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XVI INDEX OF TABLES
This review book was expressly developed and written to help the licensed/vocational nurse graduate to study and prepare for the all-important NCLEX-PN® examination. Taking this exam can be a stressful experience since it constitutes a major career milestone, and success on the NCLEX is the key to beginning a successful practice as a licensed practical/vocational nurse. The role the new LPN/LVN is expected to play in the current healthcare system has expanded enormously. This book was written with respect and a keen appreciation for this level of nursing.

ORGANIZATION, CONTENT, AND FEATURES

The content and design of this new text has been carefully constructed to reflect the NCLEX-PN® test plan effective April 2008, beginning with an introductory chapter on how to prepare for the NCLEX-PN®. Chapter 1, How to Prepare for NCLEX-PN®, includes:

- Detailed explanation of the current test plan
- Information on how the test is constructed
- How to apply to take the exam
- Data on scoring and notification of results
- Tips on how to plan your study and prepare successfully

Chapter 2, Essential Concepts, covers general care measures and is designed to help the student review basic nursing care measures commonly asked on the licensure exam. These measures apply across disease boundaries; in short, they are the type of care measures that apply to most clients, no matter what the actual diagnosis may be.

The chapters that follow are organized so concepts that apply across the spectrum of body systems are discussed first to lay a foundation and reduce unnecessary repetition. The Nursing Process as it applies to the LPN/LVN is an integral focal point in the design of this book. NANDA 2010–2011 diagnoses are in every chapter in table format for easy reference.

Individual chapters for the older adult client, perioperative client, oncology, nutrition/special diets and pharmacology address concepts applicable across the broad spectrum of diseases. Conceptual discussion is then followed by the review of the practical application of related nursing care measures.

All the body systems are addressed in individual chapters, as are the more specialized areas of female reproductive/maternity, mental health, and pediatrics.

Each chapter concludes with a number of sample questions that are written to mimic the NCLEX style and test the reader’s mastery of the subject. Following each set of questions are the answers and rationales for those questions giving the reader a powerful learning experience.

There are eight comprehensive practice tests at the end of this text comprised of 100 questions similar in content and style to the types of questions asked on the actual licensure exam. Each question has been “coded” for the student in the areas of Nursing Process, category of Client Need (from the NCLEX Test Plan), Cognitive Level, and Subject Area. This allows the student to identify individual strengths and weaknesses allowing for maximum focus and efficient use of study time. Answers and rationales for each question follow each test.

The CD-ROM included with this book holds an additional 3000 unique questions that allow students to test their knowledge and test-taking skills in two
different ways: learning or test mode. In learning mode, immediate feedback is given after each question is answered. The feedback consists of an explanation for the correct answer as well as incorrect answers. If the test mode option is chosen, the student will receive a score after the test is completed. Questions answered incorrectly may be reviewed at this time.

In either mode, once the practice test is completed, the student has the ability to view and print the results broken down into bar graphs that represent the areas of the test plan, subject area, and nursing process. This element gives the student a clear and concise presentation for enormous amounts of information that further enhance and maximize study time.

The concept, scope, and design of this text represent a commitment, through continuing education, to help the graduate LPN/LVN reach a full professional potential. Good luck on your NCLEX-PN® Examination!
CHAPTER 19
NUTRITION AND SPECIAL DIETS

CHAPTER OUTLINE
460 Carbohydrates, Proteins, and Fats
461 Vitamins
463 Minerals
463 Nursing Care
467 Nutritional Guidelines
467 Special Diets
CARBOHYDRATES (CHO)

A. Characteristics
   1. Composed of carbon, hydrogen, and oxygen
   2. Sugars, starches, and cellulose

B. Functions
   1. Energy: 4 kcal/g
      a. Glucose is a quick source of energy.
      b. Glucose is the only energy source for the central nervous system.
      c. Glucose exerts protein-sparing and fatsparing action.
   2. Regulatory function
      a. Cellulose provides bulk, preventing constipation.
      b. Lactose ferments to lactic acid and encourages the growth of normal bacterial flora and discourages undesirable flora.
   3. Carry essential nutrients
      a. Most CHO’s contain other nutrients.
      b. Concentrated sweets (sugar, syrup) do not carry nutrients and should be limited in diet.

C. Sources
   1. Milk group supplies lactose.
   2. Legumes and nuts supply cellulose and starch.
   3. Vegetables and fruits
      a. Root and seed vegetables such as beets, turnips, squash, and peas contain starch.
      b. Raw, leafy vegetables (lettuce, spinach) and fruits contain cellulose.
      c. Some vegetables and most fruits contain sugars.

D. Nutritional problems related to CHO
   1. Excessive CHO consumption
      a. Provides empty calories and reduces appetite for other foods
      b. Increases dental caries
      c. Causes increase in blood cholesterol and triglycerides
   2. Diabetes mellitus: lack of adequate amounts of insulin, which transports glucose across cell membranes
   3. Galactosemia
      a. Lack of liver enzyme that converts galactose to glucose
      b. Milk must be restricted if mental retardation is to be prevented.
   4. Lactase deficiency
      a. Lack of lactase (the enzyme that breaks down lactose [milk sugar])
      b. Manifested by gas, cramps, and diarrhea after ingesting sweet milk
      c. Higher incidence in nonwhites; occurs in all races; higher incidence in adults, although it occurs in children
      d. Treated by giving lactase in tablet form or drops to put in milk or using lactose-free milk
      e. Milk in fermented form (yogurt, cheese) is usually tolerated.
      f. Encourage client to get calcium from other sources if milk is not included in his/her diet.

