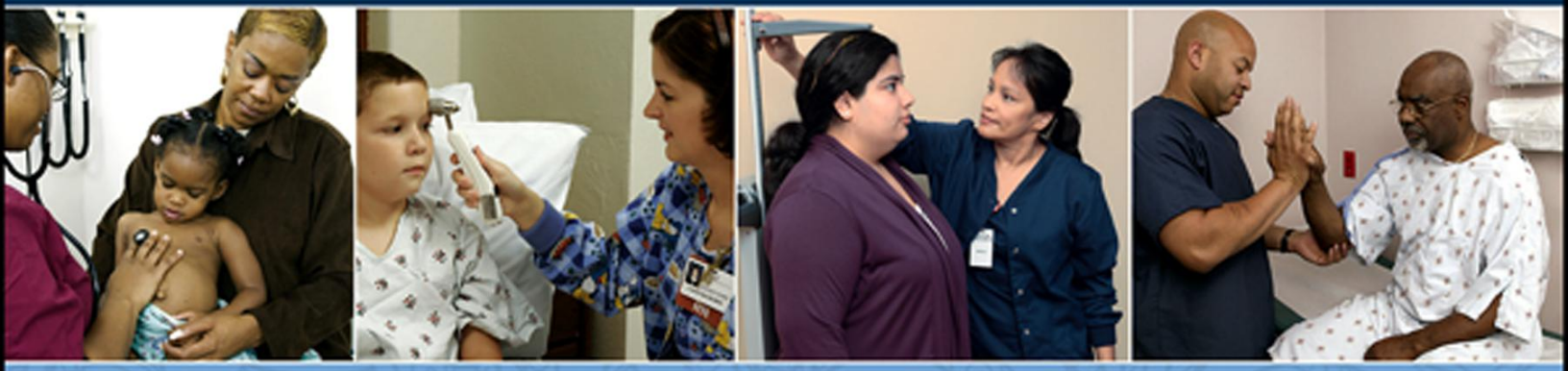
SUSAN FICKERTT WILSON | JEAN FORET GIDDENS



Health Assessment *for* Nursing Practice

7TH EDITION

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7TH EDITION

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To my daughter, Megan, for her continued love, patience, and support; to Craig Greenway for his role in this project, and to the faculty, colleagues, and students who have challenged me through the years.

SFW

To my husband, Jay, for his unconditional support; to my mentors and role models, for their guidance throughout my career; to my co-author, Susan Wilson, who has been a tremendous writing partner over the past 20 years and who has an intense passion for making this book as useful as possible for our students; and to nursing students, who are the future of our profession.

JFG

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If a teacher is indeed wise, he does not bid you enter the house of his wisdom, but rather leads you to the threshold of your own mind.

Kahlil Gibran *The Prophet*

Following this teaching we have revised this text *Health Assessment for Nursing Practice* to retain the strong features and add others. The underlying principles of the previous editions are steadfast. As with the previous editions, the seventh edition is based on the assumption that every patient—from neonate to older adult—is an interactive, complex being who is more than a collection of his or her parts. Each patient's health status depends on the interactions of physiologic, psychologic, sociocultural, and spiritual factors. These interactions occur within their physical environments (what they eat, drink, and breathe; what type of activity and work they participate in and where they live), their social environments and health beliefs (friends, family, and support systems; when and how they seek health care), and their internal environments (what they eat and drink, how they sleep, and how often they exercise).

As faculty, we are challenged with several responsibilities toward our students:

- Demonstrate caring and compassion when we interact with patients to act as role models for students.
- Help students become knowledgeable and skilled in history-taking and physical assessment.
- Model for students as well as teach them how to be objective and nonjudgmental.
- Assist students to mobilize their resources to apply health assessment knowledge and skills to patients of all ages and from a multitude of cultures and ethnic groups.

We know that students will need this content for the remainder of their professional lives. This textbook is a toolbox of information and techniques. As a wise teacher, you lead students to the threshold.

ORGANIZATION

Health Assessment for Nursing Practice is organized into four units to assist students and faculty to find their areas of interest. Unit 1, entitled Foundations for Health Assessment, provides a strong foundation for students, covering issues pertinent to nursing practice with all age-groups, such as Introduction to Health Assessment, Obtaining a Health History, Techniques and Equipment for Physical Assessment, and General Inspection and Vital Signs. Also included are chapters on Cultural Competence, Pain Assessment, Mental Health Assessment, and Nutritional Assessment.

Unit 2, entitled Health Assessment of the Adult, is organized by body system. Each chapter in this unit includes a review of Anatomy and Physiology, a Health History, an Examination section, a section on Common Problems and Conditions, and a Clinical Application and Clinical Judgment section.

The Anatomy and Physiology section is found at the beginning of the chapter because physical assessment techniques allow the student to answer the question, "How does this patient's anatomy and physiology compare with that expected for his or her age group and ethnic group?"

The Health History section instructs the student on history data to collect by providing sample questions to ask patients along with the reasons for asking those questions. The text below each question describes the variances that the student may find. Included in the Health History section are headings for Present Health Status, Past Health History, Family History, Personal and Psychosocial History, and Problem-Based History. Risk factor boxes for disorders in each body system are found within the history section to remind students to discuss these behaviors with patients to help them maintain health and reduce risk of disease. The areas of risk factor identification and health promotion are unique to this text. These areas indicate our commitment to not only teach students how to gather data from patients and examine their bodies to detect health and disease, but also to teach them how to help patients attain and maintain a higher level of health.

The Examination section begins with a table that outlines procedures performed routinely and in special circumstances as well as procedures completed by an advanced practice registered nurse. A list of the appropriate Equipment needed for these procedures is included in the table. This section guides the student sequentially in the procedures routinely performed during the physical assessment of an adult, telling what to do, how to do it, and what to expect. Photographs are provided to enhance learning. The subsequent section describes the examination procedures performed in special circumstances. The indication for performing each procedure is followed by expected and abnormal findings. The left column, Procedures With Expected Findings, details the techniques of the assessment and the expected findings, and the right column describes Abnormal Findings. Following the examination section, techniques performed by advanced practice registered nurses are described briefly. When applicable, a section on Patients With Situational Variations may include examinations of patients with limited mobility and patients with a mastectomy.

The Clinical Application and Clinical Judgment section at the end of each chapter contains a Case Study and Review Questions. Case Studies describe subjective and objective data about a patient and ask the student to use clinical reasoning

skills to answer questions. Answers for the Review Questions are included in Appendix B to facilitate self-study.

Health Promotion for Evidence-Based Practice boxes outline recommendations for health promotion and reducing health risks. These special feature boxes follow the Health History section so that data are collected at the time of history taking. The Common Problems and Conditions section toward the end of each chapter has been updated. Ethnic, Cultural, and Spiritual Variations boxes throughout the body systems chapters contain racial, cultural, and religious variations the nurse should consider when assessing patients.

Unit 3, entitled Health Assessment Across the Life Span, begins with an overview of growth and development and continues with chapters on Assessment of the Infant, Child, and Adolescent; Assessment of the Pregnant Patient; and Assessment of the Older Adult. These chapters describe how to individualize the examination for patients of different ages and in pregnancy. Each chapter includes a box that lists the differences in anatomy and physiology pertinent to those patients. Health history and examination follow along with procedures and expected and abnormal findings. The Common Problems and Conditions section toward the end of each chapter has been retained in these chapters as they pertain to the patients described.

Unit 4, entitled Synthesis and Application of Health Assessment, contains Conducting a Head-to-Toe Examination, Documenting the Comprehensive Health Assessment, and Adapting Health Assessment. These chapters provide guidelines and photographs for combining the body system assessments into one comprehensive examination, for communicating the findings to other health care professionals, and for adapting the physical assessment to patients receiving medical or surgical treatment.

Appendix A provides abbreviations for selected terms.

A Glossary at the end of the book provides definitions to enhance student comprehension of key concepts and terms.

Chapters were updated and revised based on feedback from both faculty and students. Two content areas have had intentional enhancements in this edition.

- Recognizing and screening for victims of human trafficking have been added to relevant chapters such as the Health History
- Individualizing assessments for people in the lesbian, gay, bisexual, transgender, queer, and questioning (LGBTQ+) community has been added to relevant chapters such as the Health History, Assessments of the Breasts, and Reproductive System.

Consider each chapter a different type of tool from the toolbox. Collectively they provide all that students need to perform a comprehensive health assessment.

SUMMARY OF SPECIAL FEATURES

- Most chapters in Unit 2 (body system chapters) have a Concept Overview section at the beginning of the chapter. A concept relevant to that chapter is featured; interrelated concepts are also shown with an explanation of how these concepts are linked.
- Updated Health Promotion for Evidence-Based Practice boxes include recommendations for health promotion and reducing risk.
- Risk Factors boxes are found in the Health History and highlight information specific to various body systems and disorders.
- Unique and revised Clinical Judgment boxes provide a case situation and walk students through the thought process of how an experienced nurse makes decisions. The steps presented include noticing or recognizing cues, interpreting or analyzing cues and forming hypothesis, then responding or taking action, and finally reflecting on the clinical situation.
- Frequently Asked Questions boxes answer common questions students have as they are learning health assessment. These "FAQs" appear throughout Unit 2.
- Case Studies feature a clinical situation involving a health condition and the ensuing applicable health assessment involved, as well as recognition of important cues within the data. Answers to the Case Studies are provided in Appendix B to help students evaluate their learning.
- Ethnic, Cultural, and Spiritual Variations boxes anticipate the unique needs of a multicultural patient population.
- Within each of the Unit 2 chapters, a Documenting Expected Findings box provides an example of how examination data are presented in a documentation note. This box is found at the end of the Examination section.
- A Lab Guide with skills checklists accompanies this book to assist students when practicing health assessment in laboratory settings.

TEACHING AND LEARNING AIDS

The Evolve website for this book contains extensive student and instructor resources and can be accessed at http://evolve.elsevier.com/Wilson/assessment. This dynamic educational component allows students and faculty to access the most current information and resources for further study and research.

The comprehensive Evolve Instructor Resources include TEACH for Nurses, a resource that ties together every chapter resource necessary for the most effective class presentations. TEACH for Nurses incorporates objectives, key terms, nursing curriculum standards (including BSN Essentials and Concepts), student and instructor chapter resources, in-class/online case studies, and teaching strategies consisting of

student activities, online activities, and discussion topics. The ExamView Test Bank has been updated and includes approximately 650 test questions. Also included is a comprehensive Image Collection, which contains hundreds of full-color images that can be imported into the PowerPoint Lecture Slides for use in classroom lectures. Audience Response Questions and Case Studies are also provided for the PowerPoint lecture slides. Evolve Instructor Resources also now include 20 Next Generation NCLEX® Exam-style case studies, including 15 single-episode cases and 5 unfolding cases to help prepare students for the NGN.

Evolve Student Resources include animations, case studies, content updates, key points, audio sounds, review questions, and video clips. Evolve Student Resources also now include 10 Next Generation NCLEX® Exam-style case studies to help students prepare for the NGN. Visit http://evolve.elsevier.com/Wilson/assessment to access these resources.

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CHAPTER

1 Introduction to Health Assessment

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Health assessment refers to a systematic method of collecting and analyzing data for the purpose of planning patient-centered care. The nurse collects health data from the patient and compares these with the ideal state of health, taking into account the patient's age; gender; culture; ethnicity; and physical, psychological, and socioeconomic status. Data about the patient's strengths, weaknesses, health problems, and deficits are identified. The nurse incorporates the patient's knowledge, motivation, support systems, coping ability, and preferences to develop a plan of care that will help the patient to maximize his or her potential.

One approach to developing a plan of care is using the American Nurses Association (ANA) *Standards of Practice.*[1] The first six standards are based on the nursing process (i.e., assessment, diagnosis, outcome identification, planning, implementation, and evaluation; Box 1.1). The first and foundational step is assessment, described as the collection of "pertinent data and information relative to the healthcare consumer's health or the situation."[1,p.53] The assessment and subsequent analysis of data are performed by nurses in all settings. Five core competencies identified by the Institute of Medicine are essential for all health care professionals to demonstrate in all areas of practice. These include: (1) provide patient-centered care, (2) work in interdisciplinary teams, (3) use evidenced-based practice, (4) apply quality improvements, and (5) use informatics.[2] These five competencies are integrated into all areas of care, including health assessment.

COMPONENTS OF HEALTH ASSESSMENT

Components of health assessment include conducting a health history, performing a physical examination, reviewing other data from the health record (as available), and documenting the findings (Fig. 1.1). These steps lead to data analysis and interpretation (discussed later in this chapter) so that a patient-centered plan of care can be developed and implemented. The amount of information collected by the nurse during a health history and the extent of the physical examination depend on the setting, the situation, the patient's needs, and the nurse's experience. Structured patient assessment formats provide an outline of elements to include in the assessment, which then enhances the quality and consistency of the data collected and the care provided by health care clinicians.[3] Many standardized formats are evidence based (meaning they are based on scientific evidence) and are used to guide comprehensive health assessments. They are also a specific or focused component of a health assessment (e.g., standardized pain scales, wound assessment scales, risk for fall assessment scales).

Health History

A health history consists of subjective data collected during an interview. This history includes information about the patient's current state of health, current medications, previous illnesses and surgeries, a family history, personal and psychosocial history, and review of systems. Patients may report feelings or experiences associated with health problems. These patient reports are called *symptoms* and are considered subjective data (Box 1.2). Subjective data acquired directly from a patient are considered *primary source data*. If data are acquired from another individual (e.g., a family member), they are referred to as *secondary source data*. More information about conducting a health history is presented in Chapter 2.

Physical Examination

A physical examination involves the collection of objective data; these data are sometimes referred to as *signs* (see Box 1.2). During a physical examination, objective data are collected using the techniques of inspection, palpation, percussion, and auscultation. In addition, the patient's height, weight, blood pressure, temperature, pulse rate, respiratory rate, and oxygen saturation are measured. Specific physical examination skills and techniques are presented in chapters throughout this textbook.

BOX 1.1 STANDARDS OF NURSING PRACTICE

Standard 1: Assessment
The registered nurse collects pertinent data and information relative to the health care consumer's health or the situation.

Standard 2: Diagnosis
The registered nurse analyzes the assessment data to determine actual or potential diagnoses, problems, or issues.

Standard 3: Outcome Identification
The registered nurse identifies expected outcomes for a plan individualized to the health care consumer or the situation.

Standard 4: Planning
The registered nurse develops a plan that prescribes strategies to attain expected, measurable outcomes.

Standard 5: Implementation
The registered nurse implements the identified plan.
5A: Coordination of Care—The registered nurse coordinates care delivery.
5B: Health Teaching and Health Promotion—The registered nurse uses strategies to promote health and a safe environment.

Standard 6: Evaluation
The registered nurse evaluates progress toward attainment of goals and outcomes.

From American Nurses Association: *Nursing: scope and standards of practice,* ed 3, Silver Spring, MD, 2015, American Nurses Association.

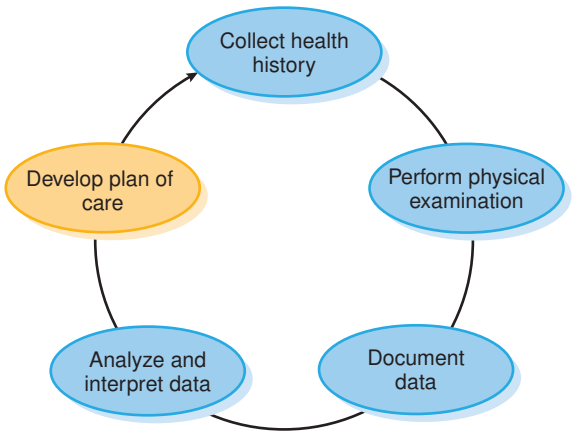

FIG. 1.1 Health history, examination, data documentation, and data analysis are antecedents to developing a plan of care.

Documentation of Data

Health assessment data are documented at the time of the health care encounter, making the information available to other health care professionals involved in the care. Complete, accurate, and descriptive documentation improves the plan of care and prevents the patient from having to provide the same information to another health care provider. The health record serves as the legal permanent record of the patient's health status at the time of the health care encounter. Thus it serves as a baseline for the evaluation of subsequent changes and decisions related to care. The format for documentation varies from agency to agency, although the electronic health record (EHR) is most widely used. An EHR is a digital version of personal health information maintained by health providers over time. It is used by all health care professionals involved in an individual's care and includes data from the history, physical examination, laboratory and diagnostic tests, and surgical procedures and progress notes (Fig. 1.2). Ultimately, the goal is for EHRs to integrate the documentation of care across participating health systems for any single patient.[4] The basic underlying principles of documentation require data to be recorded accurately, concisely, without bias or opinion, and at the point of care. Documentation of a comprehensive health assessment is presented in Chapter 23.

BOX 1.2 CLARIFICATION OF TERMS

Signs and Symptoms
- *Signs* are objective data observed, felt, heard, or measured. Examples of signs include rash, enlarged lymph nodes, and swelling of an extremity.
- *Symptoms* are subjective data perceived and reported by the patient. Examples of symptoms include pain, itching, and nausea.

Occasionally data may fall into both categories. For example, a patient may tell the nurse that he "feels sweaty"—a symptom. At the same time the nurse may observe excessive sweating, or diaphoresis—a sign.

Clinical Manifestation
Clinical manifestation is a term often used to describe the presenting signs and symptoms experienced by a patient.

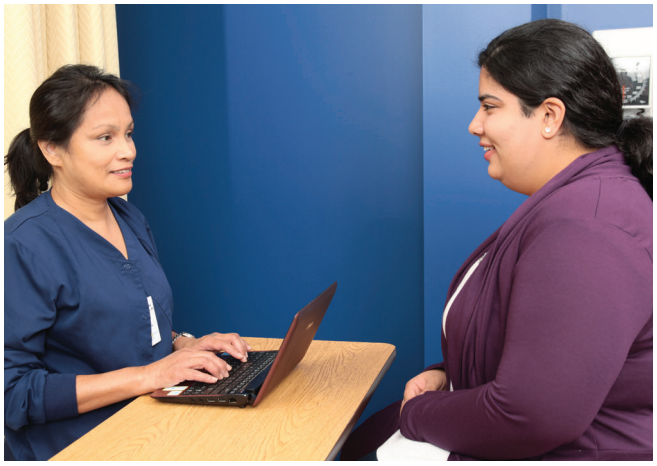

FIG. 1.2 The nurse may take notes while conducting a health assessment. (Copyright © iStock/monkeybusinessimages.)

TYPES OF HEALTH ASSESSMENTS

The amount of information gained during a health assessment depends on several factors, including the context of care and the patient needs.

Context of Care

The term *context* refers to circumstances or situations associated with an event or events. The phrase *context of care* refers to the circumstances or situations related to the health care delivery. Circumstances contributing to the context of care include the setting or environment; the physical, psychological, or socioeconomic circumstances involving patients; and the expertise of the nurse. Because of these variables, different types of assessments are performed (e.g., a comprehensive health assessment, a problem-based or focused health assessment, an episodic assessment, a shift assessment, and a screening assessment; Box 1.3). In some settings such as a hospital or a community-based primary care setting, a comprehensive history is collected and an examination is performed. In an urgent care or emergency department setting, a problem-based or focused assessment may be indicated, although additional subjective and objective data that may have a direct or indirect impact on the management of the patient are collected.

