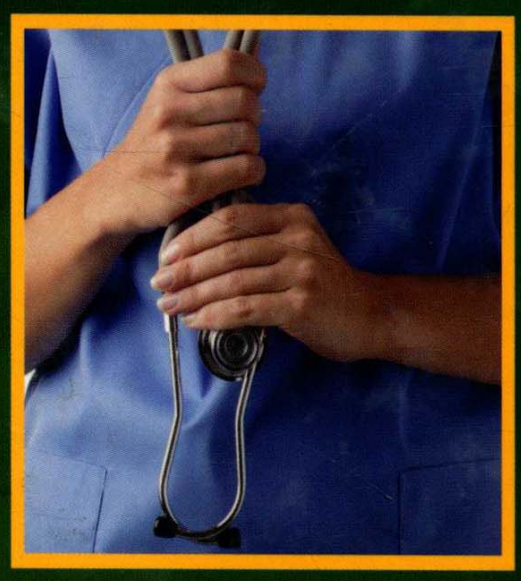
Introduction to Medical-Surgical Nursing



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Introduction to Medical-Surgical Nursing

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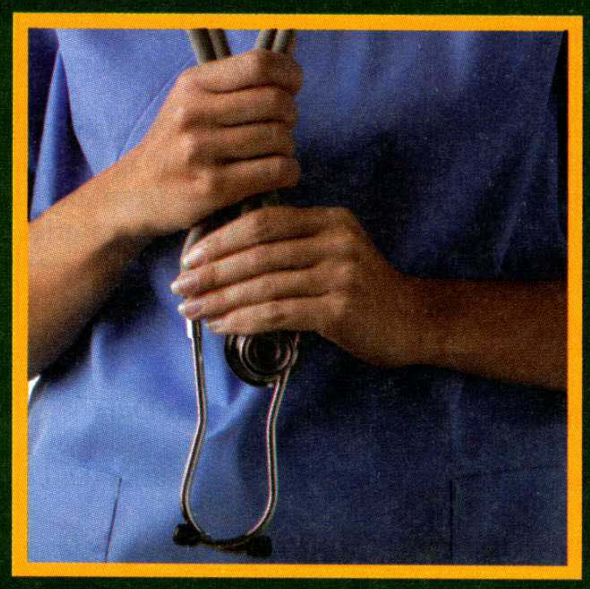

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Dedicated to Ilze Rader, Robin Richman, Terri Woods, and Marie Thomas who believed in this textbook and saw it through the first four editions.

Adrianne Dill Linton

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I wish the best to my colleague Dr. Mary Ann Matteson, who was co-author of the first two editions, as she continues to enjoy her retirement. Dr. Nancy Maebius continues to be a strong force in the development of this text and remains the author of the Study Guide. As an LVN educator, her insights and guidance are vital. I am grateful to the chapter contributors, who ensured accurate and current information, and to Allison Muller who updated the pharmacology companion, and the many other individuals involved in the development of the ancillary materials.

I must not overlook my family, who remained patient and encouraging as I immersed myself in this process once again. I want to express my appreciation to my husband, Ken, and to my daughter, Leigh, and son-in-law, Paul.

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To the Instructor

The first four editions of this text were designed to provide practical and vocational nursing students with accessible, comprehensive coverage of the nursing care of adults with disorders requiring medical, surgical, and psychiatric management. The needs of older adults and residents of nonacute care settings received special attention. The fifth edition has maintained that focus. To keep pace with the rapidly evolving field of nursing, we have added useful and exciting new features, many of which were suggested by instructors and students.

ORGANIZATION

Unit I explores patient care concepts, including the health care system, patient care settings, leadership, the nurse-patient relationship, cultural aspects of nursing care, the nurse and the family, health and illness, nutrition, developmental processes, the older patient, and the nursing process and critical thinking. Chapter one has been extensively revised to reflect the increased emphasis on quality and safety in health care. The 2010 Health Care Reform Bill received limited coverage as the implementation is pending as this text goes to press. **Unit II** focuses on physiologic responses common to many disorders: inflammation, infection, and immunity; imbalances of fluids and electrolytes; and pain. **Unit III** covers first aid and emergency care, shock, general care of the surgical patient, and intravenous therapy. Detailed coverage of cardiopulmonary resuscitation was removed because the guidelines are likely to change within the lifetime of a textbook. Therefore, the reader is referred to the American Heart Association for the latest guidelines. The in-depth coverage of topics in **Unit II** and **III** provides both a foundation for understanding many disorders and a scientific basis for many aspects of nursing care. This approach is efficient because conditions such as common electrolyte imbalances need not be explained repeatedly in the many situations in which they occur.

Acknowledging the important role the LPN/LVN plays in the care of older adults, **Unit IV** provides comprehensive coverage of four clinical problems (falls, incontinence, confusion, and immobility) as well as end-of-life care. The last of the introductory units, **Unit V,** takes a broad look at the nursing care of patients with cancer and patients with an ostomy. This overview creates a foundation for the student to build on when studying a variety of systems and disorders.

Units VI through **XVI** follow a systems approach to medical-surgical disorders. For each system, a thorough nursing assessment, age-related considerations, diagnostic tests and procedures, drug therapy, and other common therapeutic measures are discussed. Although complete assessment data are included, the specific role of the LPN/LVN in data collection for focused assessments is emphasized. Common therapeutic measures are intended not to replace a fundamentals text but, instead, to provide a limited summary or review of key aspects of nursing care. Specific aspects are covered, including pathophysiology, signs and symptoms, complications, diagnosis, and medical treatment. **Unit XVII** consists of three chapters that address psychosocial responses to illness, psychiatric disorders, and substance abuse. This unit can eliminate the need for a separate mental health nursing textbook.

KEY FEATURES

Introduction to Medical-Surgical Nursing has been enthusiastically received by both students and instructors. They told us which features were most helpful to them, and we listened.

Accessible Language

The text is straightforward and direct, avoiding the cumbersome third person. What's more, we have continued to improve consistency and to standardize the reading level throughout.

Key Terms with Phonetic Pronunciations

Complex medical, nursing, and scientific words can be tricky to understand and pronounce. A Key Terms list at the beginning of each chapter shows students how to pronounce important terms they may encounter as nurses. All phonetic pronunciations have been reviewed by a specialist in English as a Second Language (ESL). Key terms appear in color in the text and are defined.

Nursing Diagnoses, Goals, and Outcome Criteria

Nursing care is the heart of this text, which is organized according to the steps of the nursing process. For each major disorder covered, nursing diagnoses, goals, outcome criteria, and relevant interventions are presented. The nursing assessment is described, with an emphasis on data collected by the LVN/LPN.

Patient Teaching Plans
Patient and family teaching are emphasized throughout, with teaching plans presented in a special format. The patient teaching plans are intended not to be complete but, rather, to give the student some critical points to emphasize.

Diagnostic Tests and Procedures Tables
Each chapter dealing with a particular body system contains a table detailing specific diagnostic tests and procedures for selected nursing diagnoses.

Pharmacology Capsules
Important drug information, including drug actions, potential drug interactions, adverse effects, and nursing considerations are highlighted in these brief boxes within the text of each chapter.

Nutrition Considerations
A poor diet can affect a patient's health, but failing health can compromise a patient's nutritional status as well. Important nutrition-related topics are spotlighted at appropriate points throughout the text.

Put on Your Thinking Cap!
These questions, which appear in brief boxes throughout the text, invite students to take their reading a step further by thinking critically about the material and applying it to realistic scenarios.

