. complication of existing or developing health problems;
b. interference with movement; and
c. increased risk of injurious falls.
 33. Decreased consumption of meat (perhaps due to high cost or difficulty in eating) and other iron-rich foods.
 34. Vitamin A, ascorbic acid (vitamin C), and calcium.

35. Food is provided in group social setting; some nutrition education is provided.

Activity 4: Exercise, Fitness, and Stress Reduction Principles

1. Duration, intensity, frequency, type.
2. Predicted rate that won't cause chest pain.
3. Any three if these increased strength, flexibility, endurance. Weight control. Lower blood pressure, lower cholesterol, increase cardiovascular strength.
4. Warm up, endurance, competition, cool down.
5. Optimal nutrition, RDAs or above, adequate calories, low in fat, high in complex carbohydrates.
6. $c. 365 \times 100 = 36,500 \div 3500 = 10 \text{ lb (app.)}$
7. Depression, heart disease, hypertension, angina.
8. Any of these: exercise, relaxation techniques, proper diet, socialization, enough rest/sleep, counseling.
9. Scientific data only may be used to evaluate the product.
10. Those measures that enable a person to stay young and healthy in body and mind.

CHAPTER 10: DRUGS AND NUTRITION

Background Information

Answers 1–8 found in Glossary at the beginning of the chapter.

9. Any five of these:
 - a. Damage intestinal walls
 - b. Lower absorption
 - c. Destruction of accessory organs
 - d. Destroy or displace nutrients
 - e. Change the nutrient
 - f. Render nutrients incapable of acting
 - g. Cause nutrient excretion
10. a. diarrhea/constipation
b. nausea/vomiting
c. altered taste/smell
11. a. drug
b. dosage
c. time
d. frequency
e. health status
12. a. Drug interference
b. Drug-induced antagonists
13. Any five: niacin, riboflavin, pantothenic acid, ascorbic acid, folic acid, B₁₂, protein, fat, glucose, iron, copper, calcium, zinc, magnesium

14. Reabsorption/transport
15. Change in urine pH/Increase in precipitation of some

Activity 1: Food and Drug Interaction

1.
 - a. Change absorption rate
 - b. Neutralize effects
 - c. Interact
 - d. Influence excretion rate
2. Alcohol
Various amines
3. Hypertensive crisis
4.
 - a. Drug dose
 - b. Amount of food
 - c. Interval between drug and food ingestion
 - d. Patient susceptibility
 - e. Condition of the food
5. Decrease taste sensitivity
6. Causing dry mouth, constipation, and urinary retention

Fill in the blanks

7. In taking medications, the two most important precautions are:
 - a. should the medication be taken on empty stomach, or 1–2 hours before or after meals.
 - b. can alcohol be taken with the medication.
8. Some of the negative effects with medications when taken not according to recommendations include:
 - a. irritated stomach
 - b. reduced absorption
 - c. nausea and/or vomiting
 - d. headache
 - e. irregular heartbeat and palpitation
 - f. loss of potassium, calcium, and/or magnesium
 - g. excessive efficiency
 - h. hyperkalemia
 - i. risk of bleeding
 - j. flushing
 - k. increased blood pressure
 - l. drowsiness, impaired mental and/or motor performance

- | | | |
|-------|-------|-------|
| 9. c | 12. b | 15. T |
| 10. d | 13. a | 16. T |
| 11. d | 14. F | 17. T |

Activity 2: Drugs and the Life Cycle

1. Renal anomalies
CNS malformation
Cleft palate
Severe defects

2.
 - a. Type of drug
 - b. Concentration of drug
 - c. Time lapse between drug ingestion and breast-feeding
3. Anomalies of eyes, ears, heart, CNS, mental retardation
Male: enlargement of the mammary glands (gynecomastia)
Female: overgrowth of vaginal lining
4. High rate of abortions
Abruptio placenta
Low birth weight babies
5.
 - a. Length of time used
 - b. Nutritional status
 - c. Nutritional intake
 - d. Susceptibility
6.
 - a. Decreased ability to digest, absorb, and metabolize food
 - b. Decreased ability to metabolize and excrete drugs
 - c. Interaction of multiple drug use
7. Aspirin—bleeding (GI)
Laxatives—inhibit vitamin absorption
Diuretics—decreased K and Ca⁺
Alcohol—decreased folate, thiamin

- | | | |
|-------|-------|-------|
| 8. e | 11. F | 14. T |
| 9. c | 12. F | 15. F |
| 10. b | 13. F | 16. T |

CHAPTER 11: DIETARY SUPPLEMENTS

Background Information

- | | | |
|------|------|------|
| 1. T | 3. F | 5. h |
| 2. F | 4. T | |
6.
 - a. set up a new framework for FDA regulation of dietary supplements.
 - b. create an office in the National Institutes of Health to coordinate research on dietary supplements.
 - c. set up an independent dietary supplement commission to report on the use of claims in dietary supplement labeling.
 7.
 - a. Generally recognized as safe
 - b. Good manufacturing practices
 - c. Dietary Supplement Health and Education Act
 - d. Food Drug and Cosmetic Act

Activity 1: DSHE Act of 1994

1.
 - a. name and quantity of each dietary ingredient or, for proprietary blends
 - b. the total quantity of all dietary ingredients (excluding inert ingredients) in the blend

- c. identification of the product as a dietary supplement
 - d. the part of the herb or botanical ingredients used in the product
 - e. nutritional labeling information (U.S. regulations)
 - f. specification(s) in official compendium, if appropriate
2. a. nutrient-content claims
 - b. disease claims
 - c. nutrition support claims, which include “structure-function claims”
3. a. nutrition information
 - b. ingredient information
4. d 10. F 16. T
 5. b 11. T 17. T
 6. F 12. T 18. T
 7. F 13. T 19. T
 8. T 14. T
 9. T 15. T

Activity 2: Folate and Folate Acid

1. F 6. F 11. F
 2. F 7. T 12. T
 3. T 8. T 13. F
 4. F 9. T
 5. F 10. F
14. a. women of childbearing age
 - b. people who abuse alcohol
 - c. anyone taking anticonvulsants or other medications that interfere with the action of folate
 - d. individuals diagnosed with anemia from folate deficiency
 - e. individuals with malabsorption
 - f. individuals with liver disease
 - g. individuals receiving kidney dialysis treatment
15. a. spine (spina bifida)
 - b. skull
 - c. brain (anencephaly)
16. 400 micrograms of synthetic folic acid

Activity 3: Kava kava, Ginkgo Biloba, Golden seal, Echinacea, Comfrey, and Pulegone

1. Any five of the following: Kava Kava, *Ginkgo biloba*, Goldenseal, Echinacea, Comfrey, or Pulegone.
2. Any five of the following: ava, ava pepper, awa, intoxicating pepper, kava, kava kava, kava pepper, kava root, kava-kava, kawa, kawa kawa, kawa-kawa, kew, *Piper methysticum* Forst.f., *Piper methysticum* G. Forst, rauschpfeffer, sakau, tonga, wurzelstock, or yangona.

3. F 8. F 13. F
 4. F 9. T 14. T
 5. F 10. T 15. T
 6. F 11. F 16. T
 7. F 12. T

Activity 4: Tips for the Savvy Supplement User: Making Informed Decision

1. F 10. F 19. F
 2. F 11. T 20. T
 3. F 12. T 21. T
 4. F 13. F 22. T
 5. F 14. T 23. T
 6. T 15. T 24. F
 7. F 16. T 25. T
 8. F 17. F 26. F
 9. T 18. F 27. T
28. a. pregnant or breastfeeding
 - b. chronically ill
 - c. elderly
 - d. under 18
 - e. taking prescription or over-the-counter medicines
29. Health status is an important clue. Overeating is a human weakness. Product description is your major weapon for self-protection. Education is invariably a part of any health program. Symptoms from taking a dietary supplement are of course valuable indications that there is something wrong with the product.

CHAPTER 12: ALTERNATIVE MEDICINE

Background Information

1. a. Taught widely in medical schools.
 - b. Generally used in hospitals.
 - c. Usually reimbursed by medical insurance companies.
2. a. physical
 - b. mental
 - c. emotional
 - d. spiritual
3. Any six of the following: acupuncture, oriental massage, qi gong, herbal medicine, diet, meditation, exposure to sunlight, controlled breathing, homeopathic medicine, hydrotherapy, spine and soft-tissue spine, electric currents, ultrasound therapy, light therapy, or therapeutic counseling.
4. F 6. F 8. F
 5. T 7. T

Activity 1: Categories or Domains of Complementary Alternative Medicine

- alternative medical systems
 - mind-body interventions
 - biologically-based treatments
 - manipulative and body-based methods
 - energy therapies
 - acupuncture
 - herbal medicine
 - oriental massage
 - Qi gong
 - Any of five of the following: diet, exercise, meditation, herbs, massage, exposure to sunlight, or controlled breathing.
 - Any five of the following: diet and clinical nutrition, homeopathy, acupuncture, herbal medicine, hydrotherapy, spinal and soft-tissue manipulation, physical therapies involving electric currents, ultrasound and light therapy, therapeutic counseling, or pharmacology.
 - Qi gong
 - Reiki
 - therapeutic touch
- | | | |
|-------|-------|-------|
| 6. T | 11. F | 16. T |
| 7. T | 12. F | 17. T |
| 8. T | 13. F | 18. T |
| 9. T | 14. T | |
| 10. T | 15. T | |

Activity 2: Products, Devices, and Services Related to Complementary Alternative Medicine

- conduction electromagnetic signals
 - activation of opioid systems
 - changes in brain chemistry, sensations, and involuntary body functions
- Any five of the following: nausea and vomiting, headache, dizziness, bluish discoloration of the skin due to a lack of oxygen in the blood, liver damage, abnormally low blood pressure, droopy upper eyelid, difficulty walking due to damaged nerves, fever, mental confusion, coma, or death.
- Any three of the following: health care practitioners, medical libraries, educational organizations, research institutions, professional associations, or World Wide Web.
- Who runs this site?
 - Who pays for the site?
 - What is the purpose of the site?

- Where does the information come from?
 - What is the basis of the information?
 - How is the information selected?
 - How current is the information?
 - How does the site choose links to other sites?
 - What information about you does the site collect, and why?
 - How does the site manage interactions with visitors?
- | | | |
|-------|-------|-------|
| 5. T | 11. T | 17. F |
| 6. T | 12. F | 18. T |
| 7. T | 13. T | 19. F |
| 8. F | 14. F | 20. T |
| 9. T | 15. F | 21. F |
| 10. F | 16. T | 22. F |

CHAPTER 13: FOOD ECOLOGY

Activity 1: Food Safety

- All of the answers below are correct:
 - failing to wash hands after going to the bathroom
 - not washing hands after handling meat, fish, poultry, or eggs before handling other foods
 - failing to clean counters, cutting boards, and cooking equipment
 - failing to wash fresh food products thoroughly before preparation
 - failing to use clean cloths, sponges, or hand towels
 - handling food if you have upper respiratory infections (URIs)
 - working with sores, boils, etc., on hands, face
 - failing to wash after touching hair, face, or other body parts before returning to food preparation
 - talking, laughing, sneezing during food preparation
 - poor personal hygiene: dirty clothing, body, hair, etc.
- b
- Bacteria—the spores themselves and/or the toxins produced from them.
- A warm moist place is a perfect environment for bacteria to multiply. With these favorable conditions, they quickly increase by geometric progression (1-2-4-8-16-32-64, etc.).
- All of the answers below are correct:
 - use of pure drinking water
 - adequate sewage disposal
 - adequate cooking of foods
 - proper storage of foods
 - thorough cleaning of foods

- f. sanitary handling of all foods
 - g. areas free of pests, rodents, vermin, etc.
6. Nausea, vomiting, diarrhea, flatulence, abdominal distention.
 7. F
 8. T
 9. T
 10. T
 11. This soup may make the residents ill. It was at room temperature overnight and reheating will not destroy any microorganism, especially if contaminated by staph.
 12. She should throw the cans away. Even if not bulged, there is an opening at the seam which allows for contamination.
 13. Leaving ingredients such as mayonnaise and eggs out of the refrigerator to stand at room temperature for extended periods of time is a dangerous practice.
 14. Handling food in this manner is dangerous because
 - a. the cutting board is not washed before using and is stored near pipes
 - b. the cutting board is not washed before chopping of different foodstuffs, making cross contamination possible
 - c. the practice of cutting fruits and vegetables ahead of time and leaving uncovered causes excessive nutrient loss

Activity 2: Nutrient Conservation

1.
 - a. If voluntary point-of-purchase information is provided for raw produce, meats, fish, and poultry.
 - b. Eating establishments where prepared meats are provided.
2.
 - a. It identifies the nutrients.
 - b. It aids in balancing diets.
 - c. It can enhance the nutritive value of food.
3. See Table 11-1.
4. See Table 11-1.
5. See Glossary for this chapter.
6. See Glossary for this chapter.
7. See Glossary for this chapter.
8.
 - a. Enrichment: addition of iron to bread
 - b. Fortification: addition of vitamin D to milk

CHAPTER 14: OVERVIEW OF THERAPEUTIC NUTRITION

Background Information

1. Therapeutic nutrition is based on modifications of the nutrients in a normal diet.
2. The purpose of diet therapy is to restore or maintain good nutritional status.
3. The diet should be altered to the specific disease (pathophysiology).
4.
 - a. Altering basic nutrients.
 - b. Altering energy value.
 - c. Altering texture or consistency.
 - d. Altering seasonings.
5.
 - a. Anxiety and fear about an illness can change attitudes and personality.
 - b. Immobilization compounds nutritional problems.
 - c. Drug therapy may affect intake and utilization of nutrients.
 - d. The disease process modifies food acceptance.
6. The nurse has a key role. He or she assists the patient at mealtimes and explains, interprets, and supports both the physician's orders and the efforts of the dietary staff. The nurse observes and charts pertinent information and coordinates the team. The nurse also involves the patient in his or her own care and provides a care plan for other staff members to follow. And, finally, the nurse plans for discharge teaching of the patient and follow-up care.

Activity 1: Principles and Objectives of Diet Therapy

1.
 - a. Cultural aspects
 - b. Socioeconomic background
 - c. Psychological factors
 - d. Physiological factors
2.
 - a. The patient is often fearful and rejects hospital food.
 - b. Immobilization brings about nutritional stress.
 - c. The disease process alters food acceptance.
 - d. Medications may interfere with nutrient utilization.
3. Diet therapy focuses on the patient's identified needs and problem.
4. Therapeutic nutrition is based upon modifications of the nutrients in a normal diet.

5. The purpose of diet therapy is to restore or maintain good nutritional status.

Activity 2: Routine Hospital Diets

1. a 5. b 9. c 13. c
 2. c 6. b 10. d
 3. d 7. a 11. b
 4. c 8. b 12. c
14. Canned fruit cup; oatmeal with milk and sugar; toast with butter (tea with sugar, if desired)
15. a. N
 b. Y
 c. Y
 d. N
 e. Y
 f. Y
 g. N
 h. Y
 i. N
 j. N

Activity 3: Diet Modifications for Therapeutic Care

- Modify basic nutrients; modify energy value; modify texture; and modify seasoning.
- There are numerous examples that would be correct. For instance, the diet restricted in simple carbohydrates used for the diabetic whose pancreas does not produce enough insulin. Calories are not nutrients, so a low calorie diet is not appropriate here.
- a. When the diet imposes severe restrictions.
 b. When the patient's appetite is poor.
 c. When digestion, absorption, or metabolism is impaired.
- Within the framework of the correctly modified diet, the individual's likes, dislikes, and tolerances should be built in. Foods of equal value should be substituted to meet the patient's ethnic and cultural desires. Participation by the patient in choosing foods within the specified diet is desirable.

Activity 4: Alterations in Feeding Methods

1. c 4. F 7. T 10. a
 2. a 5. F 8. F 11. b
 3. c 6. T 9. c
12. A nutritionally adequate diet of liquified foods administered through a tube into the stomach or duodenum.

13. One advantage is that it is safer to feed enterally. Other answers may be found in the activity.
14. a. When the GI tract cannot be used.
 b. When the patient is severely depleted nutritionally.
15. a. Assist the patient's adjustment to an alternate feeding method.
 b. Monitor glucose levels.
 c. Be alert for signs of contaminated solutions and discard them.
16. a. Milk-based formula: milk and cream are primary ingredients.
 b. Blenderized formula: adds strained meats, vegetables, and fruits to the milk base.
 c. Meat-based formula: milk and cream are omitted.

CHAPTER 15: DIET THERAPY FOR SURGICAL CONDITIONS

Background Information

- a
 - a
 - Effective wound healing
 - Increased resistance to infection
 - Lowered mortality rate
 - Shortened convalescent period (decreased probability of complications arising during and after surgery)
7. e 12. d 17. T 22. T
 8. d 13. e 18. T 23. F
 9. a 14. b 19. F 24. T
 10. f 15. c 20. F
 11. c 16. a 21. F

Activity 1: Pre- and Postoperative Nutrition

1. b and d 5. T
 2. c 6. F
 3. a 7. F
 4. F
 8.

	Pro	CHO	Thia	Nia	Ribo	Fe	VitC
Oyster stew	X	X	X	—	X	X	—
Whole wheat garlic toast	X	X	X	X	X	X	—
Green pepper and cabbage slaw	X	X	—	—	—	—	X
Raisin rice pudding with orange sauce	X	X	—	—	—	X	X

Activity 2: The Postoperative Diet Regime

1. Regain normal body weight.
2. a. Correct fluid and electrolyte balance.
b. Carefully plan dietary and nutritional support.
c. Monitor food intake.
3. a. Prevent shock/edema.
b. Provide for synthesis of albumin, antibodies, etc.
c. Accelerate wound healing.
4. a. Blood.
b. Fluids and electrolytes.
c. 5% dextrose.
d. Protein-sparing solutions.
e. Vitamin supplement.
f. Intralipids single or in any combination.
5. Clear liquid—24 hours (after bowel sounds return).
Full liquid—1–2 days, should be supplemented with commercial formula if used longer.
Soft to Regular—remainder of hospital stay. May need supplements.
6. $150/2.2 = 68 \times 0.45 = 30.6 \times 100 = 3060$.
7. $3060 \times 0.15 = 459 \text{ kcal}/4 = 115 \text{ g protein (rounded)}$.
8. $3060 \times 30 = 1009.8 \text{ kcal}/9 = 112 \text{ g fat (rounded)}$.
9. $3060 \times 0.55 = 1683 \text{ kcal}/4 = 420 \text{ g carbohydrate (rounded)}$.
10. Your choice. Use exchange lists as needed.

CHAPTER 16: DIET THERAPY FOR CARDIOVASCULAR DISORDERS

Progress Check for Activity 1

1. a. high serum cholesterol
b. high serum triglycerides
c. obesity
d. hypertension
e. poor eating habits
2. Therapeutic lifestyle changes
3. a. reduce saturated fat and cholesterol
b. weight reduction
c. physical activity
4. Metabolic Syndrome
5. 25%–35% of total calories
6. abdominal obesity
7. lowering LDL cholesterol
8. nicotinic acid

9. d
10. b
11. b
12. See Nursing Implications: any 8 of 15

Practice Question

Check your answer with the sample menu in Appendix C. Your foods do not need to be the same, only within the guidelines for a TLC diet, and satisfactory to your client.

Activity 2: Heart Disease and Sodium Restriction

1. See the Low-Sodium Diet, Activity 2.
2. Example of menu for a 500 mg sodium diet.

Breakfast

Puffed wheat cereal
½ c skim milk
1 sliced banana
Sugar
2 slices low-sodium toast with unsalted soft margarine and honey
Coffee or decaffeinated

Mid morning

½ c orange juice
Unsalted crackers

Lunch

2 oz baked chicken*
½ c rice *
½ c green peas*
1 slice unsalted bread with special margarine
Sliced peaches

Lunch (continued)

½ c skim milk
1 slice unsalted bread special margarine
Canned pineapple
Coffee, tea, or decaffeinated beverage

Mid afternoon

½ c skim milk
1 cupcake*

Dinner

3 oz roast beef
Baked potato
½ c glazed carrots*
Lettuce with special dressing*

Bedtime

Fruit cup
½ c skim milk

*All food prepared without seasonings that contain sodium.

3. a. lemon juice/slices; orange juice/slices
b. thyme, basil, marjoram, oregano, sage, bay leaf
c. onion, garlic (fresh or powdered, not salt)
d. chives, dill, mint, parsley, rosemary
e. unsalted chopped nuts
f. green pepper, pimiento
g. cinnamon, nutmeg, brown sugar, ginger
h. vinegar, tarragon, curry, black pepper
i. mushrooms, cranberry sauce, dry mustard
j. fresh tomatoes; unsalted juice

Progress Check on Nursing Implications

1.
 - a. Reducing the workload of the heart.
 - b. Improving cardiac output; promoting patient comfort.
 - c. Restoring and maintaining adequate nutrition.
 - d. Controlling any existing conditions such as hyperlipoproteinemia or hypertension.
2.
 - a. Position the patient for maximal benefit; for example, allow the patient to sit up with the tray on his or her unaffected side.
 - b. Place food in unaffected side of the patient's mouth.
 - c. Gently stroke the patient's throat, and teach the patient to do so to relieve fear of choking (patient feels the food going down).
 - d. Provide feeding devices when necessary.
 - e. Protect the patient from spillage. Preserve the patient's dignity. Change linens as necessary.
 - f. Take plenty of time to feed or assist self-feeding.
 - g. Cut food into small bites. Open all packages and cartons.
 - h. Emphasize all successes; praise attempts at self-feeding.
 - i. Talk to the patient whether or not the patient can answer.
 - j. Try to find out from the family what foods the patient dislikes and do not feed the patient those foods.

Activity 3: Dietary Care after Heart Attack and Stroke

1. Baking powder, baking soda, patent medicines, prescribed drugs, commercial mixes, most convenience foods, frozen and canned vegetables, softened water, cured and dried meats, and vegetables.
2. See list of acceptable alternatives to salt (Activities 2 & 3).
3. See Nursing Implications.
4. To rest the heart and reduce or prevent edema.
5. c
6. b

CHAPTER 17: DIET AND DISORDERS OF INGESTION, DIGESTION, AND ABSORPTION

Activity 1: Disorders of the Mouth, Esophagus, and Stomach

1.

Diet	Disease or Condition	Foods Allowed	Foods Limited	Foods Forbidden	Nursing Implications
Low-Residue Diet	Hiatal hernia Diverticulitis Hemorrhoidectomy Ostomies Ulcerative Colitis (U.C.)	See Table 17-2 for guidance			See Nursing Implications, this chapter

2a.

Diet	Disease or Condition	Foods Allowed	Foods Limited	Foods Forbidden	Nursing Implications
Regular high protein, high carbohydrate, moderate fat without interval feedings	Gastric ulcer	Any tolerated	Milk, wine*, caffeine beverage*, some seasonings*	80 proof alcohol beer, black hot chilis, caffeine	See Nursing Implications

2b.

Diet	Disease or Condition	Foods Allowed	Foods Limited	Foods Forbidden	Nursing Implications
Moderate low-residue, high-protein, high-carbohydrate moderate fat in 6 feedings	Dumping syndrome	See Table 17-4	Complex carbohydrate, milk*	Liquids with sweets, alcohol, sweetened beverages	See Nursing Implications

*Individual tolerance and doctors orders

3. Better understanding of the causes of gastric ulcers, and improved methods of treating them, have changed the principles of diet therapy to correspond with medical treatments.
4. Following the guidelines given in the section on gastric surgery, choose the menu from Tables 15-4 and 15-5 (antidumping diets). An example follows.

8 am	10 am	2 pm
½ rice cereal rice 1 tsp margarine s.c. egg	½ melted cheese sandwich	2 oz white meat chicken ½ c cooked carrots margarine
4 pm	6 pm	8 pm
2 crackers 1 tbsp smooth peanut butter	2 oz broiled beef patty ½ c mashed potatoes	½ sandwich: 1 slice white toast 2 tsp mayonnaise 2 oz tuna

Unsweetened beverages and water between meals.

Activity 2: Disorders of the Intestines

1.

a. N	e. N	i. N
b. Y	f. N	j. Y
c. N	g. Y	
d. N	h. Y	
2. a 6. d 10. d
3. b 7. c 11. d
4. c 8. c
5. c 9. c

12. Choose from this group:

- a. any whole grain breads/cereals
- b. any fresh fruits
- c. any fresh vegetables
- d. cooked fruits and vegetables may be used in some cases; i.e., broccoli, spinach
- e. prunes, figs, raisins
- f. nuts, legumes

13.
 - a. correct nutrient deficits
 - b. restore adequate intake
 - c. prevent further losses

- d. promote repair and maintenance of body tissue
 e. promote healing
 f. control substances that are not absorbed easily
14. See Nursing Implications for ileostomy, colostomy.
15. T 18. T
 16. F 19. F
 17. F 20. T

CHAPTER 18: DIET THERAPY FOR DIABETES MELLITUS

Activity 1: Diet Therapy and Diabetes Mellitus

1. See Answer Sheet for Exercise 18-1 and 18-2 following question #34.
2. b and d 9. d 16. F 23. T
 3. a 10. c 17. F 24. F
 4. c 11. a 18. F 25. e
 5. b 12. b 19. T 26. d
 6. d 13. c 20. T 27. b
 7. a 14. F 21. T 28. c
 8. d 15. F 22. T 29. a
30. See Nursing Implications.
31. See Patient Education: What the diabetic patient must know.
- 32.

	<i>Carbo- hydrate (grams)</i>	<i>Protein (grams)</i>	<i>Fat (grams)</i>
Milk, 2 exchanges (2%)	24	16	8
Vegetables, 3 exchanges	15	6	—
Fruit, 3 exchanges	45	—	—
Lean meat, 6 exchanges	—	42	18
Medium fat meat, 2 exchanges	—	14	10
Fat, 5 exchanges	—	—	25
Bread, 6 exchanges	<u>90</u>	<u>18</u>	<u>—</u>
Total	174 g	96 g	61 g

33. Your choice. Be sure to use all exchanges, but no more than the number specified.
34. c
 $174 \times 4 = 696$ calories
 $93 \times 4 = 372$ calories
 $61 \times 9 = 549$ calories
 1617 calories (Total). Round to 1600.
35. b 7000 calories = 2 lb body fat
36. b, c Granola bar and raisin bread each have app. 100 calories; meat, though lean, has 55 calories per oz; 8 oz whole milk has 150 calories.
37. See Answer Sheet for Exercises 18-1 and 18-2.
38. People with type 2 diabetes usually have one of the following conditions:
 a. do not always produce enough insulin.
 b. produce insulin too late to match the rise in blood sugar.
 c. do not respond correctly to the insulin that is produced.
39. The three criteria that should be considered in choosing insulin are:
 a. how soon it starts working (onset).
 b. when it works the hardest (peak time).
 c. how long it lasts in the body (duration).
40. The basic four types of insulin products are:
 a. rapid acting
 b. short acting (regular)
 c. intermediate acting (NPH)
 d. Long lasting
41. The 3 ways that diabetes pills work in the body are:
 a. stimulate the pancreas to release more insulin.
 b. increase the body's sensitivity to the insulin that is already present.
 c. slow the breakdown of foods (especially the starches) into glucose.

Answer Sheet for Exercises 18-1 and 18-2

<i>Diet</i>	<i>Disease or Condition</i>	<i>Foods Allowed</i>	<i>Foods Limited</i>	<i>Foods Forbidden</i>	<i>Nursing Implications</i>
Calculated	Diabetes mellitus	All of those listed in the food exchanges (see exchange list in Appendix F)	Foods are limited by amount: larger amounts for higher caloric allowances; smaller amounts for lower caloric allowances	Sugar, sweets and desserts that exceed the carbohydrate and caloric allowance of the diet plan	See section: Nursing Implications. Also see section on the child with diabetes mellitus.

CHAPTER 19: DIET AND DISORDERS OF THE LIVER, GALLBLADDER, AND PANCREAS

Activity 1: Diet Therapy for Diseases of the Liver

- See Tables 16-1 and 16-2, and Nursing Implications.