BOX 1.3 TYPES OF HEALTH ASSESSMENT

- **Comprehensive assessment:** This involves a detailed history and physical examination performed at the onset of care in a primary care setting or on admission to a hospital or long-term care facility. The comprehensive assessment encompasses health problems experienced by the patient; health promotion, disease prevention, and assessment for problems associated with known risk factors; or assessment for age- and gender-specific health problems.
- **Problem-based/focused assessment:** This involves a history and physical examination that is limited to a specific problem or complaint (e.g., a sprained ankle). This type of assessment is commonly used in a walk-in clinic or emergency department, but it may also be applied in other outpatient settings. In addition to collecting data on a specific problem, the nurse also considers the potential impact of the patient's underlying health status.
- **Episodic/follow-up assessment:** This type of assessment is usually done when a patient is following up with a health care provider for a previously identified problem. For example, a patient treated by a health care provider for pneumonia might be asked to return for a follow-up visit after completing a prescription of antibiotics. An individual treated for an ongoing condition such as diabetes is asked to make regular visits to the clinic for episodic assessment.
- **Shift assessment:** When individuals are hospitalized, nurses conduct assessments each shift. The purpose of the shift assessment is to identify changes to a patient's condition from the baseline; thus the focus of the assessment is largely based on the condition or problem the patient is experiencing. Adapting an assessment to the hospitalized patient is discussed in Chapter 24.
- **Screening assessment/examination:** This is a short examination focused on disease detection. A screening examination may be performed in a health care provider's office (as part of a comprehensive examination) or at a health fair. Examples include blood pressure screening, glucose screening, cholesterol screening, and colorectal screening.

Patient Needs

The type of health assessment performed by the nurse is also driven by patient needs. The patient's age, general level of health, presenting problems, knowledge level, and support systems are among many variables that impact patient need. For example, a healthy 17-year-old male presenting to a primary care clinic for a sports physical clearly has different needs than a 78-year-old, recently widowed patient with diabetes, presenting to the same clinic with increasing fatigue.

Health Assessment Skills

This textbook presents basic health assessment skills with an overview of advanced health assessment skills. Learning every assessment skill described in this book is not realistic for the beginning student; in fact, few health professionals apply all health assessment skills. Research involving the physical assessment skills used in clinical practice has shown that nurses incorporate some skills regularly and others less frequently. In a study representing a sample of 193 nurses across multiple areas of clinical practice, respondents report performing only 30 of 124 examination skills on a routine basis; the remaining skills were performed occasionally or not performed at all.[5] Replication studies conducted by Anderson and colleagues[6] and Birks and colleagues[7] report similar findings, with a variance in only a few skills. Secrest, Norwood, and duMont[8] report that 92.5% of physical assessment skills on a 120-item survey were taught and practiced in baccalaureate nursing programs, yet only 29% of nurses in clinical practice actually perform those skills on a regular basis. A survey of baccalaureate students in one nursing program found that fewer than half of the skills taught in the physical examination course were actually used in clinical practice.[9] In yet another study, researchers reported that inspection was the predominate assessment strategy used and that 70% of health assessment skills often taught in nursing programs were never performed or learned. The biggest influencer of skills performed was shaped by the practice area.[10] In these studies, the large majority of the skills routinely performed by nurses represent inspection and auscultation involving cardiovascular and respiratory systems. These findings suggest the need to clearly differentiate the skills that are more likely to be used in practice from those that are used infrequently. Box 1.4 presents the *core* physical assessment skills identified through research. Throughout this textbook, the techniques that are frequently performed by most nurses in most settings are differentiated from the techniques that are less commonly performed by nurses or indicated only in special circumstances. Furthermore, a brief description of the assessment techniques typically performed by an advanced practice nurse (e.g., a clinical nurse specialist, nurse practitioner, or certified

BOX 1.4 CORE EXAMINATION SKILLS

Skin
- Inspect skin.*
- Inspect skin lesions and wounds.*

Head, Eyes, Ears, Nose, Throat
- Inspect face.*
- Inspect oral cavity.*
- Assess hearing (based on conversation).*
- Inspect external eyes.*
- Inspect pupils and response to light and accommodation.*
- Assess visual acuity.

Chest and Lungs
- Inspect chest.*
- Evaluate breathing effort.*
- Auscultate lung sounds.*
- Palpate thoracic expansion.

Cardiovascular
- Auscultate heart sounds and apical pulse.*
- Auscultate carotid artery.
- Palpate the distal pulses.*
- Palpate and inspect the nails (capillary refill).*
- Inspect and palpate extremities for edema.*
- Palpate extremities for temperature.*
- Inspect extremities for skin color and hair growth.*

Musculoskeletal
- Inspect upper and lower extremities for size and symmetry.*
- Palpate extremities for tenderness.*
- Observe range of motion.*
- Assess muscle strength.*
- Inspect spine.
- Assess gait.*

Abdomen
- Inspect abdomen.*
- Auscultate bowel sounds; aortic vascular sounds.*
- Palpate abdomen lightly (generalized tenderness and distention).*

Neurologic
- Assess mental status and level of consciousness.*
- Evaluate speech.*
- Assess Glasgow Coma Scale.
- Assess sensation to extremities.

Genitalia
- Inspect male genitalia (penis/scrotum).*
- Inspect female genitalia.

*Indicates core assessment skill in three studies.
Data from Giddens JF: A survey of physical assessment techniques performed by RNs: lessons for nursing education, *J Nurs Educ* 46:83-87, 2007; Secrest JA, Norwood BR, Dumont PM: Physical assessment skills: a descriptive study of what is taught and what is practiced, *J Prof Nurs* 21(2):114-118, 2005; Anderson B, Nix E, Norman B, McPike H: An evidence-based approach to undergraduate physical assessment practicum course development, *Nurse Educ Pract* 14:242-246, 2014.

nurse midwife) are presented at the end of the examination section.

CLINICAL REASONING AND JUDGMENT

The outcome of a health assessment is a portrait of a patient's physical status, strengths and weaknesses, abilities, support systems, health beliefs, and activities to maintain health in addition to health problems and lack of resources for maintaining health. The nurse analyzes and interprets these data to determine the best course of action for a plan of care. To be clear, physical assessment is not to be approached as just a task to be completed. The collection of data without actively applying and integrating the information in a purposeful way does little to benefit the patient. Another critical but perhaps understated purpose of health assessment is the ongoing monitoring of the patient for subtle changes (and being aware of early signs of deteriorating status).[11] Early recognition of cues by a nurse (as collected through assessment) that indicate a change in a patient's health status is central to the early detection of a deteriorating status and initiation of appropriate interventions.[12-13]

Data Organization

After collecting and documenting data, nurses organize or cluster them so the problems appear more clearly. This may be done based on a body system format (e.g., cardiovascular, musculoskeletal, auditory, visual) or a conceptual format (e.g., gas exchange, perfusion, mobility).

Data Analysis, Interpretation, and Developing a Problem List

Data are analyzed to determine findings that are expected as well as abnormal findings. This analysis helps the nurse to identify problems experienced by patients and initiate an appropriate plan of care (see Fig. 1.1). A key component of data analysis and interpretation is the formulation of a problem list, which is a summary of health problems identified as a result of the health assessment process. The list is typically placed in order of the most important or most active problems first, followed by problems of less concern. The problem list is updated over time as the patient's condition changes or as problems resolve.

Clinical Judgment

The term *clinical judgment* is defined as "an interpretation or conclusion about a patient's needs, concerns, or health

problems and/or the decision to take action (or not), use or modify standard approaches, or improvise new ones as deemed appropriate by the patient's response."[14,p 204] Although the nurse's clinical judgment depends on an accurate collection of assessment data, the interpretation of these data guides the nursing actions. According to Tanner, clinical judgment is influenced more by the nurse's experiences, knowledge, attitudes, and perspectives than the data alone.[14] In a comparison of expert and novice nurses, Hoffman and colleagues found that expert nurses collect and cluster a wider range of assessment cues in decision-making.[12] This can be illustrated in the following situation:

A 50-year-old man arrives at a walk-in medical clinic reporting a gradual onset of a cough over the course of the day that began while he was at work. He states that he takes no medications and smokes one-half pack of cigarettes a day. His vital signs and oxygen saturation are within normal limits.

- A novice nurse seeing this patient is likely to collect and document these initial data, auscultate his lungs, and inform the primary care provider that a patient with a cough and wheezing is waiting to be seen.
- An experienced nurse seeing this patient notices subtle cues (that he is anxious, his skin is somewhat pale and moist, and he is slightly restless). This nurse intuitively asks additional questions about the onset of symptoms and learns that he has felt nauseous and was exposed to chemical fumes at work. Although his vital sign data are in the "normal" range, this nurse recognizes that the respiratory rate and pulse are borderline high and the oxygen saturation is at the lower end of the expected range. This nurse suspects that the patient is becoming hypoxic and administers low-flow oxygen. The nurse informs the primary care provider that this patient is a priority for evaluation.

Both nurses in the preceding scenario noted the same initial signs and symptoms; however, the analysis and interpretation of data differ, resulting in different nursing actions. These differences can partly be explained by clinical judgment. As described by Tanner,[14] the process of clinical judgment includes four components: noticing, interpreting, responding, and reflecting. Noticing involves recognizing that a situation is or is not consistent with what nurses anticipate or expect to see based on the context of the patient situation. Tanner describes this process as a perceptual grasp of the situation. Although assessment is linked to noticing, the process of assessment in itself does not automatically lead to noticing. Noticing is based on the nurse's expectations associated with multiple variables, including clinical experience, knowledge, and the clinical context. The next step, interpreting, is a process in which the nurse uses patterns of reasoning (involving analysis and intuition) to gain an understanding of the situation. Once an understanding is gained, the nurse determines the appropriate actions and interventions to take (if any)—what Tanner refers to as responding. Reflecting is a critical component of the development of clinical judgment. Tanner differentiates reflection-*in*-action (in other words reflecting on past experiences while in the midst of another situation) from reflection-*on*-action (thinking about a situation that has occurred and developing a better understanding of what happened and the appropriateness of the patient outcomes). By reflecting, nurses use what is learned from clinical experiences for future encounters (Fig. 1.3).

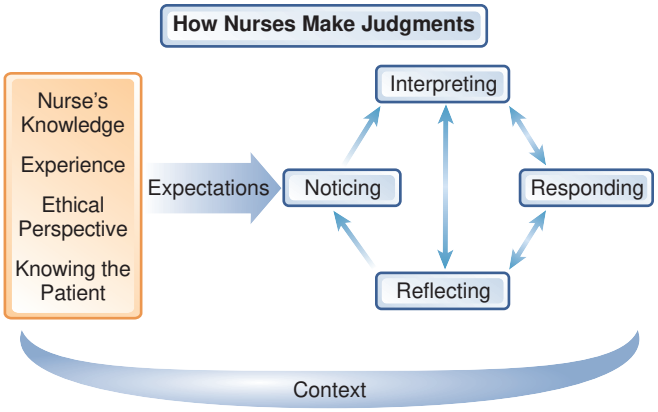

FIG. 1.3 Clinical judgment model. *Noticing* refers to the nurse's expectations and initial grasp of a situation. It triggers reasoning patterns that allow the nurse to interpret the situation and respond with interventions. *Reflection-in-action* specifically relates to evaluating outcomes of interventions, whereas *reflection-on-action* represents the contribution of an experience to a nurse's collective experiences. (From Tanner C: Thinking like a nurse: a research-based model of clinical judgment in nursing, *J Nurs Educ* 45:204-211, 2006.)

More recently, the National Council of State Boards of Nursing (NCSBN) has developed a clinical judgment model (CJM) that represents an integration of the Intuitive-Humanistic Model (represented by the work of Tanner[14] described above), the Dual Process Reasoning Theory, and the Information-Processing Model.[15] According to the NCSBN CJM, clinical judgment involves a series of underlying cognitive operations that include recognizing and analyzing cues associated with a clinical problem, developing and prioritizing a hypothesis based on those cues, which leads to the ability to take action and evaluate outcomes.[15]

HEALTH PROMOTION AND HEALTH PROTECTION

An essential component of health care is the promotion of health. Health promotion begins with health assessment; thus health promotion is found throughout this textbook. Through the process of health assessment, nurses assess patients' current health status, health practices, and risk factors. Interpretation of such data allows nurses to target appropriate health promotion needs for patients. *Health promotion* is behavior motivated by the desire to increase well-being and actualize human health potential. *Health protection* is behavior motivated by the desire to actively

TABLE 1.1 LEVELS OF HEALTH PROMOTION

LEVEL OF PREVENTION	FOCUS	EXAMPLES
Primary prevention	Protection to prevent occurrence of disease	Immunizations, pollution control, nutrition, exercise
Secondary prevention	Early identification of disease before it becomes symptomatic to halt the progression of the pathologic process	Screening examinations and self-examination practices (e.g., colorectal screening, mammography, blood pressure screening)
Tertiary prevention	Minimize severity and disability from disease through appropriate therapy for chronic disease	Diabetes mellitus management Cardiac rehabilitation Hypertension management

avoid illness, detect it early, or maintain functioning within its constraints.[16]

Three levels of health promotion—primary prevention, secondary prevention, and tertiary prevention—address the promotion of health regardless of a patient's health status. Nurses are instrumental in providing education and care to help an individual meet his or her health promotion needs. The focus of *primary prevention* is to prevent a disease from developing through the promotion of healthy lifestyles. *Secondary prevention* consists of screening efforts to promote the early detection of disease. *Tertiary prevention* is directed toward minimizing the disability from acute or chronic disease or injury and helping the patient to maximize his or her health. Table 1.1 clarifies these levels of health promotion.

CLINICAL APPLICATION AND CLINICAL JUDGMENT

See Appendix B for answers to exercises in this section.

REVIEW QUESTIONS

1. A 52-year-old male patient is admitted to the hospital with a new diagnosis of rectal cancer. Which type of assessment does the nurse conduct on his admission?
   1. A comprehensive assessment
   2. A problem-based health assessment
   3. An episodic assessment
   4. A screening assessment for colorectal cancer
2. After collecting data, the nurse begins data analysis with which activity?
   1. Documenting information from the history
   2. Organizing the data collected
   3. Reporting data to other care providers
   4. Recording data from the physical examination
3. Which situation illustrates a screening assessment?
   1. A patient visits a clinic for the first time and the nurse completes a history and physical examination.
   2. A hospital sponsors a health fair in a community to measure blood pressure and cholesterol levels.
   3. A nurse at an urgent care center checks the blood pressure, pulse, temperature, and respirations of a patient reporting leg pain.
   4. A patient with diabetes mellitus comes to the laboratory to get her blood glucose tested prior to a visit with a health care provider.
4. The nurse documents which information in the patient's history?
   1. The patient is scratching his left arm.
   2. The patient's skin feels warm.
   3. The patient reports itching of her eyes.
   4. The patient's temperature is 100°F (37.8°C).
5. Select the example given below that represents information a nurse collects from a patient during a physical examination.
   1. Shiny skin and lack of hair found on lower legs
   2. Concerned about lack of money to pay for prescriptions
   3. Complains of tingling in both feet while sleeping
   4. Family history of colon and breast cancer

CASE STUDY 1

Sharon Faulkner is a 42-year-old woman being seen in a community clinic with abdominal pain. She tells the nurse the pain she is experiencing in her right upper abdomen feels like a knife and that it goes all the way to her shoulder. She is also very nauseous. She tells the nurse that she is exhausted and has not slept for three nights because the pain keeps her awake. The nurse observes dark circles under Sharon's eyes. Her vital signs are as follows: blood pressure, 132/90 mm Hg; heart rate, 104 beats/min; respiratory rate, 22 breaths/min; temperature, 101.8°F (38.8°C). A complete blood count laboratory test reveals that Sharon has an elevated white blood cell count. She lies on the examination table in a fetal position and tells the nurse that it hurts too much for her to get up and move.

1. List the subjective data described in this case study.
2. List the objective data described in this case study.

CASE STUDY 2

Mark Lyons is a 41-year-old man in the orthopedic unit with a complex femur fracture. Listed in the next paragraph are data collected by the nurse.

Interview Data

Mark states, "I fell off my horse while riding. The horse stepped on my leg and crushed the bone in my upper leg." He describes intense pain in his right leg and states that the pain medication helps only a little. He wants to move but cannot because of an immobilizer device. Mark says, "My butt hurts because I can't move around." He tells the nurse, "I have not had a bowel movement for 3 days, and the last time the stool looked like hard, dry rabbit turds. Normally at home I go every day." Mark has not been hungry either. He says that "the food is horrible." He also complains that he is so bored he can't stand it. "I'm used to being active; being stuck in bed is driving me crazy. Television shows aren't worth watching."

Examination Data

- *Vital signs:* blood pressure, 108/72 mm Hg; pulse, 88 beats/min; respiration, 16 breaths/min; temperature, 98.1°F (36.7°C); height, 5 ft 5 in (165 cm); weight, 135 lb (61 kg).
- *Prescribed medications:* Ibuprofen 400 mg every 4 to 6 hours; oxycodone 1 or 2 by mouth every 4 to 6 hours as needed for severe pain (i.e., pain level 8 or over on 10-point scale.). He has taken two oxycodone pills every 6 hours over the past several days for pain management.
- *Diet:* Regular diet. Has eaten, on average, 30% of meals. Fluid intake has averaged 1000 mL/day.
- *Activity:* Complete bed rest.
- *Respiratory:* Breathing even/unlabored. Lungs clear to auscultation bilaterally.
- *Cardiovascular:* All distal pulses in lower extremities palpable. Heart rate and rhythm regular. No peripheral edema.
- *Abdomen:* Slightly distended. Bowel sounds auscultated throughout abdomen.
- *Musculoskeletal:* Immobilization device to right leg. Reports sensation to foot/toes, rapid capillary refill. Other extremities: full range of motion. No pain over joints and muscles.
- *Integument:* Skin warm and dry. Pin sites for external fixation device without redness or drainage. Redness over sacrum, 2 inch in diameter. Skin intact.

The following three problems are applicable to Mark. List the data presented in this case study that support each problem. NOTE: Some data may be placed under more than one problem.

1. Pain
   a. Subjective data
   b. Objective data
2. Altered elimination (constipation)
   a. Subjective data
   b. Objective data
3. Risk for skin breakdown
   a. Subjective data
   b. Objective data

CHAPTER

2

Obtaining a Health History

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Health assessment involves collecting data about a patient's health history followed by a physical examination. As noted in Chapter 1, the health history consists of subjective data collected during an interview involving the nurse and patient. The purpose of the health history is to obtain important information from the patient so a plan to promote health, prevent disease, resolve acute health problems, and minimize limitations related to chronic health problems can be developed. In many settings, patients are asked to complete a health history questionnaire, which typically consists of a series of yes-or-no questions pertaining to specific problems or symptoms that they may have experienced. Although a questionnaire is useful for collecting some elements of a heatlh history, it is never a substitute for an interview. Any past medical problems or symptoms reported on a questionnaire should be investigated further.