PROTEINS

A. Characteristics
   1. Made up of chains of amino acids; there are 20 different amino acids
   2. Intact proteins do not diffuse through capillary or cell membranes and play a role in fluid balance.
   3. When protein is dissolved in water, it forms a colloidal solution that attracts water; it acts like a sponge to pull up water, helping to regulate fluid balance.
   4. The eight essential amino acids cannot be made by the body and must be supplied in the diet.
   5. Nonessential amino acids are supplied by diet and can be made by the body.
   6. Complete protein foods supply all of the essential amino acids and come from animal sources (meat, milk, fish, and eggs), plus wheat germ and dried yeast.
   7. Incomplete protein foods supply some but not all of the essential amino acids and come from plants; can be used in combination to provide complete protein

B. Functions
   1. Provides structural components of all cells and regulatory compounds, including hormones and enzymes
   2. Regulates water balance
   3. Regulates acid-base balance
   4. Provides resistance to disease (antibodies)
   5. Can be used for energy as a last resort

C. Recommended daily amounts
   1. Infant: 2.2 g/kg body weight
   2. Adult: 0.8 g/kg body weight

D. Protein deficiency
   1. Persons at greatest risk include the chronically ill, elderly on fixed incomes, low-income groups, and strict vegetarians.
2. Manifestations
   a. Generalized weakness
   b. Weight loss
   c. Lowered resistance to infection
   d. Slow wound healing; prolonged recovery from illness
   e. Growth failure
   f. Brain damage to fetus or infant
   g. Edema due to decreased albumin in blood
   h. Anemia in severe deficiency
   i. Fatty infiltration of liver and liver damage

E. Indications for high-protein diet
   1. Burns, massive wounds when tissue building is desired
   2. Mild to moderate liver disease
   3. Malabsorption syndromes
   4. Undernutrition
   5. Pregnancy to meet needs of mother and developing fetus
   6. Preeclampsia to replace protein lost in the urine
   7. Nephrosis to replace protein lost in the urine

F. Sources of protein
   1. Animal sources: meats, fowl (chicken, turkey, duck), milk and cheese, egg whites
   2. Plant sources: legumes (soybeans, lentils, peanuts, and peanut butter)

G. Indications for low-protein diets
   1. Liver failure (liver does not metabolize protein, causing nitrogen toxicity to brain)
   2. Kidney failure (kidneys can no longer excrete protein, causing toxic nitrogen levels to build in the brain)

H. Low-protein diets
   1. Increase CHO so energy needs will be met by CHO, not protein breakdown.
   2. Small protein intake that is allowed will be complete proteins (animal sources).

FATS

A. Characteristics
   1. Made up of carbon, hydrogen, and oxygen
   2. Insoluble in water
   3. 9 kcal/g

B. Functions
   1. Provide energy
   2. Carriers for fat-soluble vitamins

C. Sources
   1. Saturated fats come from animal sources: meat, milk, and eggs.
   2. Unsaturated fats come from vegetables, nuts, or seed sources: corn oil, safflower oil, sunflower oil (liquids), olive oil, and canola oil.
   3. Palm oil and coconut oil are vegetable oils that are highly saturated.
   4. Nuts and salmon contain omega-3 fatty acids, which help to lower bad cholesterol (low-density lipoprotein [LDL]) and increase good cholesterol (high-density lipoprotein [HDL]).

D. Indications for low-fat diet
   1. Cardiovascular disease
   2. Gallbladder disease
   3. Malabsorption syndromes, cystic fibrosis, pancreatitis
   4. Obesity

E. Advise clients not to fry foods but to bake or broil without butter to reduce fat content.

Vitamins are organic food substances and are essential in small amounts for growth, maintenance, and the functioning of body processes.

A. Water-soluble vitamins
   1. Water-soluble vitamins are the B vitamins and vitamin C (Table 19–1)
   2. Characteristics
      a. Soluble in water; insoluble in fat
      b. Dissolve in cooking water
      c. Dietary excesses excreted in urine; lessens danger of overdose
      d. Minimal storage of dietary excesses; need daily intake
   3. Deficiency symptoms develop quickly.