Cultural Considerations
In our increasingly diverse culture, nurses must be comfortable working with patients of every conceivable ethnic and cultural background, religion, lifestyle, and sexual orientation. To help students see the connection between culture and care, a feature called What Does Culture Have to Do With … ? appears at relevant points in the chapter text. In addition, an entire chapter (Chapter 6: "Cultural Aspects of Nursing Care") explores transcultural nursing in detail.

Complementary and Alternative Therapies
Will taking St. John's wort interfere with my amitriptyline? Does echinacea really help prevent colds? Nurses hear these kinds of questions from patients every day. Our Consider the Alternative feature raises nurses' awareness of the herbal remedies, dietary supplements, and complementary and alternative therapies their patients are interested in and may be using.

Key Points
To succeed in the fast-paced world of health care, the nurse must be able to put it all together. Each chapter brings students a few steps closer by summarizing the most important points in a succinct, memorable way.

OTHER FEATURES

The fifth edition has been completely updated to include the latest developments in patient care and to present them in a way that is accessible to students at all levels. As instructors, we know that our students are concerned about preparing for the NCLEX-PN® examination. The following features were developed in response to the latest test plan—which, of course, reflects changes in the practice of nursing itself:

- **Drug Therapy Tables**
  Promising new prescription drugs are continually entering the marketplace, making this area of nursing practice more complex than ever. The NCLEX-PN® test plan reflects this new reality. Nurses need to be familiar with drug names, dosages, and routes of administration. Each body systems chapter includes a table that summarizes pharmaceutical options accurately and concisely. Emphasis is primarily on drug classes.
- **Multiple-Choice and Short Answer Review Questions**
  These are provided at the end of each chapter for immediate reinforcement of chapter content. Answers are located in the back of the book. Like NCLEX items, these questions are in multiple choice format with single and multiple correct answers as well as short answers. Items with more than one correct answer direct the student to "Select all that apply."
- **Legal and Ethical Considerations**
  The NCLEX-PN® test plan calls for a higher percentage of questions on legal and ethical issues, many of which fall into a category the plan refers to as "Coordinated Care." Chapter 3, "Legal and Ethical Considerations," explores the nurse's increasing responsibilities in areas such as patient confidentiality, informed consent, prevention of medical errors, and documentation.
- **Coordinated Care**
  The test plan also calls for emphasis on prioritizing and assigning tasks to nurse assistants, patient care technicians, and unlicensed assistive personnel. To help students sort out these sometimes perplexing issues, this edition of *Introduction to Medical-Surgical Nursing* includes Management and Supervision boxes in many chapters.
- **Health Promotion Considerations**
  The NCLEX-PN® test plan calls for a renewed emphasis on health promotion and maintenance. Health Promotion Considerations boxes highlight wellness and disease prevention topics nurses need to know about.
- **Nursing Care Plans with Critical Thinking Questions**
  Sample nursing care plans illustrate how the text translates into a bedside tool for patient care. Focused

critical thinking questions at the end of each care plan allow the student to check his or her understanding of the concepts presented in the chapter and synthesized in the care plan. Answers are given in the Instructor's Resource Manual portion of the Instructor's Electronic Resource.

- **Updated Content Throughout**
  Instructors and students trust *Introduction to Medical-Surgical Nursing* because it has led the way in presenting innovative, accurate, up-to-date content. Every chapter has been updated and reviewed by content and clinical experts.

ANCILLARIES

FOR THE INSTRUCTOR

- **Evolve Learning Resources**
  - ExamView Test Bank with NCLEX®-style questions and answers, separate test bank in Word for alternate-format questions, approximately 1700 questions total. Each question in the test bank includes topic, nursing process step, objective, cognitive level, correct answer, rationale, and text page number references
  - PowerPoint Presentation (approximately 3300 slides)
  - Audience Response Questions (3-5 questions per chapter to supplement the Powerpoint Presentation)
  - Open-Book Quizzes (approximately 550 questions)
  - Answers to Nursing Care Plan Critical Thinking Questions and Thinking Cap Questions
  - Study Guide Answer Key
  - Suggestions for Working with English as Second-Language Students
  - Image Collection (all images in the textbook plus supplemental images from other Elsevier sources)
- **TEACH Online**
  - Lesson Plan Manual based on textbook chapter learning objectives
  - Provides roadmap to link and integrate all parts of the educational package
  - Available for adopters of the textbook

FOR STUDENTS

- **Study Guide**
  Practical and student-friendly, this useful study guide, based on the textbook chapter objectives, is designed to help students master the content presented in the text. It includes the following:
  - Learning Activities (including listing, matching, and labeling exercises) and Multiple-Choice Questions
  - Text page references are included for each question
  - Answers are included in the Instructor's Resource Manual
- **Virtual Clinical Excursions 3.0**
  This interactive workbook and CD-ROM package complements the textbook and guides students through a multi-floor virtual hospital in a true-to-life, hands-on clinical learning experience. Students can collect and analyze data to assist in making nursing diagnoses, planning interventions, prioritizing, and implementing and evaluating care. NCLEX-PN®–style review questions provide immediate testing of clinical knowledge.
- **Evolve Learning Resources**
  - Appendixes—Laboratory Reference Values and Helpful Phrases for Communicating in Spanish
  - Animations
  - Interactive Case Studies
  - Dorland's Audio Dictionary
  - Review Questions—NCLEX® Examination
  - Review Questions—Prioritization and Delegation Exercises
  - Pharmacology Tutorial

Contact your local Elsevier sales representative to request a copy of the Instructor's Electronic Resource.

We welcome suggestions and comments you may have concerning *Introduction to Medical-Surgical Nursing*, fifth edition, and its ancillaries. Please address your comments to the Nursing Editorial Department, Elsevier Inc., 3251 Riverport Lane, St. Louis, MO 63043.

LPN Threads and Advisory Board

Introduction to Medical-Surgical Nursing, fifth edition, shares some features and design elements with other Mosby and Saunders LPN textbooks. The purpose of these "LPN Threads" is to make it easier for students and instructors to incorporate multiple books into the fast-paced and demanding LPN curriculum.

The shared features in *Introduction to Medical-Surgical Nursing,* fifth edition, include the following:

- A **reading level evaluation** was performed on every manuscript chapter during the book's development.
- Cover and internal **design similarities.**
- Numbered lists of **Objectives** that begin each chapter.
- **Key Terms** with phonetic pronunciations and page number references at the beginning of each chapter. The key terms are printed in color.
- **Health Promotion Considerations** boxes highlight wellness and disease prevention topics.
- **Coordinated Care** boxes emphasize prioritization of tasks and assignment to nurse assistants, patient care technicians, and unlicensed assistive personnel.
- **Drug Therapy Tables** help familiarize nurses with drug classes including prototypes, major actions, side and adverse effects, and nursing considerations.
- **Critical Thinking Questions** throughout the text. Answers to the critical thinking questions are provided in the Instructor's Resource Manual component of the Instructor's Electronic Resource.
- Bulleted lists of **Key Points** at the end of each chapter.
- **Multiple-Choice Review Questions** at the end of each chapter. For easy access, answers are provided in the textbook.
- A **Complete Bibliography** list at the end of the text.
- A **Glossary** at the end of the text.
- A full suite of **Intructor Resources** is available, including TEACH Lesson Plans, Lecture Outlines, and PowerPoint Slides, Test Bank, Image Collection, NCLEX Review Questions, Prioritization and Delegation Questions, and Open-Book Quizzes.
- In addition to content and design threads, these LPN/LVN textbooks benefit from the advice and input of the LPN/LVN Advisory Board.