THE INTERVIEW

The health history is obtained through an interview process where the nurse facilitates discussion to collect data. Structured formats are used in many health care settings to enhance the quality and consistency of data collected.[1] During the interview, the patient's story is revealed. This perspective is a helpful reminder that each patient is unique; thus each interview reveals specific information about that individual. Information gathered includes defining health, beliefs about attaining and maintaining health, and understanding the patient's expectations for health. Such expectations are based on his or her life experiences, family and friends' experiences, and culture. Nurses also learn about patients' health concerns and the social, economic, and cultural factors that influence their health and their responses to illness. Data generated from an interview provide the foundation for personalized, safe, and effective health care for each individual. A successful patient interview includes selecting an appropriate physical setting, using a patient-centered approach, and creating a positive rapport with the patient.

The Physical Setting

Before conducting an interview, the nurse considers the physical setting, which can impact the exchange of information. Ideally, an interview is conducted in a private, quiet, comfortable room free from environmental distractions where the nurse and patient can sit face to face.

The importance of privacy, especially when discussing issues that are highly personal, cannot be overemphasized. Patients may not be willing to share sensitive information openly and honestly if they are fearful of being overheard or are in the presence of friends or family members. For example, consider the potentially compromising situation if the nurse asks a patient about drug use or sexual activity in the presence of family members. Privacy is best gained by conducting the interview in an unoccupied room. Unfortunately, the physical layout of some patient care areas makes finding a completely private place to conduct an interview difficult; thus the nurse must make every effort to allow for as much privacy as possible. If the interview occurs in an environment with multiple treatment areas or in a semiprivate hospital room, draw the curtains to provide some degree of privacy and block out visual distractions.

Patients should be physically comfortable during the interview. When possible, patients should remain in street clothes during the interview and change into a gown for the physical examination. The nurse and patient should sit at a distance from one another that provides for a comfortable flow of conversation. The patient's comfort level is partly related to personal space (i.e., the area that surrounds the person's body). The amount of space the patient needs varies and is influenced by his or her culture and previous experiences in similar situations. In addition, if possible, the room temperature should be set at a comfortable level.

Finally, the interview should be conducted in a quiet setting without distractions. Interruptions by other individuals should be avoided. Unnecessary noise should be eliminated, and unnecessary equipment should be removed from the area or turned off, if possible. With the exception of emergencies, cell

phones and pagers should not be answered while conducting an interview.

A Patient-Centered Approach

The premise of patient-centered care is that patients, families, and health care providers engage in shared decision-making for all health decisions.[2-3] A central element of patient-centered care involves treating each patient as a unique individual, respecting the patient for who he or she is, and responding to needs and preferences. The nurse considers a wide range of variables (including age, culture, gender identity and expression, language and physical or emotional distress, sensory impairments, and cognitive impairment) when conducting an interview to ensure the patient's unique needs and preferences are revealed.

Age

The patient's age can influence the participation, accuracy, and completeness of data provided. Adults and adolescents are usually able to fully participate in an interview and answer questions for themselves. When obtaining a health history on a child, the nurse typically involves a parent or guardian, although an older child should be included in the process as appropriate. Older adults may have some decline in abilities with age; thus accommodations should be considered as needed.

Culture

Nurses work with patients from many different cultural backgrounds. Patient-centered care is provided when nurses accept and respect differences and identify cultural factors that may influence patients' beliefs about health and illness. The health care system places accountability for cultural competence with all heath care professionals.[4] Cultural competence, as defined by Campinha-Bacote, refers to "The ongoing process in which the health care professional continuously strives to achieve the ability and availability to work effectively within the cultural context of the patient (individual, family, community)."[5] To deliver culturally competent care, nurses must interact with each individual as a unique person who is a product of past experiences, beliefs, and values that have been learned and passed down from one generation to the next (Fig. 2.1). However, nurses remember that all individuals within a specific cultural group do not think and behave in a similar manner. They avoid stereotyping patients because of their culture or ethnicity. There may be as much diversity within a cultural group as there is across cultural groups. The nurse should ask patients about experiences that illustrate what has been of value to them and that characterize their culture. This increases the nurse's understanding and demonstrates interest in them as individuals. Further information about cultural considerations is presented in Chapter 5.

Gender Identity and Expression

The term *gender identity* represents a person's own internal sense of gender—which can include male, female, a blend of both, or neither. Gender identity is formed by age three.[6] *Gender expression* refers to how an individual presents his or her gender within the context of a culture and society.[7] Nurses should be aware of these distinctions and incorporate the patient's views as part of the health history, as appropriate. Box 2.1 presents common terms associated with gender identity.

FIG. 2.1 Interact with the patient as a unique person and be sensitive to cultural diversities.

BOX 2.1 COMMON TERMS ASSOCIATED WITH GENDER IDENTITY

- Cisgender—gender identity consistent with the sex assigned at birth.
- Transgender—gender identity that does not match the sex assigned at birth; male identifies as female (transfemale) or female identifies as male (transmale).
- Nonbinary—person does not identity strictly as male or female.
- Agender—person does not identify with any gender.

Language

As the country's population becomes progressively diverse, the number of patients who have limited English proficiency (LEP) increases. When the nurse and patient do not share a common language, a certified translator is used to gain accurate data for the health history. State and federal laws mandate the provision of interpreting services for patients with LEP; this is also an element within the accreditation guidelines for health care agencies.[8] Although using family members as translators may be tempting, this practice is discouraged because the family members may alter the meaning of what is said or describe what they think is wrong with the patient. Conducting an interview through a translator takes considerably more time than a typical interview because everything said must be repeated.

Physical or Emotional Distress

Ideally, patients are mentally alert and in no physical or emotional discomfort. Conducting an interview with a patient who is in physical or emotional distress is difficult. In such a

case, limit the number and nature of questions to those that are absolutely necessary for the given situation, and save any additional questions for later.

Sensory Impairment

Some individuals may have hearing or vision impairments that may make the interview more challenging. For the hearing impaired, the nurse speaks slowly and clearly and faces the individual so he or she can see the nurse's face. Individuals with a hearing impairment may not provide complete information if unable to fully hear the questions asked. Holding the interview in a quiet room without extraneous noise is important. Individuals with visual impairments may need assistance completing written interview forms.

Cognitive Impairment

When nurses interview patients with a cognitive impairment (e.g., dementia, delirium, or psychosis), they may rely on data from a secondary source (such as a family member or caregiver) to obtain pertinent and essential information. Additional information may also be gained from a preestablished health record, if it exists. Adults with confusion or memory loss may still be involved in an interview, but nurses should keep questions simple and consult with family members to clarify data as needed. A designated health care agent (medical power of attorney) should be assigned for individuals who are unable to participate in health care decisions due to a cognitive impairment. Specific laws regarding power of attorney and advance directives vary by state.[9]

Establishing Rapport

Perhaps the most important factor for a successful interview is the ability to establish a positive rapport (or relationship) with the patient. Establishing a positive rapport leads to trust that enhances the sharing of personal information. Factors that affect the rapport include the professional behavior of the nurse and effective communication.

Professional Behavior

First impressions are powerful. A first impression is made during an initial encounter and leads to the formation of an opinion regarding the other individual. The first impression nurses make starts with their appearance, dressing, and grooming. A clean appearance, modest professional attire, and an identification badge are imperative. Nurses avoid extremes in dress and manner so appearance does not become an obstacle or a distraction to the patient's responses. Nurses should strive to convey a professional, confident, and caring demeanor. A stiff, formal attitude or being too casual or displaying a "laid-back" attitude may fail to instill confidence. Examples of professional behaviors that contribute to positive first impressions are being prompt, knocking before entering a room, introducing oneself, and being fully present to the situation.

Effective Communication

Interpersonal skills are central to effective communication. Skilled nurses conduct interviews in an efficient, calm, and unhurried manor. Nurses actively listen to patients and project a genuine interest in them and what they are saying. Patients have the need to feel understood; nurses should make every attempt to understand their point of view, communicate acceptance, and treat them with respect. Failure to do so jeopardizes the flow of information. Nonverbal behavior is also very important. Posture, gestures, eye contact, and facial expression project to patients the nurse's level of interest, acceptance, and understanding of them. Avoid reactions (e.g., startle, surprise, frowning, laughter, grimacing) based on a patient's appearance or the information shared. Also avoid focusing more on the process of recording data instead of focusing on the patient. Ideally, one should listen first and then record the data.

Phases of the Interview

The interview consists of three phases: introduction, discussion, and summary (Box 2.2). To begin the introduction phase, the nurse greets the patient and introduces himself or herself. (Fig. 2.2). This is the opportunity to make an important first impression with the patient and begin establishing

BOX 2.2 PHASES OF AN INTERVIEW

Introduction Phase
- Greet the patient; introduce self to patient.
- Establish purpose of the visit from patient.
- Describe the purpose and process of the interview.

Discussion Phase
- Facilitate and maintain a patient-centered discussion.
- Use various communication skills and techniques to collect data.

Summary Phase
- Summarize the data with the patient.
- Allow the patient to clarify the data.
- Create a shared understanding of the problems with the patient.
- Plan for next steps and end interview

FIG. 2.2 Introduce yourself when you begin an interview. (Copyright © iStock/monkeybusinessimages.)

rapport. When patients are adults, address them by their title (e.g., Mr., Mrs., Miss, or Ms.) and surname initially. As a follow-up, ask "What is your preferred name? or "How would you like to be addressed?" Avoid using their first name unless they request it or when they are adolescents or children. If other individuals are in the room, acknowledge each person and determine his or her role and level of participation in care. During the introduction the nurse establishes the purpose of the visit and explains the purpose and process of the interview.

Next the interview moves into the discussion phase. The nurse collects the health history by gathering data about various aspects of the patient's health. Although the role of the nurse is to facilitate the direction of conversation, ideally the conversation is *patient-centered,* meaning the patient is free to share concerns, beliefs, and values in his or her own words.[10] During the discussion phase, a variety of communication skills and techniques are used to enhance the conversation and data collection.

The summary phase of the interview is the time for closure. Main points gained from the interview are summarized, and data that have implications for health promotion, disease prevention, or the resolution of their health problems are emphasized. The summary allows for clarification of data and provides validation to the patient that the nurse has an accurate understanding of his or her health issues, problems, and concerns. Finally, the nurse and patient plan for the next steps and end the interview.

FREQUENTLY ASKED QUESTIONS

What are the key points to ensure a successful interview with a patient?

- **Make a good first impression.** A professional greeting is essential to establish initial rapport. The nurse should consider his or her personal appearance and body language.
- **Be prepared.** Review the patient's medical record (if it is available) before meeting the patient. This not only helps the nurse to anticipate some of the issues that may arise, but it also lets the patient know that the nurse is interested enough to invest time prior to the first meeting.
- **Be an attentive listener throughout the interview.** The nurse must use active listening skills and be fully engaged in the conversation. (Active listening is described under Techniques that Enhance the Interview.)
- **Avoid using medical jargon.** The nurse should use lay language when asking questions, as appropriate to ensure the patient understands the information provided.

The Art of Asking Questions

The art of obtaining information from patients and listening carefully to their responses is an essential competency. Questions must be clearly spoken and understood by patients. Define words that patients may not understand and avoid the use of technical terms if possible. Slang words such as "pee" as opposed to "urinate" may be used if necessary to describe certain conditions. Questions are adapted to a patients' developmental level, knowledge, and understanding. For example, the nurse may ask a young child where he or she hurts but would ask an adult more detailed questions such as the onset, duration, and characteristics of the pain. Patients are encouraged to be as specific as possible. For example, if the nurse asks how many glasses of water the patient drinks each day and the patient says, "Oh, a few," the nurse clarifies what the patient means by asking, "How many is a few? Three? Four? Five?" This approach yields a more specific answer and provides the patient's interpretation of "a few."

The nurse asks one question at a time and waits for the reply before asking the next question. If several questions are asked at a time, a patient may become confused about which question to answer, or the nurse may be uncertain about which question the patient is answering. For example, the nurse asks, "Have you had immunizations for tetanus, hepatitis B, and influenza?" If the patient answers "yes," it is not clear whether the patient means "yes" to all three or to one only. If something a patient says is confusing, the nurse must ask for clarification. The explanation may clear up the confusion, or it may indicate that the patient has been misinformed or there is some underlying emotional or thought-processing difficulty that impairs understanding.

The nurse is attentive to the feelings that accompany the patient's responses to some questions. These responses may signify that additional information is needed during the interview or that problems exist that need to be addressed in the future. For example, if the patient reports that her mother died of breast cancer and she begins to cry, this may indicate a future need to discuss coping or adjustment strategies with her.

Some areas of questioning (e.g., sexuality, domestic violence, human trafficking, or the use of alcohol or drugs) are more sensitive than others. What is perceived as sensitive may vary from patient to patient. When asking questions about sensitive issues, nurses explain that they need to ask personal or sensitive questions and that all nurses ask these questions of all patients. Another technique is referred to as *permission giving.* For example, the nurse could say, "Many people have experimented with drugs; have you ever used street drugs?" or "Many young people your age have questions about sex. What questions or concerns do you have?" With the permission-giving technique, the nurse communicates to the patient that it is safe to discuss such topics.

Patients may ask the nurse questions during the interview. The nurse can answer them using terms that patients understand but avoiding giving in-depth answers or providing more information than necessary. If patients ask broad questions or questions that the nurse is unprepared to answer at that time, the nurse asks for more information about the situation such as, "Tell me more about what you are thinking." This provides some direction to answer broad questions or allows the nurse to refer the patient to appropriate resources.

Types of Interview Questions

There are two categories of interview questions—open-ended and directive questions. Both types of questions are useful to incorporate into an interview.

Open-ended Questions

Begin the interview with *open-ended questions* such as, "How have you been feeling?" or "What brings you in to the clinic today?" These broadly stated questions encourage a free-flowing, open response. The aim of open-ended questions is to elicit responses that are more than one or two words. Patients may respond to this type of question by describing the onset of symptoms in their own words and at their own pace. However, the open-ended question should focus on the patient's health. A question that is too broad such as, "Tell me a little about yourself," may be too general to provide useful information. A challenge associated with open-ended questions is that some patients may be unable to focus on the specific topic of the question or take excessive time to tell their story. In these cases the nurse needs to refocus the interview. However, flexibility is necessary when using this type of question because the patient's associations may be important and the nurse must allow the patient the freedom to pursue them.

Directive Questions

To gain more precise details, nurses ask more specific, *directive questions* (also called closed-ended questions) that require only one or two words to answer or lead patients to focus on a set of thoughts. For example, the nurse may ask, "Do you become short of breath when walking a flight of stairs?" or "How many days have you been unable to eat?" Another reason for using this type of question is to give patients options when answering questions such as, "Is the pain in your stomach sharp, dull, or aching?" This type of question is valuable in collecting data, but it must be used in combination with open-ended questions because failing to allow patients to describe their health in their own words may lead to inaccurate conclusions.

Techniques That Enhance the Interview

The professional behavior exhibited by the nurse and the art of asking questions (presented previously) are fundamental for establishing the patient's trust. In addition, a number of communication techniques are used to enhance patient responses and facilitate communication during the interview.

Active Listening

Active listening involves listening with a purpose to the spoken words, as well as noticing nonverbal behaviors. This is performed by concentrating on what the patient is saying and the subtleties of the message being conveyed, together with the facial expressions and body language observed. The nurse must pay full attention to the patient's response rather than trying to predict how the patient will respond to the question or formulate the next question. When assumptions are made, the nurse may ask an illogical question; or, if the nurse is concentrating on how the next question will be worded, attention is shifted away from the information that the patient is providing.

Facilitation

Facilitation uses phrases to encourage the patient to continue talking. These include verbal responses such as, "Go on," "Uh-huh," and "Then?" and nonverbal responses such as head nodding and shifting forward in your seat with increased attention.

Clarification

Clarification is used to obtain more information about conflicting, vague, or ambiguous statements. As an example, if the patient said, "I was so angry I almost lost it," the nurse seeking clarification may respond by asking "What do you mean by 'almost lost it'?" or, as another example, if the patient said, "I just wasn't able to return to work," the nurse might ask "What do you think kept you from returning to work?"

Reflection

Reflection is a technique used to gain clarification by restating a phrase used by the patient in the form of a question. This encourages elaboration and indicates that the nurse is interested in more information. As an example:

Patient: "I got out of bed and I just didn't feel right."
Nurse: "You didn't feel right?"
Patient: "Uh huh, I was dizzy and had to sit back on the bed before I fell over."

Confrontation

Confrontation is used when inconsistencies are noted between what the patient reports and observations or other data about the patient. For example, the nurse might say, "I'm confused. You mentioned that you are following your diet and exercising three times a week, yet your weight has increased since your last visit. Can you help me to understand this?" However, the use of confrontation can be tricky. The nurse's tone of voice is important when using confrontation; use a tone that communicates confusion or misunderstanding rather than one that is accusatory and angry.

Interpretation

The nurse uses interpretation to share with the patient the conclusions drawn from data given. After hearing the conclusion, the patient can confirm, deny, or revise the interpretation. For example, "Let me share my thoughts about what you have just told me. The week you were out of the office you exercised, felt no muscle tension, felt relaxed, and slept well. I wonder if your work environment is contributing to the anxiety that you're experiencing."

Summarization

A summary condenses and orders data obtained during the interview to help clarify a sequence of events. This is useful when interviewing a patient who rambles on or does not provide sequential data.

Behaviors That Interfere With the Interview

There are a number of nurse behaviors that can disrupt the flow of an interview, interfere with the quality of data collection, and possibly impair the patient-nurse relationship. These behaviors can often be avoided by considering the interview from the patient's perspective.

Using Medical Terminology

Using medical terminology, abbreviations, or jargon not known to patients interferes with the communication process. Some examples include saying "hypertension" instead of "high blood pressure," "dysphagia" rather than "difficulty in swallowing," "CVA" rather than "stroke," or "myocardial infarction" rather than "heart attack." Using medical terminology might confuse the patients, lead them to misunderstand the question, or cause them to feel too embarrassed to ask for clarification. Such a scenario can lead to inaccurate data collection.

Expressing Value Judgments

Value judgments expressed by the nurse have no place in an interview. For example, the nurse should ask, "If you have had a mammogram, do you recall when you had the last one?" rather than saying, "You have had regular mammograms, haven't you?" The latter question forces the patient to respond in a way that is consistent with the nurse's values, or it might cause the patient to feel guilty or defensive when she must answer to the contrary.

Interrupting the Patient

Allow patients to finish sentences; do not become impatient and finish their sentences for them. The ending the nurse might add to a sentence may be different from the one that the patient would have used. Associated with interrupting is changing the subject before a patient has finished giving information about the last topic discussed. Nurses may feel pressured for time and are eager to move on to other topics, but they should allow patients the opportunity to complete their thoughts.

Being Authoritarian or Paternalistic

The nurse who uses the approach, "I know what is best for you, and you should do what I say," risks alienating the patient. Despite personal beliefs held by the nurse, a patient's health is his or her own responsibility. The patient may choose to follow or ignore the advice and teaching offered by the nurse.