- Example: (whole day's menu)

<i>Breakfast</i>	<i>Lunch (continued)</i>
Orange juice, 8 oz	Sherbet with sugar
Cream of Wheat, 1 c with sugar and milk	cookies
Poached egg, 1, on whole wheat buttered toast	Chicken noodle soup
Milk/coffee	
<i>Mid-morning</i>	<i>Mid-afternoon</i>
English muffin with 2 tbsp cream cheese	Hardboiled egg
Milk, 8 oz	Cottage cheese with fruit
	Toast with 1 tsp butter
<i>Lunch</i>	Juice, 8 oz
Tuna salad sandwich (3 oz tuna, 2 slices bread, 1 tbsp may- onnaise, lettuce)	<i>Dinner</i>
Carrot/raisin salad	Lean roast beef, 4 oz
Assorted crackers	Mashed potatoes, 1 c with butter, 1 tsp
Fruit juice, 8 oz	Green beans
Milk, 8 oz	Fruited gelatin salad
	Rolls, 1 tsp butter
	Angel food cake
	Milk, 8 oz
	<i>Pre-bed Snack</i>
	1 c buckwheats
	1 c milk
	1 banana

- Example: (menu altered to reduce protein and sodium levels)

<i>Breakfast</i>	<i>Lunch (continued)</i>
Orange juice, 4 oz	Bread, 1 slice with butter
Cereal, ½ c with sugar and milk	Sliced peaches
Whole wheat toast, 1 slice with butter and jelly	Milk, ½ c
Coffee with 2 tbsp cream	Tea with lemon and sugar
Milk, ½ c	Fruit juice, 8 oz
<i>Mid-morning</i>	<i>Mid-afternoon</i>
English muffin with jelly	Fresh fruit
Fruit juice	Sugar cookies
Coffee with sugar	Tea
<i>Lunch</i>	<i>Dinner</i>
Small baked potato	Lean beef, 2½ oz
Green peas, ½ c	Potato, ½ c with butter
Carrot/raisin salad	Green beans
	Tossed salad with low- sodium dressing
	Roll, 1

Dinner (continued)

Fruit cocktail, ½ c
Coffee with sugar
Juice, 4 oz

Snack

Buttered toast with jelly
Banana

Note: ½ regular amount salt in cooking; no added salt at table.

- 2700 calories
 - To cover the extra energy needs from fever, infection, and stress.
 - For an adult, nonpregnant woman, the 1989 RDA for protein is 46 grams + 54 grams to bring the total to 100 grams as stated in the diet prescription.
 - To repair and regenerate liver tissue.
 - To spare protein for its primary functions and to furnish fiber, vitamins, and minerals.
 - The vitamins are coenzymes for proper utilization of foods, especially carbohydrates. Extra vitamins replace vitamins lost through the disease process and improve overall well-being.
 - Fatty meats, desserts high in fat content or chocolate, hard-to-digest fats, fried foods, and any foods or spices that cause discomfort or upset the patient. Alcohol is strictly forbidden.
 - Sodium, both in products and salt at table.
 - Isolation techniques vary somewhat from hospital to hospital, but, in general, disposable items are used. There is some problem with food getting cold unless care is taken. The nurse should visit with the patient while he or she eats, if possible, as eating in isolation usually results in decreased consumption. Consult protocol manual at institution.
 - Cancer, severe malnutrition (marasmus), and early cirrhosis (this diet regime also is suitable for postoperative patients with no complications).
- Avoid all fermented dairy products such as yogurts and cheeses.
 - Do not eat raw vegetables, including salads and garnishes, and fruits that are not peeled.
 - Defrost frozen foods in the refrigerator or microwave.
 - Do not use foods kept at room temperature or kept heated for long periods of time.
 - Serve and eat foods quickly following preparation.
 - Cover and freeze leftovers immediately.
 - Use refrigerated leftovers within two days.
 - Keep the preparation and serving area very clean.
 - Be sure that sanitary techniques are maintained throughout, and that food handlers are vigilant about personal habits and dress.

Activity 2: Diet Therapy for Diseases of the Gallbladder and Pancreas

See Table 19-1, for guidance; also see Nursing Implications.

- Menu alterations for low-fat diet:

<i>Breakfast</i>	<i>Lunch (continued)</i>
Orange juice	Roll; 1 tsp butter
Oatmeal, skim milk, sugar	Skim milk
Poached egg (1)	Tea/sugar
Toast, 1 tsp butter, jelly	<i>Dinner</i>
Coffee	Lean broiled hamburger patty
<i>Lunch</i>	Parsley carrots
Baked chicken; no skin	Tossed green salad/vinegar or lemon
Mashed potato	French bread/1 tsp butter
Green beans with pimienta	Sherbet
	Red wine
	Coffee

- Example only; other foods of similar type and value may be used.

<i>Breakfast</i>	<i>Mid-afternoon</i>
Orange juice	Milkshake made with skim milk, sherbet, and fruit
Oatmeal/brown sugar/butter	<i>Dinner</i>
Toast, butter, jelly	Broiled lean hamburger patty
Skim milk	Parsley carrots
<i>Mid-morning</i>	Wild rice/mushrooms
Fruit	French bread/butter
Sugar cookies	Sherbet
Skim milk	Fruit juice
<i>Lunch</i>	<i>Pre-bed Snack</i>
Baked chicken	Low-fat yogurt with fruit or cottage cheese and fruit
Mashed potato	Crackers
Green beans	Juice or skim milk
Roll/butter	
Tapioca pudding	
Skim milk	

- Risk of gallstone formation can be reduced with:
 - proper food choice with small amount of fat
 - diets with high fiber content
 - regular physical activity

- F
- T
- T
- F
- F

CHAPTER 20: DIET THERAPY FOR RENAL DISORDERS

Background Information and Activity 1: Kidney Function and Disease

- c
- a
- d
- c
- d
- c

7–12. See Background Information.

13–17. See Activity 1.

- A proteolytic enzyme secreted by the kidney
- Condition of soft bones with Ca⁺ deposited in tissues
- High biological value protein—especially animal protein, milk, and eggs

Activity 2: Chronic Renal Failure

- a
- b
- a
- c
- a

6–11. See Nursing Implications (any two from each category).

12–15. See section on dietary management.

Activity 3: Kidney Dialysis

- Diffusion of solutes from one side of a semipermeable membrane to another.
- Use of an artificial “kidney” outside the body to clear waste from blood.
- Use of a catheter placed in the abdominal cavity to clear waste from blood.
- Solution into which the blood waste products diffuse.
- Continuous ambulatory peritoneal dialysis.
- Nitrogenous wastes, sodium, potassium, and fluids.
- Two reliable resources on renal disease information are:
 - American dietetic Association (ADA)
 - National Kidney Foundation (NKF)
- Three important guideline documents for health professionals responsible for renal diseases are:
 - A Clinical Guide to Nutrition Care in End-Stage Renal Disease (latest edition)
 - Guidelines for Nutrition Care of Renal Patients (latest edition)
 - National Renal Diet: Professional Guide and the National Renal Diet Client Education Guide (latest edition)
- d
- c
- a
- a
- b
- c
- e
- T
- F
- T

Activity 4: Diet Therapy for Renal Calculi

- c
- b

Check your answers to Questions 3 through 10 by referring to Table 20-3, acid-based foods.

- | | | | |
|------|------|------|-------|
| 3. c | 5. a | 7. a | 9. c |
| 4. b | 6. c | 8. b | 10. c |

CHAPTER 21: NUTRITION AND DIET THERAPY FOR CANCER AND HIV

Background Information

- | | | |
|------|------|-------|
| 1. T | 5. T | 9. d |
| 2. F | 6. T | 10. e |
| 3. T | 7. T | 11. d |
| 4. T | 8. F | 12. e |

Activity 1: Nutrition Therapy in Cancer

- body's response to the disease
 - site of the cancer
 - type of treatment
 - specific physical response
 - psychosocial response of patient
 - Any five of these: fatigue, asthenia, cachexia, anorexia, anemia, fluid and electrolyte balance, or many others (see text).
 - Optimum nutrition preoperatively and postoperatively, specific modifications according to surgical site and organ function.
 - thorough personal nutrition assessment
 - maintenance of vigorous nutrition therapy
 - revision of care plan as needed
 - hair follicle loss
 - bone marrow dysfunction
 - GI disturbances
 - personal beliefs
 - advice of family and friends
 - advice on Web sites and in other media
 - Three nutritional factors that will improve protein synthesis and energy metabolism are:
 - Increase total caloric intake.
 - Increase vitamin and mineral intake as needed.
 - Maintain fluid and electrolyte balance.
 - See Table 21-2.
 - See Table 21-2.
- | | | | |
|-------|-------|-------|-------|
| 10. c | 17. T | 24. T | 31. T |
| 11. c | 18. F | 25. T | 32. F |
| 12. c | 19. T | 26. F | 33. F |
| 13. T | 20. F | 27. T | 34. T |
| 14. F | 21. T | 28. T | 35. F |
| 15. T | 22. T | 29. F | 36. T |
| 16. T | 23. T | 30. F | 37. T |

Activity 2: Nutrition and HIV Infection

- c
 - f
 - d
 - Delay progression of infections and improve patient's immune system.
 - Delay wasting effects of HIV infection.
 - Prevent opportunistic diseases.
 - Recognize infections early and provide rapid treatment.
 - Phase 1. Primary stage. Manifestations: usually asymptomatic.
 - Phase 2. Second stage. Opportunistic illnesses begin.
 - Phase 3. Terminal stage. T lymphocyte production drops below 200/mm³.
 - High-caloric, small, frequent feedings. Supplements as desired.
 - Encourage consumption of high biological value (HBV) proteins.
 - Use easily digested fats such as cream, butter, egg yolk, oils, and medium chain triglycerides (MCT). Keep fiber content low. Limited refined sugars.
 - Serve attractive, appealing food. Cold usually better. Invite guests, friends, family to socialize.
 - Antiemetics administered before meal-times. Far enough ahead to be effective, change schedule if necessary. Rearrange eating times if needed.
 - Use whatever method or type of feeding that is most effective. Supply HBV protein, vitamin mineral supplements as necessary. Assist with eating if patient is fatigued.
 - Serve cold or chilled soft bland and liquid foods in small quantities 6–8 times daily.
 - Parenteral feedings, drug therapy as necessary, protection from others, protection of others.
 - See Nursing Implications.
 - All standard sanitation procedures that are implemented by the facility must be complied with. In addition, particular attention and compliance with stringent sanitation of food preparation areas, storage, and service must be adhered. Nursing and dietary employees should have a joint inservice session to make sure all applicable measures are being implemented.
- | | | | |
|-------|-------|-------|-------|
| 9. T | 14. T | 19. T | 24. F |
| 10. T | 15. F | 20. T | 25. T |
| 11. T | 16. T | 21. F | 26. F |
| 12. F | 17. F | 22. T | 27. T |
| 13. T | 18. T | 23. F | 28. F |

CHAPTER 22: DIET THERAPY FOR BURNS, IMMOBILIZED PATIENTS, MENTAL PATIENTS, AND EATING DISORDERS

Activity 1: Diet and the Burn Patient

1. T 4. F 7. c
2. F 5. F 8. a
3. T 6. d 9. d
10. Anorexia, pain, inability to move head, swallow, chew
11. Body protein, fat, water
12. a. 77 lb = 35 kg
b. $35 \text{ kg} \times 1 \text{ g protein/kg/bw} = 35 \text{ g}$
c. $40\% \text{ body surface burned} \times 3 \text{ g/\% surface burned} = 120 \text{ g}$
d. $35 \text{ g} + 120 \text{ g} = 155 \text{ g protein required}$
13. See list of 14 nursing implications.

Activity 2: Diet and Immobilized Patients

1. Four considerations in immobilized patient's nutritional and diet care are:
 - a. nitrogen balance
 - b. calories
 - c. calcium intake
 - d. urinary and bowel function
2. Actual skin breakdown can be avoided only a combination of:
 - a. a high protein diet
 - b. frequent position adjustment
 - c. exercise if possible
 - d. special bedding materials and sheets
 - e. good hygiene
3. Calcium homostasis is determined by factors such as:
 - a. bone integrity
 - b. serum calcium
 - c. intestinal function
 - d. adequacy of active vitamin D
 - e. kidney function
 - f. parathyroid activity
4. Diseases related to excessive calcium are:
 - a. hypercalcemia
 - b. hypercalciuria
 - c. metastatic calcification of soft tissues
 - d. calcium stone formation in the bladder
5. Long-term treatment of hypercalcemia includes:
 - a. mobilization as soon as possible
 - b. calcium intake kept at 500–800 mg per day
 - c. phosphate supplement
6. T 9. F 12. T 15. T
7. T 10. T 13. T 16. T
8. T 11. T 14. F

Activity 3: Diet and Mental Patients

1. The health team of a mental patient includes:
 - a. psychiatrist
 - b. nurse
 - c. social worker
 - d. therapist
 - e. nutritionist
 - f. dietitian
 - g. psychologist
 - h. clinical specialist
 - i. health aides
2. Criticisms on nutritional care in mental institutions include:
 - a. poor food preparation facilities
 - b. poor dining environment
 - c. crowded and underbudget
3. Some of the basic reasons why mental patients have nutritional and dietary problems are:
 - a. eating handicaps
 - b. don't like the food served
 - c. abnormal behavior patterns
4. General guidelines for nursing immobilized and mental patients:
 - a. appropriate nutrition therapy is important
 - b. use most effective method of feeding
 - c. avoid interactions with medication
 - d. provide nutrition education to patient, family, and caregivers
5. F 9. T 13. F
6. T 10. T 14. T
7. T 11. F
8. T 12. F

Activity 4: Anorexia Nervosa

1. a 3. c 5. a
2. d 4. b
6. Any five of the nine listed under Feeding Routines.
7. Any five of the eight listed under Nursing Implications.

CHAPTER 23: PRINCIPLES OF FEEDING A SICK CHILD

Background Information

1. Any five of these: fatigue, vomiting, diarrhea, anorexia, pain, lethargy, confusion, effects of medication, fear, anxiety.
2. a. Anthropometric measures
b. Physical assessment
c. Laboratory tests
3. T 5. F 7. d
4. T 6. c

Activity 1: The Child, the Parents, and the Health Team

1. Any of these: fatigue, nausea, vomiting, pain, fear, anxiety, anorexia, medications, separation from parents, treatments.
2. The nurse's primary role is that of liaison and child advocate. She coordinates and provides optimal dietary care.
3. See Nursing Implications.

Activity 2: Special Considerations and Diet Therapy

1. Height, weight, allergies, likes, dislikes, food and fluid intake at home, culture, and/or ethnic group.
2. Since burns cause stress to the body and require greatly increased nutrient intake, the major nutrients for wound healing as described in Chapter 12 apply. The RDAs for children are in the appendix. In general, normal requirements will double or triple, depending on the extent of the burn. Example: protein RDA for 5-year-old = 30 grams; protein requirement for Allen = 80 to 90 grams.
3. The diet should be increased in all essential nutrients. Total calories needed are high. Fats remain in the moderate range. In general, the diet prescription would read high-protein, high-carbohydrate, and moderate-fat, with supplemental vitamins and minerals as condition requires. The increases aid wound healing, restore nutrient losses, return the child to a positive nutritional status, and maintain growth and development.
4. Your choice: protein should be high quality; snacks included as part of the caloric/nutrient allowance.
5. Allow favorite foods, serve familiar food, observe likes/dislikes as diet permits, encourage group eating (if child is allowed up), establish a pleasant environment, allow food selection, provide companionship, encourage eating (take a snack with each visit to the room, unless treatment or therapy will interfere), relieve pain ahead of meal-times, and furnish caregivers with list of acceptable foods they can bring from home.

CHAPTER 24: DIET THERAPY AND CYSTIC FIBROSIS

Background Information

1. Any five of these: frequent, large, foul-smelling stools; substandard weight gain; abdominal bloating; steatorrhea; excessive crying; sodium deficiency; circulatory collapse; frequent pneumonia.

2. b
3. b
4. c

Activity 1: Dietary Management of Cystic Fibrosis

1. No. She is undersized. The range for children seven to ten years old to the RDAs is approximately 52 inches height and 62 pounds. Susie is 8 to 10 inches shorter than average, and about 12 pounds underweight.
2. a. Diarrhea: undigested food in the stools.
b. Lethargy: general malnutrition/fever.
3. High-calorie diet for growth and compensation for food lost in stools. High-protein diet for growth and compensation for food lost in stools. High- to moderate-carbohydrate diet to spare protein and compensate for food lost in stools (simple carbohydrates are better tolerated than starches). Low- to moderate-fat diet because fats are not tolerated well; altered types of fat such as medium-chain triglycerides may be used. High-vitamin and mineral diet: double doses of multiple vitamins in water-soluble form. Salt added generously. Pancreatic enzymes are given by mouth with meals and snacks.
4. Food from home, fast food favorites, group eating, socializing occasions, cheerful atmosphere, frequent meals, some favorite foods added, compromises.
5. Your choice. Diet should contain 90 to 100 grams protein and at least 2500 calories—3000 to 3500 calories would be better. Calories can be increased as appetite improves. Use exchange lists for figuring protein and calories, plus any caloric chart available for items not listed in exchanges.

CHAPTER 25: DIET THERAPY AND CELIAC DISEASE

Activity 1: Dietary Management of Celiac Disease

1. a
2. b
3. a
4. Gluten is the protein fraction found in wheat, rye, oats, and barley to which some people are intolerant. It may be due to an immune reaction or an inherited defect, but it has a toxic effect on the intestine. Inform Mrs. Jones of products containing gluten that must be omitted from her diet to prevent changes in the jejunum. Explain that these

changes will prevent absorption of nutrients into the cell, causing acute symptoms and malnutrition.

5. Advise Mrs. Jones to pack a lunch, as most restaurants use mixes, thickeners, and other products containing gluten. She might pack: baked chicken, potato chips, celery and carrot sticks, fruit gelatin, olives, fruit or tomato juice, vanilla tapioca pudding (homemade), crisped rice cookies (made with marshmallows), etc.
6. Pasta, breads, cereals, all breaded products, commercial mixes, thickeners, commercial candies, some salad dressings, canned cream soups, etc. (also see Table 23-1).
7. Rice and corn.
8. Any creamed, thickened and filled products, including candies, gravies, sauces, puddings, casseroles, stuffings, and meat loaf.
9. Milk in all forms: fresh, dry, evaporated, fermented or malted. All foods containing milk: cocoa, chocolate, all breads, rolls, waffles, cakes made with milk. Desserts made with milk: cookies, custard, ice cream, puddings, sherbets, cream pies. Margarine that contains milk or cream. Meats: franks, any luncheon meats containing milk powder. Candy: caramel or chocolate. Vegetables in cream sauces.
10. Yes. Medium-chain triglycerides are better tolerated than regular fats and the need for calories is high. The typical client is usually underweight.

Activity 2: Screening, occurrence, complication

- | | | | |
|------|------|------|------|
| 1. T | 3. F | 5. T | 7. T |
| 2. F | 4. T | 6. T | |
8. Celiac disease could be underdiagnosed in the United States for a number of reasons:
 - a. Celiac symptoms can be attributed to other problems.
 - b. Many doctors are not knowledgeable about the disease.
 - c. Only a handful of U.S. laboratories are experienced and skilled in testing for celiac disease.

CHAPTER 25: DIET THERAPY AND CONGENITAL HEART DISEASE

Activity 1: Dietary Management of Congenital Heart Disease

- | | | | |
|------|------|------|-------|
| 1. b | 4. c | 7. d | 10. c |
| 2. a | 5. b | 8. b | |
| 3. d | 6. d | 9. a | |

- | | |
|---|--|
| 11. <i>Breakfast</i> | <i>Lunch and Dinner</i> |
| Fruit juice, 3 oz | (continued) |
| Salt-free cereal,
2 tbsp | Pureed fruit, 2–3 tbsp |
| Toast, ½ slice | Mashed potatoes, 1 tbsp |
| | <i>Snacks</i> |
| <i>Lunch and Dinner</i> | High-calorie, low-protein,
low-sodium beverages
as appropriate to age. |
| Pureed or mashed
vegetables, 2 tbsp | This will assist in meet-
ing fluid requirements. |
| Pureed meat (pre-
pared without
salt), 1 oz | |
12. See Managing Feeding Problems.
 13. See Managing Feeding Problems and Nursing Implications.
 14. See Discharge Procedures.

CHAPTER 27: DIET THERAPY AND FOOD ALLERGY

Background Information and Activity 1: Food Allergy and Children

1. Excess sensitivity to certain substances or conditions.
2. Allergens or antigens.
3. First exposure to antigen produces no overt symptoms, causes the body to form these immunoglobulins.
4. When an allergic reaction does not manifest quickly or in the usual ways, but rather over a period of time, the child shows the tension-fatigue syndrome.
5. A food allergy triggers the immunological system of the body, whereas a food intolerance is a direct result of maldigestion or malabsorption.
6.
 - a. Amount of allergen consumed.
 - b. Whether it is cooked or raw.
 - c. Cumulative effects.
 - d. Allergic to inhalable as well as ingestible items.
 - e. Allergic at one time but not at another.
 - f. Reacts to allergen when physical or emotional problems occur. Also, may be another food chemical, not protein.
7.
 - a. Offending substances must be identified and removed.
 - b. Monitors the antiallergenic diet to ensure adequate nutrient intake.
8. Breast milk does not contain beta lactoglobulins, the substance in cow's milk that may trigger reactions.
9. Skin testing and elimination diets.

Activity 2: Common Offenders

- | | | |
|------|------|-------|
| 1. b | 5. F | 9. T |
| 2. a | 6. T | 10. F |
| 3. c | 7. F | |
| 4. T | 8. F | |

Activity 3: Inspecting Foods to Avoid Allergic Ingredients

- | | | |
|------|------|------|
| 1. T | 2. F | 3. T |
|------|------|------|
4. FDA believes there is scientific consensus that the following foods can cause serious allergic reactions in some individuals and account for more than 90% of all food allergies:
- Peanuts
 - Soybeans
 - Milk
 - Eggs
 - Fish
 - Crustaceans (e.g., shrimp)
 - Tree nuts
 - Wheat

CHAPTER 28: DIET THERAPY AND PHENYLKETONURIA**Background Information**

- | | | |
|------|------|------|
| 1. b | 4. d | 7. F |
| 2. c | 5. b | |
| 3. a | 6. F | |

Activity 1: Phenylketonuria and Dietary Management

- | | | |
|------|-------|-------|
| 1. a | 6. a | 11. T |
| 2. c | 7. c | 12. T |
| 3. b | 8. d | 13. F |
| 4. b | 9. d | |
| 5. b | 10. T | |
14. a. determine age, weight, and activity level of the child;
 b. determine the client's daily requirement for phenylalanine;
 c. determine the contribution of protein from Lofenalac evaporated milk;
 d. determine calories from formula, milk, and any other food consumed; and
 e. determine total phenylalanine from formula, milk, and any other food consumed.
15. See Table 26-3. Also: the use of special, low-protein products: cookies, bread, pasta, drinks, and desserts made primarily from free foods; and the increased use of flavorings and spices as tolerated.

CHAPTER 29: THERAPY FOR CONSTIPATION, DIARRHEA, AND HIGH-RISK INFANTS**Activity 1: Constipation**

- | | | |
|------|------|------|
| 1. b | 3. d | 5. c |
| 2. a | 4. b | |
6. No regular schedule for elimination (not taking time for bathroom).
7. a. Clean out the colon with enema.
 b. Continue use until a regular defecation pattern is established.
 c. Put the child on a conditioning schedule.
 d. Reduce milk to approximately 60%–80% of normal and increase other fluids and fiber until goal is attained. Keep on maintenance dosage of fiber and other fluids. Return milk to normal amount.
8. See Nursing Implications.

Activity 2: Diarrhea

- | |
|--|
| 1. a. Stool profile.
b. Cause.
c. Site of defect. |
| 2. a. Clinical disorder.
b. Bacteria in food/formula.
c. Reactions to certain foods. |
| 3. a. Restore fluid and electrolyte balance.
b. Restore adequate nutrition. |
- 4, 5, 6. See Table 27-2.
7. a. Add corn syrup to formula.
 b. Feed strained cereals, strained fruits.
 c. Provide extra feedings.

Activity 3: High-Risk Infants

- | | | |
|------|------|------|
| 1. c | 3. a | 5. b |
| 2. d | 4. a | |
6. a. Child can suck.
 b. Child weighs more than 2000 grams.
7. a. Manual expression.
 b. Give by tube, bottle, or dropper.
 c. Milk less than 8 hours old, unrefrigerated.
8. a. 100–130 kcal/kg/bw
 b. 3–4 g pro/kg/bw
 c. fluid = to output.
 d. Supplement calcium, iron, vitamin K, tyrosine, and cystine as needed.
9. One containing specific amounts of essential nutrients necessary for the growth of the infant.

Introduction to Nutrition

Multiple Choice

Circle the letter of the correct answer.

- The food groups at the base of MyPyramid are:
 - foods containing the most kilocalories.
 - foods to be emphasized in the diet.
 - foods that are highest in essential nutrients.
 - foods contributing the least fiber.
- A dietary supplement is:
 - extra vitamins and minerals to prevent chronic diseases.
 - a health food that alleviates illness.
 - necessary to provide essential nutrients in the diet.
 - a product used to increase total dietary intake.
- Major recommendations by government health agencies for reducing chronic-disease risk include:
 - an increase in complex carbohydrate foods.
 - a decrease in use of foods high in fat.
 - an increase in foods high in fiber.
 - b and c
 - a, b, c
- A kilocalorie is:
 - the release of energy from food.
 - the amount of heat required to raise the temperature of one kilogram of water one degree centigrade.
 - the capacity to do work.
 - the amount of calories in a specific amount of food.
- The recommendations to promote health and prevent or delay the onset of chronic diseases are known as:
 - Recommended Dietary Allowances.
 - Reference Daily Intakes.
 - Dietary Guidelines for Americans.
 - Daily Reference Values.
- The levels of intake of essential nutrients considered to be adequate to meet the nutritional needs of healthy persons is known as:
 - Dietary Guidelines for Americans.
 - Recommended Dietary Allowances.
 - Reference Daily Intakes.
 - U.S. Dietary Goals.

- Nutrition labeling information is mandatory on which of the following products?
 - packaged foods, dairy foods
 - raw produce, fish
 - raw meat, poultry
 - all of the above
- Information on food labels may include which of these nutrients?
 - total fat, saturated fat, cholesterol
 - polyunsaturated fat, monounsaturated fat
 - sodium, calcium, iron
 - a, c
 - a, b, c
- The components that supply energy, promote growth, and repair and regulate body processes are termed:
 - chemicals.
 - nutrients.
 - nutrition.
 - adequate diet.

Matching

Match the foods listed on the left to the size of one serving at the right, according to MyPyramid.

- | | |
|------------------------------|----------------------|
| ___ 10. cooked cereal | a. 1 cup |
| ___ 11. raw leafy vegetables | b. $\frac{3}{4}$ cup |
| ___ 12. fruit juice | c. $\frac{1}{2}$ cup |
| ___ 13. milk | |
| ___ 14. tofu | |

- Define the following:
 - AI: _____.
 - EAR: _____.
 - IOM: _____.
 - USHHS: _____.
 - %DVs: _____.
 - Discretionary calorie allowance: _____.
 - Functional foods: _____.
 - Nutraceuticals: _____.

16. Which of the following is represented on MyPyramid.gov?
- Activity
 - Altruism
 - Gradual improvement
 - Integrity
 - Interdependency
 - Moderation
 - Personalization
 - Proportionality
 - Variety
 - a, c, f, g, h, i
 - a, b, c, d, e, f
 - b, e, f, g, h, i
17. According to labeling for one serving, which of the following is recommended based on a 2000-calorie diet:
- 50 calories is low.
 - 500 calories or more is high.
 - 100 calories is moderate.
 - 120 calories is moderate.
18. According to the sample label for macaroni and cheese, which of the following is correct?
- For %DV, 5% or less is low.
 - For %DV, 20% or more is high.
 - For trans fat, there is no %DV.
 - For sugars, the %DV is 12%.
 - a, b, c, d
 - a, b, c
19. Which of the following refers to a DRI established by www.NAS.edu?
- Tolerable Upper Intake Levels (UL), vitamins
 - Tolerable Upper Intake Levels (UL), elements
 - Estimated Energy Requirements (EER) for children
 - Acceptable Calories Distribution Ranges
 - Recommended Intakes for Individuals, macronutrients
 - Additional macronutrient recommendations
 - Estimated Average Requirements for Asians
 - a, b, c, f
 - d, e, g, h
 - a, b, e, f

20. Regarding omega-6-PUFA, which of the following is correct?
- prevalent in beef fat and corn oil
 - may benefit persons with risk of cardiovascular disease
 - includes EPA and DHA
 - a, c
 - b, c
 - a, b

Situation

Mary is on her way to take an important examination. At a fast-food restaurant she picks up the following lunch: grilled chicken sandwich, salad with low-fat dressing, an orange juice, and a fat-free yogurt. Answer the following questions about this situation.