LPN ADVISORY BOARD

To the Student

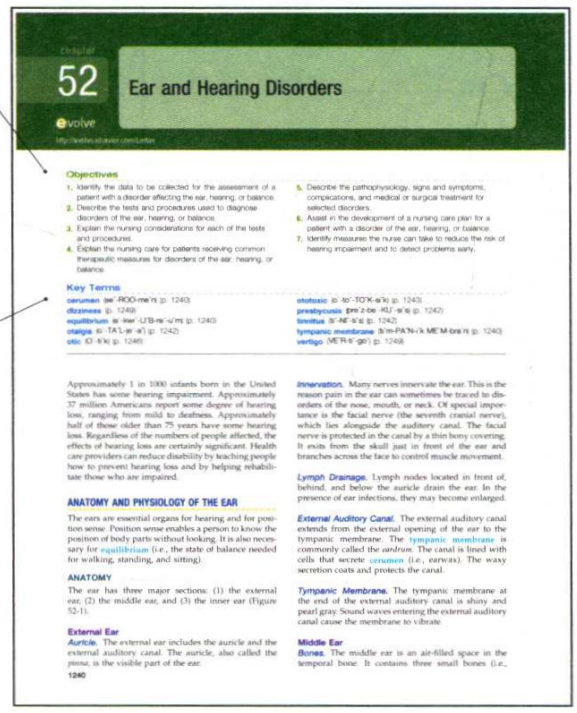
KEY FEATURES

Designed with the student in mind, *Introduction to Medical-Surgical Nursing*, fifth edition, has a visually appealing and easy-to-use format that will help you master medical-surgical nursing.

Following are some of the numerous special features and aids to help you as you study.

Objectives provide an overview of what students will learn from the chapter content.

Key Terms with **phonetic pronunciations** and page number references emphasize and clarify essential terminology.



Chapter 52 Ear and Hearing Disorders

evolve

Objectives

1. Identify the data to be collected for the assessment of a patient with a disorder affecting the ear, hearing, or balance.
2. Describe the tests and procedures used to diagnose disorders of the ear, hearing, or balance.
3. Explain the nursing considerations for each of the tests and procedures.
4. Explain the nursing care for patients receiving common therapeutic measures for disorders of the ear, hearing, or balance.
5. Describe the pathophysiology, signs and symptoms, complications, and medical or surgical treatment for selected disorders.
6. Assist in the development of a nursing care plan for a patient with a disorder of the ear, hearing, or balance.
7. Identify measures the nurse can take to reduce the risk of hearing impairment and to detect problems early.

Key Terms

cerumen (se'-ROO-me'n) (p. 1240)
dizziness (p. 1248)
equilibrium (e'-kwi'-LIB-ree'-u'm) (p. 1240)
otalgia (o'-TAL'-je'-a') (p. 1242)
otic (O'-tik) (p. 1248)
ototoxic (o'-to'-TOK-sik) (p. 1243)
presbycusis (prez'-be'-KU'-se'is) (p. 1242)
tinnitus (ti'-NI'-tu's) (p. 1242)
tympanic membrane (tim-PAN-ik MEM-brain) (p. 1240)
vertigo (VER-ti'-go) (p. 1248)

Approximately 1 in 1000 infants born in the United States has some hearing impairment. Approximately 37 million Americans report some degree of hearing loss, ranging from mild to deafness. Approximately half of those older than 75 years have some hearing loss. Regardless of the numbers of people affected, the effects of hearing loss are certainly significant. Health care providers can reduce disability by teaching people how to prevent hearing loss and by helping rehabilitate those who are impaired.

ANATOMY AND PHYSIOLOGY OF THE EAR

The ears are essential organs for hearing and for position sense. Position sense enables a person to know the position of body parts without looking. It is also necessary for equilibrium (i.e., the state of balance needed for walking, standing, and sitting).

ANATOMY

The ear has three major sections: (1) the external ear, (2) the middle ear, and (3) the inner ear (Figure 52-1).

External Ear

Auricle. The external ear includes the auricle and the external auditory canal. The auricle, also called the *pinna*, is the visible part of the ear.

Innervation. Many nerves innervate the ear. This is the reason pain in the ear can sometimes be traced to disorders of the nose, mouth, or neck. Of special importance is the facial nerve (the seventh cranial nerve), which lies alongside the auditory canal. The facial nerve is protected in the canal by a thin bony covering. It exits from the skull just in front of the ear and branches across the face to control muscle movement.

Lymph Drainage. Lymph nodes located in front of, behind, and below the auricle drain the ear. In the presence of ear infections, they may become enlarged.

External Auditory Canal. The external auditory canal extends from the external opening of the ear to the tympanic membrane. The tympanic membrane is commonly called the *eardrum*. The canal is lined with cells that secrete cerumen (i.e., earwax). The waxy secretion coats and protects the canal.

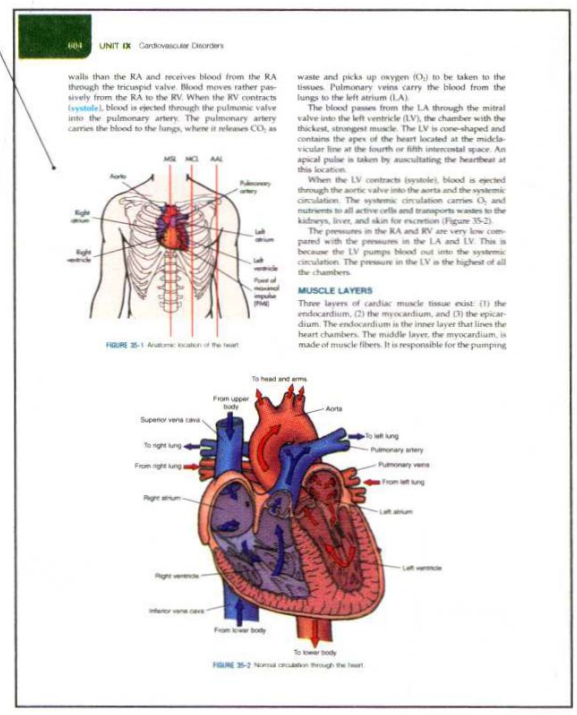
Tympanic Membrane. The tympanic membrane at the end of the external auditory canal is shiny and pearl gray. Sound waves entering the external auditory canal cause the membrane to vibrate.

Middle Ear

Bones. The middle ear is an air-filled space in the temporal bone. It contains three small bones (i.e.,

1240

Full-Color Design and Illustrations increase effectiveness of key concepts.



684 UNIT IX Cardiovascular Disorders

walls than the RA and receives blood from the RA through the tricuspid valve. Blood moves rather passively from the RA to the RV. When the RV contracts (systole), blood is ejected through the pulmonic valve into the pulmonary artery. The pulmonary artery carries the blood to the lungs, where it releases CO_2 as waste and picks up oxygen (O_2) to be taken to the tissues. Pulmonary veins carry the blood from the lungs to the left atrium (LA).

The blood passes from the LA through the mitral valve into the left ventricle (LV), the chamber with the thickest, strongest muscle. The LV is cone-shaped and contains the apex of the heart located at the midclavicular line at the fourth or fifth intercostal space. An apical pulse is taken by auscultating the heartbeat at this location.

When the LV contracts (systole), blood is ejected through the aortic valve into the aorta and the systemic circulation. The systemic circulation carries O_2 and nutrients to all active cells and transports wastes to the kidneys, liver, and skin for excretion (Figure 35-2).