Using "Why" Questions

This type of questioning can be perceived as threatening and may put patients on the defensive.[3] When patients are asked why they did something, the implication is that they must defend their choices. Instead of asking, "Why did you stop taking the antibiotics?" the nurse could say, "I noticed several doses of prescription are left in the bottle" and wait to see if the patient offers an explanation. If no explanation is forthcoming, the nurse can follow up with, "I'm curious to know whether you intended to take all the antibiotics."

Awkward Moments and Challenging Situations

Personal Questions

Patients may ask the nurse questions about his or her personal life. A brief, direct answer usually satisfies their curiosity. Sharing personal experiences that are supportive of patients may be helpful (e.g., parenting issues or stress management techniques) and may enhance the relationship with patients and increase the nurse's credibility.

Silence

When an awkward silence occurs, the nurse may feel an urge to break it with a comment or question. However, remember that patients may need the silence as a time to reflect or gather courage. Some issues can be so painful to discuss that silence is necessary and should be accepted. It may indicate that they are not ready to discuss this topic or that the approach needs to be evaluated. The nurse should become comfortable with silence; it can be useful.

Displays of Emotion

Patients may express a variety of emotions, such as sadness, fear, or anger, during an interview. Crying is a natural emotion. Saying, "Don't cry" is not a therapeutic response. A therapeutic approach is to provide tissues and let patients know that it is all right to cry by giving a response such as, "Take all the time you need to express your feelings." Postpone further questioning until the patient is ready. Crying may indicate a need that can be addressed at a later time. A compassionate response to a patient who is crying demonstrates caring and may enhance the nurse-patient relationship.

At times a patient may be angry, which can make the interview a challenge. One approach is to deal with it directly by first identifying its source. The nurse may say, "You seem angry; can you tell me what is going on?" If a patient chooses to discuss the anger, he or she may reveal whether the anger is self-directed, directed at someone else, or directed at the nurse. If the patient is angry with someone else, discuss with him or her an approach for talking with that person about the reason for the angry feelings. When patients are angry with the nurse, encourage them to discuss their feelings. Acknowledge their feelings and, if appropriate, apologize. Nurses may be able to continue working with a patient after the angry feelings have been discussed; but, if the patient would prefer to interact with another nurse, their request should be honored. Regardless of the outcome, nurses should model a healthy, appropriate approach to managing anger.

Overly Talkative Patient

Some patients are difficult to interview because they are overly talkative. They may feel a need to go into every detail of a problem or illness and become distracted as they tell their story. Some patients focus on events in the remote past with no apparent relevance to their present situation. Still others may want to discuss issues that do not relate directly to themselves, such as other people or current world events. Although each situation is unique, ideally the nurse tactfully

redirects the conversation. The use of directive or closed-ended questions may help to maintain direction and flow of the conversation.

Others in the Room

Patients may be accompanied by other individuals. When this is the case, avoid making assumptions regarding the relationship among those present. Ask the others, "What is your relationship to the patient?" Or, you can ask the patient, "Who did you bring with you today?" which gives them an opportunity to introduce those who have accompanied them.

All patients should be involved with the interview to the extent that their age, mental ability, or physical ability allows. When patients are unable to answer questions for themselves, others may assist with the interview. For example, the parent or guardian of a child usually answers interview questions on behalf of a young child. Patients who are able to speak for themselves should be given an opportunity to be interviewed directly and in private if possible. If other individuals are present, the nurse should obtain the patient's permission for them to remain in the room during the interview.

Disruptive Individuals

At times, the individuals who accompany patients are disruptive to the interview. For example, sometimes a parent, spouse, or friend will answer questions for the patient. Usually these individuals are trying to be helpful, but this may also suggest a dominant personality or, worse, an abusive situation or a human trafficking situation. Such situations can adversely affect the accuracy of data collected, and the nurse must validate with the patient that the information is correct. If others persist in answering for a patient, the nurse can specifically request them to allow the patient to answer or ask them to leave until the end of the interview.

A disruptive interview may also occur when others are present and create a distraction for the patient and/or nurse. As one example, attempting to conduct an interview with a woman who is accompanied by two active young children often causes constant distractions. If children are too young to wait in the waiting room, the nurse should find developmentally appropriate activities for them while the interview is completed.

THE HEALTH HISTORY

Types of Health Histories

A health history is obtained from patients on every visit; however, the amount of data collected for a history depends largely on the setting and the purpose of the visit. A history is a component of all the types of health assessments described in Chapter 1 (Box 1.3), including a comprehensive assessment, a problem-based or problem-focused assessment, and an episodic or follow-up assessment. If the patient has a preestablished health record available, the nurse should access the record and review it before the patient visit, if possible.

The *comprehensive health history* is performed for new patients in any setting, including a hospital admission, an initial clinic visit, or home visit. A comprehensive health history requires more time than other types of histories because a complete database is being established. The admission process for many hospitals includes obtaining a comprehensive database. However, the patient's condition must be considered. For example, a critically ill patient admitted to the hospital may be unable to participate in a comprehensive interview; thus it would be inappropriate to pursue it at that time. Family members may be of assistance in providing important, essential information to the nurse for the seriously ill patient. A comprehensive health history should be conducted once the patient is stable. An example of a documented comprehensive health history for an adult is presented in Chapter 23.

The history for a *problem-based* or *problem-focused health assessment* includes data that are limited in scope to a specific problem. However, it must be detailed enough so the nurse is aware of other health-related data that may affect the current problem. For example, the history for a patient with a lacerated foot should include information about the incident and symptoms and also medications that the patient is taking currently, medication allergies, other health problems that the patient has, and immunization status. Imagine the disastrous result that could occur if this patient had a history of diabetes mellitus and a severe allergy to penicillin and this information were not discovered. A problem-focused interview is also used when a patient seeks help to address an urgent problem such as relief from asthma attack or for chest pain. Further data may be collected once the patient has been stabilized, particularly if he or she requires ongoing care.

The history associated with an *episodic* or *follow-up assessment* generally focuses on a specific problem or problems for which a patient has already received treatment. An interview for an episodic visit focuses on the changes that have taken place since the last visit, particularly with an interest in disease management and the early detection of complications or a decline in health. As an example, a patient receiving chemotherapy as a treatment for cancer makes episodic visits to monitor his or her condition.

Components of the Health History

Because the scope of a health history varies with the type of health assessment conducted, the nurse can expect variations in the format of the history. However, many components are found consistently in all health histories. A comprehensive health history includes the following components:

- Biographic data
- Reason for seeking care
- History of presenting illness
- Present health status
- Past health history
- Family history
- Personal and psychosocial history
- Review of systems

Biographic Data

Biographic data are collected at the first visit and updated as changes occur. These data begin to form a picture of the patient as a unique individual. Box 2.3 lists the data obtained.

Reason for Seeking Health Care

The reason for seeking care is a brief statement of the patient's reason for requesting the services of a health care professional and is often recorded in direct quotes. Often the reason for seeking health care is described in terms of a *chief concern* or *presenting problem*. As an example, the patient's reason for seeking health care may be recorded as "Back pain for two days." A patient may present for a routine examination or well visit and thus does not have a presenting problem. When multiple problems are verbalized, they are all listed and the patient is asked to prioritize the problems. A patient may initially be uncomfortable giving the nurse the actual reason for seeking care. When this is the case, the patient may not divulge the true reason he or she came until the end of the visit, when he or she begins to feel more comfortable. A patient who is unable to provide an address; seems unsure of current location, current date, and time; seems nervous or afraid and avoids eye contact; provides an inconsistent history; and/or is accompanied by a person who answers for the patient, may be a victim of human trafficking (Box 2.4). When these indicators are present, the nurse should talk with the patient alone. Examples of screening questions for suspected victims of human trafficking are presented in Box 2.5. Keep in mind that victims frequently feel hopeless and may not report their situation to the nurse even when given an opportunity.[11]

The patient's condition dictates how the nurse proceeds. Urgency dictates expediency. Patients with severe pain, dyspnea, or injury should not be subjected to a prolonged

BOX 2.3 BIOGRAPHIC DATA

- Name and preferred name
- Gender and gender identity
- Address, telephone number, and email address
- Birth date
- Birthplace (important when born in a foreign country)
- Race/ethnicity
- Religion
- Marital status
- Occupation
- Contact person
- Source of data

Note: Gender is commonly used to describe a person's sex (biologic male or female distinction) in the context of social and cultural differences. Gender identity refers to an individual's view of themselves (see Box 2.1).

BOX 2.4 RECOGNIZING VICTIMS OF HUMAN TRAFFICKING

Human trafficking is defined as a commercial sex act induced by force, fraud, or coercion or in which the person induced to perform such an act has not attained 18 years of age. Nearly 80% of victims are female and present for a variety of health reasons. Since nurses are often the first health professionals to have contact with victims, they are in a unique position to identify those at increased risk and recognize red flags that indicate the victim may need help.

- Vulnerable Individuals for Human Trafficking
  - Individuals who have experienced childhood abuse or neglect
  - Children in foster care and juvenile justice system
  - Runaway or homeless youth
  - Victims of violence
  - Lesbian, gay, bisexual, and transgender individuals
  - Racial and ethnic minorities, particularly Native Americans, Native Hawaiians, and Pacific Islanders
  - Non-English speaking, limited language skills
  - Undocumented immigrants, refugees, migrant workers
  - Individuals with low socioeconomic status
  - Uneducated individuals
  - Individuals with history of substance abuse
- Common Reasons for Seeking Health Care
  - Mental health issues (anxiety, depression, posttraumatic stress disorder [PTSD]), substance abuse)
  - Physical injuries: burns, fractures
  - Malnutrition
  - Skin conditions
  - Dental injuries and disease
  - Sexually transmitted diseases (STDs); human immunodeficiency virus (HIV); acquired immunodeficiency syndrome (AIDS)
  - Complications of abortion
  - Gastrointestinal disorders
  - Evidence of sexual violence
- Indicators or "Red Flags" of Human Trafficking:
  - Unable to provide address (victims are moved frequently)
  - Unsure of present location, current date, or time
  - Accompanied by a person who answers for the patient, interprets for the patient, or refuses to let the patient have privacy
  - Not in possession of personal identification documents or money
  - Provides an inconsistent or scripted history
  - Unwilling or hesitant to answer questions about injury or illness
  - Displays evidence of controlling or dominating relationships (excessive concerns about pleasing persons who accompany him or her)
  - Demonstrates fear or nervous behavior or avoids eye contact

National Conference of State Legislatures: Human trafficking and the health care system, *Legisbrief* 26(14), 2018; Trafficking Victims Protection Act of 2000: https://www.govinfo.gov/content/pkg/PLAW-106publ386/pdf/PLAW-106publ386.pdf; The Joint Commission: Quick Safety 42: Identifying human trafficking victims, 2018. Retrieved from: https://www.jointcommission.org/issues/article.aspx?Article=Dtpt66QSsiI%2FHRklecKTZPAbn6jexdUPHfIBjJ%2FD8Qc%3D; Schwarz C, Unruh E, Cronin K, et al: Human trafficking identification and service provision in the medical and social service sectors, *Health Hum Rights* 18(1)181-191, 2016; Washburn J: What nurses need to know about human trafficking, *J Christ Nurs* 35(1): 18-25, 2018;

BOX 2.5 SCREENING QUESTIONS FOR VICTIMS OF HUMAN TRAFFICKING

- Where do you live, sleep, and eat?
- Are you allowed to leave the place where you are living or working? Under what circumstances?
- Has your identification or documentation been taken from you?
- Have you ever run away from home or a program? What did you do to survive during that time?
- Do you feel people are controlling you and forcing you to do things you do not want to do?
- Are you frightened by people in your everyday life or work setting?
- Have you been threatened with harm if you try to leave?
- Has anyone threatened or harmed your family?
- Can you quit your job or situation if you want to?
- Are you provided with protective equipment at work (gloves, glasses, masks, helmets)?
- Has anyone force you to do something physically or sexually that you did not feel comfortable doing?
- Do you feel your only option is to say in this situation?
- Would you know how to seek help if you needed it?
- Are you afraid to get help?

From: The Joint Commission: Quick Safety 42: Identifying human trafficking victims, 2018. Retrieved from: https://www.jointcommission.org/issues/article.aspx?Article=Dtpt66QSsiI%2FHRkIecKTZPAbn6jexdUPHfIBjJ%2FD8Qc%3D; Washburn J: What nurses need to know about human trafficking, *Journal of Christian Nursing* 35(1): 18-25, 2018.

history. Biographic data may be delayed to pursue the health concern. This approach enables the nurse to analyze the data quickly, identify the cause of the health concern, prioritize the patient's needs, and plan how to alleviate the signs or symptoms.

History of Presenting Illness and Symptom Analysis

When patients seek health care for a specific presenting illness or problem, the nurse investigates it further by conducting a *symptom analysis,* which is a systematic method of collecting data about the presenting problem. Remember, not all individuals seeking health care have a specific presenting problem (e.g., a person presenting for routine health care or wellness visit). For this reason, a symptom analysis is not always indicated. Several formats are used to conduct a symptom analysis, but the analysis should include all of the following variables: onset of symptoms, location and duration of symptoms, characteristics, aggravating factors, related symptoms, treatment, and severity of symptoms (Box 2.6).

Present Health Status

The current health status focuses on the patient's current health conditions, medications the patient is currently taking, and known allergies.

- *Current health conditions.* Examples include diabetes, hypertension, heart disease, sickle cell anemia, cancer, seizures, pulmonary disease, arthritis, and depression. Ask

BOX 2.6 MNEMONIC FOR SYMPTOM ANALYSIS: OLD CARTS

Onset: When Did the Symptom Begin?
- When and how did the symptom(s) begin?
- Did it develop suddenly or over a period of time? (Ask for the specific date, time, day of week if appropriate.)
- Where were you or what were you doing when the symptom started
- Does anyone else with whom you have been in contact have a similar symptom?

Location: Where Is the Symptom?
- Is the symptom in a specific area? If so, describe.
- Is it vague and generalized?
- Does the symptom radiate to another area?

Duration: How Long Does the Symptom Last?
- Is the symptom constant or intermittent (does it come and go)?
- If constant, does the severity of symptom change?
- If intermittent, how many times a day, week, or month does the symptom occur and for how long? How do you feel between episodes of the symptom?
- Since you first noticed the symptom, has it become worse? About the same?

Characteristics: Describe the Symptom
- How does the symptom feel or look?
- Describe the sensation: stabbing, dull, aching, throbbing, nagging, sharp, squeezing, itching.
- If applicable, describe the appearance: color, texture, composition, and odor.

Aggravating Factors: What Makes the Symptom Worse?
- Is the symptom aggravated by an activity or situation (e.g., walking, climbing stairs, eating, a particular body position)? If so, describe.
- Are there psychological or physical factors in the environment that may be contributing to the symptom (e.g., stress, smoke, chemicals)? If so, describe.

Related Symptoms: Are Other Symptoms Present?
- Have you noticed that other symptoms have occurred that you think may be related (e.g., fever, nausea, pain)? If so, describe.

Treatment: What Factors Alleviate the Symptom?
- Is the symptom relieved with change in body position, application of heat or cold, change in diet, or use of over-the-counter drugs?
- Have you tried any self-treatments or taken any medications to relieve the symptom? If so, have any of these treatments been effective?
- Have you previously sought treatment from a health care provider for this symptom?

Severity: Describe the Intensity of the Symptom
- Describe the size, extent, number, or amount.
- On a scale of 0 to 10, with 10 being most severe, how would you rate your symptom?
- Is the symptom so severe that it interrupts your activities (e.g., work, school, eating, sleeping)?

the patient how long he or she has had the condition(s) and the impact of the illness on daily activities.

- *Medications.* Inquire about prescription, over-the-counter, and herbal preparations. Include the reason for taking the medication, how long the patient has been taking it, the dose and frequency, any adverse effects, and the patient's perception of its effectiveness. In addition, ask about any home remedies used for health conditions.
- *Allergies.* Ask about allergies to foods, medications, environmental factors, and contact substances. Be sure to ask specifically about substances to which patients could be exposed in the health care setting such as latex and iodine. The nurse should explain the term *allergy* to ensure that the patient understands it. Many people do not know the difference between an adverse effect (e.g., nausea) and a true allergic reaction (e.g., a rash or difficulty in breathing). When the patient reports an allergy to a medication or substance, ask for a description of the symptoms that occurred to determine whether the reaction is an adverse effect or an allergic reaction.

Past Health History

Past health history (also known as the past medical history) is important because past conditions may have some effect on the patient's current health needs and problems. The following data categories are included:

- *Childhood illnesses:* measles, mumps, rubella, chickenpox, pertussis, *Haemophilus influenzae* infection, streptococcal throat infection, otitis media (ask if there were complications in later years such as rheumatic fever or glomerulonephritis that can occur after streptococcal throat infection)
- *Surgeries:* types, dates, outcomes
- *Hospitalizations:* illnesses, dates, outcomes
- *Accidents or injuries:* type (fractures, lacerations, loss of consciousness, burns, penetrating wounds), dates, outcomes
- *Immunizations:* tetanus, diphtheria, pertussis, mumps, measles, rubella, rotavirus, poliomyelitis, hepatitis A or B, influenza, pneumococcal pneumonia, human papillomavirus (HPV), meningococcal vaccines, and varicella. For foreign-born patients: bacille Calmette-Guérin (BCG). Immunizations are discussed further in Chapter 18.
- *Last examinations:* type (physical, dental, vision, hearing, electrocardiogram [ECG], chest radiograph, skin test for tuberculosis; for women: Papanicolaou [Pap] test, mammogram; for men: prostate examination), dates, and outcomes
- *Obstetric history:* number of pregnancies (gravidity), number of births (parity), and number of abortions/miscarriages, if applicable. If working with a pregnant patient or woman in childbearing years, further information is recorded; see Chapter 20

Family History

A history of the patient's blood relatives (biologic grandparents, parents, aunts, uncles, and siblings), spouse, and children is obtained to identify illnesses of genetic, familial, or environmental nature that may affect the patient's current or future health. As recommended in the *Essentials of Genetic and Genomic Nursing*, trace back at least three generations.[12] Specifically ask about the presence of any of the following diseases among family members: Alzheimer disease, cancer (all types), diabetes mellitus (specify type 1 or type 2), coronary artery disease (including myocardial infarction), hypertension, stroke, seizure disorders, mental illness (including depression, bipolar disorder, schizophrenia), substance abuse, endocrine diseases (specify), and kidney disease. The family history can be documented in narrative form, or it can be illustrated. A genogram is a tool consisting of a family-tree diagram depicting members within a family over several generations. This tool is useful in tracing diseases with genetic links. Symbols are used to indicate males and females and those who are alive and deceased. Include the current ages of those who are alive and the cause of and age at death of those who are deceased (Fig. 2.3).