21. How does Mary's meal fit into MyPyramid's food selection guide?

22. List five foods that Mary should eat at dinner to round out a balanced diet.

-
-
-
-
-

23. List the objectives of the NCEP three adult treatment panels (ATP 1, 2, 3)

-
-
-

POSTTEST FOR CHAPTER 2

Food Habits

Multiple Choice

Circle the letter of the correct answer.

- Which of the following mechanisms stimulates the appetite?
 - the central nervous system
 - the body's biological needs
 - the sight, smell, and taste of food
 - the time of day
- Lack of money affects eating patterns by
 - curtailing the kind of food bought.
 - curtailing the amount of food bought.
 - increasing the amount of starchy foods bought.
 - all of the above.
- Hunger is a mechanism controlled by
 - the central nervous system.
 - the body's biological needs.
 - the sight, smell, and taste of food.
 - the time of day.
- The one requirement that the biological food needs of an individual must provide is
 - adaptation to the culture and traditions of the people.
 - essential nutrients which the body can digest, absorb, and utilize.
 - pleasant taste, smell, and appearance of food.
 - adequate intake.
- Which of the following provides the best framework for changing eating behaviors?
 - scientific knowledge
 - relating the changes to the culture and habits
 - teaching in a group where others have the same problem
 - sending a home health aide out to check
- Which of the following nutrients tend to be deficient in the diet of the Native American?
 - calcium and riboflavin
 - vitamins A and C
 - protein
 - all of these
- The typical Chinese diet may be low in which of the following nutrients?
 - protein, calcium, vitamin D
 - carbohydrates, fats, fiber
 - thiamin, niacin, riboflavin
 - carbohydrates, iron, vitamin K
- Which of the following meats are avoided by Muslims, Jews, and Seventh Day Adventists?
 - beef
 - poultry
 - pork
 - seafood
- What is the condition that results when children have diets inadequate in protein?
 - pellagra
 - kwashiorkor
 - PEM
 - galactosemia
- The diet of the Mexican-American tends to be high in
 - fats and sodium.
 - calcium and folacin.
 - protein and carbohydrate.
 - vitamins A and D.
- Blacks, Native Americans, and Asians have a high incidence of
 - diabetes.
 - heart disease.
 - lactose intolerance.
 - marasmus.
- Yin and yang foods refer to
 - the soul food of Cheech and Chong.
 - the number 1 and 2 foods used in China.
 - hot and cold foods, not related to temperature.
 - hot, spicy foods.

Matching

Match the statement in the left column to the type of food symbolism in the right column. (Answers can be used more than once.)

- | | |
|--|--|
| _____ 13. "I take 500 mg of organic vitamin C three times per day to keep from getting a cold" | a. sociological
b. biological
c. emotional |
| _____ 14. "I want the best steaks you have; my boss is coming to dinner" | |
| _____ 15. "I ate a pound of chocolate fudge after that awful day I had at the office" | |
| _____ 16. The food symbolism most likely to change | |

True/False

Circle T for True and F for False.

17. T F Diseases of malnutrition are a problem in most countries except the United States.
18. T F A hospitalized vegetarian should not have difficulty selecting from a hospital menu.
19. T F The Jewish diet is usually high in saturated fats and cholesterol.
20. T F Hot red and green peppers, which are used liberally in the Mexican diet, contain good sources of vitamins A and C.
21. T F The practice of using lime-soaked tortillas should be discouraged.
22. T F Obesity is not a problem in United States culture.
23. T F All of the different cultures in the United States have substandard diets.
24. T F Eating behaviors develop from cultural conditioning, not from an instinct to choose adequate foods.
25. T F The economic status of an individual often changes his or her food habits.
26. T F Food has hidden meanings and may become an outlet for stress.
27. T F Poverty is a subculture in the United States.

Situation

Billy is a five-year-old who is admitted to the hospital for the first time. He will be hospitalized for approximately a week for diagnostic tests and possible surgery. When his food is not being withheld, he receives a regular diet. From this brief situation, answer the following questions by circling the letter of the best answer.

28. The breakfast tray, which has been held until 10 a.m. because of tests, has an egg, bacon, juice, and toast on it. Billy refuses it, though he has stated he was hungry. You could assume that his refusal is due to which of the following?
 - a. He has lost his appetite by 10 a.m.
 - b. The foods are unfamiliar.
 - c. He wants to be fed.
 - d. He wants his mother.
29. Billy's roommate is a one-year-old who receives a supplemental bottle feeding. When this child receives a bottle, Billy cries for one also. You could assume that this behavior is
 - a. a bid for attention.
 - b. regression to an earlier developmental stage.
 - c. because he still takes a bottle when he is home.
 - d. due to hunger.
30. You place Billy's supper tray on the bedside table and encourage him to take a few bites. He shoves the tray to the floor and starts crying loudly. The reason for this hostility is probably due to
 - a. being a spoiled brat.
 - b. anxiety and fear.
 - c. dislike of hospital food.
 - d. all of the above.

POSTTEST FOR CHAPTER 3

Proteins and Health

Multiple Choice

Circle the letter of the correct answer.

- Of the twenty-two amino acids involved in total body metabolism, building and rebuilding various tissues, eight are termed essential amino acids. This means
 - the body cannot synthesize these eight amino acids and must obtain them in the diet.
 - these eight amino acids are essential in body processes, and the remaining fourteen are not.
 - these eight amino acids can be made by the body because they are essential to life.
 - after synthesizing these eight amino acids, the body uses them in key processes essential for growth.
- A complete food protein of high biologic value would be one that contains
 - all 22 of the amino acids in sufficient quantity to meet human requirements.
 - the eight essential amino acids in any proportion, since the body can always fill in the difference needed.
 - most of the 22 amino acids from which the body will make additional amounts of the eight essential amino acids needed.
 - all eight of the essential amino acids in correct proportion to human needs.
- Besides carbon, hydrogen, and oxygen, what other element is found in all proteins?
 - calcium
 - nitrogen
 - glycogen
 - carbon dioxide
- The basic building blocks of proteins are
 - fatty acids.
 - keto acids.
 - amino acids.
 - nucleic acids.
- Sufficient carbohydrate in the diet allows a major portion of protein to be used for building tissue. This is known as
 - digestion, absorption, and metabolism.
 - the halo effect of carbohydrate regulation.
 - the protein-sparing action of carbohydrate.
 - carbohydrate loading.
- Which of the following foods contain the largest amounts of essential amino acids?
 - soybeans and peanuts
 - milk and eggs
 - meat and whole wheat bread
 - poultry and fish
- Which two foods contain proteins that are so incomplete they will not support life if eaten alone with no other added source of protein?
 - meat, eggs
 - fish, cheese
 - gelatin, corn
 - rice, dried beans
- Protein complementation is
 - combining foods that taste good.
 - combining foods with mutually supplemental amino acid patterns.
 - combining similar protein foods.
 - combining carbohydrates and fats with proteins.
- Joe is a lacto-vegetarian. Which of the following would he be most likely to consume?
 - cheese omelette
 - strawberry yogurt
 - tuna noodle casserole
 - boiled egg and toast
- The essential amino acid present in a food in the smallest amount in relation to human need is termed
 - nonessential amino acid.
 - limiting amino acid.
 - target amino acid.
 - missing amino acid.
- Kcalories provided by excess dietary protein can be
 - converted to muscle tissue.
 - converted to fat.
 - used for energy.
 - b and c.
- Anemia results from a deficiency of hemoglobin and/or red blood cells in the circulating blood. Can protein deficiency cause anemia?
 - yes
 - no
 - only if vitamin B₁₂ is also deficient
 - only if folacin is not present

Matching

Match the protein part of the food listed in the left column to its type in the right column. (Answers can be used more than once.)

- | | |
|---------------------------|-----------------------|
| ___ 13. nuts | a. complete protein |
| ___ 14. fish | b. incomplete protein |
| ___ 15. whole wheat bread | |
| ___ 16. cheese | |
| ___ 17. legumes | |

True/False

Circle T for True and F for False.

18. T F All enzymes and hormones are protein substances.
19. T F Lipoproteins are transport forms of fat, produced mainly in the intestinal wall and in the liver.
20. T F Complete proteins of high biologic value are found in whole grains, dried beans and peas, and nuts.
21. T F Protein is best absorbed and utilized when complementary protein foods are eaten in the same meal.
22. T F 30 grams of protein yields 270 calories.
23. T F Enzymes are proteins involved in metabolic processes.
24. T F The RDA for protein for an adult is figured on 0.8 gram per kg of body weight.
25. T F Kwashiorkor is a type of malnutrition resulting from a very low-calorie diet.

Situation

Five-year-old Lisa lives in a strict vegetarian family. Lately, her mother has been concerned because Lisa has been tired, cross, and withdrawn, so she takes her to the doctor. The pediatrician who examines her tells her mother that Lisa has several nutritional deficiencies and sends her to a dietitian for a consultation. Answer the following questions regarding this situation.

26. Which of the following nutrients are likely to be low in Lisa's diet?
 - a. calcium, iron, iodine
 - b. vitamins B₁₂, D, riboflavin
 - c. essential amino acids
 - d. all of the above

Lisa eats the following foods in a 24-hour period:

Breakfast: whole wheat toast, applesauce, grape juice

Lunch: steamed rice with honey and cinnamon, carrot and raisin salad, canned pears, sweetened instant drink

Dinner: alfalfa sprouts, mushroom and tomato sandwich on whole wheat bread, vegetarian vegetable soup, apple, peach nectar

Snacks: homemade raised doughnut, applesauce

27. Based upon the foods listed above, what would you expect to happen to Lisa if the eating pattern continues?
 - a. Her growth will slow or stop.
 - b. She will grow up very healthy.
 - c. She will become overweight.
 - d. She will get scurvy.
28. List at least five foods that should be added to Lisa's diet and indicate the proper combinations.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____

Carbohydrates and Fats: Implications for Health

Multiple Choice

Circle the letter of the correct answer.

- Which of the following is not a rich source of polysaccharides?
 - poultry
 - vegetables
 - cereals
 - potatoes
- What organ of the body relies primarily on glucose for energy?
 - heart
 - lungs
 - muscles
 - brain
- Which of these substances is necessary for the uptake of glucose by the cells?
 - insulin
 - epinephrine
 - adrenalin
 - thyroxin
- Which of the following is a function of sugars?
 - They enhance the flavor of some foods.
 - They add kcalories to a diet.
 - They prevent microbial growth in jams and jellies.
 - all of the above
- The incidence of dental caries is most influenced by
 - the total amount of sugar consumed.
 - the number of times a sugar food is consumed.
 - the length of time sugar is in contact with the teeth.
 - the type of sugar consumed.
- A steady blood glucose level is best achieved by consuming which of the following types of diets?
 - high-sugar foods like candy and soft drinks
 - no fluids with meals
 - small meals containing complex carbohydrate, protein, and fat
 - meals high in protein, fat, and water but low in carbohydrate
- A high-fiber diet has proven to be an effective treatment for
 - varicose veins.
 - coronary heart disease.
 - appendicitis.
 - diverticulosis.
- A therapeutic diet frequently used in the treatment of heart disease is the low-saturated fat diet. Which of the following foods would not be allowed?
 - whole milk
 - corn oil
 - special soft margarine
 - whole grains
- Fats provide the body with its main stored energy source. Another function of fat in the body is
 - furnishing essential fatty acids required by the body.
 - regulating body temperature through insulation.
 - preventing shock to vital organs by padding.
 - all of the above
- The function of cholesterol in the body is to serve in the formation of
 - hormones, bile, and vitamin D.
 - enzymes, antibodies, and vitamin B₁₂.
 - central nervous system tissue.
 - vitamins, enzymes, and fats.
- From which of these sources is cholesterol obtained?
 - animal foods containing fat
 - plant foods rich in polyunsaturated fats
 - synthesis in the liver
 - a and c
- Which of the foods listed below contains predominantly saturated fats?
 - fruits
 - vegetables
 - meats
 - breads
- Select the food item from the list below that does not contain cholesterol.
 - liver
 - cheddar cheese
 - shrimp
 - peanut butter

Matching

Match the phrases on the right to the terms on the left that they best describe.

- | | |
|--------------------------------|---|
| _____ 14. hydrogenation | a. blood sugar level below normal |
| _____ 15. bile salts | b. an essential fatty acid |
| _____ 16. linoleic | c. animal sources of carbohydrates |
| _____ 17. hypoglycemia | d. substance that breaks fat into small particles |
| _____ 18. glycogen and lactose | e. conversion of unsaturated oil to a saturated fat |

True/False

Circle T for True and F for False.

19. T F Low-density lipoproteins are thought to protect against cardiovascular disease.
20. T F Distribution of carbohydrate in the diet should range between 50 and 60 percent.
21. T F Fat should constitute approximately 40 percent of our food intake for healthful eating according to dietary guidelines.
22. T F Athletes need the same basic nutrients as all other people.
23. T F Carbohydrates are the most efficient energy source for athletes and nonathletes.
24. T F Athletes and nonathletes need some fat on their bodies.

Situation

Stacy is a sixteen-year-old high school student who is on the wrestling team. He is 5'8'' tall and weighs 150 lbs. Recently his coach told him he had to lose 10 lbs to wrestle in a lower weight division. He has 10 days before the next meet.

25. Stacy tells his mother the coach told him to eat only 1 meal a day and to increase his workouts by 1 hour. Which of the following responses is most appropriate?

- a. "No son of mine is going to starve like that."
 - b. "You will lose weight but it will be muscle loss, not fat loss."
 - c. "You should lose the required amount of weight if you don't cheat on the diet."
 - d. "I need to lose 10 lbs. I'll go on the diet with you."
26. The foods that Stacy is allowed to eat are meats of all kinds and green salads. He gets no milk or cheese. The coach also recommends that his mother buy him a megavitamin/mineral supplement and a buddy recommends bee pollen. What is the most likely response of Stacy's body to this diet regime?
 - a. The extra protein and vitamins will increase his endurance and stamina.
 - b. The bee pollen will cause him to have an allergic reaction.
 - c. He will get diarrhea, dehydration, and ketosis.
 - d. He will improve his performance by 30 percent.
 27. By decreasing his water intake the day before the match and using no salt, Stacy manages to make the 140 lb weight. Ten minutes into the match he collapses and has to be seen by a physician. The probable reason for this happening is
 - a. he was coming down with the flu.
 - b. he should have had carbohydrate loading the night before to get more energy.
 - c. he was dehydrated, weakened, and debilitated from the diet regime.
 - d. he had been to a big party and had not gotten enough rest.
 28. List at least three dietary principles you would have recommended for Stacy if you had been his coach.
 - a. _____
 - b. _____
 - c. _____

POSTTEST FOR CHAPTER 5

Vitamins and Health

Multiple Choice

Circle the letter of the correct answer.

1. A dietary deficiency of vitamin A can produce
 - a. xerophthalmia.
 - b. a prolonged blood-clotting time.
 - c. osteomalacia.
 - d. all of the above.
2. Vitamin A toxicity is likely to occur from
 - a. consuming too many dark green and deep orange vegetables.
 - b. eating liver twice a week.
 - c. consuming high dosage vitamin A supplements.
 - d. drinking too much vitamin A-fortified milk.
3. The most reliable source of vitamin D in the diet is
 - a. meat.
 - b. fruits and vegetables.
 - c. fortified milk.
 - d. enriched breads and cereals.
4. Rickets is most likely to be caused by deficiencies of
 - a. iron and phosphorus.
 - b. calcium and vitamin D.
 - c. magnesium and vitamin D.
 - d. phosphorus and fluoride.
5. Major sources of vitamin E in the diet are
 - a. meats.
 - b. milk and dairy products.
 - c. citrus fruits.
 - d. vegetable oils.
6. Vitamin K deficiency is most often observed in
 - a. newborns.
 - b. children.
 - c. teenagers.
 - d. adults.
7. The vitamin that is synthesized in the intestines by bacteria is
 - a. vitamin A.
 - b. vitamin C.
 - c. vitamin D.
 - d. vitamin K.

8. Factors that may cause a deficiency of water soluble vitamins include
 - a. taking no vitamin supplement.
 - b. fad diets.
 - c. an 1800 calorie diet from the four food groups.
 - d. a regular pregnancy.
9. B complex vitamins
 - a. function as coenzymes.
 - b. are best supplied by supplements.
 - c. include vitamin C.
 - d. include laetrile.
10. A deficiency of vitamin C
 - a. causes delayed wound healing.
 - b. decreases iron absorption.
 - c. increases capillary bleeding.
 - d. all of the above

Matching

Match the statements on the left side with the letter of the corresponding vitamins listed on the right side.

- | | |
|---|--------------|
| _____ 11. inadequate intake causes osteomalacia and rickets | a. vitamin A |
| _____ 12. inadequate intake causes poor night vision and skin infection | b. vitamin D |
| _____ 13. promotes normal blood clotting | c. vitamin E |
| _____ 14. prevents destruction of unsaturated fatty acids | d. vitamin K |

Match the statements on the left side with the letter of the corresponding vitamins listed on the right side.

- | | |
|---|----------------------------|
| _____ 15. deficiency causes cracked skin around the mouth, inflamed lips, and sore tongue | a. ascorbic acid |
| _____ 16. helps change one amino acid into another | b. pyridoxine |
| _____ 17. a cobalt-containing vitamin needed for red blood cell formation | c. vitamin B ₁₂ |
| _____ 18. promotes the formation of collagen | d. riboflavin |

True/False

Circle T for True and F for False.

19. T F Natural and synthetic vitamins are used by the body in the same way.
20. T F Vitamin K is required for the synthesis of blood clotting factors.
21. T F B-vitamins serve as coenzymes in metabolic reactions in the body.
22. T F Natural vitamin supplements are more efficiently utilized by the body than synthetic vitamins because they are in a form the body prefers.
23. T F Vitamins are a good source of food energy.
24. T F There is no RDA for vitamin K because it is produced by the body.
25. T F A deficiency of vitamin B₁₂ produces sickle cell anemia.
26. T F Niacin is found in abundance in meats, poultry, and fish.
27. T F Pyridoxine (B₆) is found in wheat, corn, meats, and liver.
28. T F Riboflavin is found abundantly in milk and cheese.

29. Identify the practices that contribute to a loss of vitamins in the preparation and storage of this meal.

30. Identify the vitamins that are lost.

31. List at least three things you would teach Mrs. A. regarding conservation of nutrients.

- a. _____
- b. _____
- c. _____

Situation

Mrs. A. is preparing dinner for visitors. She decides to do as much preparation ahead of time as she can in order to spend more time with her guests. The day before the dinner, she chops greens for a salad, puts them in a large, shallow container and refrigerates them uncovered so that they will stay crisp. The afternoon prior to the dinner she slices tomatoes and peppers and refrigerates. She peels, dices, and puts potatoes on to boil to make mashed potatoes later and reheat. She also puts green beans on about two hours prior to dinner in a large quantity of water so that they can cook slowly. She has cooked a roast which she will slice and reheat at the appropriate time. Answer the following questions.

POSTTEST FOR CHAPTER 6

Minerals, Water, and Body Processes

Multiple Choice

Circle the letter of the correct answer.

- Minerals most often deficient in the diet in the United States are
 - iodine and fluorine.
 - phosphorus and calcium.
 - calcium and iron.
 - potassium and sodium.
- Iron deficiency anemia
 - is not a major problem until age 25.
 - is a problem for male teenagers.
 - is a problem for young children and menstruating women.
 - is a problem in the geriatric adult.
- Calcium is widely involved in body processes. Among the best known functions are all except
 - nerve transmission.
 - muscle contraction.
 - maintenance of heartbeat.
 - coenzyme action.
- The disease of later years that is primarily due to an inadequate calcium intake during younger years is
 - osteoporosis
 - rickets.
 - xerophthalmia.
 - marasmus.
- The body survives the shortest time when _____ is lacking.
 - protein
 - carbohydrate
 - fat
 - water
- Which of these nutrients contributes the most weight to the human body?
 - calcium
 - zinc
 - water
 - iron
- Water functions in the body as all of these except
 - a participant in chemical reactions.
 - a solvent.
 - a lubricant.
 - a source of energy.
- Excess consumption of meat, fish, and poultry could
 - cause iron deficiency.
 - increase calcium excretion.
 - favor calcium absorption.
 - prevent iron toxicity.
- Fluoride deficiency is best known to cause
 - mottling of teeth.
 - osteoporosis.
 - nutritional muscular dystrophy.
 - dental decay.
- Which of these foods provides the best source of iron?
 - egg white
 - oranges
 - bananas
 - prunes

Matching

Match the function in the left column with the letter of the mineral in the right column.

- | | |
|--|---------------|
| _____ 11. promotes bone calcification | a. iron |
| _____ 12. deficiency causes endemic goiter | b. phosphorus |
| _____ 13. found in some proteins | c. copper |
| _____ 14. part of hemoglobin molecule | d. iodine |
| _____ 15. necessary for hemoglobin formation combined with another mineral | e. sulphur |

True/False

Circle T for True and F for False.

16. T F Most of the dietary iron ingested is absorbed.
17. T F The best food source of iron is milk.
18. T F The person constantly taking baking soda for his “acid stomach” may develop iron deficiency anemia and/or calcium deficiency.
19. T F Acidic fruits, particularly citrus and tomato, make the blood acid.
20. T F “Softened” water is usually high in sodium.
21. T F Minerals involved in maintaining the water balance of the cells are in the special form of ions.
22. T F The best source of calcium available to people who need to increase their calcium intake is calcium pills.
23. T F The major minerals are more important than the trace minerals.
24. T F The major minerals are found in larger quantities in the body than the trace minerals.
25. T F Fluoride actually forms part of the growing tooth crystal.
26. T F Manganese facilitates bone development.
27. T F Sulfur performs a structural role in the proteins of the hair, nails, and skin.

Situation

The following 24-hour intake was consumed by a 25-year-old female married graduate student.

Breakfast: coffee, cream and sugar

Lunch: green salad with blue cheese dressing
6 crackers
Jell-O with fruit cocktail
tea with lemon and sugar

Dinner: 4 oz broiled chicken
½ c rice with gravy
apple and celery salad
roll with butter
coffee, cream and sugar

Assuming that this is her typical eating pattern, answer the following questions regarding her diet:

28. Which of the following minerals would you expect to be deficient in her diet?
 - a. sodium and potassium
 - b. calcium and iron
 - c. magnesium and zinc
 - d. fluoride and iodine
29. For the minerals you identified as deficient in this diet (#28) list three good food sources and the daily amount needed according to the RDAs.

<i>Daily Amount</i>	<i>Foods</i>
Mineral #1	
_____	a. _____
	b. _____
	c. _____
Mineral #2	
_____	a. _____
	b. _____
	c. _____

30. If this person’s diet remains unchanged, what nutritionally based diseases would you expect her to develop?
 - a. iron deficiency anemia and osteoporosis
 - b. hypertension and xerophthalmia
 - c. skin lesions and dwarfism
 - d. dental caries and goiter

POSTTEST FOR CHAPTER 7

Meeting Energy Needs

Multiple Choice

Circle the letter of the correct answer.

- The most successful and healthful way to lose weight is to
 - eat less but still choose a variety of foods.
 - exercise regularly.
 - follow an 800 kcal diet until goal weight is reached.
 - a and b.
- How many kcalories are in a food if it contains 10 grams of carbohydrate, 8 grams of fat, 7 grams of protein, 5 milligrams of thiamin, and 40 grams of water?
 - 138 kcalories
 - 140 kcalories
 - 142 kcalories
 - 145 kcalories
- All of the following affect the basal metabolic rate (BMR) except
 - muscle tone.
 - gender.
 - body composition.
 - emotional state.
- Which of the following factors is directly responsible for controlling basal metabolic energy expenditure?
 - amount of daily physical activity
 - thyroid hormone secretion
 - daily caloric intake
 - percent of body weight that is fat
- Which of the following would influence the number of kcalories burned in a given physical activity?
 - a person's body weight
 - number of muscles used
 - length of time the activity is performed
 - all of the above
- Which of the following are characteristics of a fad diet?
 - It does not provide adequate carbohydrate.
 - It severely restricts food choices.
 - It emphasizes one or two foods.
 - all of the above.
- In human nutrition, the kilocalorie (calorie) is used
 - to measure heat energy.
 - to provide nutrients.
 - as a measure of electrical energy.
 - to control energy reactions.
- Which of the following foods has the highest energy value per unit of weight?
 - potato
 - bread
 - meat
 - butter
- The basal metabolic rate indicates the energy necessary for
 - digestion of food.
 - maintaining basal standard test conditions.
 - sleep.
 - maintaining vital life functions.
- Growth, fever, and food intake
 - decrease basal metabolic rate.
 - increase basal metabolic rate.
 - provide nitrogen equilibrium.
 - cause basal metabolic rate to cease.

Matching

Match the statements in the left column to their equivalents in the right column. (Answers may be used more than once.)

- | | |
|---|--------|
| ___ 11. calories per g of carbohydrate | a. 9 |
| ___ 12. calories per oz of carbohydrate | b. 270 |
| ___ 13. calories per g of protein | c. 120 |
| ___ 14. calories per oz of protein | d. 4 |
| ___ 15. calories per g of fat | |
| ___ 16. calories per oz of fat | |

True/False

Circle T for True and F for False.

- T F Ketosis is an abnormal metabolic condition resulting from low-carbohydrate and semi-starvation diets.
- T F The body has an unlimited capacity to store fat.
- T F Altering your physical activity level is usually the easiest way to change your energy expenditure.

20. T F A 20 calorie raw carrot and a 20 calorie mint candy both supply the same amount of food energy.
21. T F A hamburger probably contains more calories from fat than from protein.
22. T F A diet containing 75 g carbohydrate, 100 g protein, and 50 g fat yields 1000 calories of energy.
23. T F Mental effort requires a large output of energy.
24. T F The body is more efficient than an auto in its use of fuel.
25. T F Energy is neither created nor destroyed.
26. T F BMI is the most accurate method to estimate one's health condition.
27. T F Females with a BMI less than desirable may have a greater risk of menstrual irregularity, infertility, and osteoporosis.

Situation

Mary is a student nurse in her first semester of college. She has been very busy and usually studies late at night. Many times she and her roommate go for a snack before bedtime. She skips breakfast a lot because she gets up too late. She figures she gets enough exercise going to clinical, but she thinks wistfully of the long bicycle rides she used to take. Lately, she has been feeling sluggish and her clothes are tight. She thinks she's "holding water." Mary is 5'2" and weighs 130 pounds. She is 21 years old. Answer the following questions.

28. Mary keeps a record of her intake for 24 hours. When she totals it, she finds she has consumed 300 grams of carbohydrate, 50 grams of protein and 150 grams of fat. What is the total caloric value of her diet?
 - a. 2750 calories
 - b. 500 calories
 - c. 1800 calories
 - d. 1250 calories
29. Based on the estimated RDA range of 1700–2300 calories per day for a female 21–25 years of age, estimate how much weight Mary is likely to gain or lose by the end of the school year (6 months).

30. Which of the following statements is true concerning Mary's present weight?
 - a. She is obese.
 - b. She is average weight for her height.
 - c. More information is needed.
 - d. She has extra muscle tissue.
31. Mary decides to go on a diet. She comes to you for advice. List five important principles for weight reduction that you would give her.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____

POSTTEST FOR CHAPTER 8

Nutritional Assessment

Multiple Choice

Circle the letter of the correct answer.

- The major techniques used for assessing nutritional status are
 - physical findings and measurements.
 - blood tests and data collection.
 - the problem-solving process.
 - a and b.
- Depletion of subcutaneous fat may be a result of
 - dieting.
 - undernutrition.
 - illness.
 - all of the above.
- The components of the health care model consist of
 - interviewing, testing, diagnosing, and planning health care.
 - assessing, planning, implementing, and evaluating.
 - testing, measuring, interviewing, and teaching.
 - goal-setting, care plan, implementation, and follow-up care.
- The most common biochemical tests measure
 - creatinine clearance.
 - hemoglobin and hematocrit.
 - nitrogen balance.
 - all of the above.
- Evaluation is possible for which of the following learning objectives?
 - Understand the rationale for a modified diet.
 - State four foods allowed and four omitted on a modified diet.
 - Appreciate the difference between old and new diet patterns.
 - Tell the dietitian the diet plan will be followed.
- Responsibilities of health personnel for community health education include all but
 - teaching.
 - preparing menus.
 - acting as a liaison.
 - providing referrals.
- A balanced diet should contain _____ percent carbohydrate, _____ percent protein, and _____ percent fat:
 - 50–60, 14–20, 20–30
 - 42.5–48.9, 30.5–35.7, 30.2–35.6
 - 60–70, 10–12, 30–35
 - 30–35, 40–50, 10–20
- If you decrease your food intake by 500 calories per day, you will lose
 - 2 pounds per week.
 - 1 pound per week.
 - 0.5 pound per week.
 - no weight.
- A test useful in determining if there is a normal amount of sugar in the blood is known as a
 - serum folate test.
 - blood urea nitrogen test.
 - plasma glucose test.
 - blood transaminase test.
- Pale nail beds, brittle nails, stomatitis, and anemia indicate a deficiency in which of the following minerals?
 - calcium
 - iron
 - iodine
 - magnesium

Matching

Match the physical indicators of nutritional status listed on the left to the type of status listed at the right. (Answers may be used more than once.)