B. Fat-soluble vitamins (see Table 19–1)
   1. Fat-soluble vitamins are vitamin A (retinol), vitamin D (Calciferol), vitamin E (tocopherol), and vitamin K (Mephyton); coenzyme Q10 is also classed as a fat-soluble vitamin (see Table 19–1).
   2. Characteristics
      a. Soluble in fat; insoluble in water
      b. Follow absorption and circulation pathway of fats
      c. Dietary excesses stored in body; increases risk of overdose
      d. Dietary excesses not excreted in urine
      e. Deficiency symptoms develop slowly.
      f. Do not dissolve in cooking water
<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Functions</th>
<th>Deficiency Symptoms</th>
<th>Food Sources</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B₁, Thiamin</strong></td>
<td>Releases energy from carbohydrates (CHO); nervous system functioning</td>
<td>Mental depression, neuritis, heart failure, beriberi</td>
<td>Whole grain and enriched breads and cereals; dried peas and beans</td>
<td>Prolonged high alcohol intake causes symptoms; not well stored in body</td>
</tr>
<tr>
<td><strong>B₂, Riboflavin</strong></td>
<td>Helps transform CHO, fats, and protein into energy</td>
<td>Sensitivity to light, itching, burning eyes, sore tongue and mouth, dry cracked lips and mouth</td>
<td>Milk, yogurt, cheese, dark green vegetables, meat, poultry, eggs, whole grain and enriched cereals and breads</td>
<td>Not well stored in body</td>
</tr>
<tr>
<td><strong>Niacin</strong></td>
<td>Helps transform CHO, protein, and fat into energy</td>
<td>Pellagra, inflammation of the tongue, diarrhea, nerve degeneration, dermatitis</td>
<td>Meat, poultry, fish, whole grain and enriched cereals and breads, nuts, dried beans and peas</td>
<td>Used to reduce serum cholesterol levels</td>
</tr>
<tr>
<td><strong>B₆, Pyridoxine</strong></td>
<td>Aids in the use of amino acids and formation of certain proteins; aids in the use of fats</td>
<td>Dermatitis, nervous irritability, convulsions</td>
<td>Meat, poultry, fish, dried beans and peas, whole grain breads and cereals</td>
<td>Given with isoniazid (INH) to prevent side effect of peripheral neuritis, converts glycogen to glucose</td>
</tr>
<tr>
<td><strong>Folic Acid</strong></td>
<td>Formation of hemoglobin and genetic material</td>
<td>Neural tube defects in fetus if mother is deficient</td>
<td>Dark-green leafy vegetables, whole grain breads and cereals, dried beans and peas, fruits, especially orange juice</td>
<td></td>
</tr>
<tr>
<td><strong>B₁₂, Cobalamin</strong></td>
<td>Promotes nervous system functioning, helps to form red blood cells, synthesis of DNA and RNA</td>
<td>Pernicious anemia, neuropathy</td>
<td>Meat, milk, fish, eggs</td>
<td>Intrinsic factor is necessary for absorption</td>
</tr>
<tr>
<td><strong>C, Ascorbic Acid</strong></td>
<td>Helps to make collagen; production of steroid hormones; resistance to infection; converts folic acid to folinic acid; enhances iron absorption</td>
<td>Scurvy, bleeding gums, easy bruising, poor wound healing</td>
<td>Citrus fruits, tomatoes, melons, broccoli, raw cabbage</td>
<td>Known as a healing vitamin, not well stored in body, easily destroyed by cooking</td>
</tr>
<tr>
<td><strong>A, Retinol</strong></td>
<td>Formation and maintenance of healthy skin, hair, and mucus membranes; improves night vision; bone growth; tooth development; reproduction</td>
<td>Night blindness, poor bone and tooth development</td>
<td>Animal sources: liver, egg yolk, cheese, whole milk, butter, fish liver oils, deep yellow/orange and dark green vegetables: carrots, broccoli, spinach, sweet potatoes, pumpkin, winter squash, cantaloupe, peaches, apricots</td>
<td>Large amounts can be toxic; bile necessary for absorption</td>
</tr>
<tr>
<td><strong>D, Calciferol</strong></td>
<td>Formation and maintenance of bones and teeth; absorption and use of calcium and phosphorus</td>
<td>Rickets, bowed legs, muscle spasms, delayed eruption of teeth</td>
<td>Milk fortified with vitamin D, egg yolk, tuna, salmon, cod liver oil</td>
<td>Known as the sunshine vitamin because it is made in the skin when it is exposed to sunlight</td>
</tr>
</tbody>
</table>
Minerals are inorganic substances and essential for metabolic processes. See Table 19-2.

### Nursing Care

A. Assessment
   1. Obtain objective measurements
      a. Weight in relation to height
      b. Recent gain or loss in weight
      c. Ask client to recall foods consumed in the last three days.
   2. Determine client’s understanding of purpose of diet.

B. Interventions
   1. Discuss dietary instructions and answer questions.
   2. Provide written guidelines and lists of foods.

C. Evaluation
   1. Have client describe diet and select menu choices.
   2. Assess weight and related lab values.
<table>
<thead>
<tr>
<th>Minerals</th>
<th>Deficiency Symptoms</th>
<th>Functions</th>
<th>Food Sources</th>
<th>Indications for Increasing Mineral</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>Tetany, convulsion, bleeding</td>
<td>Building bones and teeth, muscle contraction, blood clotting</td>
<td>Milk, yogurt, and cheese; sardines; canned salmon eaten with bones; dark, green leafy vegetables; dried beans and peas</td>
<td>Bone growth in children and adolescent age groups; pregnant and lactating women; postmenopausal women to prevent osteoporosis</td>
<td>Vitamin D enhances the absorption of calcium</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>Fragile bones, fatigue, pain, and stiffness</td>
<td>Building bones and teeth; releases energy from carbohydrates (CHO), proteins, and fats; helps form genetic material and enzymes</td>
<td>Meat, poultry, fish, eggs, dried milk, and milk products; soft drink is high in phosphorous</td>
<td>Renal failure, high serum phosphorous levels</td>
<td>Diet of 1000 mg of sodium or less for persons with high phosphorous levels</td>
</tr>
<tr>
<td>Sodium</td>
<td>Nausea and vomiting, convulsion, confusion, cramps, convulsions; sedation</td>
<td>Regulates body fluid volume; regulates blood pressure; transports ions of nerve impulses</td>
<td>Table salt, commercially processed foods, milk, cheese, vegetables, and foods; cereal products (oats, rice, pasta); frozen peas, carrots, celery, spinach, baked goods</td>
<td>Cardiovascular conditions including hypertension, congestive heart failure, and myocardial infarction; renal failure; cirrhosis of the liver</td>
<td>Sodium loss increases with cystic fibrosis, requiring additional intake. Sodium loss is increased with renal failure, requiring additional intake especially in hot weather.</td>
</tr>
</tbody>
</table>