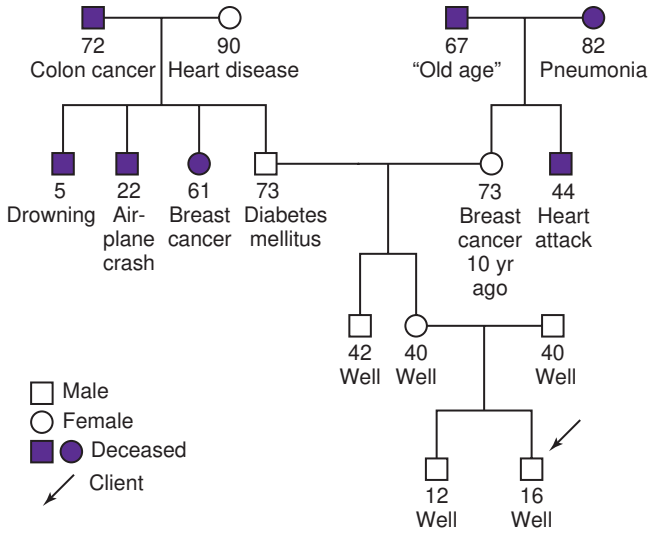

FIG. 2.3 A sample genogram identifying great-grandparents, grandparents, parents, aunts, uncles, and siblings.

Personal and Psychosocial History

This history explores a variety of topics, including any information that affects or reflects the patient's physical and mental health.

Personal status. Ask the patient for a general statement such as "How would you describe yourself?" or "How do you feel about yourself?" Ask about cultural/religious affiliations and practices. Ask about education; occupational history, work satisfaction, perception of having adequate time for leisure and rest, and current hobbies and interests.

Family and social relationships. Ask about general satisfaction with interpersonal relationships, including significant others, people with whom the patient lives, and the patient's role within the family. Sometimes health information about significant others, sexual partners, and roommates is relevant to the patient's health, so be sure to ask about the current state of health of these individuals. Ask about social interactions with friends, participation in social organizations (community, school, work), and participation in spiritual or religious

BOX 2.7 DOMESTIC VIOLENCE

Recognizing Domestic Violence

- *What:* Domestic violence can be either physical or emotional and occurs within the home.
- *Victims:* Women and children are victims most frequently, although men also are victims of domestic violence.
- *Perpetrators:* Most often an intimate partner or parent figure is the perpetrator.
- *Contributing factors:* Domestic violence is often associated with drug or alcohol use (or both).

Screening Questions for Domestic Violence

Ask the patient: When the patient answers "yes" to any question, ask additional questions to obtain more specific data.

- Have you been physically injured (hit, kicked, punched) by someone in your home in the last year? If so, describe.
- Many women are victims of domestic violence. Do you feel safe in your current relationship with your husband or significant other?
- Are you afraid of an individual with whom you have previously had a relationship?

groups. If interactions are limited, find out what makes the patient avoid social interaction—perhaps this is by choice, or there could be an underlying problem. Be aware of issues associated with domestic violence; make a point of screening all patients for this (Box 2.7).

Diet/nutrition. The patient should describe appetite and typical dietary intake for both food and fluids. Inquire about food preferences and dislikes, food intolerances, use of caffeine-containing beverages, dietary restrictions, and use of dietary supplements such as vitamins or protein drinks. Ask about recent changes in appetite or weight, changes in how food tastes, or problems with nutritional intake (e.g., indigestion, pain or difficulty associated with eating, heartburn, bloating, difficulty chewing or swallowing). Also ask about overeating, sporadic eating, or intentional fasting. Further information about a dietary history is presented in Chapter 8.

Functional ability. This functional assessment focuses on a person's ability to perform self-care activities such as dressing, toileting, bathing, eating, and ambulating. Functional ability also includes a person's ability to perform skills needed for independent living such as shopping, cooking, housekeeping, and managing finances. Ask the patient questions related to his or her perceived ability to complete these tasks. An assessment of functional ability is especially important for adults with physical or mental disabilities and for older adults. Further information about assessment of functional ability is presented in Chapter 21.

Mental health. Ask the patient about personal stress and the sources of stress. Common causes of stress include recent life changes such as divorce, moving, family illness, new baby, new job, and finances. Also ask about feelings of anxiety or nervousness, depression, irritability, or anger. Explore with the patient personal coping strategies for stressful situations and previous counseling or mental health care. Further information about obtaining a mental health history is presented in Chapter 7.

Tobacco, alcohol, and illicit drug use. The personal habits most detrimental to health include tobacco use, excessive intake of alcohol, and the use of illicit street drugs. Obtain specific information, including the substance used, the amount used, and the duration of the habit.

- *Tobacco:* Identify the type of tobacco used (cigarette, electronic cigarettes, cigars, pipe, chewing tobacco) and the frequency of use. For cigarette smokers, record the smoking history in *pack-years*. Pack-years refers to the number of packs smoked per day multiplied by the number of years smoked. For example, a patient who reports smoking approximately one pack a day for 25 years has a 25 pack-year smoking history. Many patients will report the number of cigarettes they smoke in a day, so knowing there are 20 cigarettes per pack is important. As an example, a person reporting smoking 5 cigarettes a day (¼ pack) for 15 years would have a 3.75 pack-year history.
- *Alcohol:* Identify the type and amount of alcohol consumed. Ask how many alcoholic drinks are consumed in a day; if not daily, then the weekly or monthly use. Ask about driving under the influence of alcohol. Screening questionnaires such as the Alcohol Use Disorders Identification Test (AUDIT) can be used to assess problem drinking and are discussed further in Chapter 7.
- *Illicit drug use:* Ask specifically about the use of marijuana, cocaine, crack cocaine, barbiturates, and amphetamines. Ask about high-risk behaviors such as sharing needles or driving under the influence of drugs.

Health promotion activities. Ask the patient which activities are regularly performed to maintain health. Ask specifically about exercise (type of exercise, frequency), stress management strategies, sleep habits, routine health examinations, and safety practices (e.g., seat belt use, wearing safety goggles, wearing helmets). Health promotion practices are assessed further in the review of systems section.

Environment. The history also includes data related to environmental health. Obtain a general statement of the patient's assessment of environmental safety or concerns. Variables to consider include potential hazards within the home (the lack of fire and smoke detectors, poor lighting, steep stairs, inadequate heat, open gas heaters, inadequate pest control, violent behaviors), hazards in the neighborhood or community (noise, water and air pollution, heavy traffic on surrounding streets, overcrowding, violence, firearms, sale/use of street drugs), and hazards associated with employment (inhalants, noise, heavy lifting, machinery, psychological stress). Also ask patients about recent travel outside the United States (when and which countries visited, length of stay).

Review of Systems

A review of systems is conducted to inquire about the past and present health of each of the patient's body systems. Conduct a symptom analysis when the patient acknowledges the presence of symptoms (see Box 2.6). If sufficient data have been collected about a body system in the present illness/present health status section, these questions are not repeated. For example, if you completed a symptom analysis on

"cough" when completing the present health status, you need not repeat questions about cough in the review of systems.

Symptoms listed in the review of systems are written in medical terms. A brief definition of each term is included where necessary to facilitate patient understanding. For example, if the nurse wants to know if the patient has dyspnea, the nurse asks, "Do you become short of breath?" If the patient says, "No," the nurse documents "no dyspnea," but if the patient says, "Yes," questions from the symptom analysis are used, and the findings are documented. Therefore use medical terms for documentation and communication with other health care providers, but use only terms understood by the patient during the interview. Although some health promotion data are included in other sections of the health history, additional information is collected during the review of systems.

An outline of symptoms to ask the patient follows. This list, organized by body system or region, is not inclusive; rather, it is an example of the kinds of questions to ask. More detailed questions are presented in the chapters that follow. Remember that a comprehensive health assessment includes most of the questions; in a focused health assessment, nurses ask questions only about systems related to the reason for seeking care. In an episodic or follow-up assessment, the questions are limited to asking the patient about changes that have taken place since the last visit.

General symptoms

- Pain; general fatigue, weakness; fever; problems with sleep; unexplained changes in weight

Integumentary system (see Chapter 9)

- *Skin:* skin disease, problems, lesions (wounds, sores, growths); excessive dryness, diaphoresis (sweating), or odors; changes in temperature, texture, or pigmentation; discoloration; rashes, pruritus (itching); frequent bruising
- *Hair* (refers to all body hair, not just head and pubic area): changes in amount, texture, character, distribution; alopecia (loss of hair); itching scalp
- *Nails:* changes in texture, color, shape
- *Health promotion:* plan to limit sun exposure; use of sunscreen; skin self-examination; type and frequency of nail care

Head and neck (see Chapter 10)

- *Head:* headaches; significant trauma; vertigo (dizziness); syncope (brief lapse of consciousness)
- *Eyes:* discharge, redness, pruritus (itching); excessive tearing; ophthalmalgia (eye pain) ; changes in vision (generalized or field of vision); difficulty reading; visual disturbances such as blurred vision, photophobia (sensitivity to light), blind spots, floaters, halos around lights, diplopia (double vision), or flashing lights; use of corrective or prosthetic devices; interference with activities of daily living
- *Ears:* otalgia (ear pain); excessive cerumen (earwax); discharge; recurrent infections; changes in hearing (deceased hearing or increased sensitivity to environmental noises); tinnitus (ringing or crackling); use of prosthetic devices; change in balance; interference with activities of daily living
- *Nose, nasopharynx, and paranasal sinuses:* nasal discharge; epistaxis (nosebleed); sneezing; obstruction; sinus pain; postnasal drip; change in the ability to smell; snoring
- *Mouth and oropharynx:* sore throat; tongue or mouth lesion (abscess, sore, ulcer); bleeding gums; use of prosthetic devices (dentures, bridges); altered taste; dysphagia (difficulty swallowing); difficulty chewing; changes to the voice or hoarseness
- *Neck:* lymph node enlargement; edema (swelling) or masses in neck; pain/tenderness; neck stiffness; limitation in movement
- *Health promotion:* use of protective headgear and eyewear; protection of ears from excessively loud noise; dental hygiene practices (brushing/flossing); dental care from dentist

Breasts (see Chapter 16)

- *General:* breast pain/tenderness; edema (swelling); lumps or masses, breast dimpling; nipple discharge; changes to the nipples
- *Health promotion:* date of last mammogram (if applicable)

Respiratory system (see Chapter 11)

- *General:* cough (nonproductive or productive); hemoptysis (coughing up blood); frequent colds; dyspnea (shortness of breath); night sweats; wheezing; stridor (abnormal, high-pitched, musical sound); pain on inspiration or expiration; exposure to smoke or other respiratory irritants
- *Health promotion:* handwashing (reduction of respiratory infection); tuberculosis screening; wearing a mask for occupational or environmental respiratory irritants or hazards; annual influenza immunizations (flu shots); smoking cessation; secondhand smoke exposure

Cardiovascular system (see Chapter 12)

- *Heart:* palpitations (sensation the heart is racing or fluttering); chest pain; dyspnea (shortness of breath); orthopnea (difficulty in breathing unless sitting up); paroxysmal nocturnal dyspnea (periodic dyspnea during sleep)
- *Blood vessels:* coldness in the extremities; numbness; edema (swelling); varicose veins; intermittent claudication (leg pain with exercise that ceases with rest); rest pain (leg pain with exercise that does not cease with rest); paresthesia (abnormal sensations); changes in color of extremities
- *Health promotion:* dietary practices to limit salt and fat intake; cholesterol screening; blood pressure screening; use of support hose if work involves long periods of standing; avoidance of crossing legs at the knees; exercise/activity

Gastrointestinal system (see Chapter 13)

- *General abdominal symptoms:* abdominal pain; heartburn, nausea/vomiting; hematemesis (vomiting blood); jaundice (yellowish color to skin and sclera); ascites (increase in the size of the abdomen caused by intraperitoneal fluid accumulation)
- *Elimination:* bowel habits (frequency, appearance of stool); pain or difficulty with defecation; excessive flatus (gas), change in stools (color, consistency); problems with diarrhea or constipation; blood in stool (hematochezia); hemorrhoids; use of digestive or evacuation aids (stool softener, laxatives, enemas)
- *Health promotion:* dietary analysis (compare diet with MyPlate); use of dietary fiber supplements; colon cancer screening

Urinary system (see Chapter 13)

- *General:* characteristics of urine (color, contents, odor); hesitancy (difficulty initiating urine flow); frequency (repeated need to urinate); urgency (sudden, almost uncontrollable need to urinate); change in urinary stream; nocturia (excessive urination at night); dysuria (painful urination); flank pain (pain in back between ribs and hip bone); hematuria (blood in the urine); dribbling or incontinence (inability to control urination); polyuria (excessive excretion of urine); oliguria (decreased urination)
- *Health promotion:* plan to prevent urinary tract infections (females); Kegel exercises (performed to strengthen muscles of the pelvic floor to help prevent urine leakage)

Reproductive system (see Chapter 17)

- *Male genitalia:* presence of lesions; penis or testicular pain or masses; penile discharge; hernia
- *Female genitalia:* presence of lesions, pain, discharge, odor; menstrual history (date of onset, last menstrual period [LMP], length of cycle); amenorrhea (absent menstruation); menorrhagia (excessive menstruation); dysmenorrhea (painful menstruation); metrorrhagia (irregular menstruation); pelvic pain
- *Sexual history:* ask about current and past involvement in sexual relationships and sexual preferences; nature of sexual relationship(s) (heterosexual, homosexual, bisexual); type and frequency of sexual activity; number of sexual partners (past and present); sexual identity; satisfaction with sexual relationships; method of contraception used (if applicable); changes in sex drive; problems with infertility; exposure to sexually transmitted infections; females: dyspareunia (pain during intercourse); postcoital bleeding (bleeding after intercourse); males: impotence; premature ejaculation
- *Health promotion:* methods to prevent unwanted pregnancy; protection from sexually transmitted infections; testicular or vulvar self-examination; Papanicolaou (Pap) test (females); prostate screening (males)

Musculoskeletal system (see Chapter 14)

- *Muscles:* twitching; cramping; pain; weakness
- *Bones and joints:* joint edema (swelling); pain; erythema (redness); stiffness; deformity; crepitus (noise with joint movement); limitations in range of motion; arthritis; gout; interference with activities of daily living
- *Back:* back pain; pain down buttocks and into legs; limitations in range of motion; interference with activities of daily living
- *Health promotion:* amount and kind of exercise per week; calcium intake; osteoporosis screening

Neurologic system (see Chapter 15)

- *General:* syncope (fainting episodes); loss of consciousness; seizures (which body parts moved, incontinence, characteristics); cognitive changes; changes in memory (short term, recent, long term); disorientation (time, place, person); dysphasia (difficulty communicating)
- *Motor and Gait:* loss of coordinated movements; ataxia (inability to coordinate muscle movement; paralysis (partial versus complete inability to move); paresis (weakness); tremor; spasm; interference with activities of daily living
- *Sensory:* paresthesia (abnormal sensations; e.g., "pins and needles," tingling, numbness); pain (describe sensation and location)

AGE-RELATED VARIATIONS

This chapter discusses principles of interviewing and conducting a health history with adult patients. Nurses will find that a health history may require a different approach and focus on different information, depending on the age of the patient.

INFANTS, CHILDREN, AND ADOLESCENTS

The pediatric health history is similar to that of the adult, with the addition of questions about pregnancy, prenatal care, growth and development, and behavioral and school status, as applicable. For the young child, most data are obtained from the adult accompanying the child, but the nurse should include the child as much as appropriate for his or her age. By age 7, most children can provide a dependable report on their health status (e.g., how they are feeling, where they are hurting).[13] When obtaining a health history from an adolescent, the nurse determines whether an adult or a pediatric database and history format are more appropriate. In addition, a decision is made whether to interview the adolescent with the parent present or alone. Chapter 19 presents further information regarding conducting a health history for this age group.

PREGNANCY

A comprehensive health history is obtained at the first prenatal visit to establish baseline data. This is similar to the information presented in this chapter but with a special emphasis on data that could impact pregnancy outcomes. Prenatal visits are considered episodic visits to monitor the health of the pregnancy. See Chapter 20 for further information.

OLDER ADULTS

The primary difference in conducting a health history with an older adult from that previously described is the incorporation of various age-related questions and questions involving functional status. In addition, depending on the age of the older adult, data about childhood immunizations or developing a genogram may not be necessary. Remember that more time may be needed to conduct a comprehensive health history for an older adult because he or she may have multiple symptoms and conditions, take numerous medications, and have a long past health history. Chapter 21 presents further information regarding the health history for an older adult.

CLINICAL APPLICATION AND CLINICAL JUDGMENT

See Appendix B for answers to exercises in this section.

CASE STUDY

During an interview, Leotie Deschene provides the following family history. She is 37 years old, married, and in good health. Her husband is 43 and also in good health. The couple has a 12-year-old son, an 11-year-old daughter, and a 10-year-old son, all in good health. Leotie has a 42-year-old brother and three sisters who are 32, 36, and 40 years old. All of her siblings are in good health. Both of Leotie's parents are alive. Her 70-year-old father has mild emphysema and is an only child. Her mother is 66 and has hypertension. Leotie's mother has three siblings. The oldest brother (Leotie's uncle) is 74 and suffers from glaucoma. Another brother is 72 and is in good health. A sister is 69 and has osteoarthritis. All of Leotie's grandparents are deceased. Her paternal grandfather died at age 89 of prostate cancer. Her paternal grandmother died of heart failure at age 91. Leotie's maternal grandfather died at age 86 of prostate cancer; her maternal grandmother died of "old age" at age 96. Leotie does not know anything about her great-grandparents.

ACTIVITY

Draw a genogram for Leotie's family history with the information provided.

REVIEW QUESTIONS

1. The nurse is interviewing an adult Navajo woman. Which statement demonstrates cultural sensitivity and acceptance of the patient?
   1. "How often do you visit the medicine man for your health care?"
   2. "Tell me about your health care beliefs and practices."
   3. "Many Navajo people are afraid of hospitals. Are you afraid?"
   4. "Have you ever had a physical examination by a physician or a nurse practitioner?"
2. Which statement is appropriate to use when beginning an interview with a new patient?
   1. "Have you ever been a patient here before?"
   2. "Tell me a little about yourself and your family."
   3. "Did you have any difficulty finding the clinic?"
   4. "What is your purpose for coming to the clinic today?"
3. While giving a history, a patient describes several events out of order that occurred in different decades in his life. What technique does the nurse use to understand the timeline of these events?
   1. Draw conclusions about the order of events from data the patient provided.
   2. Ask the patient to elaborate about these events.
   3. State the order of events as understood and ask the patient to verify the order.
   4. Ask the patient to repeat what he said about these events in the order they occurred.
4. A patient is very talkative and shares much information that is not relevant to his history or the reason for his admission. Which action by the nurse improves data collection in this situation?
   1. Use closed-ended questions.
   2. Ask the patient to stay on the subject.
   3. Ask another nurse to complete the interview.
   4. Terminate the interview.
5. For which patient is a focused health history most appropriate?
   1. A new patient at the health clinic for an annual examination
   2. A patient at the health care provider's office for a sport physical
   3. A patient discharged 11 months ago who is being readmitted today
   4. A patient presenting to a clinic with a lacerated finger
6. A nurse is interviewing a male patient who reports he has not had a tetanus immunization in about 15 years because he had a "bad reaction" to the last tetanus immunization. What is the most appropriate response by the nurse in this case?
   1. Notify the health care provider that this immunization cannot be given.
   2. Document that the patient is allergic to the tetanus vaccine.
   3. Ask the patient to describe the "bad reaction" to the vaccine in more detail.
   4. Give the vaccine after explaining that adverse reactions are rare.