- | | |
|--|--|
| _____ 11. thin, fine, sparse hair | a. good nutritional status |
| _____ 12. bloodshot eyes | b. malnutrition |
| _____ 13. weakness and tenderness in muscles | c. not a positive sign of nutritional status |
| _____ 14. dry, flaky, sandpaper skin | |
| _____ 15. deep pink tongue, slightly rough | |

True/False

Circle T for True and F for False.

16. T F Approximately one-half the fat in our bodies is directly below the skin.
17. T F Assessment provides a baseline for identifying problems.
18. T F Assessment provides a baseline for later evaluation.
19. T F Nutritional needs remain the same throughout life even though people change.
20. T F All physical findings that are indicators of health are directly related to good or poor nutrition.
21. T F Subjective data are not considered helpful to the health practitioner.
22. T F Lab tests for assessing vitamins, minerals, and trace elements are routinely performed in most hospitals.
23. T F Interviewing skills affect the data obtained from a client.
24. T F Malnutrition can describe an excess of calories as well as a deficit of calories.
25. T F A health care professional's role is defined by law.

POSTTEST FOR CHAPTER 9

Nutrition and the Life Cycle

Multiple Choice

Circle the letter of the correct answer.

- An expectant mother's protein intake
 - may be related to clinical risk.
 - affects the height of the child.
 - may provide the child passive immunity.
 - all of the above.
- Pregnancy-induced hypertension (PIH)
 - excessive sodium intake.
 - excessive water intake.
 - a low-protein diet.
 - a high-protein diet.
- Nausea and vomiting during pregnancy
 - are uncommon.
 - go away in the third trimester.
 - can be counteracted to some extent by a dry, high-carbohydrate, low-fat diet.
 - should be countered with vitamin B₁₂.
- Advantages of breast-feeding include
 - psychological benefits for the mother.
 - anti-infective factors in human milk.
 - establishing a maternal bond with the child.
 - all of the above.
- Advantages of bottle-feeding include
 - greater calcium absorption by the infant.
 - greater weight gain by the infant.
 - a low incidence of diarrhea.
 - all of the above.
- The most important factor in establishing a healthy diet in children is
 - teaching children to make adaptive food choices.
 - withholding "junk" food so they do not acquire a taste for it.
 - rewarding a wise choice with a special treat.
 - requiring them to eat all food served to them.
- Eating habits of teenagers
 - usually demonstrate a lack of sound nutrition information.
 - may be tied to peer acceptance.
 - cause concern among health professionals.
 - all of the above.
- Nutrient needs during adulthood
 - are the same as any other age except for different calorie needs.
 - may require modification, dependent upon health status.
 - affect the quality of the rest of life.
 - all of the above.
- The nutritional status of a female on the "Pill" may be worsened with respect to
 - B vitamins and vitamin C.
 - vitamin A and iron.
 - calcium and magnesium.
 - protein and sodium.
- The major nutritionally related clinical conditions of old age include
 - risk of heart disease.
 - bone disease.
 - weight imbalance.
 - all of the above.

Matching

Match the description listed on the left with the infant's age listed on the right:

- | | |
|---|-------------------|
| ___ 11. able to digest starch after this age | a. one day old |
| ___ 12. solids usually introduced at this age | b. 3 months old |
| ___ 13. colostrum is the food the baby is receiving at this age | c. 4–6 months old |
| ___ 14. egg white usually withheld until this age | d. one year old |

Match the items in the left-hand column with the conditions in the right-hand column.

- | | |
|-----------------------------|-----------------------------|
| ___ 15. body fat | a. increased in the elderly |
| ___ 16. periodontal disease | b. decreased in the elderly |
| ___ 17. basal metabolism | |
| ___ 18. intestinal motility | |
| ___ 19. saliva production | |

True/False

Circle T for True and F for False.

20. T F Aerobic exercise can increase the risk of cardiovascular disease.
21. T F Nutrition-related cancers are more prevalent during the adult years.
22. T F Elderly persons and alcoholics are at high risk for developing drug-induced nutritional deficiencies.
23. T F The nutrients most often low in the adolescent's diet are protein, iron, and vitamin D.
24. T F Iron deficiency anemia is often a problem in childhood.
25. T F Breast-fed babies may need a fluoride supplement.
26. T F Excessive use of alcohol during a pregnancy can cause the infant to be mentally retarded.

Situation

Lisa is a 2½-year-old who is brought to a well-child clinic by her grandmother, who is her guardian. Lisa says no to everything and has eaten only peanut butter sandwiches for a week. Her grandmother says her appetite has decreased since last year and she lingers over food for hours. Grandmother states that her own children were not allowed to do this. Answer the following questions in relation to this situation.

27. What developmental problem is Lisa facing and how is this affecting her eating behavior?

28. What other information do you need in order to assess Lisa's nutritional status?

29. What would you say regarding Lisa's decreased appetite?

30. How would you counsel the grandmother in regard to the peanut butter sandwiches and the difference in two generations of child-rearing practices?

POSTTEST FOR CHAPTER 10

Drugs and Nutrition

Multiple Choice

Circle the letter of the correct answer.

- Drug and food interactions that compromise nutritional status include
 - altered taste.
 - slowed or accelerated intestinal motility.
 - decreased or increased appetite.
 - all of the above.
- Foods may compromise drug actions by which of the following methods?
 - delayed absorption
 - altered metabolism
 - inhibited drug response
 - altered drug excretion
 - all of the above
- Drug therapy can alter which of these functions?
 - intestinal absorption
 - utilization of nutrients
 - storage of nutrients
 - synthesis of nutrients
 - all of these
- Absorption of drugs is accomplished by all except
 - enzymes.
 - gastrointestinal pH.
 - fat solubility.
 - particle size.
- Persons who are malnourished are likely to respond to a drug in all except which of these ways?
 - They respond more profoundly to the drug.
 - They require a higher dose of the drug.
 - They require a smaller dose of the drug.
 - They will not exhibit toxic effects to the drug.
- Diarrhea, steatorrhea, and weight loss are usually the result of
 - malabsorption of drugs.
 - poor excretory function.
 - intolerance to foods ingested.
 - malnutrition.
- Foods can increase or decrease
 - acidity.
 - digestive juices.
 - intestinal motility.
 - all of the above.
- Fatty low-fiber meals given with oral medications
 - decrease drug absorption.
 - slow drug action.
 - increase drug absorption.
 - form a neutral base for absorption.
- High protein meals given with medications
 - increase gastric blood flow.
 - increase drug absorption.
 - decrease gastric blood flow.
 - a and b
 - a and c
- People who use mineral oil for a laxative should be taught that mineral oil
 - depletes fat-soluble vitamins.
 - depletes water-soluble vitamins.
 - may cause rickets.
 - a and b
 - a and c
- Oral contraceptives result in a deficiency of which of these vitamins?
 - tocopherol
 - niacin
 - B₆
 - B₁₂
- Aspirin will decrease the absorption and utilization of which of these vitamins?
 - ascorbic acid
 - folacin
 - B₆
 - a and b
 - a, b, and c
- The drug and food components that have been identified as causing harmful effects on the course and outcome of pregnancy include
 - alcohol.
 - food additives.
 - food contaminants.
 - all of the above.

14. If a nursing mother is taking a prescribed drug that carries potential risk that passes to the infant, what should be the doctor's recommendation?
 - a. Change to another drug.
 - b. Warn the mother and let her decide.
 - c. Stop breast-feeding.
 - d. Alert her to report all signs and symptoms.
15. Administering drugs with foods is a common practice used for all except which of these reasons?
 - a. reduce GI side effects
 - b. disguise taste
 - c. chelate the drug
 - d. all of the above
16. Pregnant women who are carriers, or who have phenylketonuria, should avoid aspartame ingestion because it
 - a. makes the infant hyperactive.
 - b. causes birth defects.
 - c. contains phenylalanine.
 - d. contains caffeine.

True/False

Circle T for True and F for False.

17. T F Drug-induced malnutrition is not a problem since so many supplements are available.
18. T F Overmedicating means the person takes a larger dose than prescribed.
19. T F Prescription medications are safer than OTC medications.
20. T F OTCs and prescribed medicines usually enhance the effects of both drugs so are safer taken together.
21. T F Alcohol and OTCs are safe taken together, but prescribed medicine with alcohol is contraindicated.
22. T F Pregnant women may drink unlimited amounts of caffeine-containing beverages.
23. T F Mercury poisoning leads to permanent brain damage in the fetus.
24. T F Nicotine ingestion will cause fetal growth retardation.
25. T F Vitamin K is an essential nutrient. Foods rich in this nutrient can be taken without any precaution.
26. T F Calcium is an essential nutrient. Foods rich in this nutrient such as dairy products can be taken without any precaution.

Fill-in

27. Name the most common side effects of medication.

28. Name three drugs that increase appetite.

a. _____

b. _____

c. _____

29. Name three drugs that decrease appetite.

a. _____

b. _____

c. _____

30. Name three drugs that affect taste sensation.

a. _____

b. _____

c. _____

31. Name two drugs that contain a large amount of glucose.

a. _____

b. _____

32. Name two drugs that contain large amounts of sodium.

a. _____

b. _____

Dietary Supplements

Multiple Choice

Circle the letter of the correct answer.

- Labels for herbal and nutrient concoctions carry claims about
 - relieving pain
 - energizing the body
 - detoxifying the body
 - providing guaranteed results
 - all of the above
- Dietary supplements can be purchased through
 - health food stores
 - grocery
 - drug stores
 - discount chain stores
 - mail-order catalogs
 - TV programs
 - the Internet
 - direct sales
 - any of the above
- A supplement could state on its label, "Excellent source of vitamin C" when it contains, per serving, at least:
 - 12 mg of vitamin C
 - 15 mg of vitamin C
 - 20 mg of vitamin C

Fill-in

- The eight provisions of the DSHEA are:
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
- A nurse must be prepared to teach clients how to:
 - _____
 - _____

- _____
- _____
- _____
- _____
- _____

- Name the seven ways in which a dietary supplement may be harmful:

- _____
- _____
- _____
- _____
- _____
- _____
- _____

- Criteria used in DSHEA to establish a formal definition of "dietary supplement" are:

- _____
- _____
- _____
- _____
- _____

- Information on the statement of identity include:

- _____
- _____
- _____
- _____
- _____
- _____
- _____

- The FDA authorizes disease claims showing a link between a food or substance and a disease or health-related condition based on:

- _____
- _____

10. A nutrition label must contain information in the following sequence:
- _____
 - _____
 - _____
 - _____
 - _____
11. Name two of the questions still to be answered about Echinacea:
- _____
 - _____
12. Ginkgo can cause the following side effects:
- _____
 - _____
 - _____
 - _____
 - _____
19. T F Nutrition support claims can describe a link between a nutrient and the deficiency disease that can result if the nutrient is lacking in the diet.
20. T F Leafy greens such as spinach and turnip greens, dry beans and peas, fortified cereals and grain products, and some fruits and vegetables are rich food sources of folate.
21. T F Women who could become pregnant are advised to eat foods fortified with folic acid or take supplements in addition to eating folate-rich foods to reduce the risk of some serious birth defects.
22. T F Lowering homocysteine with vitamins will reduce your risk of heart disease.
23. T F Supplemental folic acid should not exceed the UL to prevent folic acid from masking symptoms of vitamin B₁₂ deficiency.
24. T F Use of kava-containing dietary supplements may be associated with severe liver injury.
25. T F Persons who are taking drug products that can affect the liver, should consult a physician before using kava-containing supplements.
26. T F Consumers who use a kava-containing dietary supplement do not have to consult with their physician if they are not ill.
27. T F In Europe and some Asian countries, standardized extracts from ginkgo leaves are taken to treat a wide range of symptoms, including dizziness, memory impairment, inflammation, and reduced blood flow to the brain and other areas of impaired circulation.
28. T F The extract of the ginkgo leaf contains a balance of flavone glycosides (including one suspected high-dose carcinogen, quercetin) and terpene lactones.
29. T F Ginkgo is an effective blood thinner and improves circulation. It is, therefore, effective in treating migraine headaches, depression, and a range of lung and heart problems.
30. T F Large doses of goldenseal root should not be taken internally as the side effects can be very severe.
31. T F Berberine and hydrastine are biologically effective compounds in goldenseal root.
32. T F Echinacea can be taken in large doses without serious side effects.
33. T F Comfrey is hepatotoxic and should not be used as a dietary supplement.
34. T F Allantoin is a protein that can stimulate cell proliferation.
35. T F Pennyroyal can cause hepatic, renal, and pulmonary toxicity in humans.
36. T F Herbal supplements can be taken together as they are generally safe.

True/False

Circle T for True and F for False.

13. T F The current definition of dietary supplement is product containing not only essential nutrients, but may be composed of herbs and other botanicals, amino acids, glandulars, metabolites, enzymes, extracts, or any combination of these.
14. T F Manufacturers must describe the supplement's effects on "structure or function" of the body or the "well-being" achieved by consuming the dietary ingredient.
15. T F Both dietary supplements and food additives have to be preapproved by the FDA before marketing.
16. T F FDA has the authority to mandate the dietary supplement supplier and retailers to withdraw a product from the market if the product is found to be adulterated.
17. T F The vitamin folic acid can be claimed to have a link with a decreased risk of neural tube defect-affected pregnancy, if the supplement contains sufficient amounts of folic acid.
18. T F Psyllium seed husk (as part of a diet low in cholesterol and saturated fat) can be claimed to lower coronary heart disease, if the supplement contains sufficient amounts of psyllium seed husk.

37. T F Information on the functions and potential benefits of vitamins and minerals, as well as upper safe limits for nutrients are more reliable if they come from nonprofit organizations such as government agencies (e.g., FDA), university extension, American Dietetic Association, and so on.
38. T F If you are pregnant, nursing a baby, or have a chronic medical condition, such as diabetes, hypertension, or heart disease, be sure to consult your doctor or pharmacist before purchasing or taking any supplement.
39. T F Safety of dietary supplement products are reviewed by the government before they are marketed.
40. T F A nurse should counsel patients to seek expert advice from their physicians before beginning any supplement regime.
41. T F The medical profession, drug companies, and the government can suppress information about a particular treatment.
42. T F “Economic fraud” is a practice in which the manufacture substitutes part or all of a product with an ineffective, inferior, or cheaper ingredient and then passes off the fake product as the real thing but at a lower cost.

POSTTEST FOR CHAPTER 12

Alternative Medicine

Fill-in

- CAM treatments and therapies are used in what three major ways?
 - _____
 - _____
 - _____
- Name five domains or categories of CAM:
 - _____
 - _____
 - _____
 - _____
 - _____
- Name five commonly included symptoms in depression:
 - _____
 - _____
 - _____
 - _____
 - _____
- Most basic questions a patient should ask the CAM practitioner are:
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
- Ayurvedic medicine (meaning “science of life”) is a comprehensive system of medicine that strives to restore the innate harmony of the individual and places equal emphasis on:
 - _____
 - _____

- _____
- Homeopathic medicine is based on the principles that the same substance that
 - _____
 - _____
 - Biological-based therapies include:
 - _____
 - _____
 - _____

True/False

Circle T for True and F for False.

- T F Complementary and alternate medicine (CAM) are treatments and health care practices generally taught widely in U.S. medical schools.
- T F Holistic treatment generally means that the health care practitioner considers the whole person’s physical, mental, emotional, and spiritual aspects.
- T F Energy therapy employs energy fields originating within the body or from electromagnetic fields outside the body.
- T F Preventive therapy means that the practitioner educates and treats the person to prevent health problems from arising, rather than treating symptoms after problems have occurred.
- T F The presence of qi (vital energy) and its distribution through meridians in the body have not been accepted by all conventional medical practitioners in the United States.
- T F Acupuncture involves stimulating specific anatomic points in the body for therapeutic purposes, usually by puncturing the skin with a needle.
- T F Meditation, certain uses of hypnosis, dance, music, and art therapy, and prayer and mental healing are categorized as complementary and alternative medicine.
- T F Many of the biological-based therapies, including natural and biologically based practices, interventions, and products, overlap with conventional medicine’s use of dietary supplements. Included are herbal, special dietary, orthomolecular, and individual biological therapies.

16. T F Treating disease with varying concentrations of chemicals, such as magnesium, melatonin, and megadoses of vitamins, is considered basically ineffective, and maybe even harmful.
17. T F Manipulative and body-based CAM methods are based on manipulation and/or movement of the body.
18. T F Massage therapists manipulate the soft tissues of the body to normalize those tissues.
19. T F Chiropractic and massage therapies are gradually being accepted as being effective in treating certain ailments.
20. T F Biofield therapies are intended to affect the energy fields, whose existence is not yet experimentally proven, that surround and penetrate the human body.
21. T F Reiki, the Japanese word representing Universal Life Energy, is based on the belief that by channeling spiritual energy through the practitioner the spirit is healed, and it in turn heals the physical body.
22. T F Therapeutic Touch is based on the premise that it is the healing force of the therapist that affects the patient's recovery and that healing is promoted when the body's energies are in balance. By passing their hands over the patient, these healers identify energy imbalances.
23. T F In Therapeutic Touch, the healer places their hands over the patient, identifies the energy imbalances, and transfers the healing force to promote patient's energy balance.
24. T F Bioelectromagnetic-based therapies involve the unconventional use of electromagnetic fields, such as pulsed fields, magnetic fields, or alternating current or direct current fields, to, for example, treat asthma or cancer, or manage pain and migraine headaches.
25. T F In traditional Chinese medicine, there are at least 2000 acupuncture points connected through 12 primary and 8 secondary meridians in the body.
26. T F Acupuncture is believed to balance yin and yang, keep the normal flow of energy unblocked, and maintain or restore health to the body and mind.
27. T F Preclinical studies have documented acupuncture's effects, but they have not been able to fully explain how acupuncture works within the framework of the Western system of medicine.
28. T F Laetrile is not approved by the Food and Drug Administration for use in the United States.
29. T F Amygdalin is found in the pits of many fruits, raw nuts, and in other plants, such as lima beans, clover, and sorghum.
30. T F Cyanide is believed to be the active cancer-killing ingredient in laetrile.
31. T F The chemical make-up of Laetrile patented in the United States is different from the laetrile/amygdalin produced in Mexico.
32. T F The patented Laetrile is a semi-synthetic form of amygdalin.
33. T F Laetrile is administered by mouth (orally) as a pill or given by injection into a vein (intravenously) or muscle.
34. T F The beneficial effects of laetrile treatment can be increased by eating raw almonds or certain types of fruits and vegetables including celery, peaches, bean sprouts, and carrots, or by taking high doses of vitamin C.
35. T F St. John's wort is an herb that is useful for treating chronic depression.
36. T F More research is required to determine whether St. John's wort has value in treating other forms of depression.
37. T F St. John's wort interacts with certain drugs, and these interactions can be dangerous.
38. T F Health care providers are becoming more familiar with complementary and alternative medical treatments, or they should be able to refer you to someone who is.
39. T F Medical regulatory and licensing agencies in your state are eligible agencies to provide information about a specific practitioner's credentials and background.
40. T F Many states license practitioners who provide alternative therapies such as acupuncture, chiropractic services, naturopathy, herbal medicine, homeopathy, and massage therapy.
41. T F Health care providers, or professional associations and organizations can provide names of local practitioners and provide information about how to determine the quality of a specific practitioner's services.

POSTTEST FOR CHAPTER 13

Food Ecology

Multiple Choice

Circle the letter of the correct answer.

- Custards and cream fillings should be eaten soon after preparation and properly refrigerated when stored because
 - bacteria such as staphylococci multiply rapidly in these foods unless they are kept at low temperatures.
 - the fat in these foods is poisonous if it becomes rancid.
 - all minerals and vitamins are lost if these foods are cooked at temperatures high enough to destroy the bacteria in them.
 - cooling these foods alters their taste and destroys the vitamins.
- If several persons become ill from food poisoning while at a picnic, which of the following foods would most likely be the cause?
 - tuna salad
 - Jell-O salad
 - bean salad (kidney, wax, and green beans in oil and vinegar dressing)
 - baked beans
- Whenever possible, raw fruits and vegetables should be included in the menu because
 - cooking destroys flavor.
 - excessive heat destroys minerals.
 - cooking removes the cellulose in plants.
 - cooking destroys some of the minerals and vitamins.
- The nutritive value, color, and flavor of cooked vegetables will be retained if they are prepared
 - in an open kettle, in boiling salted water, until they are tender.
 - in a large amount of rapidly boiling unsalted water until done.
 - in cold water and cooked just until tender.
 - in a covered container, in a small amount of boiling salted water just until tender.
- The nutrients most susceptible to destruction from improper handling, processing, and cooking are
 - niacin and iron.
 - folacin and niacin.
 - vitamin C and iron.
 - vitamin C and folacin.
 - folacin and iron.
- Raw meats should not be stored in the refrigerator for more than _____ days, while poultry or fish can be safely stored for _____ days.
 - 2, 2
 - 5, 2
 - 7, 5
 - 9, 7
- Which of the following temperature ranges for holding food may make it unsafe to eat?
 - 60°–125°F
 - 130°–140°F
 - 160°–175°F
 - 10°–32°F
- The most common biological illnesses transmitted from the food supply to people are from
 - bacteria.
 - viruses.
 - parasites.
 - all of the above.
- What is the meaning of the phrase “illness transmission by the oral-fecal route”?
 - transmitted from beast, to human, to food
 - transmitted from unwashed hands, to food, to mouth
 - transmitted by improper storage methods, to food, to human
 - transmitted by a contaminated water supply to food and liquids
- The toxin produced by staphylococcus
 - is seldom found in food.
 - is anaerobic under ideal conditions.
 - is the most common foodborne illness.
 - will grow even in frozen foods.

Matching

Match the procedures in the left column to the statements in the right column.

- | | |
|---|---|
| _____ 11. Peel potatoes before cooking. | a. The procedure will help to conserve nutrients. |
| _____ 12. Store fresh vegetables in air-tight containers. | b. The procedure will increase nutrient losses. |
| _____ 13. Add baking soda to cooking water of vegetables. | c. The procedure is unrelated to conservation of nutrients. |
| _____ 14. Use as little water as possible when cooking. | |
| _____ 15. Keep freezer at constant temperature below 0°F. | |

True/False

Circle T for True and F for False.

16. T F Anaerobic bacteria thrive when food is stored in open containers.
 17. T F Food should be cooled before being refrigerated; otherwise the temperature in the refrigerator will get too high.
 18. T F Bacteria is the major cause of foodborne illness.
 19. T F Foods high in protein are the group that most commonly causes food poisoning.
 20. T F Boiling a food for five minutes will make it safe to eat.
 21. T F A can opener not washed after each use can cause food poisoning.
 22. T F Bulging ends of a can indicate the food has spoiled.
 23. T F The bacteria that thrives in low acid conditions is called perfringens.
 24. T F A person who has a sore on his hand should not prepare or serve food.
 25. T F Food tasting with fingers or cooking utensils during preparation is acceptable practice only at home.
26. The peaches are very pretty but she finds that the least expensive ones are not fresh. Even though they are very soft and contain some bruises, they could be used when peeled and cut up. Which of the following will happen with the peaches?
 - a. They will be very sweet because they are so ripe.
 - b. The vitamin content will be much lower because the produce is not fresh.
 - c. They will be fine because they will be cut and chilled ahead of time.
 - d. All of the above.
 27. While she is shopping she buys some dry cereal and cooking oil, which she forgets and leaves in her car trunk. The result of this may be
 - a. she will have to buy more the next time because she forgot she had them.
 - b. nothing will happen; this kind of food keeps for a long time.
 - c. the cooking oil will get rancid and the cereal will get weevils.
 - d. since they are stored in a dry dark place they will probably last longer than otherwise.
 28. Dana is in a hurry to fix the potatoes she bought, so she puts them on to cook without peeling them. A likely outcome of this is
 - a. she will get food poisoning.
 - b. the nutrients will be conserved.
 - c. she will have to change her menu as these will be unusable.
 - d. the caloric content will be less.
 29. Dana notices that the bread she bought was labeled "enriched." This means that
 - a. nutrients were added that were not originally present.
 - b. thiamin, niacin, riboflavin, and iron were added.
 - c. substances were added to preserve the food from spoilage.
 30. Dana should know that nutrition labeling after 1992 is mandatory
 - a. at all times.
 - b. when a nutrient is added.
 - c. when a claim is made.
 - d. b and c

Situation

Dana is a newlywed whose closest encounter with a kitchen has been to find the cook and tell her what to prepare. Her lifestyle has changed and now she is doing her own shopping and food preparation. On Wednesday afternoon she shops for fresh produce because her local market is having a sale.

POSTTEST FOR CHAPTER 14

Overview of Therapeutic Nutrition

Multiple Choice

Circle the letter of the correct answer.

- The purpose of diet therapy is
 - to modify texture and energy values.
 - to restore and maintain good nutritional status.
 - to interpret the diet in terms of the disease.
 - to involve the patient in his or her care.
- The basis of therapeutic nutrition is
 - assisting a patient to identify his or her malnutrition.
 - removing excess modifications.
 - modifying the nutrients in a normal balanced diet.
 - modifying the patient's behavior to gain appropriate acceptance.
- Which of the following conditions is not a result of poor nutrition in the recovery to health?
 - delayed convalescence
 - overeating
 - delayed wound healing
 - anemia
- The stress of illness may negatively affect
 - personality.
 - nutritional balance.
 - developmental tasks.
 - all of the above.
- When planning modified diets, the major factors to be observed include altering the diet to the specific pathophysiology and
 - considering the patient's attitude toward hospitalization.
 - considering emotional interferences with diet.
 - individualizing the diet to the patient's total acculturation.
 - focusing on patient's development of a trust relationship.
- What factor will determine a patient's nutritional requirements?
 - nature and severity of the disease or injury
 - functioning capacity of the hypothalamus
 - previous nutritional state and duration of the disease
 - a and c

- Nutritional requirements during disease, injury, and hospitalization include
 - increased calories and protein.
 - increased vitamins and minerals.
 - decreased fluids and exercise.
 - a and b.
- Routine hospital diets include all of these except
 - clear- and full-liquid.
 - low-residue.
 - mechanical- and medical-soft.
 - regular.
- Blocks to nutritional adequacy that the nurse may encounter when counseling a patient on a modified diet include
 - cultural differences.
 - ignorance.
 - environmental stressors.
 - all of the above.

Matching

Match the terms listed on the left to their descriptions listed on the right.

- | | |
|--------------------|---|
| ___ 10. ascites | a. inflammation of the stomach |
| ___ 11. edema | b. membrane lining the walls of the abdominal and pelvic cavity |
| ___ 12. gastritis | c. abnormal accumulation of fluid in the peritoneal cavity |
| ___ 13. peritoneum | d. abnormal accumulation of fluid in intercellular spaces |

Match the diets listed on the left to their descriptions listed on the right.

- | | |
|-------------------------|---|
| ___ 14. regular | a. reduced fiber, texture and seasonings |
| ___ 15. medical-soft | b. used for people who have chewing difficulty |
| ___ 16. mechanical-soft | c. the most frequently used of all diets |
| ___ 17. clear-liquid | d. the most nutritionally inadequate of the standard hospital diets |
| ___ 18. full-liquid | e. consists of liquids and foods that liquefy at body temperature |

True/False

Circle T for True and F for False.

19. T F A modified diet is an asset rather than a stressor.
20. T F The focus of diet therapy is based upon the patient's identified needs and problems.
21. T F The regular or house diet restricts foods to the basic food groups.
22. T F A modified diet is successful only if it is accurate.
23. T F Environment and attitude affect a patient's acceptance of a modified diet.

Situation

James, age 19, is admitted to the hospital following a motorcycle accident. He has compound fractures of both legs. He is 6' tall, weighs 130 lb, and has a past history of drug abuse.