The pressures in the RA and RV are very low compared with the pressures in the LA and LV. This is because the LV pumps blood out into the systemic circulation. The pressure in the LV is the highest of all the chambers.

MUSCLE LAYERS

Three layers of cardiac muscle tissue exist: (1) the endocardium, (2) the myocardium, and (3) the epicardium. The endocardium is the inner layer that lines the heart chambers. The middle layer, the myocardium, is made of muscle fibers. It is responsible for the pumping

FIGURE 35-1 Anatomic location of the heart.

FIGURE 35-2 Normal circulation through the heart.

Patient Teaching Plans illustrate examples of individualized patient care using the nursing process.

594 UNIT VII Respiratory Disorders

simply "being difficult." If possible, encourage a family member who has a calming influence on the patient to remain at the bedside. When leaving the patient, place a call bell within reach and instruct the patient in its use. Finally, the check on the patient often to provide reassurance that help is nearby if needed.

Imbalanced Nutrition: Less Than Body Requirements

The work of breathing is increased with COPD, which in turn increases the patient's caloric requirements. Some patients with COPD have difficulty maintaining adequate nutritional intake. The patient should be weighed daily or weekly, depending on the situation, to monitor fluid and nutritional status. A patient with heart failure may gain weight because of fluid retention. Weight loss may indicate elimination of excess fluid or loss of body weight as a result of inadequate nutrition. Inadequate nutrition may be associated with dyspnea, anorexia, depression, or inability to obtain and prepare food.

The patient who is dyspneic may be given a soft diet with frequent small meals rather than three large meals daily. High-calorie, high-protein supplements may be provided as well. Try to plan care so that the patient is not excessively tired or coughing during meals. To combat anorexia, ask the dietitian to provide foods that are appealing to the patient. Assist the patient with oral hygiene before meals and create a pleasant environment by removing soiled tissues and emesis basins. If the agency permits, encourage a family member to eat with the patient to provide a more social atmosphere. If the patient is unable to consume adequate nutrients, then tube feeding or total parenteral nutrition (TPN) may be instituted. If the patient is obese, then the benefits of weight loss should be discussed.

Risk for Infection

Because of pooled secretions and poor nutritional status, the patient with chronic bronchitis and emphysema is at risk for respiratory infections. In addition, because corticosteroid agents decrease a patient's immune response, a patient on these medications has an increased risk for infection. Monitor for fever and for green or yellow sputum. In addition, promote good hydration and nutrition and administer prophylactic antimicrobial agents as ordered. Advise patients to take annual influenza immunizations and to avoid people who are ill with infectious respiratory diseases. The physician may prescribe a Pneumovax 23 vaccine to prevent pneumococcal pneumonia.

Activity Intolerance

During hospitalization, it is important to attempt to schedule treatments, meals, and exercise so that the patient has time to rest. If the patient becomes excessively dyspneic or experiences tachycardia during activity, then that activity should be stopped until the patient recovers. When preparing a patient for discharge, help the patient plan a daily schedule that spaces more demanding activities and allows scheduled rest periods (see Patient Teaching: Chronic Bronchitis and Emphysema). Portable O_2 therapy may be ordered to permit increased mobility while receiving supplemental O_2. At home, environmental adaptations may be needed, such as rearrangement of furniture to permit easy access to bathrooms and ramps to replace steps.

If the patient is participating in a rehabilitation program to improve exercise tolerance, then monitor his or her progress and provide encouragement and feedback.

Decreased Cardiac Output

Patients with chronic bronchitis and emphysema are at risk for right-sided heart failure that eventually affects the left side of the heart as well. Therefore it is important to monitor for signs of failure: increasing dyspnea, decreasing urine output, tachycardia, and dependent edema. Management of congestive heart failure (CHF) is covered in Chapter 35 (see Coordinated Care: Working with the Certified Nursing Assistant).

BRONCHIECTASIS

Bronchiectasis is an abnormal dilation and distortion of the bronchi and bronchioles that is usually confined to one lung lobe or segment. It typically follows

Patient Teaching

Chronic Bronchitis and Emphysema

Patients with chronic bronchitis and emphysema need to know how they can manage the condition. However, instruction is best done in small units to prevent overtiring and overwhelming the patient. Supplement verbal instructions with written material and encourage the patient to do the following:

- Take your prescribed drugs as instructed; report adverse effects to the physician.
- Avoid substances that irritate the airway.
- Cover the nose and mouth when outside in cold weather.
- To reduce risk of infection, avoid infected people.
- Report fever or increased symptoms to your physician promptly.
- Schedule activities to allow adequate rest.
- If oxygen (O_2) therapy is ordered, then do not exceed the prescribed liter flow; to do so may depress your breathing.
- Smoking cessation can improve your symptoms. Programs and assistance are provided by the local chapter of the American Lung Association and the American Cancer Society.

Coordinated Care

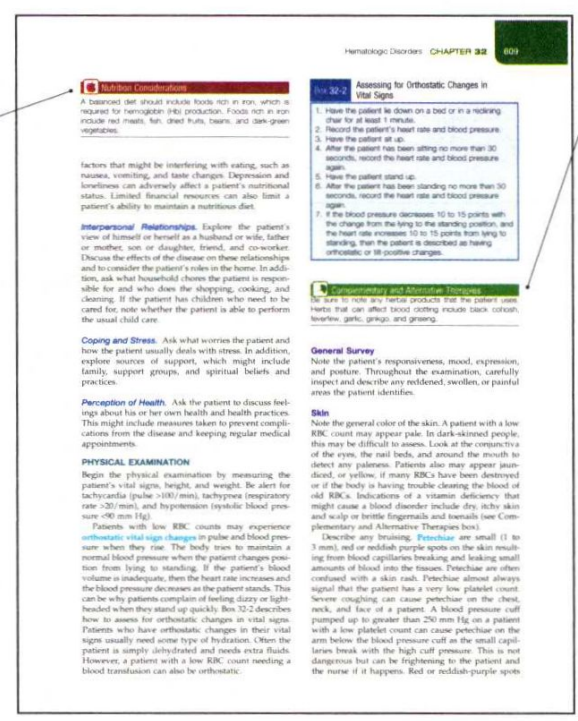
Working with the Certified Nursing Assistant

- Demonstrate proper positioning of the patient with dyspnea to the certified nursing assistant (CNA).
- Although the CNA can count the patient's respiratory rate, the nurse should collect additional data including breath sounds.

Coordinated Care boxes help nurses prioritize tasks and assign them safely and efficiently.

Nutrition Considerations emphasize the role nutrition plays in disease and nursing care.

Complementary and Alternative Therapies boxes increase awareness of nontraditional approaches in today's health care settings.



Hematologic Disorders CHAPTER 32 609

Nutrition Considerations

A balanced diet should include foods rich in iron, which is required for hemoglobin (Hb) production. Foods rich in iron include red meats, fish, dried fruits, beans, and dark-green vegetables.

factors that might be interfering with eating, such as nausea, vomiting, and taste changes. Depression and loneliness can adversely affect a patient's nutritional status. Limited financial resources can also limit a patient's ability to maintain a nutritious diet.

Interpersonal Relationships. Explore the patient's view of himself or herself as a husband or wife, father or mother, son or daughter, friend, and co-worker. Discuss the effects of the disease on these relationships and to consider the patient's roles in the home. In addition, ask what household chores the patient is responsible for and who does the shopping, cooking, and cleaning. If the patient has children who need to be cared for, note whether the patient is able to perform the usual child care.