7. The patient reports having a persistent cough for the past 2 weeks and that the cough disrupts sleep and has not been helped by over-the-counter cough medicines. Which question is most appropriate for the nurse to ask next?
   1. "What do you think is causing this persistent cough?"
   2. "What other symptoms have you noticed related to this cough?"
   3. "Have you tried taking sleeping pills to help you sleep?"
   4. "Did you think this will just go away on its own?"

CHAPTER

3

Techniques and Equipment for Physical Assessment

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Conducting a physical assessment requires the use of infection control practices, assessment techniques, optimal patient positions for examination, and equipment. Safety measures are described throughout the chapter. Correct technique and proper use of equipment are essential for accurate data collection and patient safety. This chapter provides an overview of these topics. The use of techniques and equipment as related to specific body systems is discussed in subsequent chapters.

INFECTION CONTROL PRACTICES

The prevention and control of infection underlies all areas of healthcare practice. Infection rates are considered one of the patient safety indicators identified by the Agency of Healthcare Research and Quality.[1] All health care professionals, including nurses, are responsible for incorporating infection control principles. Two levels of infection control guidelines exist: standard precautions and transmission-based precautions.

Standard Precautions

Standard precautions are applied in all aspects of patient care and in all health settings.[2] These measures reduce the risk of transmitting infection from body fluids and non-intact skin. Body fluids include blood, secretions, and excretions from mucous membranes (with the exception of sweat). Even though performing a health assessment is a relatively safe activity, it has the potential for infection transmission that can occur from patient to nurse, from nurse to patient, or from patient to patient via the nurse, equipment used by the nurse, or the environment. The primary elements of standard precautions recommended by the Centers for Disease Control and Prevention (CDC)[2] include:

- Hand hygiene
- Personal protective equipment
- Respiratory hygiene/cough etiquette
- Appropriate patient placement
- Managing contaminated equipment (including sharps)
- Environmental infection control

Some of these elements are infrequently applied when conducting a health assessment, but all nurses are expected to know when and how to incorporate each element, should it be needed. These specific elements are described further in the following sections.

Hand Hygiene

The single most important action to reduce the transmission of infection is hand hygiene, an essential element of standard precautions (Fig. 3.1). The CDC estimates that, on average, providers perform hand hygiene less than half of the time they should, despite it being a very simple and effective way to prevent infection.[3] Because of ongoing poor compliance and high rates of infections transmitted by personnel in health care settings, The Joint Commission now cites noncompliance of hand hygiene as a deficiency if a surveyor observes any individual failing to perform hand hygiene in the process of direct patient care.[4]

Hand hygiene is performed before and after direct contact with a patient. This includes direct contact with a patient's intact skin, non-intact skin, mucous membranes, blood or any body fluids, or any wound dressings, as well as any objects, including medical equipment, chairs, and tables, in the patient care area.[5] Hand hygiene is also performed during the care for the same patient if the nurse is moving from a contaminated body site (such as perineal area or open wound) to a clean body site. Hand hygiene is performed also after removing gloves following patient contact, as well as before eating, and after using the bathroom. *Note: Wearing gloves is never a substitute for hand hygiene!*

FIG. 3.1 Correct handwashing technique includes rubbing from the palms to the back of the hands with fingers interlocked.

There are two acceptable methods for cleaning hands in the health care setting: washing with soap and water or, when hands are not visibly dirty, using alcohol-based hand sanitizers.[5] Box 3.1 presents recommendations for hand hygiene techniques.

FREQUENTLY ASKED QUESTIONS

Which is a better method for performing hand hygiene: using alcohol-based hand sanitizer or washing with soap and water?

Both approaches to hand hygiene are acceptable. However, the use of alcohol-based sanitizer is the preferred method for cleaning the hands *when the hands are not visibly dirty*. Reasons for this preference are that hand sanitizer requires less time, is more effective at killing pathogens on the hands, reduces bacterial counts on the hands, causes less skin irritation compared to soap and water, and is more accessible than sinks.

From Centers for Disease Control: Hand Hygiene in Healthcare Settings: Show Me the Science, updated 2016. Retrieved from: https://www.cdc.gov/handhygiene/science/index.html.

Personal Protective Equipment

Standard precautions guidelines for infection control include personal protective equipment (PPE; e.g., gloves, masks or respirators, eye protection, face shields, and gowns) worn by health care providers.[6] Box 3.2 presents a guideline for the use of personal protective equipment. The specific PPE used depends on the specific precautions in place. Regardless of the equipment used, the sequence for putting on PPE is gown, then mask or respirator, then goggles and/or face shield, and then gloves. The sequence for removing PPE follows a reverse order—gloves, goggles/face shield, mask, and then gown—although removal of the gown and gloves at the same time is also permissible.[7] Hand hygiene is performed immediately upon removal of all PPE.

BOX 3.1 TECHNIQUES FOR PERFORMING HAND HYGIENE

Using Alcohol-Based Hand Sanitizer

- Apply a generous amount of product to hands. Use a product with at least 60% alcohol. (Most preparations used in health care settings contain between 60% and 95% ethanol or isopropanol.)
- Cover all surfaces (including fingers and back of hands). The efficacy of hand hygiene depends on the volume of product applied and the areas covered. Areas most often missed are the thumbs, fingertips, and between the fingers.
- Rub hands together until hands feel dry.

Note: The entire process should take about 20 seconds.

Washing With Soap and Water

- Wet the hands first with warm water and then apply soap product to cover the surface of the hands completely.
- Rub hands together vigorously for ***at least*** 15 seconds, covering all surfaces of the hands and fingers.
- Rinse the hands with warm water and dry them thoroughly with a disposable towel. Turn the faucet off using the towel.

Note: Avoid using hot water to avoid excessive drying of the skin. Some sources recommend washing for 20 seconds; either time frame is acceptable.

From Centers for Disease Control: Hand Hygiene in Healthcare Settings: Clean Hands for Healthcare Providers, 2018. Retrieved from: https://www.cdc.gov/handhygiene/providers/index.html.

Respiratory Hygiene/Cough Etiquette

These precautions apply to any patient care environment to contain respiratory secretions among patients and visitors who are symptomatic for respiratory infections.[8] Specific measures for symptomatic individuals include:

- Cover mouth/nose with a tissue when coughing or sneezing and promptly dispose of the contaminated tissues in a no-touch trash receptacle.
- Perform hand hygiene when the hands are contaminated with respiratory secretions and from contaminated objects and materials.
- When individuals in the health care setting are coughing, offer them a mask to contain respiratory secretions. This is particularly important during periods of respiratory infection outbreaks, such as the flu or coronavirus.
- A spatial separation of at least 3 feet among people in the waiting area is ideal when space and chairs are available. However, a separation of 6 feet is used when mandates for social distancing are implemented, such as when the coronavirus outbreak began in 2020.

Patient Placement

Within patient care settings, the placement of patients is another consideration of infection control practice. A patient should be placed in a single room if he or she is suspected of having a highly transmittable infection or is likely to contaminate the environment. Likewise, if the patient is known to be immunosuppressed and at risk of acquiring an infection, he or she should be placed in a single room for protection.

BOX 3.2 STANDARD PRECAUTION GUIDELINE: PERSONAL PROTECTIVE EQUIPMENT

Gloves

Gloves should be worn when contact with a patient's blood or other body fluid is possible or when handling equipment contaminated with blood or other body fluids. Gloves are worn for three primary reasons:

1. To protect the health care worker from exposure to bloodborne pathogens carried by the patient
2. To protect the patient from microorganisms on the hands of the health care worker
3. To reduce the potential of infection transmission from one patient to another patient via the hands of the health care worker

The use of gloves does not reduce the frequency or importance of hand hygiene. Hands must be washed before performing a procedure, even when gloves are worn and again immediately after removal of gloves. Gloves should be changed between procedures on the same patient to prevent cross-contamination. If a glove breaks during a procedure, it should be removed promptly and replaced with a new glove. Gloves should be discarded after all procedures; they should never be washed and reused.

Masks, Eye Protection, Face Shields

The nurse should wear a mask with eye protection or a face shield during procedures that may result in splashes or sprays of the patient's blood, body fluids, secretions, or excretions. Such equipment protects the mucous membranes of the eyes, nose, and mouth from contact, thus reducing the likelihood of pathogen transmission. Although not routinely needed for health assessment, this equipment become necessary in selective patient encounters.

Gowns

A gown should be worn during procedures to protect the health care worker's arms and other exposed skin surfaces, and to prevent the contamination of clothing with the patient's blood or other body fluids or contact with other potentially infectious material.

From Siegel JD, Healthcare Infection Control Practices Advisory Committee: *2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings,* 2007. Retrieved from: https://www.cdc.gov/hai/pdfs/Isolation2007.pdf.

Contaminated Patient Care Equipment and Sharps

Another aspect of standard precautions involves the management of contaminated patient care equipment.[6] The nurse should wear gloves when touching equipment contaminated with blood or other body fluid. Multiple-use patient equipment that has been soiled with blood or other body fluids (e.g., a vaginal speculum) should not be reused until it has been adequately cleaned and reprocessed. Single-use items must be disposed of properly after patient use. The nurse must be cautious when handling contaminated sharp equipment. (Note: Gloves do not provide protection from a sharp injury such as a needle stick.) The appropriate handling of sharps includes the following principles:

- Never recap a needle after patient use.
- Never attempt to remove a needle from a disposable syringe.
- After use, place disposable syringes and needles directly into a "sharps container" (i.e., a puncture-resistant container designated for contaminated sharp items). If the sharps container is full, do not attempt to force additional sharps in the container, as this may lead to a stick injury.

The CDC and Safe Injection Practice Coalition has launched the One & Only Campaign (https://www.cdc.gov/injectionsafety/one-and-only.html) to raise awareness among patients and health care providers about safe injection practices and to eliminate infections associated with unsafe injection practices.[9]

Environmental Control

Environmental control refers to the process of decontaminating the patient care environment. This includes the routine care, cleaning, and disinfection of environmental surfaces, particularly frequently used surfaces such as examination beds, tabletops, counter surfaces, and examination lights. Specific protocols for decontamination are required within all patient care settings.

Transmission-Based Precautions

These guidelines are designed for the control of infections among patients with known or suspected infections caused by certain pathogens of epidemiologic significance. Transmission-based precautions include (1) contact precautions, (2) droplet precautions, and (3) airborne precautions. Additional information about transmission-based precautions can be found on the Centers for Disease Control and Prevention website (www.cdc.gov).

Latex Allergy

Occupational latex allergy has become a problem for many health care professionals because latex is found in gloves and many other types of medical equipment and supplies. A latex allergy is a reaction to the proteins in latex rubber. The amount of exposure required to produce a latex allergy reaction is unknown, but frequent exposure increases the risk of developing allergic symptoms.[10] An estimated 9.7% of health care workers have latex allergy, compared with 7.2% of susceptible patients and 4.3% of the general population.[11] The three types of latex reactions include (1) irritant contact dermatitis (contact dermatitis of the skin, not involving the immune system), (2) Type I reaction (an immune-based systemic reaction caused by an antigen-antibody reaction and resulting in the release of histamine), and (3) Type IV contact dermatitis (a delayed hypersensitivity involving the immune system in response to the chemicals in latex occurring 24 to 48 hours after contact). The use of nonpowdered latex gloves and nonlatex gloves has been shown to reduce the incidence of latex allergy.[12] The National Institute for Occupational Safety and Health recommendations for preventing latex allergy in nurses are summarized in Box 3.3.

Patients may also have a latex allergy; those particularly at risk are children with spina bifida and people who have had multiple medical procedures and surgeries, especially genitourinary surgery. For this reason, nurses should routinely ask

BOX 3.3 PREVENTING LATEX ALLERGY

- Use nonlatex gloves for any activities that are not likely to involve contact with infectious materials.
- If latex gloves are to be used, use a powder-free, low-allergen glove, if possible.
- Do not use oil-based hand lotions when wearing latex gloves.
- Immediately after removing latex gloves, wash the hands with mild soap and dry them thoroughly.

From National Institute for Occupational Safety and Health: *Latex allergy: a prevention guide,* NIOSH publication no. 98–113, Cincinnati, 1998, NIOSH. Retrieved from: https://www.cdc.gov/niosh/docs/98-113/.

patients about latex allergy; if it exists, they should protect patients from coming in contact with latex gloves and other medical equipment made of latex, such as urinary catheters and gastrostomy tubes.

TECHNIQUES OF PHYSICAL ASSESSMENT

Data for physical assessment are collected using four basic assessment techniques: inspection, palpation, percussion, and auscultation.

Inspection

The term *inspection* refers to data obtained by a visual examination of the body, including body movement and posture, as well as that obtained by smell. The physical examination begins with inspection, a technique used throughout the entire exam with each body system. For example, when inspecting the lungs and respiratory system, the nurse observes the shape of the chest, paying attention to breathing (noting the rate, depth, and effort of respiration) and noticing the overall color of the skin, lips, and nail beds. During inspection, the patient is draped appropriately to maintain modesty while allowing sufficient exposure for examination; adequate lighting is essential.

Inspection can be hindered when the nurse has preconceived assumptions about the patient. For this reason, thoroughly observing the patient with a critical eye is important. By concentrating on the patient without being distracted, the nurse notices potentially important data. Although inspection at first may seem like an easy assessment technique to master, practice is necessary to develop expertise.

Sometimes the use of equipment facilitates the inspection of certain body systems. For example, a penlight may be used to increase the light in a specific location (looking into a mouth, looking at a skin lesion) or to create shadows by directing light at right angles to the area being inspected—a technique referred to as *tangential lighting* (Fig. 3.2). Other instruments, such as an otoscope, an ophthalmoscope, or a vaginal speculum, are used to enhance the inspection of specific body systems or structures. Equipment used to facilitate the inspection is presented later in this chapter.

FIG. 3.2 Tangential light using a penlight to inspect jugular vein pulsations.

Palpation

Palpation involves using the hands to feel texture, size, shape, consistency, pulsation, and location of certain parts of the patient's body. It is also used to identify areas the patient reports as being tender or painful. This technique requires the nurse to move into the patient's personal space. The nurse's touch should be gentle, the hands warm, and nails short to prevent discomfort or injury to the patient. Touch has cultural significance and symbolism. Each culture has its own understanding of the uses and meanings of touch. Because of this, the nurse must tell the patient the purpose of and need for the touch (e.g., "I'm feeling for lymph nodes now") and manner and location of touch (e.g., "I'm going to press deeply on your abdomen to feel the organs"). Gloves are worn when palpating mucous membranes or any other area where contact with body fluids is possible.

The palmar surfaces of the fingers and finger pads are more sensitive to palpation than the fingertips; thus they are better for determining position, texture, size, consistency, masses, fluid, moisture, and crepitus. The ulnar surface of the hands extending to the fifth finger is the most sensitive to vibration, whereas the dorsal surface (back) of the hands is more sensitive to temperature.

Palpation using the palmar surfaces of the fingers may be light or deep and is controlled by the amount of pressure applied. Light palpation is accomplished by pressing down to a depth of approximately 1 cm and is used to assess skin, pulsations, and tenderness (Fig. 3.3A). Deep palpation is accomplished by pressing down to a depth of 4 cm with one or two hands and is used to determine size and contour of an organ (Fig. 3.3B). A bimanual palpation technique uses both hands, one anterior and one posterior, to entrap a mass or an organ (such as the uterus, kidney, or large breasts) between the fingertips to assess size and shape. Light palpation should always precede deep palpation because deep palpation may cause tenderness or disrupt fluid, which may interfere with collecting data by light palpation.

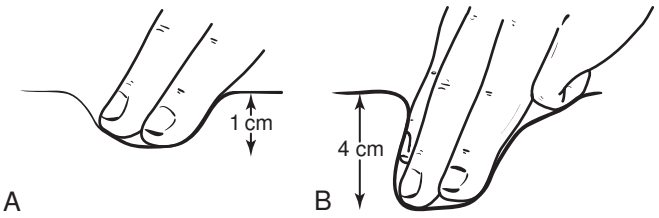


FIG. 3.3 (A) Superficial palpation. (B) Deep palpation.

Percussion

Percussion is performed to evaluate the size, borders, and consistency of internal organs; detect tenderness; and determine the extent of fluid in a body cavity. There are two percussion techniques: direct and indirect.

Direct Percussion

Direct percussion involves striking a finger or hand directly against the patient's body. The nurse may use direct percussion technique to evaluate the sinus of an adult by tapping a finger over the sinus or to elicit tenderness or pain over the kidney by striking the costovertebral angle (CVA) directly with a fist (Fig. 3.4). How and where to strike the CVA is discussed in Chapter 13.

Indirect Percussion

Indirect percussion requires the use of both hands and is performed by different methods, depending on which body area is being assessed. One method, indirect fist percussion of the kidney, involves placing the nondominant hand palm down (with fingers together) over the CVA and gently tapping the back of the hand with the fist of the dominant hand. Another method, indirect finger percussion, is performed by placing the distal aspect of the middle finger of the nondominant hand against the skin over the organ being percussed and striking the distal interphalangeal joint (between the cuticle and first joint) with the tip of the middle finger of the dominant hand. The position of the other fingers of the nondominant hand is important; they are spread apart and slightly elevated off the patient's skin so they do not dampen the vibrations (Fig. 3.5). The force of the downward snap of the striking finger comes from the rapid flexion of the wrist. The wrist must be relaxed and loose while the forearm remains stationary. Make the striking finger rebound as soon as it makes contact with the striking surface so the vibration is not muffled. Listen for the vibrations created by the percussion. The tapping produces a vibration 1.5 to 2 inches (4 to 5 cm) deep in the body tissue and subsequent sound waves. Percuss two or three times in one location before moving to another. Stronger percussion is needed for obese or very muscular patients because the thickness of tissue can impair the vibrations; the denser the tissue, the quieter the percussion tones.

Five percussion tones are described in Table 3.1. *Tympany* is normally heard over the abdomen. *Resonance* is heard over healthy lung tissue, whereas *hyperresonance* is heard in overinflated lungs (as in emphysema). *Dullness* is heard over the liver, and *flatness* is heard over bones and muscle. Detecting sound changes is easier when moving from resonance to dullness (e.g., from the lung to the liver).

FIG. 3.4 Hand position for direct fist percussion of the kidney.

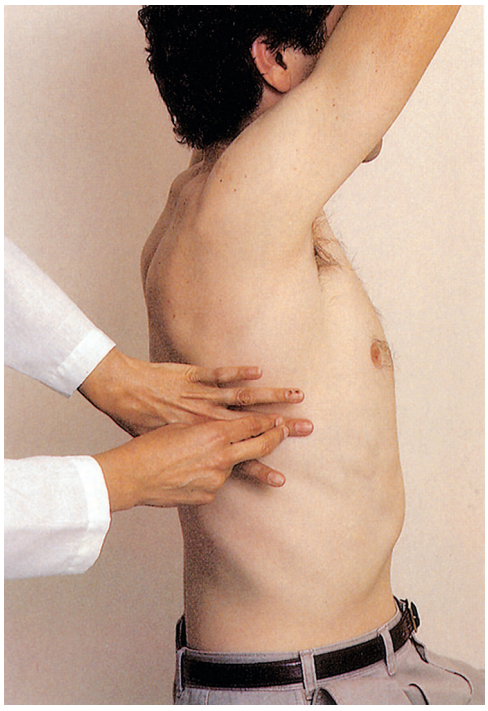


FIG. 3.5 Indirect percussion of the lateral chest wall.