24. Therapeutic nutrition for James would focus upon
 - a. measures to restore optimal nutrition.
 - b. measures to reduce liver damage.
 - c. measures to increase his self-esteem.
 - d. allowing him to select as he chooses.
25. Diet modification will include
 - a. increasing all basic nutrients.
 - b. increasing energy value.
 - c. decreasing fiber content.
 - d. a and b.
26. The goals of the diet therapy used for James would center upon his specific needs. These needs would include
 - a. restoration of weight and nutrient reserves.
 - b. promotion of bone formation.
 - c. regulation of methadone dosage.
 - d. a and b.
27. The nurse's role in adapting a client to a modified-diet regime includes all except
 - a. diffusion of responsibility.
 - b. explanation of the diet to the patient.
 - c. interpretation, follow-through.
 - d. discharge planning.
28. List the four most common diet modifications. Based upon your knowledge of these modifications, write the diet prescription for James.
 - a. _____
 - b. _____
 - c. _____
 - d. _____

James's prescription:

29. State the rationale for the diet prescription you just wrote for James.

30. The greatest amount of calcium for bone healing can be provided to James through
 - a. 1 egg.
 - b. 2 tbsp cream cheese.
 - c. 1 oz cheddar cheese.
 - d. ½ c orange sherbet.

POSTTEST FOR CHAPTER 15

Diet Therapy for Surgical Conditions

Multiple Choice

Circle the letter of the correct answer.

- Complete dietary protein of high biologic value is essential to tissue building and wound healing after surgery because it
 - supplies all the essential amino acids needed for tissue synthesis.
 - saves carbohydrate to supply the necessary energy.
 - is easily digested and does not cause gastrointestinal upsets.
 - provides the most concentrated source of calories.
- Mrs. Jones is two days postoperative following a hysterectomy and tells you she wants to be on a 1000 calorie reduction diet when she is allowed to eat again. Your most appropriate response would be to
 - ask her doctor to prescribe it.
 - explain that a reduction diet should be at least 1200 calories.
 - explain that tissue repair requires more nutrients.
 - tell her a 1000 calorie high-protein diet will be okay.
- Fluids given after surgery should
 - be increased to replace losses.
 - be decreased to prevent edema.
 - be kept at maintenance levels to counteract overhydration.
 - be withheld to prevent nausea.
- A minimum of _____ calories per day is needed after surgery to spare protein for tissue repair.
 - 1000
 - 1200
 - 1800
 - 2800
- Both pre- and postoperative patients need proteins of high biological value. These include
 - milk, eggs, cheese, meats.
 - grains, legumes, nuts, vegetables.
 - a and b.
 - none of the above.
- Increased ascorbic acid is essential for wound healing. Which of these foods is highest in ascorbic acid?
 - creamed cottage cheese.
 - egg whites.
 - peanut butter.
 - coleslaw.
- For which of the following would total parenteral nutrition be inappropriate diet therapy?
 - a patient with 50 percent of his body surface burned
 - a patient with a cholecystectomy
 - a patient with advanced stomach cancer
 - a patient admitted for surgery who has not eaten in a week
- The most common nutrient deficiency related to surgery is that of
 - iron.
 - vitamin C.
 - protein.
 - zinc.
- All kinds of stress related to surgery may
 - reduce the function of the GI tract.
 - interfere with the desire to eat.
 - deplete liver glycogen.
 - all of the above.
- Good nutrition prior to surgery can
 - shorten convalescence.
 - increase resistance to infection.
 - increase the mortality rate.
 - a and b.

Matching

Match the vitamins listed on the left to their function in wound healing listed on the right.

- | | |
|----------------------|---|
| _____ 11. vitamin C | a. coenzyme in carbohydrate metabolism |
| _____ 12. folic acid | connective tissue |
| _____ 13. vitamin K | b. cementing material for connective tissue |
| _____ 14. thiamin | c. formation of hemoglobin |
| | d. essential for blood clotting |

True/False

Circle T for True and F for False.

15. T F Usually nothing is given by mouth for at least eight hours prior to surgery to avoid food aspiration during anesthesia.
16. T F Oral liquid feedings usually provide little nourishment regardless of the type.
17. T F Tube feedings can only be made successfully from commercial preparations.
18. T F As much as one pound of muscle tissue per day may be lost following surgery.
19. T F Vitamin D is essential to wound healing, since it provides a cementing substance to build strong connective tissue.
20. T F Most patients are at optimum nutritional status before they go to surgery.
21. T F Obese patients are high surgical risks but underweight patients are no greater risks than those of normal weight.
22. T F An inadequate protein intake will delay the healing of a fractured bone.
23. T F Inadequate diet may depress pulmonary and cardiac functions in a patient who has no history of respiratory or cardiac disease.
24. T F Malnourished patients who receive post-surgical total parenteral nutrition support have fewer noninfectious complications than controls.
25. T F Subjective global assessment (SGA) is not useful in determining the effects of malnutrition on organ function and body composition.

Situation

Mrs. H., a 40-year-old woman, was involved in an auto accident. She suffered multiple broken bones and underwent emergency surgery for a ruptured spleen. The following questions pertain to this situation.

26. The surgical team is considering placing her on total parenteral nutrition (TPN). What is the rationale for their decision?

27. Mrs. H. finds breathing difficult because of several broken ribs. She is also 20 pounds overweight. Should she be placed on a reduction diet to ease this situation? Explain your answer.

28. List four important nutrients necessary for Mrs. H.'s speedy recovery and two foods that are good sources for each nutrient.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
29. List three nutritional nursing measures appropriate to this situation.
 - a. _____
 - b. _____
 - c. _____

Diet Therapy for Cardiovascular Disorders

Multiple Choice

Circle the letter of the correct answer.

- A low-cholesterol diet would restrict all of the following foods except
 - shellfish, cream cheese.
 - liver.
 - eggs, yolks.
 - lobster.
- Which of these seasonings may be used on a 1 gram sodium-restricted diet?
 - lemon juice, herbs, spices
 - soy sauce, m.s.g. (Accent)
 - butter or margarine
 - garlic or celery salt
- Which of these labeling terms approved by the FDA is correct?
 - Low calorie: contains 25% less calories than regular product
 - Low in saturated fat: contains less than 5 g saturated fat per serving
 - Cholesterol free: contains less than 20 mg cholesterol per serving
 - Sodium free: contains less than 5 mg per serving
 - All of these terms are correct
- The amount of fiber per day recommended in the TLC diet is:
 - 10–15 g
 - 15–20 g
 - 20–30 g
 - 30–40 g
- Which of the following meals would be most appropriate for a person on a fat-controlled diet?
 - macaroni and cheese, avocado/grapefruit salad, Jell-O, tea
 - roast beef, baked potato with sour cream, coconut cookie, skim milk
 - broiled chicken breast with wild rice, tossed salad with French dressing, baked apple with walnuts and raisins, tea
 - tuna salad on lettuce, crackers, sliced cheese, lemon pudding, skim milk
- Poor eating habits that can increase risk of heart disease include all except
 - consumption of large amounts of alcohol.
 - consumption of large amounts of beef, pork, butter, ice cream.
 - excess total daily calories.
 - daily consumption of peanut butter, chicken, fish.
- Which of these would be the diet therapy of choice for a patient following a myocardial infarction?
 - clear-liquid first 24 hours
 - regular low-residue first 24 hours
 - limited in sodium, caffeine-restricted, soft
 - caffeine and sodium restricted, clear-liquid
- Following a cerebrovascular accident, the diet therapy
 - will be an I.V. line for the first 24 hours.
 - may be a tube feeding or oral liquids.
 - may be semi-solid.
 - may be any of these, or any combination.
- The most suitable of the following food groups for a patient on TLC diet is:
 - Lean pork, roast beef, lamb, and coconut
 - Turkey, pasta, spinach, and graham crackers
 - Duck, cheddar cheese, shrimp, and avocado
 - Spareribs, bologna, ice milk, and olives
- Total fat allowed in a LDL-lowering diet is:
 - 10%–15% of total calories
 - 20%–25% of total calories
 - 25%–35% of total calories
 - 30%–40% of total calories

Matching

Match the factors involved in heart disease listed on the left with the recommended measures to prevent or lessen the effects listed on the right.

- | | |
|--------------------------------|--|
| ___ 11. hypertension | a. regular program of exercise |
| ___ 12. elevated cholesterol | b. limiting sodium intake |
| ___ 13. elevated triglycerides | c. limiting sugar intake |
| ___ 14. obesity | d. limiting saturated fats in diet |
| ___ 15. sedentary lifestyle | e. limiting total energy value of diet |

True/False

Circle T for True and F for False.

16. T F About two-thirds of the total fat in the United States diet is of animal origin and therefore mainly saturated.
17. T F Coconut oil is a polyunsaturated vegetable oil, used in low-saturated-fat diets.
18. T F Optimum LDL cholesterol levels are < 100 mg/dL of blood.
19. T F Desirable total cholesterol is classified as 200–240 mg/dL of blood.
20. T F Tea, coffee, and alcohol are not used in the diet of cardiac patients.
21. T F Spices such as cinnamon, nutmeg, and garlic are high in sodium content.
22. T F HDL cholesterol levels of less than 60 mg/dL blood are considered low.
23. T F Low-potassium serum levels are not a problem for persons who are taking antihypertensive medicine.
24. T F An objective of diet therapy for a patient who has had a myocardial infarction is to reduce the workload of the heart.
25. T F Persons who must limit their intake of foods containing cholesterol should be able to eat lunchmeat and lean hamburgers.

Situation

26. Mr. J., age 45, is in the hospital recovering from a myocardial infarction. He is on a 1500 calorie diet, low in saturated fats and high in polyunsaturated fats. The chief purpose of the diet ordered for Mr. J. is to reduce weight and
 - a. prevent development of edema.
 - b. lower the blood cholesterol level.
 - c. decrease blood clotting time.
 - d. provide for ease of digestion.
27. Which of these food choices, as ordinarily prepared, would be most suitable for Mr. J.?
 - a. roast turkey, baked trout, breaded veal cutlet
 - b. lean roast beef, breaded veal cutlet, cheese soufflé
 - c. baked trout, lean roast beef, roast turkey
 - d. roast turkey, baked trout, broiled calves' liver
28. Which of these foods would be most suitable for Mr. J.'s meal?
 - a. baked potato, tossed salad with French dressing, grapefruit
 - b. cauliflower with cheese sauce, sliced tomato, orange sherbet
 - c. hash brown potatoes, tomato salad, Jell-O with whipped cream
 - d. broccoli, Waldorf salad, custard
29. In counseling Mr. J. regarding diet management, the nurse would
 - a. discuss food preparation methods.
 - b. need more information regarding the patient's usual habits.
 - c. explain the importance of weight control.
 - d. all of the above.
30. The diet for Mr. J. should be
 - a. restricted only in carbohydrates.
 - b. a basic pattern within the limitations imposed by the diet orders.
 - c. a list of foods to be eaten at the same time each day.
 - d. a weighed diet.

Diet and Disorders of Ingestion, Digestion, and Absorption

Multiple Choice

Circle the letter of the correct answer.

- Which of these factors is most important to the healthy functioning of the gastrointestinal tract?
 - specific food combinations
 - physiological and psychological conditions
 - a regular exercise program
 - few environmental pollutants
- Which of the following statements is true regarding the treatment of infants with cleft palate?
 - The nutritional requirements are higher than those of unaffected infants.
 - Surgery is performed after the age of one year.
 - Lack of essential nutrients is the most likely cause of cleft palate.
 - All of the above.
- Mr. H. received a fractured mandible in an auto accident and is in the hospital. He will go home before the wires are removed. Which of the following instructions for eating will you give him?
 - His diet, though liquid, must be high in all nutrients.
 - He must learn to pass the tube down.
 - He will need water and mouthwash before and after each feeding.
 - a and c
- Which of the following is a major cause of the high incidence of dental caries?
 - lack of essential nutrients in the diet
 - Vincent's disease
 - high use of concentrated sweets
 - pregnancy
- The disadvantages of wearing dentures include
 - the need for frequent realignment.
 - lowered self-esteem.
 - the fact that everyone knows you wear them.
 - halitosis.
- Which of the following are appropriate dietary measures for a person with a hiatal hernia?
 - a low-fiber, bland diet in six feedings
 - antacids and fluids between meals
 - no spices, no alcohol, limited fat intake
 - all of the above
- The diet containing a minimum amount of residue will be deficient in which of these nutrients?
 - calcium, iron, and vitamins
 - carbohydrates, proteins, and fats
 - water, sodium, and potassium
 - cellulose, glycogen, and glucose
- The low-residue diet would be the diet of choice for all but which of the following disorders?
 - diverticulosis
 - diarrhea
 - cancer of the colon
 - ulcerative colitis
- Foods allowed on the very low-(minimal) residue diet include
 - cheddar cheese, fruits, milk, creamed soup.
 - green beans, carrots, butter, broiled steak.
 - roast turkey, mashed potatoes, butter, tomato juice.
 - bouillon, whole wheat toast, jelly, orange sherbet.
- A patient had a gastrectomy and developed a "dumping syndrome." His diet must be modified. Which of these modifications would be appropriate?
 - Lower the fat content of the diet.
 - Avoid sugars, restrict starches.
 - Decrease protein content of diet.
 - All of the above.
- Diverticulitis is best treated with a _____ diet.
 - bland
 - low-residue
 - high-fiber
 - clear-liquid
- The dietary changes that help to reduce the incidence of constipation include
 - using laxatives and stool softeners.
 - increasing fiber and fluid intake.
 - increasing protein and fat intake.
 - all of the above.
- The most serious consequence of functional diarrhea is
 - weight loss.
 - hemorrhoids.
 - dehydration.
 - pain and fever.

14. Research supports the high-fiber diet as a deterrent to colon cancer. Briefly describe the rationale for this conclusion:

15. Mrs. Martin was on a very-low-residue diet while she was hospitalized with diverticulitis. Now that she has recovered and is going home, the doctor has told her to eat high-fiber foods. Explain the reason for this drastic change to Mrs. M.

Short answers

16. Name three serious obesity-related health problems for which GI bypass surgery would be an option.

a. _____

b. _____

c. _____

17. Successful results of bypass surgery depend on what two major changes a patient must make?

a. _____

b. _____

18. a. A common risk of restrictive operations is vomiting. What causes vomiting to occur?

- b. Why do bypass surgeries cause the dumping syndrome to occur?

19. Briefly explain why malabsorptive operations carry a high risk for nutritional deficiencies.

20. Name the nutritional supplements that a person will be required to take for life following a malabsorptive bypass procedure.

True/False

Circle T for True and F for False

21. T F The state of the body system determines how food is digested and absorbed.
22. T F Cleft lip or palate is a congenital birth defect.
23. T F The G.I. tract consists of stomach, small and large intestine, and colon.
24. T F All of the teeth a person will ever have are formed before birth.
25. T F Poorly fitting dentures can lead to malnutrition.
26. T F For gastrointestinal surgery, the implication of proper enteral and parenteral nutrition revolves around the close working relationship among the doctor, the nurse, and the dietitian.
27. T F Gastrointestinal surgery for obesity does not alter the digestive process.
28. T F Restrictive surgical operation is not as successful in long-term weight loss as malabsorptive operations.

Situation

Carmen is a twenty-year-old female college student, hospitalized with ulcerative colitis. She has many food intolerances; she does not like raw fruits or vegetables, and does not drink milk. She is fond of soda pop and tacos. She will be going home soon and back to school, but is very anxious and apprehensive because she feels she will not be able to maintain her diet. The doctor has ordered a 150 gram protein, 3000 calorie diet for her. The following questions pertain to this situation.

29. Carmen has been in negative nitrogen balance. This means that she
- was dehydrated.
 - was losing more tissue protein than she was replacing.
 - was gaining tissue protein, so, therefore, excreted nitrogen.
 - had an electrolyte imbalance.
30. Which of the following nutritional problems would the nurse not encounter in Carmen?
- skin lesions and inflammation
 - anorexia and weight loss
 - avitaminosis and anemia
 - esophageal varices and pulmonary edema
31. If Carmen wanted tacos as part of her meals, the nurse would
- tell her firmly “no.”
 - tell her she will try to get them for her.
 - explain the situation to dietary aides.
 - compromise: if Carmen agrees to eat them with less seasoning, the nurse will ask the dietitian to include them occasionally.
32. In counseling Carmen so that she will comply with the diet, the nurse explains the rationale. List three of these reasons.
- _____
 - _____
 - _____
33. The nurse asks Carmen to keep very careful daily records. List three important records she would need in order to evaluate her progress.
- _____
 - _____
 - _____

Diet Therapy for Diabetes Mellitus

Multiple Choice

Circle the letter of the correct answer.

Mr. G., a 40-year-old man, is a newly diagnosed diabetic. He weighs 160 lb, and is 5' 10'' tall. The diet prescribed contains 250 g carbohydrate, 100 g protein, and 70 g fat.

Answer the following questions relating to this patient.

- Mr. G's daily caloric intake is
 - 1230 calories.
 - 1530 calories.
 - 1830 calories.
 - 2030 calories.
- This caloric allowance should
 - prevent hypoglycemia.
 - decrease body weight.
 - maintain body weight.
 - promote normal potassium balance.
- Emphasis is placed on using polyunsaturated fats and limiting foods high in cholesterol in the diet of the diabetic. This will
 - aid in preventing cardiovascular diseases.
 - aid in the digestive process.
 - prevent skin breakdown.
 - control blood sugar.
- In counseling Mr. G. regarding diet management, the nurse should
 - explain the importance of weight control.
 - interpret food exchanges to him.
 - discuss food preparation methods.
 - all of the above.
- Mr. G. should know that factors which can trigger hyperglycemia in a diabetic include
 - decreased exercise.
 - increased food intake.
 - decreased insulin.
 - all of the above.
- The daily intake of foods for the diabetic is spaced at regular intervals throughout the day. This should
 - prevent hunger pangs.
 - avoid symptoms of hypoglycemia or hyperglycemia.
 - modify eating habits.
 - prevent obesity.
- Although diabetics are taught to limit foods containing sugar, exception can be made to that rule when
 - vigorous exercise is undertaken.
 - there is fever.
 - gangrene has developed.
 - there are no exceptions.
- The caloric value of a diabetic diet should be
 - increased above normal requirements to meet the increased metabolic demand.
 - decreased below normal requirements to prevent glucose formation.
 - the same as normal energy requirements to maintain ideal weight.
 - contributed mainly by fat to spare carbohydrate.
- The diabetic diet is designed for long-term use and contains a balance of
 - energy.
 - nutrients.
 - distribution.
 - all of the above.
- Sources of blood glucose include
 - carbohydrates, proteins, and fats.
 - amino acids, cellulose, and polysaccharides.
 - water and vitamin and mineral compounds.
 - by-products of metabolism.

Matching

Match the terms listed on the left to the descriptions listed on the right.

- | | |
|-------------------------|-----------------------------|
| ___ 11. insulin | a. a complete protein |
| ___ 12. hypoglycemia | containing large |
| ___ 13. glucagon | amounts of essential |
| ___ 14. hyperglycemia | amino acids |
| ___ 15. glycogen | b. glucose in blood exceeds |
| ___ 16. ketosis | the normal range |
| ___ 17. high biological | c. glucose in blood below |
| | the normal range |
| | d. a hormone that raises |
| | blood sugar levels |
| | e. a hormone that lowers |
| | blood sugar levels |
| | f. one result of poor uti- |
| | lization of carbohydrate |
| | value range |
| | g. emergency supply of |
| | (stored) glucose |

True/False

Circle T for True and F for False.

18. T F Group teaching of diabetics is more useful than one-on-one teaching.
19. T F The exchange lists may be successfully used whenever nutrients in a diet need to be calculated.
20. T F The milk exchange list contains cheddar and cottage cheese.
21. T F Diabetic and dietetic foods are the same thing.
22. T F Large doses of vitamin C give a false urinary glucose test.
23. T F Insulin is produced by the beta cells in the islets of Langerhans in the pancreas.
24. T F People with Type 1 diabetes do not produce insulin.

Situation

Jane is a newly diagnosed ten-year-old diabetic. She weighs 70 lb and is placed on a 150 g carbohydrate, 80 g protein, 50 g fat diet with afternoon and bedtime feedings. Answer the following questions by circling the letter of the correct answer.

25. The diet prescribed for Jane furnishes
 - a. 1370 calories and 1.5 g protein per kg body weight.
 - b. 1370 calories and 2.5 g protein per kg body weight.
 - c. 1110 calories and 1.5 g protein per kg body weight.
 - d. 1110 calories and 2.5 g protein per kg body weight.
26. The night feeding, consisting of milk, crackers, and butter will provide
 - a. high-carbohydrate nourishment for immediate utilization.
 - b. nourishment with latent effect to counteract late insulin activity.
 - c. encouragement for Jane to stay on her diet.
 - d. added calories to help her gain weight.
27. In planning menus for this child, one should
 - a. limit calories to encourage weight loss.
 - b. allow for normal growth needs.
 - c. avoid using potatoes, bread, and cereal.
 - d. discourage substitutions in the menu pattern.
28. The diet should be
 - a. restricted only in carbohydrates.
 - b. a detailed pattern of special food and insulin.
 - c. a list of foods to be eaten at some time each day.
 - d. a basic pattern that can be varied by substituting foods of equal nutrient content.
29. Jane's mother should know that
 - a. all of her food must be weighed.
 - b. she needs a snack before she exercises.
 - c. she should always carry hard candy with her.
 - d. she can liberalize the diet in a few years.

Part I: Diet Therapy for Disorders of the Liver

Multiple Choice

Circle the letter of the correct answer.

- The liver stores
 - glycogen and vitamins.
 - ACTH and cholecystokinin.
 - bile and cholesterol.
 - calcium and chlorides.
- The symptoms of hepatitis that interfere with food intake include
 - anorexia.
 - confusion.
 - constipation.
 - internal bleeding.
- Which of the following foods may be restricted in the diet of the hepatitis patient?
 - milk
 - butter
 - noodles
 - chocolate
- The symptom of cirrhosis that may interfere with nutrient intake is
 - anorexia.
 - distention.
 - pain.
 - all of the above.
- Which of the following meals would best fit the needs of a cirrhotic patient with esophageal varices who is on a 350 g carbohydrate, 80 g protein, 100 g fat diet?
 - chicken soup, beef patty, mashed potato, stewed tomatoes, cantaloupe
 - cranberry juice, meat loaf, hash brown potato, orange slices
 - tuna noodle casserole, lima beans, apple juice, pineapple slice
 - peach nectar, scrambled eggs, cooked spinach, applesauce
- The purpose of the low-protein diet (15–20 g) is to help prevent the development of hepatic coma by
 - decreasing ammonia production.
 - increasing sodium excretion.
 - decreasing serum potassium.
 - increasing the utilization of carbohydrates.
- Which of the following meals would be appropriate for a person on a 15 g protein diet?
 - baked potato, green beans, fruit salad, coffee with cream
 - sliced cheese, crackers, tossed salad, Jell-O with whipped cream
 - meat patty, mashed potato, steamed carrots, peach half
 - tomato stuffed with tuna fish, crackers with butter, ice cream, tea
- Hepatic coma results from increased blood levels of
 - glucose.
 - fatty acids.
 - ammonia.
 - sodium.
- Diet treatment for hepatic coma includes
 - high protein tube feedings.
 - increased fluids.
 - N.P.O. to rest the liver.
 - controlled I.V. fluids.

Matching

Diet therapy for hepatitis is a major part of the treatment. Match the diet modifications on the left with the rationale for their use on the right.

- | | |
|--------------------------------|--|
| ___ 10. high-protein diet | a. improves total intake |
| ___ 11. high-carbohydrate diet | b. regenerates liver cells |
| ___ 12. high-calorie diet | c. meets increased energy demands |
| ___ 13. high-fluid diet | d. restores glycogen reserves |
| ___ 14. moderate-fat diet | e. compensates for losses from fever, diarrhea |

Match the actions listed on the left that apply to the nutrition and elimination needs of the patient with cirrhosis with the rationale for the action listed on the right.

- | | |
|---|--|
| _____ 15. support, encouragement, small feedings, nutrition education | a. to record the patient's condition and measures taken to restore homeostasis |
| _____ 16. careful monitoring of patient's mental/physical status | b. to combat anorexia, low self-esteem |
| _____ 17. individualizing the diet | c. to watch for signs of impending coma |
| _____ 18. careful measurement of all foods/fluids ingested and excreted | d. to achieve adequate nutrition and changes in diet as condition indicates |
| _____ 19. accurate charting | e. to prevent excess accumulation of fluids in the tissues |

True/False

Circle T for True and F for False.

20. T F The diet modifications for early cirrhosis are the same ones used for hepatitis.
21. T F The diet modifications for late stages of cirrhosis are the same as for hepatitis.
22. T F Optimum nutrition can help damaged liver cells regenerate.
23. T F Ascites is accumulation of fluid in the chest cavity.
24. T F The diet for a client with liver cancer is high in carbohydrates, protein, fluid, vitamins, and calories.
25. T F Diet therapy for a patient with liver disease is individualized.

Situation

Mr. L. was admitted to the hospital complaining of abdominal pain, fatigue, and anorexia. His skin showed a yellow tinge as did the sclera of his eyes. Laboratory tests and assessments revealed evidence of liver dysfunction, fluid retention, and portal hypertension. Macrocytic anemia, thiamin and zinc deficiency were also identified. The following questions pertain to this situation.

26. From the presenting symptoms, identify the probable diagnosis.
 - a. hepatitis
 - b. jaundice
 - c. cirrhosis
 - d. cancer
27. Which of the following diet modifications would be appropriate for Mr. L.?
 - a. 250 mg sodium
 - b. 60 g protein
 - c. fluid restriction to 1000 ml
 - d. all of the above
28. What daily measurements are appropriate for Mr. L.'s condition?
 - a. intake and output
 - b. weight and abdominal girth
 - c. skinfold thickness
 - d. all of the above
29. Four days after admission, Mr. L.'s condition seemed to worsen. He appeared confused, forgetful, and lethargic. His blood levels of ammonia were elevated and his skin color had deepened.

Given these symptoms, the most probable cause of his worsening condition is

 - a. allergic reaction.
 - b. impending hepatic coma.
 - c. esophageal varices.
 - d. advanced cirrhosis.
30. All except which of the following foods should be omitted from Mr. L.'s diet while he is in this stage of his illness?
 - a. milk and meat
 - b. vegetables and fruits
 - c. butter and honey
 - d. grains and legumes

Part II: Diet and Disorders of the Gallbladder and Pancreas

Multiple Choice

Circle the letter of the correct answer.

1. The gallbladder stores
 - a. fats.
 - b. bile.
 - c. cholecystokinin.
 - d. cholesterol.
2. Bile functions in the digestion of food in which of the following ways?
 - a. breaks fat into fatty acids and glycerol
 - b. forms lipoproteins for transport to blood-stream
 - c. breaks fats into very small particles for enzyme action
 - d. prevents cholesterol from entering the blood-stream
3. The function of the hormone cholecystokinin is
 - a. to convert fats to cholesterol.
 - b. to stimulate the gallbladder to contract.
 - c. to provide the necessary enzyme for fat digestion.
 - d. to prevent cholesterol from crystallizing.
4. Symptoms of cholecystitis that interfere with nutrient intake include all except
 - a. distention.
 - b. pain.
 - c. internal bleeding.
 - d. nausea and vomiting.
5. Gallstones are primarily composed of
 - a. calcium.
 - b. chloride.
 - c. cholesterol.
 - d. cholecystokinin.
6. The initial diet for acute pancreatitis is
 - a. I.V. therapy.
 - b. low-protein, high-carbohydrate, soft.
 - c. low-fat.
 - d. full-liquid.
7. The usual diet therapy for chronic pancreatitis is
 - a. bland in six feedings.
 - b. low-residue every hour.
 - c. liquids via tube.
 - d. I.V. therapy.

Matching

Match the nursing measures appropriate to diet therapy for gallbladder disease listed on the left with the rationale for the action listed on the right.

- | | |
|--|--|
| _____ 8. Evaluate diet for vitamins A, D, E, and K. | a. Substitute alternate sources of nutrients. |
| _____ 9. Provide recipes for broiling and baking foods. | b. Fat-soluble vitamins are often inadequate. |
| _____ 10. Ask dietary personnel to remove raw apple and baked beans. | c. Discourage use of fried foods. |
| _____ 11. Ask for canned peaches and cottage cheese as a replacement for foods omitted in #10. | d. Individual intolerance to foods requires omitting them. |

True/False

Circle T for True and F for False.