Coping and Stress. Ask what worries the patient and how the patient usually deals with stress. In addition, explore sources of support, which might include family, support groups, and spiritual beliefs and practices.

Perception of Health. Ask the patient to discuss feelings about his or her own health and health practices. This might include measures taken to prevent complications from the disease and keeping regular medical appointments.

PHYSICAL EXAMINATION

Begin the physical examination by measuring the patient's vital signs, height, and weight. Be alert for tachycardia (pulse >100/min), tachypnea (respiratory rate >20/min), and hypotension (systolic blood pressure <90 mm Hg).

Patients with low RBC counts may experience orthostatic vital sign changes in pulse and blood pressure when they rise. The body tries to maintain a normal blood pressure when the patient changes position from lying to standing. If the patient's blood volume is inadequate, then the heart rate increases and the blood pressure decreases as the patient stands. This can be why patients complain of feeling dizzy or lightheaded when they stand up quickly. Box 32-2 describes how to assess for orthostatic changes in vital signs. However, a patient with a low RBC count needing a blood transfusion can also be orthostatic.

Box 32-2 Assessing for Orthostatic Changes in Vital Signs

1. Have the patient lie down on a bed or in a reclining chair for at least 1 minute.
2. Record the patient's heart rate and blood pressure.
3. Have the patient sit up.
4. After the patient has been sitting no more than 30 seconds, record the heart rate and blood pressure again.
5. Have the patient stand up.
6. After the patient has been standing no more than 30 seconds, record the heart rate and blood pressure again.
7. If the blood pressure decreases 10 to 15 points with the change from the lying to the standing position, and the heart rate increases 10 to 15 points from lying to standing, then the patient is described as having orthostatic or tilt positive changes.

Complementary and Alternative Therapies

Be sure to note any herbal products that the patient uses. Herbs that can affect blood clotting include black cohosh, feverfew, garlic, ginkgo, and ginseng.

General Survey

Note the patient's responsiveness, mood, expression, and posture. Throughout the examination, carefully inspect and describe any reddened, swollen, or painful areas the patient identifies.

Skin

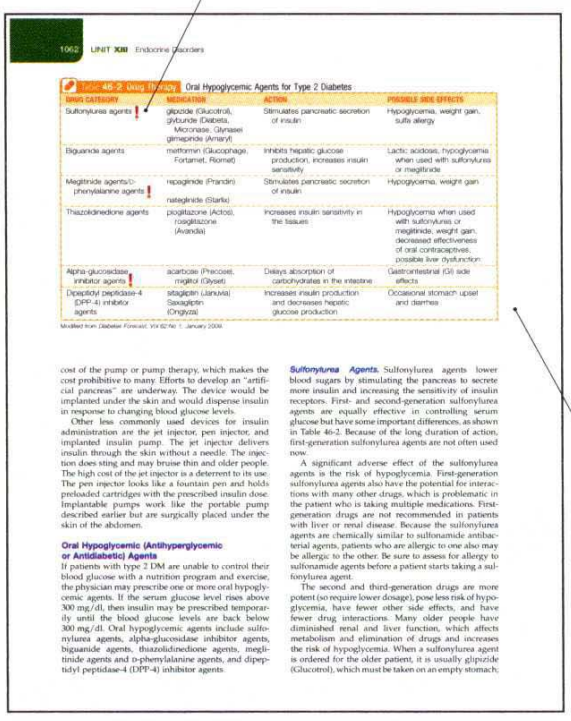
Note the general color of the skin. A patient with a low RBC count may appear pale. In dark-skinned people, this may be difficult to assess. Look at the conjunctiva of the eyes, the nail beds, and around the mouth to detect any paleness. Patients also may appear jaundiced, or yellow, if many RBCs have been destroyed or if the body is having trouble clearing the blood of old RBCs. Indications of a vitamin deficiency that might cause a blood disorder include dry, itchy skin and scalp or brittle fingernails and toenails (see Complementary and Alternative Therapies box).

Describe any bruising. Petechiae are small (1 to 3 mm), red or reddish-purple spots on the skin resulting from blood capillaries breaking and leaking small amounts of blood into the tissues. Petechiae are often confused with a skin rash. Petechiae almost always signal that the patient has a very low platelet count. Severe coughing can cause petechiae on the chest, neck, and face of a patient. A blood pressure cuff pumped up to greater than 250 mm Hg on a patient with a low platelet count can cause petechiae on the arm below the blood pressure cuff as the small capillaries break with the high cuff pressure. This is not dangerous but can be frightening to the patient and the nurse if it happens. Red or reddish-purple spots

NEW! Safety Alert Icon indicate potential risks will carry over into clinical practice in the health care setting

Health Promotion Considerations boxes highlight timely wellness and disease prevention topics.

Pharmacology Capsules alert students to important precautions, interactions, and adverse effects of medications.



1062 UNIT XIII Endocrine Disorders

Table 46-2 Drug Therapy Oral Hypoglycemic Agents for Type 2 Diabetes

DRUG CATEGORY	MEDICATION	ACTION	POSSIBLE SIDE EFFECTS
Sulfonylurea agents !	glipizide (Glucotrol), glyburide (Diabeta, Micronase, Glynase) glimepiride (Amaryl)	Stimulates pancreatic secretion of insulin	Hypoglycemia, weight gain, sulfa allergy
Biguanide agents	metformin (Glucophage, Fortamet, Riomet)	Inhibits hepatic glucose production, increases insulin sensitivity	Lactic acidosis, hypoglycemia when used with sulfonylurea or meglitinide
Meglitinide agents/D-phenylalanine agents !	repaglinide (Prandin) nateglinide (Starlix)	Stimulates pancreatic secretion of insulin	Hypoglycemia, weight gain
Thiazolidinedione agents	pioglitazone (Actos), rosiglitazone (Avandia)	Increases insulin sensitivity in the tissues	Hypoglycemia when used with sulfonylurea or meglitinide, weight gain, decreased effectiveness of oral contraceptives, possible liver dysfunction
Alpha-glucosidase inhibitor agents !	acarbose (Precose), miglitol (Glyset)	Delays absorption of carbohydrates in the intestine	Gastrointestinal (GI) side effects
Dipeptidyl peptidase-4 (DPP-4) inhibitor agents	sitagliptin (Januvia) Saxagliptin (Onglyza)	Increases insulin production and decreases hepatic glucose production	Occasional stomach upset and diarrhea

Modified from *Diabetes Forecast*, Vol 62 No 1, January 2009.

cost of the pump or pump therapy, which makes the cost prohibitive to many. Efforts to develop an "artificial pancreas" are underway. The device would be implanted under the skin and would dispense insulin in response to changing blood glucose levels.

Other less commonly used devices for insulin administration are the jet injector, pen injector, and implanted insulin pump. The jet injector delivers insulin through the skin without a needle. The injection does sting and may bruise thin and older people. The high cost of the jet injector is a deterrent to its use. The pen injector looks like a fountain pen and holds preloaded cartridges with the prescribed insulin dose. Implantable pumps work like the portable pump described earlier but are surgically placed under the skin of the abdomen.