Auscultation

Auscultation involves listening to sounds within the body. Although some sounds are audible to the ear without the use of special equipment (e.g., respiratory stridor, severe wheezing, and abdominal gurgling), a stethoscope is usually used to facilitate auscultation. The stethoscope blocks out extraneous sounds that may interfere with hearing sounds produced by the heart, blood vessels, lungs, and intestines (Fig. 3.6). Listen for the sound and its characteristics: intensity, pitch, duration, and quality (Box 3.4). Concentration is required

TABLE 3.1 PERCUSSION TONES

AREA PERCUSSED	TONE	INTENSITY	PITCH	DURATION	QUALITY
Lungs	Resonant	Loud	Low	Long	Hollow
Bone and muscle	Flat	Soft	High	Short	Extremely dull
Viscera and liver borders	Dull	Medium	Medium high	Medium	Thudlike
Stomach and gas bubbles in intestines	Tympanic	Loud	High	Medium	Drumlike
Air trapped in lung (emphysema)	Hyperresonant	Very loud	Very low	Longer	Booming

FIG. 3.6 Auscultation using a stethoscope. The diaphragm of the stethoscope is stabilized between the index and middle fingers.

BOX 3.4 CHARACTERISTICS OF SOUNDS HEARD BY AUSCULTATION

- *Intensity* is the loudness of the sound, described as soft, medium, or loud.
- *Pitch* is the frequency or number of sound waves generated per second. High-pitched sounds have high frequencies. Expected high-pitched sounds are breath sounds, whereas cardiac sounds are low pitched.
- *Duration of sound vibrations* is short, medium, or long. Layers of soft tissue dampen the duration of sound from deep organs.
- *Quality* refers to the description of the sounds (e.g., hollow, dull, crackle).

because sounds may be transitory or subtle. Closing the eyes may improve listening because it reduces distracting visual stimuli. The isolation of specific sounds such as sounds of air during inspiration or a single heart sound is referred to as *selective listening*.

Precautions should be taken to optimize the quality of auscultation findings. Auscultation is best performed in a quiet room because environmental noise can interfere with hearing the sounds. The stethoscope must be placed directly onto the skin because clothing (including a patient gown) obscures or alters sounds. Warm the head of the stethoscope before placing it on the patient. If the patient becomes cold and shivers, involuntary muscle contractions could interfere with auscultation findings. The friction of body hair rubbing against the diaphragm of the stethoscope could be mistaken for abnormal lung sounds (crackles). Bumping the stethoscope tubing while auscultating produces a loud tapping sound that obscures the underlying auscultation findings. Because the diaphragm and bell of the stethoscope are placed on the patient's skin, they must be cleaned with alcohol between patients to prevent the spread of infection.

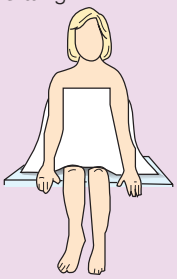
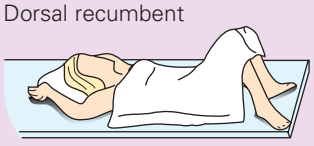
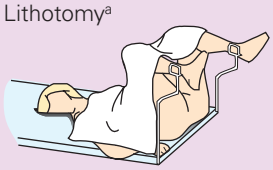
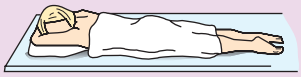
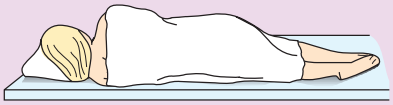
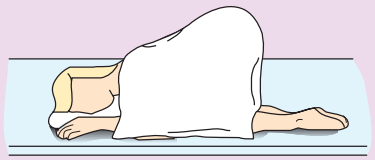
EXAMINATION SETTING

The physical assessment is usually conducted in a health care setting. There are several characteristics of an optimal space for examination. Providing privacy is a priority, particularly during examination procedures where the patient is exposed. A private examination room provides the best level of privacy and also reduces the risk of interruptions during the examination. The examination space should have good lighting to facilitate inspection, should be quiet to facilitate hearing sounds during auscultation or percussion, and should be a warm temperature to maximize patient comfort. The examination setting should be furnished with an examination table or bed that maximizes options for patient positioning, an examination stool, and a bedside table. Finally, the equipment needed to conduct the examination should be readily available, accessible, and functional.

PATIENT POSITIONING

The patient may assume a number of positions during the examination; the positions depend on the type of examination to be performed and the condition of the patient. The sitting and supine positions are the most common. Various positions for examination are presented in Table 3.2. Draping the patient appropriately is important to provide for modesty while allowing the exposure needed for the examination. The inability to assume a particular position may be a significant finding about the patient's physical status and require the nurse to make necessary accommodations. For example, a

TABLE 3.2 POSITIONS FOR EXAMINATION

POSITION	AREAS ASSESSED	RATIONALE	LIMITATIONS
Sitting 	Head and neck, back, posterior thorax and lungs, anterior thorax and lungs, breasts, axilla, heart, vital signs, and upper extremities	Sitting upright provides full expansion of lungs and better visualization of symmetry of upper body parts.	Physically weakened patient may be unable to sit. The nurse should use supine position with the head of bed elevated instead.
Supine 	Head and neck, anterior thorax and lungs, breasts, axilla, heart, abdomen, extremities, pulses	This is the most normally relaxed position. It provides easy access to pulse sites.	If patient becomes short of breath easily, the nurse may need to raise the head of the bed.
Dorsal recumbent 	Head and neck, anterior thorax and lungs, breasts, axilla, heart, abdomen	This position is used for abdominal assessment because it promotes relaxation of abdominal muscles.	Patients with painful disorders are more comfortable with knees flexed.
Lithotomy[a] 	Female genitalia and genital tract	This position provides maximal exposure of genitalia and facilitates insertion of vaginal speculum.	Lithotomy position is embarrassing and uncomfortable; thus the nurse minimizes the time that a patient spends in it. The patient is kept well draped.
Sims 	Rectum and vagina	Flexion of hip and knee improves exposure of rectal area.	Joint deformities may hinder the patient's ability to bend the hip and knee.
Prone 	Musculoskeletal system	This position is used only to assess the extension of the hip joint.	This position is poorly tolerated in patients with respiratory difficulties.
Lateral recumbent 	Heart	This position assists in detecting murmurs.	This position is poorly tolerated in patients with respiratory difficulties.
Knee-chest[a] 	Rectum	This position provides maximal exposure of rectal area.	This position is embarrassing and uncomfortable; thus the nurse minimizes the time that the patient spends in it. The patient is kept well draped.

[a]Patients with arthritis or other joint deformities may be unable to assume this position.
From Potter PA, Perry AG: *Basic nursing: essentials for practice,* ed 6, St Louis, 2006, Mosby.

patient who is short of breath may not be able to tolerate a supine position. In this situation, the nurse should raise the head of the bed or examination table for certain aspects of the assessment (e.g., abdominal assessment).

EQUIPMENT USED DURING THE EXAMINATION

Examination equipment is used to facilitate the collection of data. Keep in mind that not all equipment presented in this chapter is used for all examinations. The type of equipment used varies, depending on the type of examination and the problem being assessed.

Thermometer

A thermometer is an instrument used to measure body temperature. Common thermometers used in health care settings are the electronic thermometer, the tympanic membrane thermometer, and the temporal artery thermometer.

The standard electronic thermometer, used for the measurement of oral, axillary, or rectal temperatures, consists of a battery-powered display unit, a thin wire cord, and a temperature-sensitive probe (Fig. 3.7A). The probe is covered with a disposable sheath before use and placed either under the tongue with the mouth closed, in the axilla with the upper arm held close to the chest, or in the rectum. The probe measures the temperature of the blood flowing near the tissue surface. The thermometer calculates and displays the temperature either in Fahrenheit or Celsius on a digital screen within 15 to 30 seconds.

The tympanic membrane thermometer (Fig. 3.7B) is an infrared radiation device that measures the temperature of blood flowing near the tympanic membrane. The device works when the temperature-sensitive probe, covered with a disposable sheath, is inserted into the patient's external auditory canal; a temperature measurement either in Fahrenheit or Celsius is displayed on the screen in less than 5 seconds.

The temporal artery thermometer (Fig. 3.7C) is an infrared radiation device that provides a temperature measurement from the temporal artery. Depress the scan button on the thermometer and slide it from one side of the patient's forehead to behind the ear. Heat emitted from the skin surface of the forehead and behind the ear is detected while scanning the temporal artery to record the temperature. The device is noninvasive and demonstrates sufficient accuracy in studies involving children between the age of 1 and 4 and among adults in a critical care setting.[13-14] A newer infrared radiation device that has become increasingly prevalent for body temperature measurement is the noncontact infrared thermometers (NCIT). This is a type of thermal radiation thermometer that uses laser technology to obtain a temperature reading. However, a recent study recommended further calibration of the NCIT is needed to ensure its accuracy.[15]

Body temperature is routinely measured using peripheral thermometers such as tympanic membrane, temporal artery, axillary, or oral. Over the past decade, a number of studies comparing the accuracy of the various devices to measure body temperature in a wide range of populations have been conducted with variable results. A meta-analysis of these studies concluded that peripheral thermometers lack accuracy and should not be used as a basis for clinical decisions.[16] Although using an electronic thermometer and infrared devices provide easy measurement of body temperature, they are generally less reliable than obtaining a core body temperature and should be used for screening.[15,17–20] The gold standard for core body temperature is that of blood in the pulmonary artery. Since this site is impractical for daily monitoring, the site that provides the most practical option is the rectal temperature.[16] However, core temperature is not measured as part of a routine physical assessment because it involves invasive approaches.

Stethoscope

A stethoscope is used to auscultate sounds within the body that are not audible with the naked ear. Although there are several types of stethoscopes (acoustic, magnetic, electronic, and stereophonic), the acoustic stethoscope is used routinely for a physical examination (Fig. 3.8A).

The acoustic stethoscope is a closed cylinder that transmits sound waves from the source through the tube to the ears. It does not magnify sounds but allows difficult-to-hear sounds to be heard more easily by blocking out extraneous noise from the room. The stethoscope consists of four components: the earpieces, the binaurals, the tubing, and the head. The earpieces, which may be hard or soft, should fit snugly and completely fill the ear canal. The binaurals are metal tubes connecting the stethoscope tubing to the earpieces. They allow the earpieces to be angled toward the nose so sound is projected toward the tympanic membrane. The tubing is usually made of a firm polyvinyl material and no longer than 12 to 18 inches (30 to 46 cm). If the tubing is longer than 18 inches (46 cm), the sounds may become distorted.

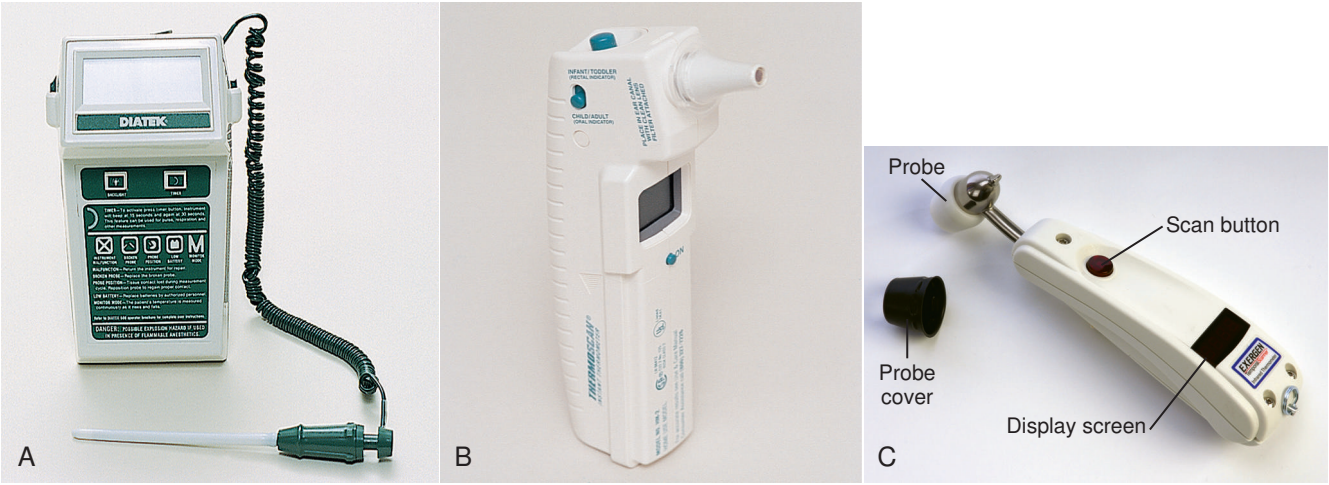


FIG. 3.7 (A) Electronic thermometer. (B) Tympanic thermometer. (C) Temporal artery thermometer. (B, From Seidel et al., 2011. C, From Bonewit-West, 2012.)

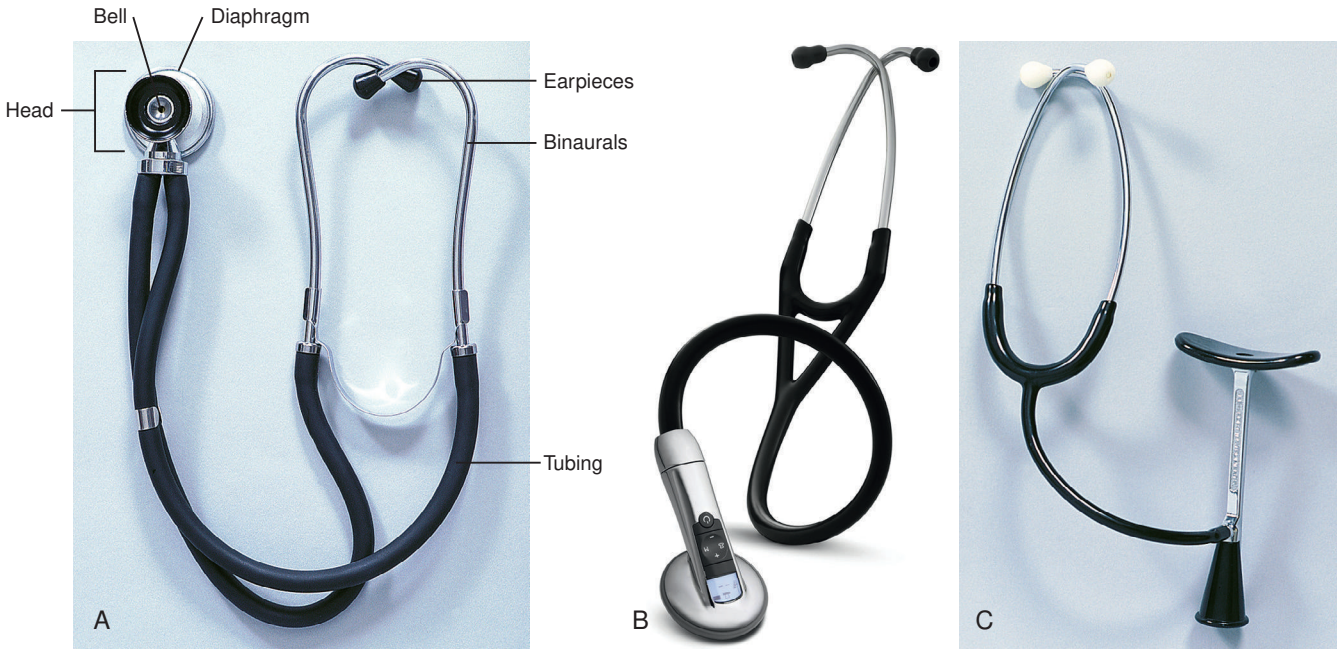


FIG. 3.8 (A) Acoustic stethoscope. (B) Digital stethoscope. (C) Fetoscope. (A and C, From Ball et al., 2015. B, From Swarup S, Makaryus: Digital stethoscope: technology update. *Medical Devices: Evidence and Research* 11:29–36, 2018.)

The head of the stethoscope consists of two components: the diaphragm and the bell. It should be heavy enough to lie firmly on the body surface without being held. This piece is configured by a closure valve so only the diaphragm or the bell may be activated at any one time. The diaphragm consists of a flat surface with a rubber or plastic ring edge. It is used to hear *high-pitched* sounds such as breath, bowel, and normal heart sounds. Its structure screens out low-pitched sounds. The nurse holds the diaphragm firmly against the patient's skin, stabilizing it between the index and middle fingers (see Fig. 3.6). The bell of the stethoscope is constructed in a concave shape. It is used to hear soft, *low-pitched* sounds such as extra heart or vascular sounds (bruit). When using the bell, the nurse presses it lightly on the skin with just enough pressure to ensure that a complete seal exists around it. If the bell is pressed too firmly on the skin, the concave surface is filled with skin, and the bell functions as a diaphragm and inhibits sound waves. Some stethoscopes have varying head sizes that are interchangeable. When assessing an infant or a young child, the nurse uses a pediatric stethoscope, which has a small head. The diaphragm and bell should span one intercostal space of the patient's thorax.

A digital stethoscope represents a recent advancement in healthcare technology. The digital stethoscope (which attained FDA clearance in 2015)[21] converts an acoustic sound to electronic signals that can be amplified and then digitalized for transmittal to a computer and incorporation into a patient's electronic health record[22] and is especially helpful to support telehealth. Although similar in appearance to an acoustic stethoscope, the diaphragm of the acoustic stethoscope has a transducer with a microphone that allows for a recording, an electronic display, and Bluetooth capabilities (Fig. 3.8B). Although this technology may not be used for general health assessment immediately, as this technology evolves, such devices will be used in clinical practice with increasing frequency.

A special type of acoustic stethoscope known as a fetoscope (Fig. 3.8C) is used to auscultate the heart sounds of the fetus. The fetoscope has a metal attachment that rests against the nurse's head. This metal piece assists the conduction of sound so the fetal heart tones are heard more easily.

Equipment to Measure Blood Pressure

Blood pressure is usually measured indirectly (noninvasively) using a manual sphygmomanometer or an electronic automated blood pressure device. The sphygmomanometer consists of the gauge to measure the pressure (manometer), a blood pressure cuff that encloses an inflatable bladder, and a pressure bulb with a valve used to manually inflate and deflate the bladder within the cuff (Fig. 3.9A). A stethoscope is used in conjunction with the sphygmomanometer to auscultate the blood pressure.

The automated blood pressure device attaches to a blood pressure cuff (Fig. 3.9B). It operates by sensing circulating blood flow vibrations through a blood pressure cuff sensor and converting these vibrations into electric impulses. These impulses are translated to a digital readout that generally consists of the blood pressure, mean arterial pressure, and pulse rate. The device can be programmed to repeat the measurements on a scheduled basis and alarm if the measurements are outside the desired limits. This feature is especially useful for patients requiring frequent blood pressure monitoring. A stethoscope is not required when the automated device is used.