12. T F Pancreatitis is a complication of cirrhosis but would not occur as a result of cholelithiasis.
13. T F Cholesterol is normally found in solution in bile.
14. T F Heredity is an important factor in gallbladder disease.
15. T F Excess polyunsaturated fats increase the risk of cholelithiasis.
16. T F Obesity is not significant in contributing to gallbladder disease.
17. T F As BMI increases, the risk for developing gallstones does not rise.
18. T F Obese people may produce high levels of cholesterol that can lead to production of bile containing more cholesterol than it can dissolve. This can lead to formation of gallstone.
19. T F Men and women who carry fat around their midsections may be at a greater risk for developing gallstones than those who carry fat around their hips and thighs.
20. T F Gallstones are common among people who undergo gastrointestinal surgery.
21. T F Weight loss should be maintained at 1 to 2 lb per week in order to avoid formation of gallstones.

Situation

Mrs. O., age 58, 5'1'' tall, 165 lb, is admitted to the hospital with a diagnosis of acute cholecystitis. Further tests confirm the presence of cholelithiasis. The doctor tells her that surgery will be necessary, but that she will be dismissed with a modified-diet plan and return for surgery at a later date. The following questions pertain to this situation.

22. From the information given, which of the following diet prescriptions would be appropriate for Mrs. O.?
- 500 calorie high-protein (100 g) soft diet
 - 1000 calorie moderate-fat (100 g) diet
 - 1200 calorie, 60 g protein, 50 g fat, regular diet
 - low-cholesterol, regular diet

Mrs. O.'s diet history reveals the following information:

Breakfast: 2 fried eggs, sausage or bacon, 2 pieces buttered toast, 1 glass milk, coffee with cream and sugar

Mid-morning snack: 1 cup dry cereal with sugar and half-and-half cream

Lunch: sandwich (2 slices lunch meat, 1 tbsp mayonnaise, lettuce, 2 slices bread), 1 glass milk, 1 cup canned fruit in sugar syrup

Dinner: fried pork chop or hamburger steak with gravy, 1 c mashed potatoes with butter, avocado salad, pie, cake or ice cream for dessert, coffee with cream and sugar

Bedtime snack: leftover dessert or cheese and crackers or handful of peanuts, glass of cola beverage

23. This diet pattern
- contains adequate amounts of all the basic food groups.
 - is short in the bread-cereal group.
 - is short in the meat group.
 - is short in the milk group.
 - is short in the fruit-vegetable group.
24. In order to modify her diet to prepare for surgery,

which of the following adjustments will she need to make?

- change methods of preparation
- decrease total quantity
- omit all snacks
- change type of foods consumed
- a, b, and d

Alter the following items from Mrs. O.'s diet history to make them suitable for her present modified diet requirements (substitutes may be made if necessary):

25. fried eggs: _____
26. fruit in sugar syrup: _____
27. lunch meat: _____
28. pie or cake: _____
29. cheese: _____
30. avocado salad: _____
31. ice cream: _____
32. lettuce: _____

Mrs. O. returns to the hospital after a few months for a cholecystectomy and an uneventful recovery.

33. The diet she was on prior to surgery will be
- suitable for her convalescence.
 - changed to meet her recovery needs.
 - permanent to maintain her weight.
 - discontinued and TPN used.
34. While in surgery, Mrs. O. was given an injection of vitamin K. The purpose of this was to
- counteract bleeding tendencies present following a cholecystectomy.
 - prevent rapid blood clotting.
 - prevent anemia.
 - follow routine postoperative orders.
35. A diet very low in fat may also be low in
- thiamin.
 - vitamin C.
 - vitamin A.
 - calcium.

POSTTEST FOR CHAPTER 20

Diet Therapy for Renal Disorders

Multiple Choice

Circle the letter of the correct answer.

1. Angiotensin II, which is secreted by the kidneys, is a(an)
 - a. proteolytic enzyme.
 - b. vasoconstrictor.
 - c. precursor to erythropoietin.
 - d. indicator of kidney disease.
2. Lack of erythropoietin results in
 - a. anemia.
 - b. albuminuria.
 - c. hematuria.
 - d. hypertension.
3. Lack of active vitamin D hormone will
 - a. result in high blood pressure.
 - b. cause an imbalance of calcium and phosphorus.
 - c. cause metabolic acidosis.
 - d. result in oliguria.
4. Acute glomerulonephritis is the result of
 - a. hereditary defects.
 - b. hypertensive crisis.
 - c. acute malnutrition.
 - d. streptococci infection.
5. Dietary management of renal disease requires correction of imbalances in which of these?
 - a. fluids and electrolytes
 - b. acidosis or alkalosis
 - c. blood pressure and weight
 - d. all of the above
6. Blood protein loss is ____ in hemodialysis than in peritoneal dialysis.
 - a. greater
 - b. lesser
 - c. the same
 - d. not lost in either
7. A major disruption in renal functioning affects the metabolism of which of these nutrients?
 - a. carbohydrates, fats, and vitamins
 - b. protein, minerals, and water
 - c. blood, acids, and alkalines
 - d. cellulose, chlorides, and calcium
8. Hemodialysis treatments for a person in renal failure will
 - a. increase the protein requirement.
 - b. decrease the protein requirement.
 - c. maintain the protein synthesis.
 - d. not affect the protein requirement.
9. The principles of dietary treatment for urinary calculi center around which of the following?
 - a. diet therapy based on stone chemistry
 - b. an attempt to change urinary pH
 - c. a large fluid intake
 - d. all of the above
10. The most common type of kidney stone is that composed of
 - a. calcium.
 - b. uric acid.
 - c. cystine.
 - d. magnesium.
11. The type of diet recommended for a calcium stone would be
 - a. alkaline ash.
 - b. acid ash.
 - c. protein restricted.
 - d. protein increased.
12. Which of the following foods would you expect to be prohibited on an acid-ash diet?
 - a. bread, macaroni, eggs, cranberries
 - b. oranges, bananas, lima beans, olives
 - c. meat, cheese, eggs, plums
 - d. spaghetti, prunes, eggs, meat
13. Which of the following foods would you expect to find on an alkaline-ash diet?
 - a. meat, cheese, eggs, corn
 - b. milk, coconut, chestnuts, oranges
 - c. prunes, cranberries, plums, honey
 - d. peanuts, walnuts, bacon, rice

True/False

Circle T for True and F for False

14. T F Each kidney contains over a million nephrons.
15. T F Vitamin D activity is maintained by the kidneys.
16. T F Hyperphosphaturia lowers serum calcium.
17. T F Dietary management of CRF is more moderate than the diet for acute glomerulonephritis.

18. T F Deterioration of the nephrons can cause anemia.
19. T F Diet therapy for renal disease is a standard prescription of 500 mg sodium 25 gm protein.
20. T F 500 ml of water to cover insensible loss is added to the amount of urine excreted.
21. T F Medical nutrition therapy is critical to the effective treatment of patients with renal disease, and trained dietitians are best suited to provide such nutritional intervention.
22. T F Marked improvements in the administration of dialysis have been observed by the protein and calorie therapy.

Matching

Match the terms on the left with their definitions listed on the right.

- | | |
|-----------------------|--------------------------------|
| _____ 23. diaphoresis | a. a foreign invader of the |
| _____ 24. glomerulus | body |
| _____ 25. nephron | b. cluster of capillaries in a |
| _____ 26. antigen | capsule |
| _____ 27. antibody | c. destroyer of foreign |
| | invaders |
| | d. profuse perspiration |
| | e. basic unit of the kidneys |

Situation

Mrs. J. has a diagnosis of uremia. After an individualized assessment of her status, she is placed on a 2000-calorie, 1000-mg sodium, 2500-mg potassium, 60-g protein diet. Her fluid intake is restricted to 500 ml plus the amount excreted the prior 24 hours.

28. This diet regime will fulfill which of the following treatment objectives?
 - a. correct electrolyte imbalance
 - b. minimize protein catabolism
 - c. avoid dehydration/overhydration
 - d. all of the above

29. If Mrs. J. is still hungry after eating all of her meal, which of the following snacks would you suggest to comply with her restrictions?
 - a. banana and sugar wafers
 - b. arrowroot cookies with whipped topping
 - c. cottage cheese and fruit cocktail
 - d. puffed wheat with milk and sugar
30. Mrs. J.'s usual eating pattern includes many protein foods with low biological value, which must be avoided. Which of the following foods would you restrict?
 - a. cereal grains and vegetables
 - b. milk and eggs
 - c. cream, honey, and most fruits
 - d. meat, fish, and poultry
31. Mrs. J.'s output for the previous 24 hours is 500 ml, so she receives 1000 ml of fluids the next 24 hours. This fluid intake
 - a. should come from water and be consumed all at once.
 - b. should come from foods, water, and other fluids and be divided equally throughout the day.
 - c. should be given by I.V. drip.
 - d. should be a saline/dextrose solution.
32. Mrs. J. develops a fever and diarrhea. Her fluid intake should
 - a. remain the same.
 - b. be further restricted to curtail the diarrhea.
 - c. be increased to compensate for the fluid loss.
 - d. be administered via tube feeding.

Nutrition and Diet Therapy for Cancer Patients and Patients with HIV Infection

Multiple Choice

Circle the letter of the correct answer.

1. The most common detection and diagnostic tools for cancer are:
 - a. CT (or CAT) scans, MRI
 - b. ultrasonography
 - c. endoscopy
 - d. biopsy
 - e. any combination of the above
2. Nutritional and metabolic changes characteristic of both cancer and AIDS individuals are directly related to:
 - a. the body's response to the disease
 - b. treatment methods
 - c. surgical procedures
 - d. psychological and emotional responses
 - e. any combination of the above
3. Factors that influence food intake include:
 - a. Income
 - b. Psychosocial factors
 - c. Dependency issues
 - d. Psychological factors
 - e. Ethnic and cultural considerations
 - f. All of the above
4. Fat intake in HIV infection and AIDS should be limited to:
 - a. 0%
 - b. 10%
 - c. 20%
 - d. 30%
5. A severely malnourished patient may require a daily intake of:
 - a. 1500 to 2500 kcalories
 - b. 2000 to 3000 kcalories
 - c. 2500 to 3500 kcalories
 - d. 3000 to 4000 kcalories

Fill-in

6. Name six characteristics of cachexia:
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
 - f. _____
7. Name three metabolic changes characteristic of cancer patients:
 - a. _____
 - b. _____
 - c. _____
8. Current cancer therapy takes four major forms:
 - a. _____
 - b. _____
 - c. _____
 - d. _____
9. The most apparent side effects in chemotherapy are changes in
 - a. _____
 - b. _____
 - c. _____
10. The basis for planning care with patients on chemotherapy includes:
 - a. _____
 - b. _____
 - c. _____
11. Common mouth problems with patients on chemotherapy are:
 - a. _____
 - b. _____
 - c. _____
 - d. _____

12. Name four problems associated with vitamin and mineral megadoses:
- _____
 - _____
 - _____
 - _____

True/False

13. T F Beta cells are common lymphocytes that produce immunoglobulins. They originate in the bone marrow cells and involve many cells in the body in the immune response.
14. T F Cancer occurs when cells become abnormal and keep dividing without control or order.
15. T F Anorexia, the most common symptom, is related to altered metabolism, type of treatment, or emotional distress.
16. T F Head and neck surgery or resections have no major effect on intake, and thus the diet does not require any modification.
17. T F Bone marrow effects due to radiation therapy include interference with production of both white and red blood cells, producing anemia, infection, and bleeding.
18. T F Carbohydrate should supply most of the energy intake of cancer patients with fat restricted to about 20 percent of total calories.
19. T F Vitamins A and C are components of tissue structure.
20. T F Vitamin D is not related to metabolism of blood serum.
21. T F Vitamins that are popular in megavitamin and mineral therapies are A, C, B₁₂, and thiamin, and the minerals iron, zinc, and selenium.
22. T F Both vitamin and mineral megadoses do not hamper immune function and are safe at high levels.
23. T F Nutrition therapy in cancer patients must be proactive but not aggressive.
24. T F Providing the patients with information regarding symptoms they are experiencing usually will discourage the patient from accepting nutrition therapy.
25. T F Enteral and/or parenteral methods of feeding patients is preferred during cancer treatment.
26. T F HIV infection has a dormant phase in the body.
27. T F Food and nutrient interactions with antiretroviral medications are common, making it difficult for a patient to adhere to the medical regime. Therefore, proactive nutrition therapy is not necessary.
28. T F The stress response of the body to the immune system's efforts to protect the body is a discrete process.
29. T F At the terminal stage of HIV infection, or AIDS, the patient is marked by declining T lymphocyte production from the normal level of $\approx 1000/\text{mm}^3$.
30. T F Death in the end stages of HIV syndrome is correlated with the degree of loss of lean body mass.
31. T F Small frequent feedings of high quality protein are better tolerated than full meals.
32. T F Planning a diet for the person with HIV infection does not have to be individualized.
33. T F Excess vitamin C often causes rebound scurvy when discontinued.
34. T F Laetrile has never been proven to be beneficial in the treatment of chronic disease.
35. T F Blue-green algae improves digestion, mental functioning, and strengthens the immune system.
36. T F Nutritional needs for children infected with HIV or with AIDS have the same RDA as their age group.
37. T F Infants with HIV or AIDS should be fed with kcal-dense formulas, supplements of MCT, or glucose polymers.
38. T F Lactaid (a commercial preparation) is added to milk products to improve their digestibility and should be fed to all HIV and AIDS patients.
39. T F The impaired immune systems of HIV and AIDS patients are unable to fight food borne infections.
40. T F Patients with HIV or AIDS should be encouraged to use self-prescribed nutrition therapy as they are complementary and alternative in nature.

Diet Therapy for Burns, Immobilized Patients, Mental Patients, and Eating Disorders

Multiple Choice

Circle the letter of the correct answer.

- Interferences to successful feeding of burn patients include all except which of these?
 - food brought from home
 - difficulty swallowing or chewing
 - psychological trauma
 - anorexia
- Aggressive nutritional therapy aims to keep weight loss at less than _____ percent of preburn body weight.
 - 35
 - 25
 - 15
 - 10
- Fluid and electrolyte replacement are crucial to recovery from burns. Which of these two electrolytes are most likely to be deficient?
 - iron and zinc
 - glucose and calcium
 - sodium and potassium
 - phosphorus and magnesium
- Immediate replacement of fluid and electrolytes is necessary to prevent
 - edema and ascites.
 - hypovolemic shock.
 - hyperphosphatemia.
 - anaphylactic shock.
- Daily caloric need for a patient with a burn injury is calculated at _____ kcal/kg of normal body weight and _____ kcal/kg percent of body surface burned.
 - 25, 40
 - 10, 30
 - 40, 40
 - 25, 50
- Daily protein need for a patient with a burn injury is calculated at _____ g/kg normal body weight and _____ g/kg percent of body surface burned.
 - 2, 4
 - 1, 3
 - 0.8, 1.2
 - 2, 2.5
- The amount of vitamin C given to a burn patient is usually
 - 2–10 times RDA.
 - 10–20 times RDA.
 - 20–30 times RDA.
 - 1000 mg daily.
- A food high in zinc includes
 - seafood.
 - liver.
 - eggs.
 - all of the above.
- The burn patient with edema and/or ascites may also be
 - fatigued.
 - nervous.
 - thirsty.
 - confused.
- What method(s) is/are used to combat renal calculi in an immobilized patient?
 - provide a low-calcium diet
 - increase fluids
 - assist early ambulation
 - all of the above

Fill-in

- Untreated hypercalcemia can lead to:
 - _____
 - _____
 - _____
 - _____

12. Treatment for acute hypercalcemia may include:
- _____
 - _____
 - _____
 - _____
13. Nutritional education programs for mental patients that have been proven successful include:
- _____
 - _____
 - _____

True/False

14. T F The likelihood of mortality from second and third degree burns decreases with age.
15. T F Immobilized patients require less protein intake than normal people.
16. T F With extended immobilization, muscle loss can be reversed with high-protein diet.
17. T F During the beginning of bed-confinement, weight loss may be avoided by a high calorie intake.
18. T F Calorie intake of all immobilized patients are generally the same.
19. T F Patients with spinal cord injury have a higher risk of genitourinary tract infection.
20. T F Intake of fluid for immobilized patients should be controlled carefully relative to their urination volume.
21. T F Immobilized patients develop either diarrhea or constipation problems easily.
22. T F In general, hospitalized mental patients have a satisfactory nutritional status.
23. T F Mental patients may be confused about food and eating.
24. T F Nutritional status of mental patients can be improved by proper care.
25. T F Malfunctioning hypothalamus can reduce the desire for food.
26. T F Anorectic patients eat better when hospitalized because they don't have to make decisions.
27. T F Most anorectics wish they didn't have a starved appearance.
28. T F A liquid diet may be more acceptable to the anorectic as it appears to contain fewer calories than solid foods.

Fill-in

29. Name eight physical symptoms of bulimia nervosa:

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

30. Name five manifestations of the chronic dieting syndrome

- _____
- _____
- _____
- _____
- _____

Principles of Feeding a Sick Child

Multiple Choice

Circle the letter of the correct answer.

- Which of these factors decrease the probability of adequately feeding a sick child?
 - fear, anxiety, anorexia
 - pain, fatigue, lethargy
 - vomiting, nausea, medications
 - all of the above
- Which of the following is not a factor in planning nutritional care for a hospitalized child?
 - individual likes and dislikes
 - personal eating patterns
 - home feeding environment
 - type of disease
- Which of these considerations has little influence on the dietary care of a sick child?
 - nutritional status of the child before hospitalization
 - the onset and duration of symptoms
 - rehabilitation measures needed
 - the presence of others at mealtime
- From which of these factors are feeding problems unlikely to develop?
 - child's past experience with food
 - child's nutritional status when admitted
 - child's unreasonable demands
 - child's fear and anxiety
- Which of these functions would not be appropriate for the pediatric nurse to perform?
 - Suggest changes in diet orders to the physician when deemed necessary.
 - Request supplemental fluids/foods as needed.
 - Ask the parents to refrain from being present at feeding time and upsetting the child.
 - Record incidences of feeding tantrums and/or manipulation.
- If a child must have a modified diet, which of the following guidelines will be likely to increase acceptance?
 - Start the new regime immediately in order to teach the child to comply.
 - Move into the new diet gradually in order to give the child time to adjust.
 - Put the new diet in writing and let the mother start the child on the diet when they get home.
 - Use different kinds of utensils and foods to spark interest in the new diet.
- Which of these responses would be the most appropriate for the hospitalized child who is not eating?
 - "If you don't eat better than this, the doctor will stick a tube down your throat."
 - "You can't have your dessert unless you clean your plate."
 - "Would you help me select your food for the next meal?"
 - "Do you want to upset your mother by refusing to eat?"
- A child's food intake may be improved by using all of the following measures except
 - allowing self-selection.
 - serving familiar foods.
 - providing a cheerful environment.
 - requiring a child to "clean the plate."
- Instructions given to children on modified diets should be
 - given to both parent and child.
 - given slowly, repeated, and responses noted.
 - based on the child's readiness to learn.
 - all of the above.
- The hospitalized child who is allowed freedom in choosing the foods he or she eats
 - may become malnourished.
 - may eat more food.
 - may get diarrhea.
 - may become unmanageable.
- Sick children fail to receive adequate intake for which of the following reasons?
 - Their gastrointestinal tract malfunctions.
 - They have high metabolic demands.
 - They have neurological and psychological disturbances.
 - All of the above.
- Diarrhea in very young children
 - is often caused by overfeeding.
 - causes fluid and electrolyte imbalances.
 - requires hospitalization.
 - causes colic.

Matching

Match the assessment data listed on the left to the type of assessment it represents at the right. (Terms may be used more than once.)

- | | |
|-------------------------------------|-------------------|
| _____ 13. hemoglobin/
hematocrit | a. anthropometric |
| _____ 14. head circumference | b. physical |
| _____ 15. distended abdomen | c. laboratory |
| _____ 16. X-rays | |
| _____ 17. skinfold thickness | |

True/False

Circle T for True and F for False

18. T F The same diet principles used for feeding a well child apply to feeding a sick child.
19. T F A diet that meets the RDAs and is based on the basic food groups satisfies the needs of all growing children.
20. T F Children of different ethnic origins should be fed the same foods in order to not discriminate.
21. T F The food choices for sick children should not be limited regardless of the disease process.
22. T F Children like to eat in groups rather than alone.
23. T F Psychosocial problems may contribute to a child's failure to eat adequately.
24. T F Children like to try new and different foods.
25. T F It is not unusual for a five-year-old to want to be fed.

Situation

Johnny, age six, was hospitalized for tests, due to weight loss, irritability, diarrhea, and a low-grade fever.

26. Which of the following statements is most accurate regarding Johnny's nutritional status?
 - a. He probably has pneumonia.
 - b. He has extensive nutrient and fluid loss.
 - c. He has lactose intolerance.
 - d. His condition may be due to neglect by his mother.
27. Johnny has food and fluids withheld for tests. When he is allowed to eat again, which of these interventions is most appropriate?
 - a. Make up missed meals with supplements.
 - b. Provide six small meals instead of three large ones.
 - c. Ask for soft solids instead of regular food.
 - d. All of the above.
28. Johnny does not seem to care for hospital food. The nurse should allow
 - a. food brought in from home or a fast food outlet.
 - b. him to skip meals he doesn't like.
 - c. only what the diet order calls for.
 - d. none of the above.

Diet Therapy and Cystic Fibrosis

Multiple Choice

Circle the letter of the correct answer.

1. Cystic fibrosis is an inherited disease that primarily affects the
 - a. mucous and sweat glands.
 - b. lungs and liver.
 - c. pancreas and mucous and sweat glands.
 - d. digestive system.
2. Malnutrition in the child with cystic fibrosis is caused primarily by
 - a. lack of digestive enzymes.
 - b. excessive electrolytes in sweat.
 - c. lung infections.
 - d. vomiting and diarrhea.
3. Failure to thrive, which is a manifestation of cystic fibrosis, describes the child who
 - a. is small for gestational age.
 - b. shows reduced weight gain or height appropriate for age.
 - c. is malnourished.
 - d. dies before reaching maturity.
4. The proper diagnosis of a child with cystic fibrosis is determined from
 - a. X-rays of the chest.
 - b. clinical symptoms.
 - c. sodium chloride in sweat.
 - d. all of the above.
5. Lack of which of the following secretions creates the malabsorption syndrome in cystic fibrosis children?
 - a. lipase, trypsin, amylase
 - b. sodium, potassium, iron
 - c. antibodies
 - d. fat-soluble vitamins
6. Early diagnosis and treatment of cystic fibrosis
 - a. can restore normal body size and appearance.
 - b. cannot prevent mental retardation.
 - c. prevents delayed sexual development.
 - d. all of the above.
7. The goals of diet therapy for cystic fibrosis include which of the following?
 - a. increase body weight
 - b. control or prevent rectum prolapse
 - c. control or improve emotional problems associated with the disease
 - d. all of the above
8. Which of these statements is correct regarding the use of pancreatic enzymes?
 - a. Infants and small children are given injections of enzymes.
 - b. Enzymes are given at least one hour before mealtimes.
 - c. Prolonged use of enzymes can cause psychological problems.
 - d. Enzymes may cause ulceration.
9. Which of the following statements is true regarding use of medium chain triglycerides?
 - a. They increase energy intake.
 - b. They promote fat absorption.
 - c. They reduce malabsorption.
 - d. All of the above.
10. Nutrient dense supplements useful in diet therapy for cystic fibrosis include all except which of these products?
 - a. protein hydrolysate solutions
 - b. beef serum, commercial supplements
 - c. medium-chain triglycerides and glucose solutions
 - d. fat polymers

Matching

Match the principles of dietary management listed on the left with the rationale listed on the right.

- | | |
|-----------------------------------|---|
| ___ 11. high-calorie diet | a. to compensate for pancreatic deficiency |
| ___ 12. high-protein diet | b. to compensate for fecal losses |
| ___ 13. low- to moderate-fat diet | c. to meet high energy demands |
| ___ 14. generous salt in diet | d. to limit steatorrhea |
| ___ 15. vitamin supplements | e. to replace electrolyte losses |
| ___ 16. pancreatic | f. to meet need for three times the RDA enzymes |

True/False

Circle T for True and F for False.

17. T F Children with cystic fibrosis produce heavy viscid mucus.
18. T F Children with cystic fibrosis digest very little of their protein.
19. T F Up to 12 percent of cystic fibrosis patients are diagnosed at birth because of a bowel obstruction.
20. T F The child with cystic fibrosis usually is anorexic.
21. T F General feeding techniques used for all children cannot be applied to cystic fibrosis children.
22. T F Use of pancreatic enzymes definitely improves the nutritional status of the child with cystic fibrosis.
23. T F A child with cystic fibrosis may have deficient linoleic acid.
24. T F The caloric need for children with cystic fibrosis may be 80%–110% above normal requirements.
25. T F Lactose deficiency is sometimes a complication in cystic fibrosis.
26. T F When CFTR is abnormal, it blocks the movement of chloride ions and water in the lungs, pancreas, colon, and genitourinary tract with secretion of abnormal mucus.
27. T F The abnormal CFTR protein is also called deltaF508 CFTR, and accounts for all CF cases.

Situation

José is a fourteen-year-old male with cystic fibrosis admitted to the hospital with pneumonia. He is short of breath, is coughing, and has a temperature of 102°. His appetite is poor and he is approximately 20 lb underweight for his age and height. The orders are for a 3500 calorie high-protein, low-fat, soft diet. He also is prescribed pancreatic enzymes, water-miscible fat-soluble vitamin supplements, medium-chain triglyceride supplements, and extra fluid.

28. In order to increase calories, he receives a chocolate milk shake between meals, which he likes. The most probable outcome of this kind of supplement is that
 - a. he will regain some lost weight.
 - b. he will get diarrhea.
 - c. he will receive excessive amounts of cholesterol.
 - d. he will get acne.

29. Briefly explain the reason for each of the following diet orders:
 - a. fat-soluble, water-miscible vitamin supplements

 - b. pancreatic enzymes

 - c. medium-chain triglyceride supplements

 - d. extra fluids

30. List four important instructions to be given to José and his family regarding his diet when he returns home.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
31. List the four major nursing implications required to adequately implement nutrition principles for a cystic fibrosis patient.
 - a. _____
 - b. _____
 - c. _____
 - d. _____

POSTTEST FOR CHAPTER 25

Diet Therapy and Celiac Disease

Multiple Choice

Circle the letter of the correct answer.

- The protein to which patients are intolerant when they have celiac disease is
 - phenylalanine.
 - casein.
 - gluten.
 - glycogen.
- Celiac patients have mucosal atrophy of the small intestine. This means that
 - villi are lacking.
 - the villi are flat instead of round.
 - only small amounts of digestive enzymes are secreted.
 - all of the above.
- Which of the following are presenting symptoms of celiac disease?
 - diarrhea, steatorrhea, irritability
 - irregular heartbeat, fever, lethargy
 - anorexia, eczema, dehydration
 - hyperactivity, infections, weight loss
- Which of these symptoms indicate malnutrition in the celiac patient?
 - cheilosis, glossitis, anemia, tetany
 - hyperosmolarity, arrhythmias, acidosis
 - hypoglycemia, flatulence, cramps
 - all of the above
- The basic principle of diet therapy for celiac disease is to
 - exclude all sources of glycogen.
 - exclude all sources of gluten.
 - exclude all sources of lactose.
 - exclude all sources of casein.
- Celiac disease in children can be cured in which of the following time frames?
 - 1–2 weeks
 - 1–5 years
 - time varies with each child
 - celiac disease is never cured
- Which of the following foods must be excluded from the diet of the person with celiac disease?
 - rye, wheat, barley, and oats
 - potatoes, corn, rice, and malt
 - arrowroot, soybean, and tapioca
 - all of the above
- Which of the following foods would be suitable for a celiac patient?
 - chicken fried steak, breaded veal cutlet, fish sticks
 - roast beef, baked chicken, broiled salmon
 - fried chicken, meat loaf, lobster thermidor
 - marinated herring, chili con carne, lamb chops
- Which of the following statements is appropriate when teaching a celiac patient regarding his diet therapy?
 - “You must read all labels carefully.”
 - “Let’s talk about ways to prevent infections.”
 - “These substitutes are needed to help you balance your diet.”
 - a, b, and c are all appropriate
- When the offending foods have been removed from the diet of the celiac patient, which of these nutrients are most likely to be deficient?
 - vitamins A, D, E, and K
 - thiamin, niacin, and iron
 - sodium, protein, and carbohydrates
 - all of the above

Matching

Match the food in the left column to its appropriate use in the right column.