**Table 19-2 Minerals**

- Calcium: 1000–1200 mg/day
- Phosphorus: 700 mg/day
- Sodium: 1000 mg/day

- Calcium-based antacids such as Gels and Option-phenolphosphate can cause calcium to be fragile.
<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Recommended Dietary Allowance (RDA)</th>
<th>Effects of Deficiency</th>
<th>Food Sources</th>
<th>Effects of Overdose</th>
<th>Preventive Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Potassium</strong></td>
<td>No Recommended Dietary Allowance (RDA); 2000–3000 mg usual recommendation</td>
<td>Muscle contraction including heart muscle; fluid and electrolyte balance in cells; transmission of nerve impulses; release of energy from CHO, proteins, and fats; may help in blood pressure control</td>
<td>Citrus fruits (oranges, grapefruit, melons, apricots), dried peas, soy beans, Lima beans, kidney beans, meat, baked potatoes, squash, milk. <strong>Foods low in potassium:</strong> breads and cereals, white sugar, fats, cranberry and grape juice; potassium is soluble in water (soaking vegetables in water before cooking reduces potassium content)</td>
<td>Thiazide diuretics and furosemide (Lasix); Cushing’s syndrome; vomiting; diarrhea; nasogastric (NG) tube</td>
<td>Kidney failure; burns (first 2–3 days)</td>
</tr>
<tr>
<td><strong>Magnesium</strong></td>
<td>Men: 350 mg; Women: 280 mg</td>
<td>Builds bones, makes proteins, releases energy from muscle glycogen, regulates body temperature, helps to prevent irregular heartbeat, eases premenstrual syndrome and menstrual cramps</td>
<td>Leafy green vegetables, nuts and seeds, whole grains, dried beans and peas, shellfish</td>
<td>Alcoholism, cardiac dysrhythmias, constipation</td>
<td>Overdose unlikely</td>
</tr>
<tr>
<td><strong>Iron</strong></td>
<td>Premenopausal women: 15 mg/day; pregnant women: 50 mg/day; older women and men: 10 mg/day</td>
<td>Makes hemoglobin, which carries oxygen to cells; makes myoglobin in muscle; part of several enzymes and proteins</td>
<td>Red meats, liver, kidney, poultry, fish, egg yolks, green leafy vegetables, dried beans and peas, whole grain products, fortified breads and cereals</td>
<td>Iron deficiency anemia, blood loss, pregnancy</td>
<td>Persons who have hemosiderosis (accumulation of iron in the tissues) should not take iron supplements</td>
</tr>
</tbody>
</table>
| **Zinc** | Men: 15 mg/day; Women: 12 mg/day | Formation of protein, wound healing, prevention of anemia, growth of genital organs, fights colds and flu; taste and smell | Meat, poultry, shellfish, cheese, whole grain cereals, dried beans and peas, nuts and cereals | Older men to promote healthy prostate | None | Doses over 100 mg/day can impair immunity. Zinc is necessary to maintain proper amount of vitamin E in the blood. | (Continued)
<table>
<thead>
<tr>
<th>Mineral</th>
<th>Functions</th>
<th>Deficiency Symptoms</th>
<th>Food Sources</th>
<th>Indications for Increasing Mineral</th>
<th>Indications for Decreasing Mineral</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Iodine</strong></td>
<td>Major ingredient of thyroid hormones; reproduction</td>
<td>Endemic goiter</td>
<td>Iodized salt, seafood, shrimp, lobster, crab, seaweed</td>
<td>Iodine-deficient goiter</td>
<td>Before iodine uptake studies</td>
<td></td>
</tr>
<tr>
<td><strong>Chlorine</strong></td>
<td>Part of HCl in gastric juice, helps regulate blood acidity</td>
<td>Not common</td>
<td>Chief food source is salt—sodium chloride</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td><strong>Fluorine</strong></td>
<td>Strong, decay-resistant teeth, bone strength</td>
<td>Poor teeth</td>
<td>Fluoridated water, water naturally containing fluoride, small ocean fish with bones, fluoride mouthwash and toothpaste</td>
<td>To promote strong teeth</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td><strong>Selenium</strong></td>
<td>Works with vitamin E to help prevent cancer and heart disease; protects against cataracts and macular degeneration; fights viral infections; promotes pancreatic function</td>
<td>Muscle breakdown, cancer, heart disease</td>
<td>Meat, whole grains, Brazil nuts, broccoli, yeasts, onions, salmon</td>
<td>Intake usually adequate</td>
<td>No side effects known</td>
<td></td>
</tr>
</tbody>
</table>

Source: Delmar/Cengage Learning
**Consistency Modifications**

A. Clear, liquid diet
   1. Purpose is to rest gastrointestinal (GI) tract and maintain fluid balance.

B. Indications
   a. Immediate postoperative period until bowel sounds have returned and nausea and vomiting have ceased
   b. Diarrhea

**Nutritional Guidelines**

**Food Pyramid**

A. Foods are grouped according to composition and nutrient value (Figure 19–1).
   1. Bread, cereal, rice, pasta group: 6 to 11 servings

2. Fruit group: 2 to 4 servings
3. Vegetable group: 3 to 5 servings
4. Meat, poultry, fish, beans, eggs, and nuts group: 2 to 3 servings
5. Milk, yogurt, cheese group: 2 to 3 servings
6. Use fats, oil, and sweets sparingly.