Oral Hypoglycemic (Antihyperglycemic or Antidiabetic) Agents

If patients with type 2 DM are unable to control their blood glucose with a nutrition program and exercise, the physician may prescribe one or more oral hypoglycemic agents. If the serum glucose level rises above 300 mg/dl, then insulin may be prescribed temporarily until the blood glucose levels are back below 300 mg/dl. Oral hypoglycemic agents include sulfonylurea agents, alpha-glucosidase inhibitor agents, biguanide agents, thiazolidinedione agents, meglitinide agents and D-phenylalanine agents, and dipeptidyl peptidase-4 (DPP-4) inhibitor agents.

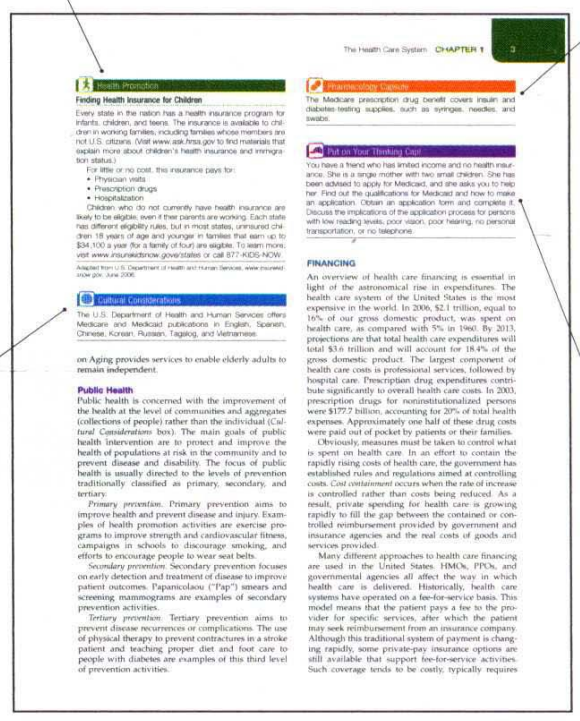
Sulfonylurea Agents. Sulfonylurea agents lower blood sugars by stimulating the pancreas to secrete more insulin and increasing the sensitivity of insulin receptors. First- and second-generation sulfonylurea agents are equally effective in controlling serum glucose but have some important differences, as shown in Table 46-2. Because of the long duration of action, first-generation sulfonylurea agents are not often used now.

A significant adverse effect of the sulfonylurea agents is the risk of hypoglycemia. First-generation sulfonylurea agents also have the potential for interactions with many other drugs, which is problematic in the patient who is taking multiple medications. First-generation drugs are not recommended in patients with liver or renal disease. Because the sulfonylurea agents are chemically similar to sulfonamide antibacterial agents, patients who are allergic to one also may be allergic to the other. Be sure to assess for allergy to sulfonamide agents before a patient starts taking a sulfonylurea agent.

The second and third-generation drugs are more potent (so require lower dosage), pose less risk of hypoglycemia, have fewer other side effects, and have fewer drug interactions. Many older people have diminished renal and liver function, which affects metabolism and elimination of drugs and increases the risk of hypoglycemia. When a sulfonylurea agent is ordered for the older patient, it is usually glipizide (Glucotrol), which must be taken on an empty stomach;

Cultural Considerations provide essential knowledge to ensure individualized care of patients.

Drug Therapy tables in each systems chapter provide quick references to relevant drugs and tests.



The Health Care System CHAPTER 1 3

Health Promotion

Finding Health Insurance for Children

Every state in the nation has a health insurance program for infants, children, and teens. The insurance is available to children in working families, including families whose members are not U.S. citizens. (Visit www.ask.hrsa.gov to find materials that explain more about children's health insurance and immigration status.)

For little or no cost, this insurance pays for:
- Physician visits
- Prescription drugs
- Hospitalization

Children who do not currently have health insurance are likely to be eligible, even if their parents are working. Each state has different eligibility rules, but in most states, uninsured children 18 years of age and younger in families that earn up to $34,100 a year (for a family of four) are eligible. To learn more, visit www.insurekidsnow.gov/states or call 877-KIDS-NOW.

Adapted from U.S. Department of Health and Human Services, www.insurekidsnow.gov, June 2006.

Cultural Considerations

The U.S. Department of Health and Human Services offers Medicare and Medicaid publications in English, Spanish, Chinese, Korean, Russian, Tagalog, and Vietnamese.

on Aging provides services to enable elderly adults to remain independent.

Public Health

Public health is concerned with the improvement of the health at the level of communities and aggregates (collections of people) rather than the individual (*Cultural Considerations* box). The main goals of public health intervention are to protect and improve the health of populations at risk in the community and to prevent disease and disability. The focus of public health is usually directed to the levels of prevention traditionally classified as primary, secondary, and tertiary.

Primary prevention. Primary prevention aims to improve health and prevent disease and injury. Examples of health promotion activities are exercise programs to improve strength and cardiovascular fitness, campaigns in schools to discourage smoking, and efforts to encourage people to wear seat belts.

Secondary prevention. Secondary prevention focuses on early detection and treatment of disease to improve patient outcomes. Papanicolaou ("Pap") smears and screening mammograms are examples of secondary prevention activities.

Tertiary prevention. Tertiary prevention aims to prevent disease recurrences or complications. The use of physical therapy to prevent contractures in a stroke patient and teaching proper diet and foot care to people with diabetes are examples of this third level of prevention activities.

Pharmacology Capsule

The Medicare prescription drug benefit covers insulin and diabetes-testing supplies, such as syringes, needles, and swabs.

Put on Your Thinking Cap!

You have a friend who has limited income and no health insurance. She is a single mother with two small children. She has been advised to apply for Medicaid, and she asks you to help her. Find out the qualifications for Medicaid and how to make an application. Obtain an application form and complete it. Discuss the implications of the application process for persons with low reading levels, poor vision, poor hearing, no personal transportation, or no telephone.

FINANCING

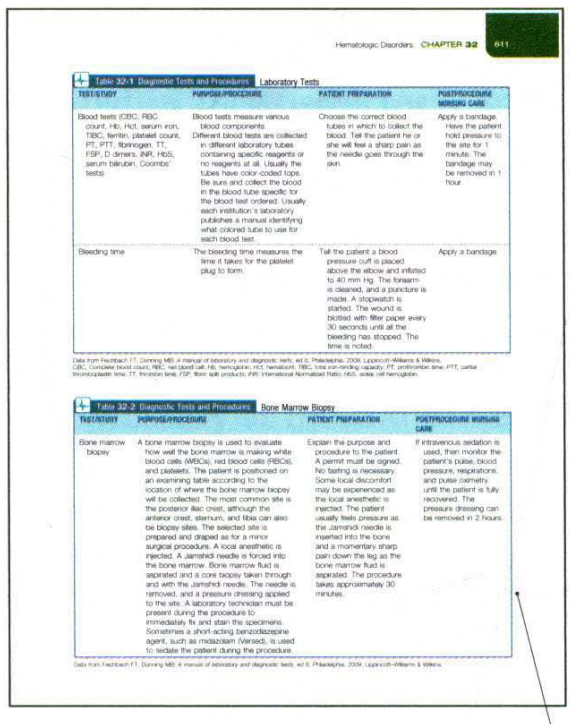
An overview of health care financing is essential in light of the astronomical rise in expenditures. The health care system of the United States is the most expensive in the world. In 2006, $2.1 trillion, equal to 16% of our gross domestic product, was spent on health care, as compared with 5% in 1960. By 2013, projections are that total health care expenditures will total $3.6 trillion and will account for 18.4% of the gross domestic product. The largest component of health care costs is professional services, followed by hospital care. Prescription drug expenditures contribute significantly to overall health care costs. In 2003, prescription drugs for noninstitutionalized persons were $177.7 billion, accounting for 20% of total health expenses. Approximately one half of these drug costs were paid out of pocket by patients or their families.