- | | |
|------------------------------|---------------|
| ___ 11. crisped rice cereal | a. permitted |
| ___ 12. ice cream cone | b. prohibited |
| ___ 13. pancakes | c. limited |
| ___ 14. fruit | |
| ___ 15. potatoes | |
| ___ 16. chocolate candy | |
| ___ 17. peanut butter | |
| ___ 18. malted milk shake | |
| ___ 19. cornbread and butter | |
| ___ 20. catsup | |

True/False

Circle T for True and F for False.

21. T F Children are the major population group to have celiac disease.
22. T F A lowered prothrombin time indicates that the blood clots too quickly.
23. T F Adult patients seem to recover from celiac disease better than children.
24. T F Celiac diet therapy usually requires vitamin supplements.
25. T F The symptoms of celiac disease and cystic fibrosis are very similar.
26. T F Celiac disease is the most common genetic disease among Europeans and their descendants, about 1 in 150–200 people may have it.
27. T F Treatment is important because people with celiac disease could develop complications like cancer, osteoporosis, anemia, miscarriage, congenital malformation of the baby, short stature, convulsions, and seizures.
28. T F A person with celiac disease will show symptoms.
29. T F Diagnosis involves blood tests such as antibody tests against gluten and biopsy.

Situation

Bonnie is an 18-month-old infant brought to the clinic after her mother called the nurse there to ask what she might do to alleviate the problem of 3 or 4 foul smelling, foamy stools per day. The mother had been offering Bonnie lots of fluids but she refused them. A diagnosis of celiac disease was made.

30. What additional information would you need in order to plan diet therapy? _____

31. Loss of which of the following nutrients would be of greatest concern for Bonnie?
 - a. water, sodium, potassium
 - b. fat-soluble and water-soluble vitamins
 - c. fats, calcium, carbohydrates
 - d. all of the above
32. Plan a one-day menu pattern that could be used as a teaching tool for Bonnie's mother.

33. List three commercial products useful in supplementing the diet of the child with celiac disease.
 - a. _____
 - b. _____
 - c. _____
34. Bonnie's mother asks how long she will have to be on this diet. Your most appropriate answer would be
 - a. to recommend the diet be continued indefinitely.
 - b. three to six months.
 - c. until she is at least six years old.
 - d. until she is a teenager.

Diet Therapy and Congenital Heart Disease

Multiple Choice

Circle the letter of the correct answer.

- Which of the following manifestations, in a child with congenital heart disease, affects nutritional status?
 - malabsorption of nutrients
 - elevated body temperature
 - excessive urinary output
 - all of the above
- Caloric need is higher for children with congenital heart disease than for healthy children because
 - the metabolic rate is higher.
 - the antibody production is low.
 - the kidneys are malfunctioning.
 - all of the above.
- Which of these nutrients are primarily responsible for renal overload?
 - water, oxygen
 - sodium, potassium
 - calcium, iron
 - phosphates, chlorides
- Which of these foods are not tolerated well by children with congenital heart disease?
 - fats and sugar in quantity
 - proteins
 - fluids in quantity
 - vitamin supplements
- Which of these factors result in vitamin/mineral deficiencies in children with congenital heart disease?
 - amount of food consumed is too small to be adequate
 - allergy to foods containing vitamins
 - nonprescription vitamins do not contain all the child needs
 - a and c
- The introduction of solid foods to a child with congenital heart disease is delayed in order to
 - keep the sodium content in the diet low.
 - avoid the problem of diarrhea.
 - reduce the workload on the heart.
 - prevent dehydration.
- Caretakers of children with congenital heart disease should be taught
 - to omit sodium from the diet.
 - principles of a balanced diet.
 - to read labels.
 - all of the above.
- Which of these discharge procedures should the nurse follow when a child with congenital heart disease is going home?
 - Provide teaching and referrals for follow up.
 - Provide psychiatric counseling.
 - Provide special products.
 - All of the above.
- Which of these guidelines provides appropriate distribution of nutrients for the child with congenital heart disease?
 - 40% carbohydrates, 20% proteins, 30% fat
 - 35%–65% carbohydrates, 10% proteins, 30%–50% fat
 - 30% carbohydrates, 30% protein, 40% fat
 - none of the above
- Which of the following statements best describes a milliequivalent?
 - a metric unit of volume
 - amount of solute dissolved in a milliliter of solution
 - concentration of an ion in solution
 - amount of solution in a metric unit

Matching

Match the dietary alteration at the left to the correct rationale at right.

- | | |
|-----------------------------------|------------------------------------|
| ___ 11. MCT oil | a. prevent dehydration |
| ___ 12. folic acid | b. prevent renal overload |
| ___ 13. extra juices, water | c. prevent vitamin deficiency |
| ___ 14. extra energy supplements | d. provide adequate fat absorption |
| ___ 15. limited sodium, potassium | e. increase caloric intake |

True/False

Circle T for True and F for False.

16. T F A child with congenital heart disease may voluntarily reduce food intake.
17. T F The only cure for congenital heart disease is successful surgery.
18. T F The child should weigh at least 30 pounds before surgery is performed.
19. T F Regular foods are not used at all for children with congenital heart disease.
20. T F A congenital disease means that it is inherited.
21. T F Heart disease in children is readily identified at birth.
22. T F The cause of congenital heart disease is unknown.
23. T F The mortality rate for children with congenital heart disease is not as high for small children as for larger ones.
24. T F Children with congenital heart disease tend to be overdependent.
25. T F Children with congenital heart disease and parents may need counseling for psychological problems as well as dietary ones.

Situation

Teresa is eight months old and has a ventricular septal defect (V.S.D., a common congenital heart defect). She needs to gain a minimum of 10 pounds before she can have surgery to close the hole in the septum.

26. The major nutritional management for this child is to
 - a. provide essential nutrients that are easily digested.
 - b. provide high calorie food and fluids without overloading the kidneys.
 - c. provide small, frequent feedings rather than three large meals.
 - d. all of the above.

27. List three suitable energy supplements for Teresa that should assist in weight gain.

- a. _____
- b. _____
- c. _____

28. Provide a one-day menu pattern that Teresa's mother may use to plan her food intake.

29. Describe four feeding problems Teresa's mother may encounter and solutions to each.

- a. _____
- b. _____
- c. _____
- d. _____

30. List four important dietary principles Teresa's mother should learn.

- a. _____
- b. _____
- c. _____
- d. _____

Diet Therapy and Food Allergy

Multiple Choice

Circle the letter of the correct answer.

- Maldigestion or malabsorption of food may be termed
 - a food allergy.
 - malnutrition.
 - a food intolerance.
 - an immunological reaction.
- Substances that trigger allergic reactions are
 - allergens.
 - enzymes.
 - antigens.
 - a or c.
- Less than ____ of all people in the United States have some form of food allergy.
 - 8%
 - 25%
 - 50%
 - 1%
- Allergens are usually
 - food additives.
 - proteins.
 - sugars.
 - food preservatives.
- Food allergies are more prevalent in
 - adolescence.
 - childhood.
 - adulthood.
 - b and c.
- The most common food allergy in children is an allergy to
 - nuts.
 - wheat.
 - soy.
 - cow's milk.
- The milk of choice for an infant from a family prone to allergies is
 - cow's milk.
 - soy formula.
 - breast milk.
 - evaporated milk.

Matching

Match the potential offender on the right with the food source on the left. Answers may be listed more than once.

- | | |
|----------------------|---------------------------|
| ____ 8. mayonnaise | a. legumes |
| ____ 9. tartrazine | b. corn |
| ____ 10. chocolate | c. milk |
| ____ 11. tangerine | d. eggs |
| ____ 12. pumpkin pie | e. kola nuts |
| ____ 13. custard | f. citrus fruits |
| ____ 14. licorice | g. spices |
| ____ 15. corn syrup | h. artificial food colors |

True/False

Circle T for True and F for False.

- T F Most people exhibit symptoms of a food allergy, but are unaware that these symptoms are the result of a food allergy.
- T F Skin testing is an accurate method of detecting food allergies.
- T F An infant with a risk for developing allergies should receive solid foods as early as possible.
- T F Depending on the number of foods eliminated, an antiallergic diet may be nutritionally inadequate.
- T F Food allergies are relatively easy to diagnose and confirm.
- T F Once the offending food has been determined, it should never be reintroduced into the patient's diet.
- T F Raw foods are more likely to be allergens than the cooked form.
- T F Occurrence of undeclared allergens usually arises from cross-contamination of allergens in ingredients or equipment used in the production of products.
- T F Current regulations require that all added ingredients be declared on the label including allergens.

Fill-in

25. To protect the consumers, both adults and children, each FDA food inspector is asked to pay special attention to the following when inspecting an establishment that manufactures processed food products:
- _____
 - _____
 - _____
 - _____

Situation

Bobby is exhibiting the following symptoms: skin rash, diarrhea, and nasal congestion. His mother is concerned that he may be allergic to something he is eating.

26. What would be your first course of action in determining whether a food allergy is actually the cause of the symptoms?
- _____
- _____
- _____
- _____
27. You notice that Bobby is routinely eating some of the foods listed among the top ten offenders for children. These are cow's milk, wheat, eggs, and corn. What would you suggest to Bobby's mother at this point?
- _____
- _____
- _____

28. From close monitoring of Bobby's diet, it has been determined that Bobby is allergic to cow's milk and wheat. Besides fluid milk, name five sources of cow's milk that Bobby may also be allergic to.

- _____
- _____
- _____
- _____
- _____

Name five sources of wheat Bobby may need to avoid.

- _____
- _____
- _____
- _____
- _____

29. As Bobby grows older, should he try to reintroduce milk or wheat products back into his diet? Why or why not?

Diet Therapy and Phenylketonuria

Multiple Choice

Circle the letter of the correct answer.

- Which of the following statements most accurately describes the etiology of PKU (phenylketonuria)?
 - There is an inability to convert phenylalanine into tyrosine.
 - There is a lack of synthesis of phenylalanine.
 - There is a lack of the essential amino acids.
 - There is a lack of leucine conversion to lysine.
- The most serious effect of untreated PKU is
 - behavior disturbances.
 - convulsive seizures.
 - mental retardation.
 - reticulosarcoma.
- Children with PKU usually have lighter complexions, hair, and eyes than normal children because of
 - their genetic makeup.
 - lack of tyrosine.
 - failure to thrive.
 - lack of amino acid metabolism.
- Which of the following statements expresses the dietary management of PKU children?
 - Rigidly restrict phenylalanine intake.
 - Make the diet very low in tyrosine.
 - Make the diet very low in galactose.
 - Omit phenylalanine and tyrosine entirely.
- If treatment is started after retardation has occurred, which of the following outcomes may be expected?
 - Normal ability will return completely.
 - Retardation will continue, as the process is irreversible.
 - Growth and development will slow or stop.
 - Normal ability will not return but the retardation will not proceed any further.
- An infant should be provided with enough phenylalanine to maintain a serum level of
 - 3–10 mg per 100 ml.
 - 10–29 mg per 100 ml.
 - 20–25 mg per 100 ml.
 - PKU infants should not have a serum phenylalanine.
- After the clinical condition of a one-year-old child with PKU stabilizes, what information concerning blood tests is most appropriate?
 - The blood should be tested twice weekly.
 - The blood should be tested daily.
 - The blood should be tested weekly.
 - The blood should be tested monthly.
- The diet for PKU children must meet which of these criteria?
 - Provide for normal growth and development.
 - Maintain phenylalanine within safe limits.
 - Permit liberalization to conform to culture.
 - a and b
- The steps necessary for planning the diet for a PKU child include which of these?
 - Determine age, weight, and activity level.
 - Determine daily phenylalanine required and amount of protein to be given.
 - Determine calories received from formula, milk, and food.
 - All of these steps are necessary.
- Which of these techniques would promote dietary compliance in a PKU child?
 - Remove all desserts until the child eats other food.
 - Vary taste, texture, and variety within limits of diet.
 - Increase the amount of milk in the diet.
 - Omit all snacks.

Matching

Match the foods at the left with their use in the PKU diet at right.

- | | |
|--------------------|---------------|
| ___ 11. meats | a. permitted |
| ___ 12. Lofenalac | b. prohibited |
| ___ 13. fruits | c. limited |
| ___ 14. vegetables | |
| ___ 15. cheese | |

True/False

Circle T for True and F for False.

16. T F The only treatment for PKU is diet therapy.
17. T F Babies born with PKU can now be diagnosed early enough to prevent serious side effects.
18. T F Once PKU has been diagnosed, all offending substances must be omitted entirely from the diet.
19. T F Emotional support for the family is an important part of the management of PKU children.
20. T F The symptoms of PKU and cystic fibrosis are very similar.
21. T F A baby with PKU can be successfully breast-fed if the mother is willing to try.
22. T F PKU is self-limiting; the child will outgrow it.
23. T F Insufficient phenylalanine will result in mental retardation.
24. T F Excessive phenylalanine will result in mental retardation.
25. T F It is recommended that the special diet be discontinued by age four.

Situation

Terry is a three-year-old male who is seen in the pediatrician's office for a routine checkup. He has PKU but no other problems. He is 40 inches tall and weighs 36 pounds. His mother asks for a consultation with a dietitian because she believes it is time to liberalize Terry's diet. He still drinks Lofenalac and his mother monitors all the food he eats, but lately he has been crying for the hamburgers and hot dogs his father and older brothers eat. He will also start nursery school soon. His phenylalanine level is 9mg/100 ml of blood.

Circle the correct response.

26. a. Is the phenylalanine level acceptable? Yes No
b. Is Terry's weight and height in normal range? Yes No
27. What response would be appropriate regarding liberalizing Terry's diet?
 - a. "Yes, I agree it's time he got other foods."
 - b. "You may ask for a second opinion, but specialists agree that three years is too early."
 - c. "Why don't you stop feeding the others what Terry can't eat?"
 - d. "Do you think this is just a phase he's going through?"
28. Plan a one-day menu suitable for Terry.

29. What substances must be calculated in this diet to make sure it is adequate and safe?
 - a. carbohydrate, protein, fat
 - b. phenylalanine, protein, calories
 - c. calcium, magnesium, iron
 - d. phenylalanine, vitamins, calories

Diet Therapy for Constipation, Diarrhea, and High-Risk Infants

Multiple Choice

Circle the letter of the correct answer.

- Safe food(s) that may be used to combat constipation in infants include
 - prune juice.
 - 1 tsp sugar/4 oz formula.
 - strained apricots.
 - all of the above.
- Recommended treatment for dry, hard stools in an infant is to
 - increase formula feedings.
 - increase fluids.
 - increase laxative intake.
 - increase activity level.
- Two types of constipation common in children under five years old are
 - physiological and psychological.
 - anatomical and environmental.
 - psychological and anatomical.
 - environmental and physiological.
- Parents may initiate a regular pattern of elimination by which of these methods?
 - Put the child on a regular schedule.
 - Increase foods with fluids and fiber.
 - Decrease formula to 80 percent of normal.
 - all of the above
- If a child has diarrhea for several weeks, but continues to grow at a normal rate, the problem is classified as
 - celiac disease.
 - chronic diarrhea.
 - acute diarrhea.
 - allergy diarrhea.
- Which of these beverages contain high amounts of both sodium and potassium?
 - orange juice
 - Pepsi Cola
 - skim milk
 - grape juice
- The dietary management of diarrhea in children includes all except which of these steps?
 - Restore fluid and electrolyte balance.
 - Use an elimination diet.
 - Restore adequate nutrition.
 - Increase the kcal content of the diet.
- Added foods that will increase a one year old's kcal content when the child is recovering from diarrhea include
 - eggnog.
 - milkshakes.
 - strained cereal.
 - all of the above.
- Caloric needs of the high-risk infant are
 - twice those of a normal infant.
 - three to four times those of a normal infant.
 - approximately six times those of a normal infant.
 - the same as those of a normal infant; they have little movement.
- High-risk infants need large amounts of fluid for all except which of these reasons?
 - They require extra essential amino acids.
 - They have a larger body water content than normal infants.
 - Their kidneys can't concentrate urine.
 - They have increased water evaporation.
- First feedings for high-risk infants include
 - TPN.
 - fluid with extra calories.
 - 10 percent glucose IVs.
 - no feeding until stabilized.
- A mother can breast feed her premature infant when
 - the baby weighs more than 4 pounds.
 - the baby has sucking reflexes.
 - the baby gets additional supplements.
 - all of the above.

True/False

Circle T for True and F for False.

13. T F Diarrhea is an infrequent occurrence among infants and young children.
14. T F Infants and young children with diarrhea can be managed at home unless dehydration occurs.
15. T F Milk is high in sodium.
16. T F A hypotonic solution contains excess electrolytes and glucose.
17. T F Low-residue diets are used after diarrhea has subsided.
18. T F Tyrosine and cystine are essential amino acids.
19. T F Lytren is an essential amino acid especially for children.
20. T F High-risk infants may be able to breast feed.

Matching

Match the term on the left to the definition that best defines it.

- | | |
|---------------------|-------------------------|
| ___ 21. Meconium | a. substance that |
| ___ 22. Mucilage | dissolves in water into |
| ___ 23. Benign | ions |
| ___ 24. Electrolyte | b. interrupted before |
| ___ 25. Prematurity | maturity |
| | c. not recurrent |
| | d. dark green substance |
| | in fetal intestine |
| | e. aqueous gummy |
| | substance |

Match the characteristics of normal fecal material on the right to the most likely type of feeding.

- | | |
|--|----------------------------|
| ___ 26. Commercial formula | a. similar to adult |
| ___ 27. Breast milk, 3 months | b. intense yellow, firm |
| ___ 28. Regular foods, 10 months | c. highly variable |
| ___ 29. Whole milk, 10 months | d. golden, creamy texture |
| ___ 30. Mixed diet (liquid, solid), 1 year | e. compressed, pale yellow |

Answers to Posttests

Chapter 1

Multiple Choice

1. b
2. d
3. d
4. b
5. c
6. b
7. a
8. e
9. b

Matching

10. c
11. a
12. b
13. a
14. c
15. a. AI: adequate intake
b. EAR: estimated average requirement
c. IOM: Institute of Medicine
d. USHHS: U.S. Department of Health and Human Services
e. %DV: % Daily Values
f. Discretionary Calorie Allowance: The remaining amount of calories in a food intake pattern after accounting for the calories needed for all food groups using forms of foods that are fat-free or low-fat and with no added sugars
g. Functional foods: “legal” conventional foods (natural or manufactured) that contain bioactive ingredients
h. Nutraceuticals: Adding a bioactive ingredient, especially one with nutritional value to a dietary or an OCT drug
16. j

17. c
18. f
19. j
20. e

Situation

21. Her lunch fits MyPyramid’s recommendation.
22. a. bread
b. fruits
c. vegetables
d. meat
e. milk
23. a. ATP 1 outlined a major strategy for primary prevention of coronary heart disease (CHD) in persons with high levels of low-density lipoprotein (LDL) (>160 mg/dl) or borderline LDL of 130–159 mg/dl.
b. ATP 2 affirmed this approach and added a new feature: the intensive management of LDL cholesterol in persons with CHD. It set a new goal of < 100 mg/dl of LDL.
c. ATP 3 maintains the core of ATP 1 and 2, but its major new feature is a focus on primary prevention in persons with multiple risk factors. It calls for more intensive LDL lowering therapy in certain groups of people and recommends support for implementation. This approach includes a complete lipoprotein profile, high-density lipoprotein (HDL) cholesterol and triglycerides, as the preferred initial test. It encourages the use of plants containing soluble fiber as a therapeutic dietary option to enhance lowering LDL cholesterol and presents strategies for promoting adherence. It recommends treatment beyond LDL lowering in people with high triglycerides.

Chapter 2

- | | | | |
|------|-------|-------|-------|
| 1. c | 9. b | 17. F | 25. T |
| 2. d | 10. a | 18. T | 26. T |
| 3. a | 11. c | 19. T | 27. T |
| 4. b | 12. c | 20. T | 28. b |
| 5. b | 13. b | 21. F | 29. b |
| 6. d | 14. a | 22. F | 30. b |
| 7. a | 15. c | 23. F | |
| 8. c | 16. b | 24. T | |

Chapter 3

- | | | | |
|------|-------|-------|-------|
| 1. a | 8. b | 15. b | 22. F |
| 2. d | 9. b | 16. a | 23. T |
| 3. b | 10. b | 17. b | 24. T |
| 4. c | 11. d | 18. T | 25. F |
| 5. c | 12. a | 19. T | 26. d |
| 6. b | 13. b | 20. F | 27. a |
| 7. c | 14. a | 21. T | |
28. The missing nutrients in Lisa's diet are all of those listed in question #26. Therefore, any and all of these foods need to be added to her diet:
Soy milk fortified with calcium and vitamin D, rice and bean combinations, legumes, nuts, seeds (i.e., date-nut breads), peanut butter sandwiches and peanut butter cookies, corn and beans, meat analogs, combined cereals and legumes, dark green leafy vegetables such as kale, turnip greens, mustard greens, oranges and orange juice.
Suggest: Vitamin B₁₂ supplements, perhaps iron and use of iodized salt. As fiber content is high, small frequent meals may be indicated.

Chapter 4

- | | | | |
|------|-------|-------|-------|
| 1. a | 8. a | 15. d | 22. T |
| 2. d | 9. d | 16. b | 23. T |
| 3. a | 10. a | 17. a | 24. T |
| 4. d | 11. d | 18. c | 25. b |
| 5. c | 12. c | 19. F | 26. c |
| 6. c | 13. d | 20. T | 27. c |
| 7. d | 14. e | 21. F | |
28. Any of these:
1. Use the recommended distribution of nutrients.
 - a. 50%–60% of total calories from carbohydrates—mainly from grains, fruits, and vegetables.
 - b. Protein for a teenage athlete at 1–1.5 g/kg of body weight.
 - c. Remainder of total calories from fat.

2. No reduced caloric intake at all unless percent of body fat exceeded normal range.
3. No vitamin/mineral supplements, no electrolyte solutions, no bee pollen.
4. No carbohydrate loading for a teenager.
5. High-fluid intake, especially water, at all times before, during, and after a match. If sweet drinks are used, they should be diluted.

Chapter 5

- | | | | |
|------|-------|-------|-------|
| 1. a | 8. b | 15. d | 22. F |
| 2. c | 9. a | 16. b | 23. F |
| 3. c | 10. d | 17. c | 24. F |
| 4. b | 11. b | 18. a | 25. F |
| 5. d | 12. a | 19. T | 26. T |
| 6. a | 13. d | 20. T | 27. T |
| 7. d | 14. c | 21. T | 28. T |
29. Storing uncovered and 24-hour advance salad preparation accelerates vitamin loss due to oxidation. Dicing potatoes and cooking ahead destroys vitamins. The smaller the cut, the greater the loss. Cooking foods in large amounts of water over long periods of time increases vitamin loss by leaching and oxidation.
30. The water-soluble vitamins, especially vitamin C which is the least stable of the vitamins, were lost.
31. Ways to conserve nutrients include:
- a. cook vegetables whole and unpared.
 - b. use cooking methods that shorten cooking time.
 - c. use the smallest amount of water.
 - d. cook covered to use shortest cooking time possible.
 - e. slice or cut fruits and vegetables just before use to prevent oxidation.

Chapter 6

- | | | | |
|------|-------|-------|-------|
| 1. c | 8. b | 15. c | 22. F |
| 2. c | 9. d | 16. F | 23. F |
| 3. d | 10. d | 17. F | 24. T |
| 4. a | 11. b | 18. T | 25. T |
| 5. d | 12. d | 19. F | 26. T |
| 6. c | 13. e | 20. T | 27. T |
| 7. d | 14. a | 21. T | 28. b |
29. calcium 800 mg—See calcium table for food sources.
iron 18 mg—See iron table for food sources.
30. a

Chapter 7

- | | | | |
|------|-------|-------|-------|
| 1. d | 8. d | 15. a | 22. F |
| 2. b | 9. d | 16. b | 23. F |
| 3. d | 10. b | 17. T | 24. T |
| 4. b | 11. d | 18. T | 25. T |
| 5. d | 12. c | 19. T | 26. F |
| 6. d | 13. d | 20. T | 27. T |
| 7. a | 14. c | 21. T | 28. a |
29. 2750 = present consumption. Using the mid-range of 2000 calories, Mary's intake is 750 kcal per day in excess of output. $750 \text{ kcal} \times 7 \text{ days per week} = 5250 \text{ extra kcal per week}$. This is roughly $1\frac{1}{2} \text{ lb per week weight gain}$. Estimate 6–7 lb per month $\times 6 \text{ months}$. Mary will gain 36 to 42 lb by the end of school.
30. c
31. While there are 22 items listed under responsibilities of health personnel, 5 that are especially important in Mary's case are:
- Do not use any fad diets: a low-calorie diet that contains essential nutrients is to be used. (#18)
 - Become familiar with behavior modification techniques and use them to gain control of eating patterns. (#22)
 - Adopt a more healthful diet instead of giving up certain foods. (#20)
 - Use a balanced diet, proper food preparation, portion control, sound food guides. (#9)
 - Encourage regular exercise (daily), at the same time as reducing quantity of food. (#15)
- Note: #16, 19, and 21 are also important, so if you listed any of those you may count them.

Chapter 8

- | | | | |
|------|-------|-------|-------|
| 1. d | 8. b | 15. a | 22. F |
| 2. d | 9. c | 16. T | 23. T |
| 3. b | 10. b | 17. T | 24. T |
| 4. b | 11. b | 18. T | 25. T |
| 5. b | 12. c | 19. F | |
| 6. b | 13. b | 20. F | |
| 7. a | 14. b | 21. F | |

Chapter 9

- | | | | |
|------|-------|-------|-------|
| 1. d | 8. d | 15. a | 22. T |
| 2. c | 9. a | 16. a | 23. F |
| 3. c | 10. d | 17. b | 24. T |
| 4. d | 11. b | 18. b | 25. T |
| 5. b | 12. c | 19. b | 26. T |
| 6. a | 13. a | 20. F | |
| 7. d | 14. d | 21. T | |

27. Lisa is striving for autonomy and it is reflected in the eating behavior. As she struggles for control she wants to do everything her way. It is a phase that will pass.
28. a. What and how much food does the child eat per day?
 b. Is her weight normal for her height/age?
 c. Is she gaining at a regular, slow, steady rate?
 d. Do other physical characteristics appear normal (hair, eyes, teeth, etc.)?
 e. Does she appear to be a happy child?
29. The growth rate has slowed since last year and her appetite has diminished. Accordingly, she does not need as much food as during her first year of life.
30. a. "Food jags" are common at this age. As long as the food is nutritious, the grandmother should not be concerned.
 b. Children are no longer forced to "finish everything" because obesity is a problem to be avoided at any age, but especially early childhood. After a reasonable time, remove the food from the table without comment.