**Special Diets**

**Consistency Modifications**

A. Clear, liquid diet
   1. Purpose is to rest gastrointestinal (GI) tract and maintain fluid balance.

2. Indications
   a. Immediate postoperative period until bowel sounds have returned and nausea and vomiting have ceased
   b. Diarrhea
c. Nausea and vomiting
d. Bowel preps before bowel x-rays or bowel surgery

3. Foods allowed: “see-through foods”
a. Water
b. Tea
c. Broth
d. Gelatin (Jell-O)
e. Apple juice
f. Cranberry juice
g. Ginger ale

4. Not nutritionally adequate

B. Full, liquid diet
1. Clear liquids
2. Milk and milk products
   a. Puddings
   b. Custards
   c. Cream soups
   d. Ice cream
   e. Sherbert
   f. All fruit juices
3. Can be nutritionally adequate

C. Soft diet
1. Full, liquid diet
2. Pureed vegetables
3. Eggs cooked any way except fried
4. Tender meat
5. Potatoes (not fried)
6. Cooked fruit

D. Bland diet
1. Promotes healing of the gastric mucosa
2. Chemically and mechanically nonstimulating
3. Given in small, frequent feedings to assist in diluting or neutralizing stomach acid (protein foods are good at neutralizing acid)
4. Spices such as pepper and chili are eliminated.
5. A soft diet without spices

E. Low-residue diet
1. Residue is the indigestible material left in the digestive tract after food has been digested. It is not the same as fiber. High-fiber foods are high in residue. Other foods such as milk and milk products also leave a residue.
2. Indications
   a. Following colon, rectal, or perineal surgery to reduce pressure on the operative site
   b. Prior to examination of the lower bowel to enhance visualization
   c. Internal radiation for cancer of the cervix
   d. Crohn’s disease or regional enteritis, ulcerative colitis to reduce irritation of the large bowel
   e. Diarrhea to rest the bowel
3. Foods that should be avoided:
   a. High-fiber foods: fruits and vegetables
   b. Milk and milk products
   c. Whole grain breads and cereals
4. Foods allowed:
   a. Clear liquids
   b. Sugar, salt
   c. Meats, eggs
   d. Limited amounts of milk
   e. Refined cereals
   f. White breads
   g. Peeled white potatoes

F. High-residue diet
1. Indications
   a. Constipation
   b. Hemorrhoids
2. Foods to include are high-fiber foods
   a. Fresh fruits and vegetables
   b. Whole grain products

GLUTEN-FREE DIET

A. Purpose is to eliminate gluten (a protein) from the diet.
B. Indicated in malabsorption syndromes such as sprue and celiac disease
C. Eliminate all barley, rye, and wheat. Some oats may contain gluten.
D. Avoid
1. Cream sauces
2. Breadcrusts
3. Cakes
4. Breads
5. Muffins
E. Allow corn, rice, and soy flour.
F. Teach client to read the labels of prepared foods.

PHENYLKETONURIA (PKU) DIET

A. Purpose is to control intake of phenylalanine, an amino acid that cannot be metabolized in persons who have phenylketonuria.
B. Diet should be followed lifelong.
C. Avoid
1. Breads
2. Meats
3. Fish
4. Poultry
5. Cheeses
6. Legumes
7. Nuts
8. Eggs
9. Too much pasta
D. Give phenylalanine-free formula as ordered.
E. Teach the family to use low-protein flour for baking.
F. Sugar substitutes containing aspartame (NutraSweet, Equal) contain phenylalanine and must not be used. Avoid diet soft drinks containing aspartame.
G. Amount of phenylalanine ingested must be monitored and recorded daily; limits adjusted for growth spurts, aging
LOW-PURINE DIET

A. Indicated for gout, uric acid kidney stones, and uric acid retention
B. Purpose is to decrease the amount of purine, a precursor to uric acid.
C. Foods containing purines should be avoided.
   1. Organ meats
   2. Other meats
   3. Fowl
   4. Fish and lobster
   5. Lentils, dried peas and beans
   6. Nuts
   7. Oatmeal
   8. Whole wheat

DIETS TO ALTER ACIDITY OF BLOOD

A. Acid ash diet
   1. Used to prevent alkaline kidney stones
   2. Avoid most fruits and vegetables and milk.
   3. Cranberries, plums, and prunes leave an acid ash and are encouraged.
   4. Meats and breads are allowed.
B. Alkaline ash diet
   1. Used to prevent acid kidney stones
   2. Avoid proteins, cereals, meats, fish, eggs, bread, cranberries, prunes, and plums.
   3. Cranberries, prunes, and plums are not allowed.

Table 19–3 Exchange Groups for Diabetic Diet

<table>
<thead>
<tr>
<th>Milk</th>
<th>Vegetable</th>
<th>Fruit</th>
<th>Bread</th>
<th>Meat</th>
<th>Fat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equivalent to 1 cup skim milk, most milk products also contain fat; whole milk is 1 milk and 2 fat exchanges</td>
<td>Equivalent to 1/2 cup of nonstarchy, low-calorie vegetables: broccoli, carrots, string beans, tomatoes; lettuce and radishes can be eaten as desired</td>
<td>Contains more sugar and more calories than vegetable exchanges. Amount of fruit in an exchange varies with the sugar content of each fruit: 1 small apple, 1/2 cup orange juice, 1/3 cup pineapple juice, 1/4 cup raisins</td>
<td>Contains about 70 calories, 1 slice bread, 1/2 hamburger roll, 1/2 tortilla, 1⁄2 cup bran flakes, 1/2 cup cooked cereal. Starchy vegetables: corn, potato, sweet potato, peas, lentils, dried peas and beans; pasta such as macaroni and spaghetti. Biscuits, muffins, and pancakes are breads but also contain fat</td>
<td>1 oz lean meat. Meat that is not lean also contains fat exchanges. An egg is 1 meat and 1 fat; 2 tablespoons of peanut butter equals 1 meat and 2 fat exchanges; 1/4 cup regular cottage cheese equals 1 meat and 1/2 fat exchange</td>
<td>1 tablespoon butter or margarine is 1 exchange; salad dressing, nuts, 1 slice bacon</td>
</tr>
</tbody>
</table>