Obviously, measures must be taken to control what is spent on health care. In an effort to contain the rapidly rising costs of health care, the government has established rules and regulations aimed at controlling costs. *Cost containment* occurs when the rate of increase is controlled rather than costs being reduced. As a result, private spending for health care is growing rapidly to fill the gap between the contained or controlled reimbursement provided by government and insurance agencies and the real costs of goods and services provided.

Many different approaches to health care financing are used in the United States. HMOs, PPOs, and governmental agencies all affect the way in which health care is delivered. Historically, health care systems have operated on a fee-for-service basis. This model means that the patient pays a fee to the provider for specific services, after which the patient may seek reimbursement from an insurance company. Although this traditional system of payment is changing rapidly, some private-pay insurance options are still available that support fee-for-service activities. Such coverage tends to be costly, typically requires

Pharmacology Capsules alert students to important precautions, interactions, and adverse effects of medications.

Put on Your Thinking Cap boxes encourage analysis of content for application to clinical situations.



Hematologic Disorders CHAPTER 32 611

Table 32-1 Diagnostic Tests and Procedures Laboratory Tests

TEST/STUDY	PURPOSE/PROCEDURE	PATIENT PREPARATION	POST/PROCEDURE NURSING CARE
Blood tests (CBC, RBC count, Hb, Hct, serum iron, TIBC, ferritin, platelet count, PT, PTT, fibrinogen, TT, FSP, D-dimers, INR, HbS, serum bilirubin, Coombs' tests)	Blood tests measure various blood components. Different blood tests are collected in different laboratory tubes containing specific reagents or no reagents at all. Usually the tubes have color-coded tops. Be sure and collect the blood in the blood tube specific for the blood test ordered. Usually each institution's laboratory publishes a manual identifying what colored tube to use for each blood test.	Choose the correct blood tubes in which to collect the blood. Tell the patient he or she will feel a sharp pain as the needle goes through the skin.	Apply a bandage. Have the patient hold pressure to the site for 1 minute. The bandage may be removed in 1 hour.
Bleeding time	The bleeding time measures the time it takes for the platelet plug to form.	Tell the patient a blood pressure cuff is placed above the elbow and inflated to 40 mm Hg. The forearm is cleaned, and a puncture is made. A stopwatch is started. The wound is blotted with filter paper every 30 seconds until all the bleeding has stopped. The time is noted.	Apply a bandage.

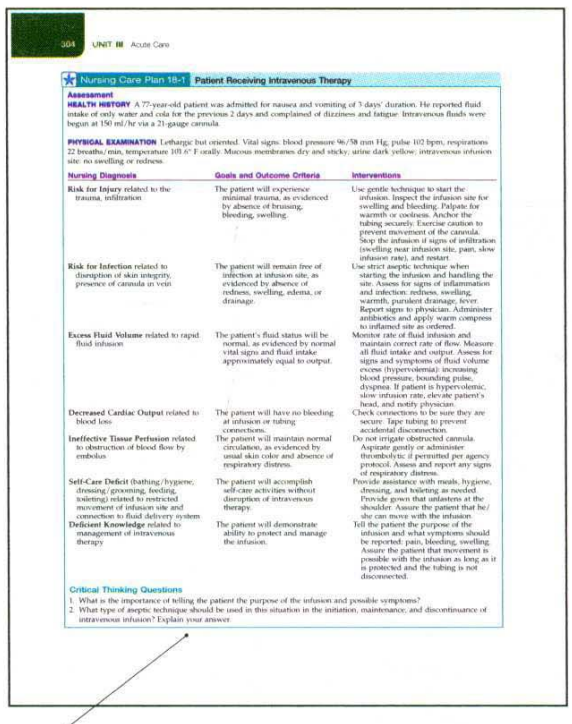
Data from Fischbach FT, Dunning MB: *A manual of laboratory and diagnostic tests*, ed 8, Philadelphia, 2009, Lippincott–Williams & Wilkins.
CBC, Complete blood count; RBC, red blood cell; Hb, hemoglobin; Hct, hematocrit; TIBC, total iron-binding capacity; PT, prothrombin time; PTT, partial thromboplastin time; TT, thrombin time; FSP, fibrin split products; INR, International Normalized Ratio; HbS, sickle cell hemoglobin.

Table 32-2 Diagnostic Tests and Procedures Bone Marrow Biopsy

TEST/STUDY	PURPOSE/PROCEDURE	PATIENT PREPARATION	POST/PROCEDURE NURSING CARE
Bone marrow biopsy	A bone marrow biopsy is used to evaluate how well the bone marrow is making white blood cells (WBCs), red blood cells (RBCs), and platelets. The patient is positioned on an examining table according to the location of where the bone marrow biopsy will be collected. The most common site is the posterior iliac crest, although the anterior crest, sternum, and tibia can also be biopsy sites. The selected site is prepared and draped as for a minor surgical procedure. A local anesthetic is injected. A Jamshidi needle is forced into the bone marrow. Bone marrow fluid is aspirated and a core biopsy taken through and with the Jamshidi needle. The needle is removed, and a pressure dressing applied to the site. A laboratory technician must be present during the procedure to immediately fix and stain the specimens. Sometimes a short-acting benzodiazepine agent, such as midazolam (Versed), is used to sedate the patient during the procedure.	Explain the purpose and procedure to the patient. A permit must be signed. No fasting is necessary. Some local discomfort may be experienced as the local anesthetic is injected. The patient usually feels pressure as the Jamshidi needle is inserted into the bone and a momentary sharp pain down the leg as the bone marrow fluid is aspirated. The procedure takes approximately 30 minutes.	If intravenous sedation is used, then monitor the patient's pulse, blood pressure, respirations, and pulse oximetry until the patient is fully recovered. The pressure dressing can be removed in 2 hours.

Data from Fischbach FT, Dunning MB: *A manual of laboratory and diagnostic tests*, ed 8, Philadelphia, 2009, Lippincott–Williams & Wilkins.

Diagnostic Tests and Procedures tables in each systems chapter provide quick references to relevant drugs and tests.



304 UNIT III Acute Care

Nursing Care Plan 18-1 Patient Receiving Intravenous Therapy

Assessment

HEALTH HISTORY A 77-year-old patient was admitted for nausea and vomiting of 3 days' duration. He reported fluid intake of only water and cola for the previous 2 days and complained of dizziness and fatigue. Intravenous fluids were begun at 150 ml/hr via a 21-gauge cannula.

PHYSICAL EXAMINATION Lethargic but oriented. Vital signs: blood pressure 96/58 mm Hg, pulse 102 bpm, respirations 22 breaths/min, temperature 101.6° F orally. Mucous membranes dry and sticky; urine dark yellow; intravenous infusion site: no swelling or redness.