Chapter 10

- | | | | |
|------|-------|-------|-------|
| 1. d | 8. a | 15. b | 22. F |
| 2. e | 9. d | 16. c | 23. T |
| 3. e | 10. e | 17. F | 24. T |
| 4. a | 11. c | 18. F | 25. F |
| 5. c | 12. d | 19. F | 26. F |
| 6. a | 13. d | 20. F | |
| 7. d | 14. c | 21. F | |

27. Anorexia, increase or decrease intestinal motility, change absorption and metabolism of nutrients, nausea, vomiting, damage intestinal walls.
28. Antidepressants, antihistamines, oral contraceptives and alcohol (small amounts only)
29. Amphetamines, Cholinergic agents, some expectorants and narcotic analgesics (Elderly: tranquilizers)
30. Penicillamine, streptomycin, KCL, vitamin B complex in liquid form and some chemotherapies
31. Cough syrup, expectorants, elixirs
32. Antibiotics and parenteral drug solutions

Chapter 11

-
1. e 2. i 3. a
4. a. Define dietary supplements and dietary ingredients.
 b. Establish a new framework for assuring safety.
 c. Outline guidelines for literature displayed where supplements are sold.
 d. Provide for use of claims and nutritional support statements.
 e. Require ingredient and nutrition labeling.
 f. Grant the FDA the authority to establish good manufacturing practice (GMP) regulations.
 g. Require the formation of an executive level Commission on Dietary Supplement Labels.
 h. Establish an Office of Dietary Supplements within the National Institutes of Health.
5. a. Detect fraudulent products and deceptive advertising.
 b. Purchase quality products if they intend to use supplements.
 c. Read product labels.
 d. File a report if side effects are experienced.
 e. Recognize that dietary supplements can cause harm and the reasons they can be harmful.
 f. The types of reactions that may occur.
 g. Reduce the chances of suffering adverse effects from supplement use.
6. a. Raw impurities
 b. Excess levels of ingredients used
 c. Allergic reactions to some ingredients
 d. Systemic poisoning
 e. Overdosing oneself
 f. Negative reactions in some individuals because of a specific sensitivity
 g. Safety of the product has not been carefully evaluated
7. a. A product (other than tobacco) that is intended to supplement the diet that bears or contains one or more of the following dietary ingredients: a vitamin, a mineral, an herb or other botanical, an amino acid, a dietary substance for use by humans to supplement the diet by increasing the total daily intake, or a concentrate, metabolite, constituent, extract, or combinations of these ingredients.
 b. A product intended for ingestion in pill, capsule, tablet, or liquid form.
 c. The supplement is not represented for use as a conventional food or as the sole item of a meal or diet.
 d. It is labeled as a “dietary supplement.”
- e. It includes products such as an approved new drug, certified antibiotic or licensed biologic that was marketed as a dietary supplement or food before approval, certification, or license (unless specifically waived).
8. a. Net quantity of contents (e.g., “60 capsules”).
 b. Structure-function claim and the statement “This statement has not been evaluated by the Food and Drug Administration.”
 c. “This product is not intended to diagnose, treat, cure, or prevent any disease.”
 d. Directions for use (e.g., “Take one capsule daily.”).
 e. Supplement Facts panel (lists serving size, amount, and active ingredient).
 f. Other ingredients in descending order of predominance and by common name or proprietary blend.
 g. Name and place of business of manufacturer, packer, or distributor (address to write for more product information).
9. a. A review of the scientific evidence.
 b. An authoritative statement from certain scientific bodies, such as the National Academy of Sciences.
10. a. Dietary ingredients in “significant amount.”
 b. Nutritional ingredients with % RDI.
 c. Nonnutritional ingredients without % RDI.
 d. Quantity per serving for each dietary ingredient (or proprietary blend).
 e. Source of dietary ingredients as appropriate.
11. a. In what form the product should be taken: orally, or is it digested to inert forms?
 b. How much of the substance is in the product and does it contain the active ingredient?
12. a. mild gastrointestinal complaints
 b. headaches
 c. dizziness
 d. palpitations
 e. allergic skin reactions
13. T 23. T 33. T
 14. F 24. T 34. T
 15. F 25. T 35. T
 16. T 26. F 36. F
 17. T 27. T 37. T
 18. T 28. T 38. T
 19. T 29. F 39. F
 20. T 30. T 40. T
 21. T 31. T 41. F
 22. F 32. T 42. T

Chapter 12

1. a. alone
b. in combination with other alternative therapies
c. in addition to conventional therapies
 2. a. alternate medicine systems
b. mind-body interventions
c. biologically based treatments
d. manipulative and body-based methods
e. energy therapy
 3. Any five of the following: ongoing sad mood; loss of interest or pleasure in activities that the person once enjoyed; significant change in appetite or weight; oversleeping or difficulty sleeping; agitation or unusual slowness; loss of energy; feelings of worthlessness or guilt; difficulty “thinking,” such as concentrating or making decisions; or recurrent thoughts of death or suicide.
 4. a. What benefits can be expected from this therapy?
b. What are the risks associated with this therapy?
c. Do the known benefits outweigh the risks?
d. What side effects can be expected?
e. Will the therapy interfere with conventional treatment?
f. Is this therapy part of a clinical trial, if so, who is sponsoring the trial?
g. Will the therapy be covered by health insurance?
 5. Body, mind, spirit, and strives to restore the innate harmony of the individual.
 6. In large doses produces the symptoms of an illness, in very minute doses cures it.
 7. a. herbal therapies
b. orthomolecular therapies
c. biological therapies
- | | | |
|-------|-------|-------|
| 8. F | 20. T | 32. T |
| 9. T | 21. T | 33. T |
| 10. T | 22. T | 34. F |
| 11. T | 23. T | 35. F |
| 12. T | 24. T | 36. T |
| 13. T | 25. T | 37. T |
| 14. T | 26. T | 38. T |
| 15. T | 27. T | 39. T |
| 16. T | 28. T | 40. T |
| 17. T | 29. T | 41. T |
| 18. T | 30. T | |
| 19. T | 31. T | |

Chapter 13

- | | | | |
|------|-------|-------|-------|
| 1. a | 9. b | 17. F | 25. F |
| 2. a | 10. c | 18. T | 26. b |
| 3. d | 11. b | 19. T | 27. c |
| 4. d | 12. a | 20. F | 28. b |
| 5. d | 13. b | 21. T | 29. b |
| 6. b | 14. a | 22. T | 30. a |
| 7. a | 15. a | 23. F | |
| 8. a | 16. F | 24. T | |

Chapter 14

- | | | | |
|------|-------|-------|-------|
| 1. b | 8. b | 15. a | 22. F |
| 2. c | 9. d | 16. b | 23. T |
| 3. b | 10. c | 17. d | 24. a |
| 4. d | 11. d | 18. e | 25. d |
| 5. c | 12. a | 19. F | 26. d |
| 6. d | 13. b | 20. T | 27. a |
| 7. d | 14. c | 21. F | |
28. The most common diet modifications are alterations in basic nutrients, energy value, texture, and seasonings. James needs an alteration in basic nutrients and energy value. Unless further assessment reveals a need for additional adjustments, the diet prescription should be a high carbohydrate, high protein, high vitamin, moderate fat, regular diet containing approximately 3500 calories.
 29. Rationale: to restore and maintain nutritional status: James is underweight, apparently malnourished, and injured.
 30. c

Chapter 15

- | | | | |
|------|-------|-------|-------|
| 1. a | 8. c | 15. T | 22. T |
| 2. c | 9. d | 16. F | 23. T |
| 3. a | 10. d | 17. F | 24. T |
| 4. d | 11. b | 18. T | 25. F |
| 5. a | 12. c | 19. F | |
| 6. d | 13. d | 20. F | |
| 7. b | 14. a | 21. F | |
26. Because of extensive injuries and surgery, this patient is in a hypermetabolic state. She needs to be maintained at the high rate of TPN.
 27. No. Patients are never placed on reduction diets until after healing has taken place. Other measures to relieve breathing must be considered.
 28. See Table 13-1.
 29. See Nursing Implications, Chapter 13.

Chapter 16

- | | | | |
|------|-------|-------|-------|
| 1. d | 9. b | 17. F | 25. F |
| 2. a | 10. c | 18. T | 26. b |
| 3. d | 11. b | 19. F | 27. c |
| 4. d | 12. d | 20. T | 28. a |
| 5. c | 13. c | 21. F | 29. d |
| 6. d | 14. e | 22. F | 30. b |
| 7. d | 15. a | 23. F | |
| 8. d | 16. T | 24. T | |

Chapter 17

- | | | | |
|------|------|-------|-------|
| 1. b | 5. a | 9. c | 13. b |
| 2. a | 6. d | 10. b | |
| 3. d | 7. a | 11. b | |
| 4. c | 8. a | 12. b | |
14. A high-fiber diet promotes better and faster elimination, decreasing pressure on the intestines and helping to prevent future inflammation.
15. High-fiber diets rapidly eliminate residue from the intestine, so that it is subjected to less bacterial action and harmful by-products remaining against the mucosal lining.
16. a. diabetes
b. sleep apnea
c. obesity-related heart problems
17. a. long-term healthy eating behaviors
b. regular physical exercise
18. a. Vomiting occurs because the small stomach is overly stretched by food particles that have not been chewed well.
b. Bypass surgeries cause the stomach contents to move too rapidly through the small intestines.
19. The procedure causes food to bypass the duodenum and jejunum.
20. Calcium, iron and fat-soluble vitamins (A, D, E, K). In some patients, B₁₂ is also added.
- | | | |
|-------|-------|-------|
| 21. T | 25. F | 29. b |
| 22. T | 26. T | 30. d |
| 23. F | 27. F | 31. d |
| 24. T | 28. T | |
32. Any three of these: restore nutritional deficits, prevent further losses, promote healing, repair and maintain body tissue, improve chances for recovery.
33. a. fluid intake and output
b. nutrient intake (amount of protein especially important, and vitamins)
c. caloric intake and weight changes

Chapter 18

- | | | | | |
|-------|-------|-------|---------|-------|
| 1. d* | 8. c | 15. g | 22. T | 29. c |
| 2. c | 9. d | 16. f | 23. T | |
| 3. a | 10. a | 17. a | 24. T | |
| 4. d | 11. e | 18. F | 25. b** | |
| 5. d | 12. c | 19. T | 26. b | |
| 6. b | 13. d | 20. F | 27. b | |
| 7. a | 14. b | 21. F | 28. d | |

$$*(250 \times 4) + (100 \times 4) + (70 \times 9) = 2030$$

$$**70 \text{ lb} \div 2.2 = 32 \text{ kg (rounded)}$$

$$80 \text{ g protein} \div 32 \text{ kg} = 2.5 \text{ g/kg body weight}$$

$$(150 \times 4) + (80 \times 4) + (50 \times 9) = 1370 \text{ calories}$$

Chapter 19: Part I

- | | | | |
|------|-------|-------|-------|
| 1. a | 9. d | 17. d | 25. T |
| 2. a | 10. b | 18. e | 26. c |
| 3. d | 11. d | 19. a | 27. d |
| 4. d | 12. c | 20. T | 28. d |
| 5. d | 13. e | 21. F | 29. b |
| 6. a | 14. a | 22. T | 30. c |
| 7. a | 15. b | 23. F | |
| 8. c | 16. c | 24. T | |

Chapter 19: Part II

- | | | | |
|------|-------|-------|-------|
| 1. b | 7. a | 13. T | 19. T |
| 2. c | 8. b | 14. T | 20. T |
| 3. b | 9. c | 15. T | 21. T |
| 4. c | 10. d | 16. F | |
| 5. c | 11. a | 17. F | |
| 6. a | 12. F | 18. T | |

22. boiled or poached, three times a week
23. fruit, fresh or in natural juice
24. omit, substitute chicken or tuna
25. omit, substitute fruit
26. use low-fat cottage cheese only
27. omit, use a fresh spinach or other dark green salad
28. substitute sherbet within the caloric allowance
29. no alteration necessary
30. b
31. a
32. c

Chapter 20

- | | | | |
|------|-------|-------|-------|
| 1. b | 9. d | 17. F | 25. e |
| 2. b | 10. a | 18. T | 26. a |
| 3. b | 11. b | 19. F | 27. c |
| 4. d | 12. b | 20. T | 28. d |
| 5. d | 13. b | 21. T | 29. b |
| 6. b | 14. T | 22. F | 30. a |
| 7. b | 15. T | 23. d | 31. b |
| 8. a | 16. T | 24. b | 32. c |

Chapter 21

- | | | | | |
|------|------|------|------|------|
| 1. e | 2. e | 3. f | 4. c | 5. d |
|------|------|------|------|------|
- Any 10 of the following: anorexia, weakness, early satiety, nonintentional weight loss, loss of muscle and fat stores, decreased mobility and physical activity, nausea, vomiting, dehydration, edema, chronic diarrhea or constipation, pain, fever, night sweats, dysphagia, candidiasis, malabsorption, or dementia.
 - Three of the following: fatigue, anemia, cachexia, hypogeusia, dysgeusia, xerostomia, dysphagia, stomatitis, fever, altered metabolic rate, infection, nausea, vomiting, or anorexia.
 - surgery
 - radiation
 - chemotherapy
 - combination of any of the above
 - bone marrow
 - hair follicles
 - GI tract
 - thorough personal nutrition assessment
 - vigorous nutrition therapy to maintain good nutritional status and support
 - revision of care plan as individual status changes
 - Sore mouth, dysgeusia, hypogeusia, low salivary production, candidiasis
 - Any four of the following: Toxic at high levels, increasing problems with skin, bone, central nervous system, nausea, hair loss, and depleted immune function
- | | | | |
|-------|-------|-------|-------|
| 13. T | 20. F | 27. F | 34. T |
| 14. T | 21. T | 28. F | 35. F |
| 15. T | 22. F | 29. F | 36. F |
| 16. F | 23. T | 30. T | 37. T |
| 17. T | 24. F | 31. T | 38. F |
| 18. F | 25. F | 32. F | 39. T |
| 19. T | 26. F | 33. T | 40. F |

Chapter 22

- | | | |
|------|------|-------|
| 1. a | 5. a | 9. c |
| 2. d | 6. b | 10. d |
| 3. c | 7. a | |
| 4. b | 8. d | |
- Untreated hypercalcemia can lead to:
 - kidney failure
 - high blood pressure
 - seizures
 - hearing loss
 - Treatment for acute hypercalcemia may include:
 - intravenous fluid therapy with saline
 - intravenous diuretic medications and replacement of all loss of sodium, magnesium, and potassium
 - replacement of any excessive urine loss by fluid (intravenous saline)
 - implement of a low-calcium diet.
 - Nutritional education programs for mental patients that have been proven successful include:
 - teaching some basic facts and skills about food budgeting, purchasing, and preparation
 - teaching principles of nutritional needs
 - teaching known effects of drugs on nutritional status.
- | | | |
|-------|-------|-------|
| 14. F | 19. T | 24. T |
| 15. F | 20. T | 25. T |
| 16. T | 21. T | 26. T |
| 17. T | 22. F | 27. F |
| 18. F | 23. T | 28. T |
- Any 8 of these: blood shot eyes, broken blood vessels on face, decayed teeth, bruises on hand, sore throat, swollen salivary glands, intestinal problems, fatigue, cessation of menses (women), esophageal tears, rupture of gastric mucosa
 - Any 5 of these: compulsive overeating, anxiety, emotional problems, weight cycling, loss of lean body mass, lowered BMR, altered body composition

Chapter 23

- | | | | |
|------|-------|-------|-------|
| 1. d | 8. d | 15. b | 22. T |
| 2. c | 9. d | 16. c | 23. T |
| 3. d | 10. b | 17. a | 24. F |
| 4. c | 11. d | 18. T | 25. T |
| 5. c | 12. b | 19. F | 26. b |
| 6. b | 13. c | 20. F | 27. d |
| 7. c | 14. a | 21. F | 28. a |

Chapter 24

- | | | | |
|------|-------|-------|-------|
| 1. c | 8. c | 15. f | 22. T |
| 2. a | 9. d | 16. a | 23. T |
| 3. b | 10. d | 17. T | 24. T |
| 4. d | 11. c | 18. F | 25. T |
| 5. a | 12. b | 19. T | 26. T |
| 6. a | 13. d | 20. F | 27. F |
| 7. d | 14. e | 21. F | 28. b |
29. a. He cannot absorb the fat-soluble vitamins until they are made water-miscible.
 b. These are effective in assisting the patient to utilize more of his ingested food.
 c. Medium-chain triglyceride supplements are better tolerated than regular fats and therefore increase caloric intake.
 d. He has a fever; also extra fluids help dissolve the mucus collection. Note: Extra salt may also be needed.
30. a. The essentials of the daily food guide.
 b. How to make appropriate substitutions for high-fat and poorly tolerated foods.
 c. How to keep an accurate food record for assessment and follow up care.
 d. The essentials of low-fat cookery and cooking with medium-chain triglycerides.
31. a. Maintain adequate nutrition (see Nursing Implications #1, a–e).
 b. Promote growth and development through adequate nutrition.
 c. Provide support to the family.
 d. Educate the child and its family (see Nursing Implications, #4, a–e).

Chapter 25

- | | | | | |
|------|-------|-------|-------|-------|
| 1. c | 8. b | 15. a | 22. F | 29. T |
| 2. d | 9. d | 16. b | 23. F | |
| 3. a | 10. b | 17. a | 24. T | |
| 4. a | 11. a | 18. b | 25. T | |
| 5. b | 12. b | 19. a | 26. F | |
| 6. c | 13. b | 20. a | 27. T | |
| 7. a | 14. a | 21. T | 28. F | |
30. Weight at present. Signs of dehydration, social behavior at present. Deviations (loss) of weight. Eating behaviors (anorexia, hunger, etc.). Any physical signs of malnutrition.
31. d

32. Daily meal pattern (amounts and textures appropriate for 18-month-old child): Meat, fish, poultry or meat substitute; potato, rice, grits, sweet potatoes, vegetables (any appropriate for age); fruit (any appropriate for age); special low gluten bread or cornbread, margarine; milk.

Between-meal snacks: Chocolate, Kool-Aid, cornstarch, rice or tapioca pudding; fruits or juices, sherbet, gelatin, cheese (no cheese foods); cookies/cakes from low gluten, rice or arrowroot flour.

33. a. low protein (gluten) flour, cookies, pastas
 b. MCT
 c. water-miscible vitamins
34. a

Chapter 26

- | | | | |
|------|-------|-------|-------|
| 1. d | 8. a | 15. b | 22. T |
| 2. a | 9. b | 16. T | 23. T |
| 3. b | 10. b | 17. T | 24. T |
| 4. a | 11. d | 18. T | 25. T |
| 5. d | 12. c | 19. F | 26. d |
| 6. c | 13. a | 20. F | |
| 7. d | 14. e | 21. F | |

27. a. Extra carbohydrate: karo syrup or polycose
 b. Extra fats: MCT and corn oil
 c. Extra low protein, low electrolyte formula in addition to solids

28. Breakfast: 3 oz juice; 2 tbsp salt-free cereal; 1 slice toast

Lunch and dinner: 2 tbsp mashed or junior vegetables; 1 oz chopped or ground meat; 2–3 tbsp soft mashed or pureed fruit; 1 tbsp mashed potato

Snacks: Any high calorie, low protein, low sodium beverages or formulas, such as SMA.

29. Problems: Crying; refusing to eat; using food to get their way; becoming too tired to eat; turning blue. Coping: Stay calm; avoid overconcern; do not “invalidate”; be consistent; don’t feed when the child is tired; divide food into small feedings; foster independence as soon as possible.
30. All nursing implications should be reinforced for the mother to assist her in competently caring for Teresa at home. *See also* Nursing Implications, Chapter 24.

Chapter 27

- | | | | |
|------|-------------|----------|-------|
| 1. c | 7. c | 13. c, d | 19. T |
| 2. d | 8. b* | 14. a | 20. F |
| 3. a | 9. h | 15. b | 21. F |
| 4. b | 10. e | 16. F | 22. T |
| 5. b | 11. f | 17. F | 23. T |
| 6. d | 12. c, d, g | 18. F | 24. F |

*(if made from corn oil, d)

25. To protect the consumers, both adults and children, each FDA food inspector is asked to pay special attention to the following when inspecting an establishment that manufactures processed food products.
- product development
 - receiving
 - equipment
 - processing
26. Have Bobby's mother keep a detailed food record of everything Bobby eats for a certain time period.
27. Although diagnosing food allergies is difficult, the elimination diet is probably the most successful. Bobby's mother should try eliminating the four foods one at a time. When symptoms disappear, try reintroducing one food at a time until symptoms reappear, the food causing the reappearance of symptoms may be the offender. Make sure Bobby receives substitutes for the foods removed from his diet, i.e., soy milk for cow's milk, rice products for wheat products, to avoid nutritional inadequacies.
28. a. ice cream
b. cheese
c. custard
d. cream and cream foods
e. yogurt
f–j. any of the following: most baked goods, cream sauce, macaroni, noodles, pie crust, cereals, chili, breaded foods
29. Bobby should try to reintroduce these foods into his diet occasionally because allergies may fade over time.

Chapter 28

- | | | | |
|------|-------|-------|-------|
| 1. a | 8. d | 15. b | 22. F |
| 2. c | 9. d | 16. T | 23. T |
| 3. b | 10. b | 17. T | 24. T |
| 4. a | 11. b | 18. F | 25. F |
| 5. d | 12. a | 19. T | |
| 6. a | 13. a | 20. F | |
| 7. c | 14. c | 21. F | |

26. a. Yes b. Yes

27. b

28. Your choice; however, the menu pattern will follow these guidelines.

Breakfast: fruit, 1 serving; allowed cereal, $\frac{1}{2}$ c; Lofenalac, 8 oz.

Lunch: fruit, 1 serving; green vegetable, 1 serving; starchy vegetable, 1 serving; crackers (4); butter or margarine; 2 tbsp allowed dessert; Lofenalac, 4 oz.

Snacks at 10, 2, and bedtime: fruit; arrowroot cookies (5); Lofenalac, 4 oz.

Dinner: green vegetable, 1 serving; vegetable soup, $\frac{1}{4}$ c; potato, $\frac{1}{2}$ c; butter or margarine; 2 tbsp allowed dessert; Lofenalac, 8 oz.

29. b

Chapter 29

- | | | | |
|------|-------|-------|-------|
| 1. d | 9. b | 17. T | 25. b |
| 2. b | 10. a | 18. T | 26. e |
| 3. c | 11. c | 19. F | 27. d |
| 4. d | 12. d | 20. T | 28. a |
| 5. b | 13. F | 21. d | 29. b |
| 6. c | 14. T | 22. e | 30. c |
| 7. b | 15. T | 23. c | |
| 8. c | 16. F | 24. a | |

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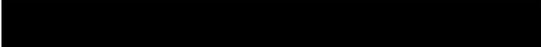


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Table F-1. Dietary Reference Intakes (DRIs): Recommended Intakes for Individuals, Vitamins
Food and Nutrition Board, Institute of Medicine, National Academies

Life Stage Group	Vit A (µg/d) ^a	Vit C (mg/d)	Vit D (µg/d) ^{b,c}	Vit E (mg/d) ^d	Vit K (µg/d)	Thiamin (mg/d)	Riboflavin (mg/d)	Niacin (mg/d) ^e	Vit B ₆ (mg/d)	Folate (µg/d) ^f	Vit B ₁₂ (µg/d)	Pantothenic Acid (mg/d)	Biotin (µg/d)	Choline ^g (mg/d)
Infants														
0–6 mo	400*	40*	5*	4*	2.0*	0.2*	0.3*	2*	0.1*	65*	0.4*	1.7*	5*	125*
7–12 mo	500*	50*	5*	5*	2.5*	0.3*	0.4*	4*	0.3*	80*	0.5*	1.8*	6*	150*
Children														
1–3 y	300	15	5*	6	30*	0.5	0.5	6	0.5	150	0.9	2*	8*	200*
4–8 y	400	25	5*	7	55*	0.6	0.6	8	0.6	200	1.2	3*	12*	250*
Males														
9–13 y	600	45	5*	11	60*	0.9	0.9	12	1	300	1.8	4*	20*	375*
14–18 y	900	75	5*	15	75*	1.2	1.3	16	1.3	400	2.4	5*	25*	550*
19–30 y	900	90	5*	15	120*	1.2	1.3	16	1.3	400	2.4	5*	30*	550*
31–50 y	900	90	5*	15	120*	1.2	1.3	16	1.3	400	2.4	5*	30*	550*
51–70 y	900	90	10*	15	120*	1.2	1.3	16	1.7	400	2.4ⁱ	5*	30*	550*
> 70 y	900	90	15*	15	120*	1.2	1.3	16	1.7	400	2.4ⁱ	5*	30*	550*
Females														
9–13 y	600	45	5*	11	60*	0.9	0.9	12	1	300	1.8	4*	20*	375*
14–18 y	700	65	5*	15	75*	1	1	14	1.2	400ⁱ	2.4	5*	25*	400*
19–30 y	700	75	5*	15	90*	1.1	1.1	14	1.3	400ⁱ	2.4	5*	30*	425*
31–50 y	700	75	5*	15	90*	1.1	1.1	14	1.3	400ⁱ	2.4	5*	30*	425*
51–70 y	700	75	10*	15	90*	1.1	1.1	14	1.5	400	2.4^h	5*	30*	425*
> 70 y	700	75	15*	15	90*	1.1	1.1	14	1.5	400	2.4^h	5*	30*	425*
Pregnancy														
14–18 y	750	80	5*	15	75*	1.4	1.4	18	1.9	600^j	2.6	6*	30*	450*
19–30 y	770	85	5*	15	90*	1.4	1.4	18	1.9	600^j	2.6	6*	30*	450*
31–50 y	770	85	5*	15	90*	1.4	1.4	18	1.9	600^j	2.6	6*	30*	450*
Lactation														
14–18 y	1,200	115	5*	19	75*	1.4	1.6	17	2	500	2.8	7*	35*	550*
19–30 y	1,300	120	5*	19	90*	1.4	1.6	17	2	500	2.8	7*	35*	550*
31–50 y	1,300	120	5*	19	90*	1.4	1.6	17	2	500	2.8	7*	35*	550*

NOTE: This table (taken from the DRI reports, see www.nap.edu) presents Recommended Dietary Allowances (RDAs) in **bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). RDAs and AIs may both be used as goals for individual intake. RDAs are set to meet the needs of almost all (97 to 98 percent) individuals in a group. For healthy breastfed infants, the AI is the mean intake. The AI for other life stage and gender groups is believed to cover needs of all individuals in the group, but lack of data or uncertainty in the data prevent being able to specify with confidence the percentage of individuals covered by this intake.

^a As retinol activity equivalents (RAEs). 1 RAE = 1 µg retinol, 12 µg β -carotene, 24 µg β -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.

^b As cholecalciferol. 1 µg cholecalciferol = 40 IU vitamin D.

^c In the absence of adequate exposure to sunlight.

^d As 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.

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

^f As 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.

^g Although 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.

^h Because 10 to 30 percent 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.

ⁱ In 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.

^j It 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 periconceptual period—the critical time for formation of the neural tube.

Table F-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															
0–6 mo	210*	0.2*	200*	0.01*	110*	0.27*	30*	0.003*	2*	100*	15*	2*	0.4*	0.12*	0.18*
7–12 mo	270*	5.5*	220*	0.5*	130*	11	75*	0.6*	3*	275*	20*	3	0.7*	0.37*	0.57*
Children															
1–3 y	500*	11*	340	0.7*	90	7	80	1.2*	17	460	20	3	3.0*	1.0*	1.5*
4–8 y	800*	15*	440	1*	90	10	130	1.5*	22	500	30	5	3.8*	1.2*	1.9*
Males															
9–13 y	1,300*	25*	700	2*	120	8	240	1.9*	34	1,250	40	8	4.5*	1.5*	2.3*
14–18 y	1,300*	35*	890	3*	150	11	410	2.2*	43	1,250	55	11	4.7*	1.5*	2.3*
19–30 y	1,000*	35*	900	4*	150	8	400	2.3*	45	700	55	11	4.7*	1.5*	2.3*
31–50 y	1,000*	35*	900	4*	150	8	420	2.3*	45	700	55	11	4.7*	1.5*	2.3*
51–70 y	1,200*	30*	900	4*	150	8	420	2.3*	45	700	55	11	4.7*	1.3*	2.0*
> 70 y	1,200*	30*	900	4*	150	8	420	2.3*	45	700	55	11	4.7*	1.2*	1.8*
Females															
9–13 y	1,300*	21*	700	2*	120	8	240	1.6*	34	1,250	40	8	4.5*	1.5*	2.3*
14–18 y	1,300*	24*	890	3*	150	15	360	1.6*	43	1,250	55	9	4.7*	1.5*	2.3*
19–30 y	1,000*	25*	900	3*	150	18	310	1.8*	45	700	55	8	4.7*	1.5*	2.3*
31–50 y	1,000*	25*	900	3*	150	18	320	1.8*	45	700	55	8	4.7*	1.5*	2.3*
51–70 y	1,200*	20*	900	3*	150	8	320	1.8*	45	700	55	8	4.7*	1.3*	2.0*
> 70 y	1,200*	20*	900	3*	150	8	320	1.8*	45	700	55	8	4.7*	1.2*	1.8*
Pregnancy															
14–18 y	1,300*	29*	1,000	3*	220	27	400	2.0*	50	1,250	60	12	4.7*	1.5*	2.3*
19–30 y	1,000*	30*	1,000	3*	220	27	350	2.0*	50	700	60	11	4.7*	1.5*	2.3*
31–50 y	1,000*	30*	1,000	3*	220	27	360	2.0*	50	700	60	11	4.7*	1.5*	2.3*
Lactation															
14–18 y	1,300*	44*	1,300	3*	290	10	360	2.6*	50	1,250	70	13	5.1*	1.5*	2.3*
19–30 y	1,000*	45*	1,300	3*	290	9	310	2.6*	50	700	70	12	5.1*	1.5*	2.3*
31–50 y	1,000*	45*	1,300	3*	290	9	320	2.6*	50	700	70	12	5.1*	1.5*	2.3*

NOTE: This table presents Recommended Dietary Allowances (RDAs) in **bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). RDAs and AIs may both be used as goals for individual intake. RDAs are set to meet the needs of almost all (97 to 98 percent) individuals in a group. For healthy breastfed infants, the AI is the mean intake. The AI for other life stage and gender groups is believed to cover needs of all individuals in the group, 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); 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 Water, Potassium, Sodium, Chloride, and Sulfate (2004). These reports may be accessed via <http://www.nap.edu>.

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