Source: Delmar/Cengage Learning

DIETS FOR TREATMENT OF DIABETES

A. Exchange list (Table 19–3)
   1. Purpose
      a. Attain or maintain ideal body weight while ensuring normal growth
      b. Maintain plasma glucose levels as close to normal as possible
   2. Distribution of calories
      a. Protein: 12% to 20%
      b. CHO: 55% to 60%
      c. Fats: 20% to 30%; fats should be unsaturated
   3. Daily distribution of calories
      a. Breakfast: 1/4
      b. Lunch: 1/4
      c. Supper: 1/4
      d. Snacks: 1/4 divided among morning, afternoon, and evening snacks, with the evening snack being the biggest
   4. Use foods high in fiber and complex CHO.
   5. Avoid simple sugars, jams, honey, syrup, and frosting.
B. Glycemic index
   1. Glycemic index refers to how fast and how much the food raises the blood sugar level.
   2. Persons with diabetes should eat foods with moderate to low glycemic index and have minimal amounts of high glycemic index foods (Table 19–4).
   3. Foods high in fiber usually have lower glycemic index. Fat in foods also lowers glycemic index.
Sample Questions

1. The nurse knows that the client understands a low-sodium diet when the client selects which of the following menus?
   1. Lobster salad, corn bread, and milk
   2. Hot roast beef sandwich, celery sticks, and coffee
   3. Sliced chicken, fresh tomatoes, and beets
   4. Liver and onions, creamed carrots, and a biscuit

2. An adult has chronic renal failure and asks why sodium must be limited. What is the best answer for the nurse to make?
   1. “Sodium causes high blood pressure, which is not good for your kidneys.”
   2. “Kidneys normally help the body eliminate sodium. Your kidneys are not doing that now.”
   3. “Sodium tends to increase the workload of the kidneys. Your kidneys need rest.”
   4. “Sodium causes hypotension, which is dangerous when your kidneys don’t work.”

3. A low-sodium, low-fat diet has been prescribed for a client who recently had a myocardial infarction. Which of the following menu selections would be most appropriate for this client?
   1. Hot dog and roll, tossed salad with blue cheese dressing, and chocolate chip cookies
   2. Roast beef with gravy, baked potato, and sliced carrots
   3. Cream of mushroom soup, tuna sandwich, and sliced tomatoes
   4. Baked chicken, green beans, and mashed potatoes

4. Digoxin (Lanoxin) and furosemide (Lasix) have been prescribed for a client who has congestive heart failure. Which snack would be best for the client?
   1. Crackers
   2. Honeydew melon
   3. Apple
   4. Carrots

5. Which foods should be omitted from the diet of a client who has gout?
   1. Eggs and cheese
   2. Lobster and liver
   3. Bread and peanut butter
   4. Apricots and melons

6. A client who is on a special diet for the treatment of gout asks the nurse why a special diet is prescribed. What is the best answer for the nurse to give?
   1. “When purines are used by the body, they break down into uric acid that deposits in your joints and causes pain.”
   2. “Proteins make your lungs work harder and cause you pain.”
   3. “Your heart cannot handle extra fluids.”
   4. “Fats cause oxalates to deposit in your toes and legs, decreasing circulation.”

7. A 10-year-old child has a lactose intolerance. The child’s mother asks the nurse for assistance in meeting calcium needs. What is the best nursing response?
   1. “Serve broccoli and other dark green vegetables frequently.”
   2. “Give her ice cream.”
   3. “Have her drink skim milk.”
   4. “Serve carrots and other yellow vegetables frequently.”

8. The wife of a man who has coronary artery disease asks the nurse how she can prepare foods that will be good for her husband. What should the nurse include when talking with this woman?
   1. Encourage her to use cream sauces to enhance the flavor of foods
   2. Tell her to shop exclusively at health food stores

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Table 19-4  Glycemic Index

<table>
<thead>
<tr>
<th>High</th>
<th>Moderate-High</th>
<th>Moderate-Low</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>White bread</td>
<td>Pita bread</td>
<td>Apples</td>
<td>Broccoli</td>
</tr>
<tr>
<td>Bagels</td>
<td>Oat bran bread</td>
<td>Garbanzo beans</td>
<td>Plums</td>
</tr>
<tr>
<td>White rice</td>
<td>Brown rice</td>
<td>Navy beans</td>
<td>Leafy vegetables</td>
</tr>
<tr>
<td>Corn flakes</td>
<td>All-Bran</td>
<td>Pinto beans</td>
<td>Cherries</td>
</tr>
<tr>
<td>Pretzels</td>
<td>Oat bran</td>
<td>Potato chips</td>
<td>Squash</td>
</tr>
<tr>
<td>Cheerios</td>
<td>Rolled oats</td>
<td>Oranges</td>
<td>Peaches</td>
</tr>
<tr>
<td>Puffed rice/wheat</td>
<td>Carrots</td>
<td>Raisins</td>
<td>Tomatoes</td>
</tr>
<tr>
<td>Graham crackers</td>
<td>Parsnips</td>
<td>Dried fruits</td>
<td>Peanuts</td>
</tr>
<tr>
<td>Pasta (white)</td>
<td>Bananas</td>
<td>Grapes</td>
<td>Yogurt</td>
</tr>
<tr>
<td>Grape Nuts</td>
<td>Kidney beans</td>
<td>Peas</td>
<td>Ice cream</td>
</tr>
<tr>
<td>Glucose</td>
<td>Potatoes</td>
<td>Mars bars</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Honey</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Delmar/Cengage Learning
3. Suggest she substitute salmon or other fish for meat several times a week.
4. Encourage her to add onion salt and celery salt to foods.