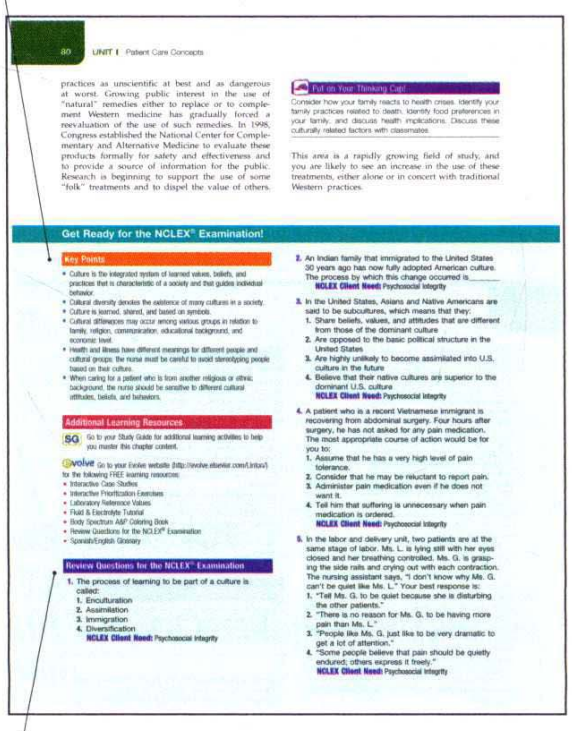
Nursing Diagnosis	Goals and Outcome Criteria	Interventions
Risk for Injury related to the trauma, infiltration	The patient will experience minimal trauma, as evidenced by absence of bruising, bleeding, swelling.	Use gentle technique to start the infusion. Inspect the infusion site for swelling and bleeding. Palpate for warmth or coolness. Anchor the tubing securely. Exercise caution to prevent movement of the cannula. Stop the infusion if signs of infiltration (swelling near infusion site, pain, slow infusion rate), and restart.
Risk for Infection related to disruption of skin integrity, presence of cannula in vein	The patient will remain free of infection at infusion site, as evidenced by absence of redness, swelling, edema, or drainage.	Use strict aseptic technique when starting the infusion and handling the site. Assess for signs of inflammation and infection: redness, swelling, warmth, purulent drainage, fever. Report signs to physician. Administer antibiotics and apply warm compress to inflamed site as ordered.
Excess Fluid Volume related to rapid fluid infusion	The patient's fluid status will be normal, as evidenced by normal vital signs and fluid intake approximately equal to output.	Monitor rate of fluid infusion and maintain correct rate of flow. Measure all fluid intake and output. Assess for signs and symptoms of fluid volume excess (hypervolemia): increasing blood pressure, bounding pulse, dyspnea. If patient is hypervolemic, slow infusion rate, elevate patient's head, and notify physician.
Decreased Cardiac Output related to blood loss	The patient will have no bleeding at infusion or tubing connections.	Check connections to be sure they are secure. Tape tubing to prevent accidental disconnection.
Ineffective Tissue Perfusion related to obstruction of blood flow by embolus	The patient will maintain normal circulation, as evidenced by usual skin color and absence of respiratory distress.	Do not irrigate obstructed cannula. Aspirate gently or administer thrombolytic if permitted per agency protocol. Assess and report any signs of respiratory distress.
Self-Care Deficit (bathing/hygiene, dressing/grooming, feeding, toileting) related to restricted movement of infusion site and connection to fluid delivery system	The patient will accomplish self-care activities without disruption of intravenous therapy.	Provide assistance with meals, hygiene, dressing, and toileting as needed. Provide gown that unfastens at the shoulder. Assure the patient that he/she can move with the infusion.
Deficient Knowledge related to management of intravenous therapy	The patient will demonstrate ability to protect and manage the infusion.	Tell the patient the purpose of the infusion and what symptoms should be reported: pain, bleeding, swelling. Assure the patient that movement is possible with the infusion as long as it is protected and the tubing is not disconnected.

Critical Thinking Questions

1. What is the importance of telling the patient the purpose of the infusion and possible symptoms?
2. When type of aseptic technique should be used in this situation in the initiation, maintenance, and discontinuance of intravenous infusion? Explain your answer.

Nursing Care Plans with Critical Thinking Questions at the end of each care plan encourage students to synthesize key concepts. Answers are given in the Instructor's Electronic Resource.

Key Points reinforce important information in each chapter.



80 UNIT I Patient Care Concepts

practices as unscientific at best and as dangerous at worst. Growing public interest in the use of "natural" remedies either to replace or to complement Western medicine has gradually forced a reevaluation of the use of such remedies. In 1998, Congress established the National Center for Complementary and Alternative Medicine to evaluate these products formally for safety and effectiveness and to provide a source of information for the public. Research is beginning to support the use of some "folk" treatments and to dispel the value of others.

Put on Your Thinking Cap!

Consider how your family reacts to health crises. Identify your family practices related to death. Identify food preferences in your family, and discuss health implications. Discuss these culturally related factors with classmates.

This area is a rapidly growing field of study, and you are likely to see an increase in the use of these treatments, either alone or in concert with traditional Western practices.

Get Ready for the NCLEX® Examination!

Key Points

- Culture is the integrated system of learned values, beliefs, and practices that is characteristic of a society and that guides individual behavior.
- Cultural diversity denotes the existence of many cultures in a society.
- Culture is learned, shared, and based on symbols.
- Cultural differences may occur among various groups in relation to family, religion, communication, educational background, and economic level.
- Health and illness have different meanings for different people and cultural groups; the nurse must be careful to avoid stereotyping people based on their culture.
- When caring for a patient who is from another religious or ethnic background, the nurse should be sensitive to different cultural attitudes, beliefs, and behaviors.

Additional Learning Resources

SG Go to your Study Guide for additional learning activities to help you master this chapter content.

volve Go to your Evolve website (http://evolve.elsevier.com/Linton/) for the following FREE learning resources:
- Interactive Case Studies
- Interactive Prioritization Exercises
- Laboratory Reference Values
- Fluid & Electrolyte Tutorial
- Body Spectrum A&P Coloring Book
- Review Questions for the NCLEX® Examination
- Spanish/English Glossary

Review Questions for the NCLEX® Examination

1. The process of learning to be part of a culture is called:
   1. Enculturation
   2. Assimilation
   3. Immigration
   4. Diversification

   NCLEX Client Need: Psychosocial Integrity
2. An Indian family that immigrated to the United States 30 years ago has now fully adopted American culture. The process by which this change occurred is _____.

   NCLEX Client Need: Psychosocial Integrity
3. In the United States, Asians and Native Americans are said to be subcultures, which means that they:
   1. Share beliefs, values, and attitudes that are different from those of the dominant culture
   2. Are opposed to the basic political structure in the United States
   3. Are highly unlikely to become assimilated into U.S. culture in the future
   4. Believe that their native cultures are superior to the dominant U.S. culture

   NCLEX Client Need: Psychosocial Integrity
4. A patient who is a recent Vietnamese immigrant is recovering from abdominal surgery. Four hours after surgery, he has not asked for any pain medication. The most appropriate course of action would be for you to:
   1. Assume that he has a very high level of pain tolerance.
   2. Consider that he may be reluctant to report pain.
   3. Administer pain medication even if he does not want it.
   4. Tell him that suffering is unnecessary when pain medication is ordered.

   NCLEX Client Need: Psychosocial Integrity
5. In the labor and delivery unit, two patients are at the same stage of labor. Ms. L. is lying still with her eyes closed and her breathing controlled. Ms. G. is grasping the side rails and crying out with each contraction. The nursing assistant says, "I don't know why Ms. G. can't be quiet like Ms. L." Your best response is:
   1. "Tell Ms. G. to be quiet because she is disturbing the other patients."
   2. "There is no reason for Ms. G. to be having more pain than Ms. L."
   3. "People like Ms. G. just like to be very dramatic to get a lot of attention."
   4. "Some people believe that pain should be quietly endured; others express it freely."

   NCLEX Client Need: Psychosocial Integrity

Multiple-Choice Review Questions test knowledge of the chapter content.

Contents