9. A client who has hypertension makes all of the following statements. Which statement indicates a need for more teaching?
   1. “I eat fresh fruit every day.”
   2. “I just love dill pickles with my sandwich at lunch.”
   3. “I prefer broiled meats to fried food.”
   4. “I enjoy one cup of decaffeinated coffee at lunch.”

10. An adult who has hypertension is taking furosemide (Lasix). The client has been placed on a low-sodium, high-potassium diet. What is the reason for the potassium alteration?
   1. To prevent sodium loss from the renal tubules
   2. To replace potassium lost from the kidneys
   3. To prevent osteoporosis secondary to diuresis
   4. To maintain an acid-base balance

11. Ferrous sulfate has been prescribed for a woman who is pregnant. The nurse should advise her to take the medication at which time?
   1. Upon arising
   2. With meals
   3. Immediately following meals
   4. At bedtime

12. A pregnant woman asks why iron has been prescribed for her. How should the nurse reply?
   1. “Iron helps to prevent sickle cell anemia in your baby.”
   2. “Iron will help your baby to develop more intelligence.”
   3. “Your body needs a lot of iron to make red blood cells for you and your baby.”
   4. “Your morning sickness will be less if you have plenty of iron.”

13. A pregnant woman asks the nurse for help in planning her diet to include iron sources. Which suggestion would be best?
   1. Be sure to eat at least one egg white a day.
   2. Drink orange juice with your morning egg.
   3. Drink milk with every meal.
   4. A peanut butter sandwich is a good snack.

14. A young mother is concerned about providing an adequate diet for her children and asks the nurse how to be sure they get enough B vitamins. Which response is best?
   1. Provide a glass of milk with every meal.
   2. Offer whole grains and cereals.
   3. Give citrus fruits as snacks.
   4. Offer carrots and melons.

15. An adult says to the nurse, “The doctor told me that I should have plenty of the healing vitamin to help my operation heal.” What foods would best meet this prescription?
   1. Apple juice
   2. Strawberries
   3. Hamburger
   4. Peanut butter

16. An adult is on a low-sodium, low-fat diet for hypertension. What question is most important for the nurse to ask when starting to teach the client?
   1. “How do you prepare your foods?”
   2. “When do you eat your meals?”
   3. “Who eats with you?”
   4. “When do you sleep?”

17. Which of these meals would the nurse recommend to provide the highest amount of protein and calories?
   1. Vegetable soup, cottage cheese on crackers, applesauce, and a hot chocolate
   2. Cheeseburger, French-fried potatoes, carrot sticks, cantaloupe balls, and milk
   3. Fresh fruit plate with sherbert, buttered muffin, slice of watermelon, and a fruit-flavored milk drink
   4. Chicken noodle soup, cream cheese and jelly sandwich, buttered whole-kernel corn, orange sherbert, and a cola drink

18. Mothers should be instructed that diets for infants and toddlers who drink a lot of milk and few other foods will most likely result in the development of a deficiency in which of these nutrients?
   1. Iron
   2. Carbohydrate
   3. Vitamin D
   4. Vitamin K

19. Following surgery, a clear liquid diet is ordered. Which of these foods would be contraindicated for this person?
   1. Tea with lemon
   2. Ginger ale
   3. Milk
   4. Gelatin desert

20. A 4-year-old child has phenylketonuria and must follow a special diet. Which food is allowed on this diet?
   1. Bread and butter
   2. Strawberries
   3. Peanut butter sandwich
   4. Hamburger

21. A low-residue diet is ordered for an adult. The nurse knows the client understands the diet when which foods are selected?
   1. Spinach salad and roast beef
   2. Mashed potatoes and chicken

NUTRITION AND SPECIAL DIETS 471
22. The nurse is to teach a client about a low-purine diet. What should the nurse do initially?
1. Provide a list of foods to be avoided
2. Ask the client what he has eaten for the last three days
3. Obtain baseline weight and height measurements
4. Explain why he must follow this diet

23. A woman who is in the seventh month of pregnancy has symptoms of preeclampsia. When discussing diet, the nurse instructs the client to eat a high-protein diet and to avoid foods that have a high sodium content. Which of these foods, if selected by the client, would be correct?
1. Creamed chipped beef on dry toast
2. Cheese sandwich on whole-wheat toast
3. Frankfurter on a roll
4. Tomato stuffed with diced chicken

24. An adolescent has been recently diagnosed as having Type 1 insulin-dependent diabetes. She asks the nurse if she will ever be able to go out with her friends for pizza or ice cream. Which of these responses by the nurse would give accurate information?
1. “You can go with the group, but you cannot eat pizza or ice cream.”
2. “You can have pizza but not ice cream.”
3. “If you eat when out with your friends, you will have to skip the next meal.”
4. “It is important for you to be with your friends. We will help you learn how to choose foods.”

25. A pregnant woman tells the nurse that she is constipated. What suggestion is best for the nurse to give the woman?
1. Reduce your fluid intake.
2. Reduce your intake of fruits.
3. Increase your intake of raw vegetables.
4. Increase your intake of rice.

Answers and Rationales

1. Chicken is lower in sodium than seafood and beef. Fresh tomatoes are low in sodium. Canned tomato products are not. Beets are not high in sodium. Seafood is high in sodium. Foods containing baking soda, such as corn bread and biscuits, are high in sodium. Milk and milk products are high in sodium. Creamed foods are high in sodium. Celery sticks and carrots are naturally high in sodium.

2. This best explains the reason for reducing sodium in the diet of someone who has chronic renal failure. There is some truth to answer 1. Sodium is probably related to hypertension in some individuals, and hypertension is not good for the kidneys. However, answer 2 is better. Answer 3 is not correct. Answer 4 is not correct. Sodium causes hypertension, not hypotension.

3. Chicken is lower in sodium and fat than beef and other meats. Green beans and mashed potatoes are low in sodium. Hot dogs are high in sodium and fat. Blue cheese dressing is high in sodium and fat. Carrots are naturally high in sodium. Creamed products are high in sodium and fat. Soups have about 1000 mg of sodium per serving. Tuna is high in sodium. Bread contains about 200 mg of sodium per slice.

4. Furosemide is a potassium-depleting diuretic. Melons are high in potassium. Crackers have very little potassium. An apple is not high in potassium. Carrots are high in sodium.

5. Lobster and liver are high in purines. The other foods are not particularly high in purines.

6. The prescribed diet for gout is a low-purine diet. Purines break down into uric acid. Persons who have gout do not excrete the uric acid normally, and it deposits in joints and causes severe pain. Answer 2 makes no sense. Extra fluid volume is not the problem in gout. Gout is faulty purine metabolism, not faulty oxalate metabolism.

7. Broccoli and other dark green vegetables are high in calcium. The person who has lactose intolerance usually cannot eat ice cream or skim milk, both of which contain lactose (milk sugar). Carrots and yellow vegetables are high in vitamin A but are not high in calcium.

8. Salmon and fish contain omega-3 fatty acids, which are “heart healthy” and help to increase HDL and lower LDL. Meat is high in omega-6 fatty acids, which raise the bad cholesterol (LDL). Cream sauces are high in fat and should be avoided if a person has coronary artery disease. There is no need to shop exclusively at health food stores. Onion salt and celery salt contain salt and are usually limited for a person who has coronary artery disease.

9. The person who has hypertension should have a diet low in sodium and fat and avoid caffeine. Dill pickles are extremely high in sodium. Each slice of bread has about 200 mg of sodium. Sandwiches should be avoided on a low-sodium diet. Fresh fruit is low in sodium. Meats, when eaten, should be broiled, not fried. Decaffeinated coffee is recommended for persons who have hypertension.
10. 2. Furosemide (Lasix) is a potassium-depleting diuretic. Persons taking furosemide should increase their intake of potassium to replace the potassium lost in the urine. A high-potassium diet does not prevent sodium loss from the renal tubules. Sodium loss from the renal tubules is the mechanism by which furosemide works. Potassium in the diet does not prevent osteoporosis secondary to diuresis. Dietary potassium is not increased to maintain acid-base balance.

11. 2. Taking ferrous sulfate (iron) with meals helps to reduce nausea associated with the medicine. Absorption is best on an empty stomach. However, many people experience nausea when taking iron.

12. 3. The mother has to supply the iron needed for her increase in blood volume during pregnancy, for the baby’s blood, and a six-month supply of iron for the newborn. Iron does not prevent sickle cell anemia. Iron does not increase intelligence. Iron does not reduce morning sickness. In fact, iron can cause nausea if it is taken on an empty stomach.

13. 2. Egg yolk contains iron. Iron is best absorbed when taken with a vitamin C source, such as orange juice. Egg white contains no iron. Milk contains no iron. A peanut butter sandwich is not a good source of iron.

14. 2. The best sources of B vitamins are whole grains and cereals. Milk contains good amounts of calcium. Citrus fruits are good sources of vitamin C and potassium. Carrots and melons are good sources of vitamin A.

15. 2. Strawberries are high in vitamin C. The other choices are not high in vitamin C. Vitamin C is called “the healing vitamin.”

16. 1. A high-fat, low-sodium diet involves low salt and baking or broiling, not frying. The other questions are not particularly relevant to a low-sodium, low-fat diet.

17. 2. Protein is in the cheeseburger and the milk. The calorie load is high. The other choices have less protein and fewer calories.

18. 1. Milk contains no iron.

19. 3. Milk is not a clear liquid. All of the other choices are clear liquids.

20. 2. The PKU diet eliminates phenylalanine. Phenylalanine is a protein. The person should avoid all meats and protein foods. Bread contains small amounts of protein and should be avoided on a PKU diet.

21. 2. Mashed potatoes and chicken are low in residue. Residue sources have skins, seeds, or leaves. Spinach, green beans, and lettuce are all high in residue.

22. 2. Nutrition teaching should start with a diet history.

23. 4. Chicken contains protein and is relatively low in sodium. Fresh tomatoes are low in sodium. Creamed chipped beef on toast, a cheese sandwich, and a hot dog all contain protein but are also very high in sodium.

24. 4. This answer recognizes the adolescent’s need to be with her friends and explains that she will learn how to choose foods. The other answers do not give accurate information.

25. 3. Constipation is best prevented by increasing fiber intake. Fresh vegetables and fruits are good sources of fiber. Fluid intake should be increased, not reduced. Rice tends to cause constipation.