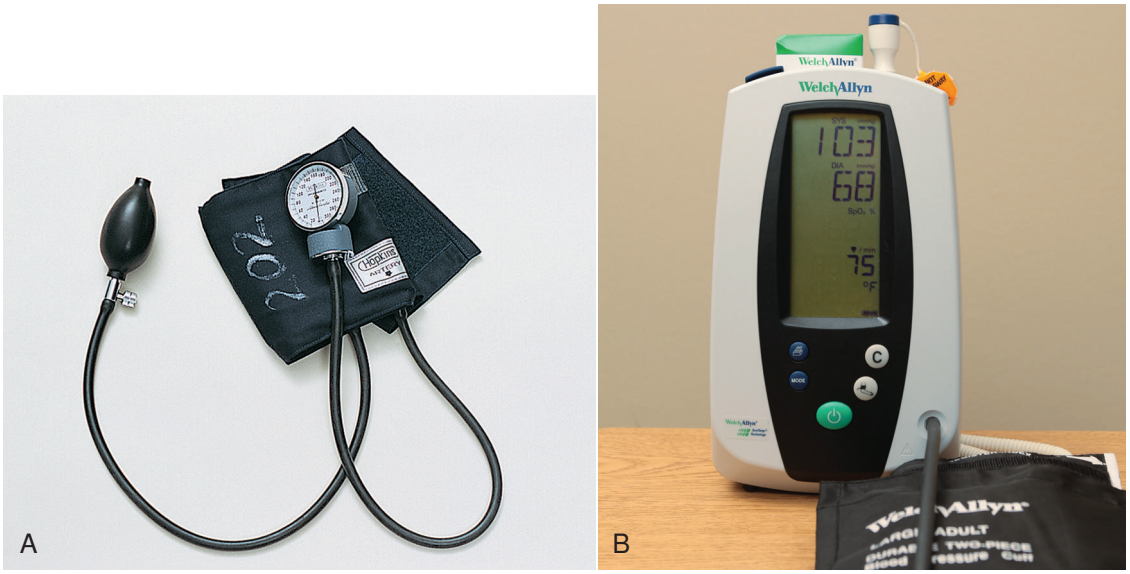


FIG. 3.9 (A) Aneroid sphygmomanometer. (B) Automated blood pressure device.

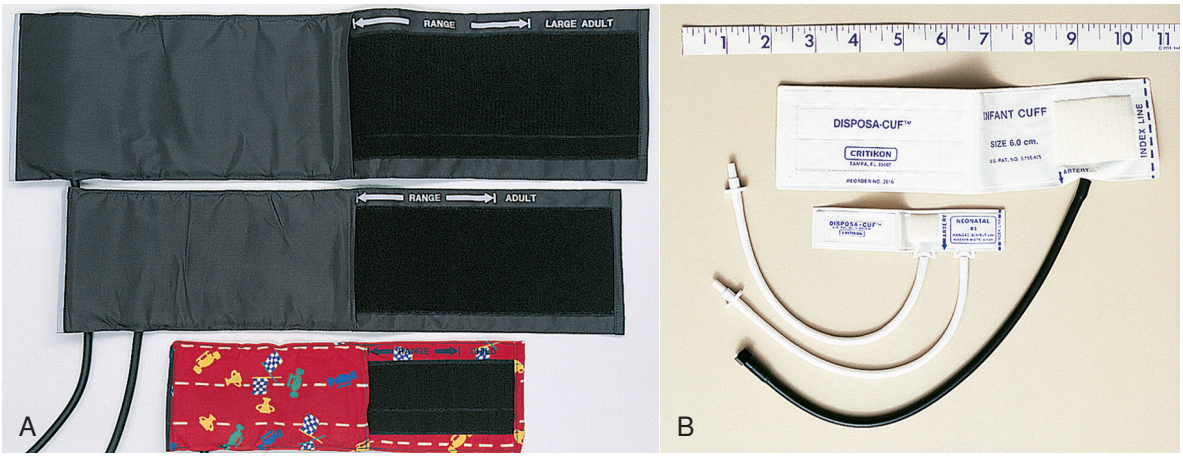


FIG. 3.10 Blood pressure cuffs in various sizes. (A) Reusable cuffs in large adult *(top),* adult *(middle),* and child *(bottom)* sizes. Note the range lines above the Velcro material on the right side of each cuff. (B) Disposable infant *(top)* and neonatal *(bottom)* cuffs. (B, From Seidel et al., 2011.)

Blood pressure cuffs come in a variety of sizes and are either reusable (occlusive cloth shell) or disposable (a vinyl material; Fig. 3.10). Both have a Velcro-type material on one end used to secure the cuff when it is wrapped around the arm. To obtain accurate results, the nurse must select a blood pressure cuff that is the correct size for the patient. If the cuff is too wide, it underestimates the blood pressure; if it is too narrow, it overestimates the blood pressure. Ideally the cuff width should be 40% of the circumference of the limb to be used. The bladder within the cuff should encircle at least 80% of the upper arm. Recommended cuff sizes are based on arm circumference and presented in Table 3.3. On most cuffs, range lines are indicated to assess the proper size. When a correctly sized cuff is applied, the cuff edge should lie between the range lines (see Fig. 3.10). Adult cuffs are available in two widths. The standard cuff is adequate for most adults. If the adult is large or obese, an oversized cuff may be used. If the adult has an extremely obese arm, the nurse uses a larger cuff designed to measure the blood pressure around a thigh. There are many different sizes of cuffs for children. The width of the cuff should cover two-thirds of the child's or infant's upper arm. Correct cuff selection affects the accuracy in blood pressure measurement. Although selecting the correct cuff size may seem relatively easy, only 43% of nurses participating in a study assessing their knowledge about blood pressure measurement answered questions on the assessment of the cuff size correctly.[23] In another study, 22% of participants reported being unable to regularly obtain the correct cuff size.[24]

Wrist blood pressure monitors have emerged as another option for blood pressure monitoring; however, these devices are commonly used in home settings. Like the automated

TABLE 3.3 SIZES FOR BLOOD PRESSURE CUFFS BASED ON ARM CIRCUMFERENCE

ARM CIRCUMFERENCE (MEASURED AT MIDDLE OF ARM)	NAME AND SIZE* OF CUFF
5–7.5 cm (2–3 in)	Newborn: 4 × 8 cm (1.5 × 3.1 in)
7.5–13 cm (3–5.2 in)	Infant: 6 ×12 cm (2.4 × 4.7 in)
13–20 cm (5.2–7.9 in)	Child: 9 × 18 cm (3.5 × 7.1 in)
22–26 cm (8.8–10.4 in)	Small adult: 12 × 22 cm (4.7 × 8.6 in)
27–34 cm (10.8–13.6 in)	Adult: 16 × 30 cm (6.3 × 11.8 in)
35–44 cm (14–17.6 in)	Large adult: 16 × 36 cm (6.3 × 14.2 in)
45–52 cm (18–20.8 in)	Adult thigh: 16 × 42 cm (6.3 × 16.5 in)

*Note: Cuff measurement represents width and length.
Based on American Heart Association Recommendations (Pinkering TG, Hall JE, Appel LJ, et al.: Recommendations for blood pressure measurement in humans and experimental animals. Part 1: Blood pressure measurement in humans, *Hypertension* 45:142–161, 2005) and Welton PK, Carey RM, Aronow WS, et al: ACA/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: executive summary. *Hypertension* 71:1269–1324, 2018.

blood pressure devices mentioned previously, the wrist monitors use oscillometric technology to estimate arterial blood pressure (meaning the device detects vibration of blood in the artery and converts this into digital readings). The reliability of these devices has been questioned, and for this reason, they are not recommended by the American Heart Association.[25]

Pulse Oximeter

Oxygen saturation in arterial blood is measured using a pulse oximeter, consisting of a light-emitting diode (LED) probe connected by a cable to a monitor (Fig. 3.11). The LED emits light waves that reflect off oxygenated and deoxygenated hemoglobin molecules circulating in the blood. This reflection is used to estimate the percentage of oxygen saturation in arterial blood and a pulse rate. The sensor probe is taped or clipped to a highly vascular area—typically a digit (finger or toe) or an earlobe; for infants, a foot, the palm of a hand, or a thumb is used. Pulse oximetry is considered highly accurate in the measurement of oxygen saturation over the range of 70% to 100%, although if the probe is applied to cold fingers or toes, the accuracy may be affected.

Scales to Measure Body Weight and Height

Measurement of body height and weight is accomplished using a scale. A standing platform scale is used for older children and adults (Fig. 3.12A). The scale should be calibrated

FIG. 3.11 Pulse oximeter shown with a clip and tape sensor probe. (Image used by permission from Nellcor Puritan Bennett LLC, Boulder, CO, part of Covidien.)

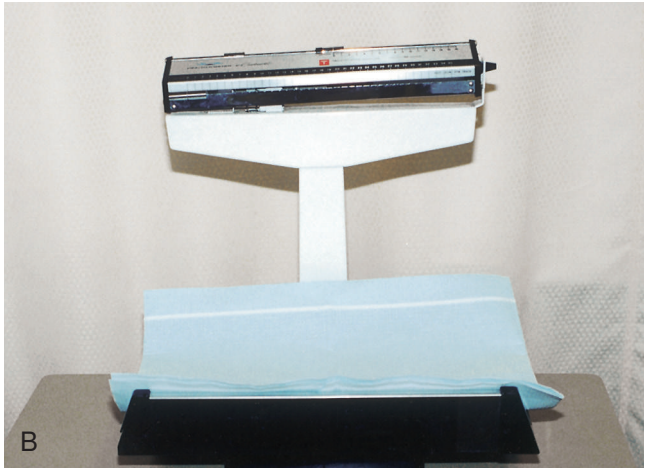


FIG. 3.12 (A) Adult platform scale. (B) Infant platform scale.

to 0 (zero) before measuring a patient's weight. The weight can be recorded in increments as small as 0.25 lb or 0.1 kg. Height is measured using the height attachment. This should be pulled up before the patient stands on the platform and then lowered until it is in firm contact with the top of the patient's head (see Fig. 4.2). Height is usually recorded in inches or centimeters for infants and in feet and inches or centimeters for children, adolescents, and adults. Measurement of height and weight using a platform scale is discussed further in Chapter 4.

Electronic scales are also used in many health care facilities. The patient steps on the scale, the weight is calculated, and a digital readout is provided (either in pounds or kilograms). Calibration of these scales occurs automatically with each use.

Infants are weighed using an infant platform scale (Fig. 3.12B). These work similarly to the adult platform scale but can measure weight in ounces or grams. The child may sit or lie on the platform while the weight is measured. Because the infant platform scale does not have a height attachment, height (length) is measured using a mat or board. This is discussed further in Chapter 4.

Skinfold Caliper

One method to estimate body fat is by measuring the thickness of subcutaneous tissue with a skinfold caliper. Different models of calipers (e.g., Lang or Herpendem) can be used to measure the thickness of subcutaneous tissue at different points on the body (Fig. 3.13). The most frequent location for thickness evaluation is the posterior aspect of the triceps. The use of calipers to measure skinfold thickness is discussed further in Chapter 8.

Ruler and Tape Measure

Obtaining an accurate measurement of size is accomplished with a ruler or tape measure. A small transparent metric ruler with markings in both millimeters and centimeters is useful for measuring lesions or other marks on the skin. A disposable paper tape measure is useful in various situations such as measuring the length of an infant, determining the circumference of an extremity, or measuring an open wound. A tape measure that has inches on one side and centimeters on the reverse side is ideal. Nurses can estimate size using their hands or fingers if they know landmark measurements (e.g., the fingertip to the distal interphalangeal joint).

FIG. 3.13 Skinfold calipers.

FIG. 3.14 Wood lamp. (From Pfenninger, Fowler, 2011.)

Wood Lamp

The black-light effect of a Wood lamp is used to detect fungal infections of the skin or corneal abrasions of the eye. The examination room should be darkened to enhance the determination of the lesion color. Skin lesions caused by a fungal infection exhibit a fluorescent yellow-green or blue-green color when examined with a Wood lamp (Fig. 3.14). When fluorescein dye is placed in the eye, the Wood lamp can also detect scratches or abrasions of the cornea.

Magnification Device

Many nurses use a small handheld magnification device to assist with inspection. Some of these devices come with a battery-powered light source. Magnification and lighting facilitate the inspection of wounds, skin lesions, and parasites.

Penlight

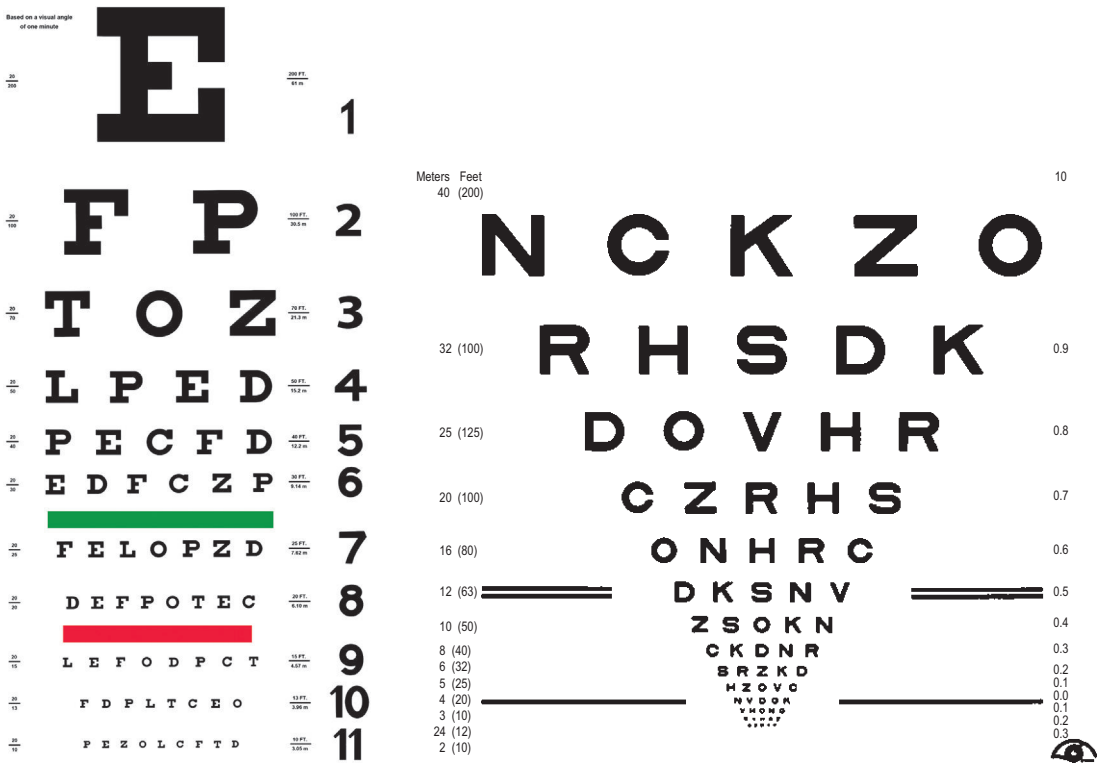
The penlight provides a focused light source to facilitate inspection; thus it has many uses during a physical examination. It may be used to illuminate the inside of the mouth or nose, highlight a lesion, or evaluate pupillary constriction (see Fig. 3.2). To be effective, the penlight must have a bright light source. In addition, some penlights have a pupil-size gauge printed on the side of the light cylinder that allows the nurse to measure pupil size.

Visual Acuity Charts

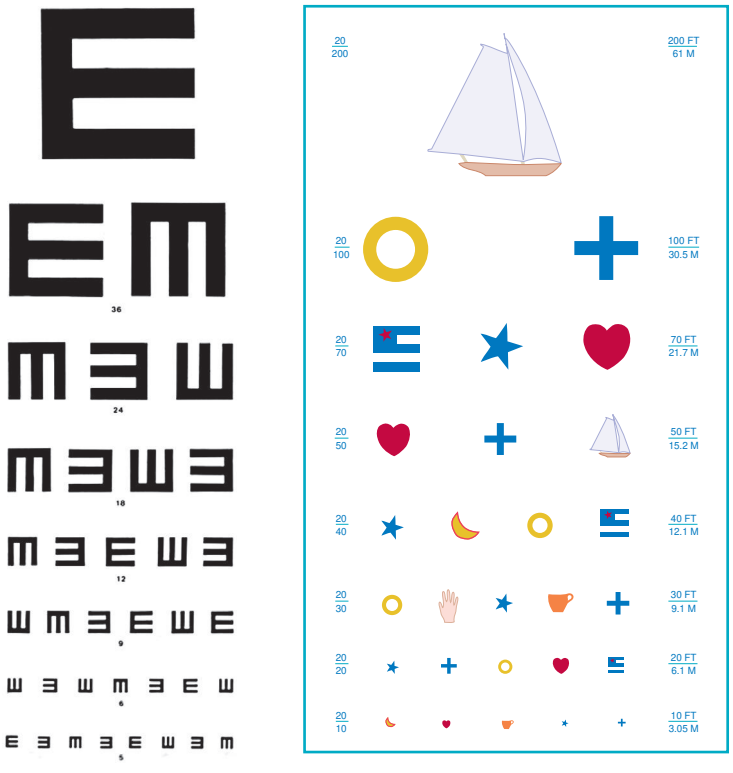
A screening examination for visual acuity, color perception, and field perception is performed using visual acuity or eye charts. Several types of charts may be used, and the nurse must select a chart that is appropriate for the patient.

Distance Vision Charts

Either the Snellen or Sloan chart is used to screen for vision for English-speaking adults and children ages six and older.[26] These charts are hung on a wall at a distance of 20 feet from the patient (although some charts have been configured for use at 10 feet). The Snellen chart consists of 11 lines of letters of decreasing size (Fig. 3.15A). The letter size indicates the degree of visual acuity when read from a distance of 20 feet. The patient is tested one eye at a time. Ask the patient to read the smallest line possible. Beside each line of letters is the



A B



C D

FIG. 3.15 (A) Snellen visual acuity chart. (B) Sloan chart. (C) Tumbling E chart. (D) Allen chart. (From Yoost and Crawford, 2016.)

corresponding acuity rating that should be recorded (e.g., 20/40, 20/100). The top number of the recording indicates the distance between the patient and the chart, and the bottom number indicates the distance at which a person with normal vision should be able to read that line of the chart. Ask the patient to name the colors of the horizontal lines as a screening for color perception. The top line is green, and the bottom line is red. Also ask the patient which line is longer as a screening for field perception measurement (the green line is longer).The Sloan chart consists of 5 letters to a row, and each row of letters is of decreasing size; they are scored in the same way as the Snellen chart (Fig. 3.15B).

For non–English-speaking individuals or those who cannot differentiate letters, the "Tumbling E" chart can be used (Fig. 3.15C). The nurse describes the "E" as a table with three legs and asks the patient to point in the direction that the table legs point. The scoring of the Tumbling E chart is the same as that of the Snellen chart.

Although children can use the Tumbling E chart, the HOTV or picture charts may be more appropriate for young children. The HOTV chart uses four letters, and the child is asked to identify the letters (H, O, T, or V) displayed. Picture/symbol charts (such as the Lea or Allen charts) show pictures and symbols in decreasing size. For example, the Allen chart depicts a sailboat, a flag, a star, heart, an O, and + (Fig. 3.15D). See Chapter 10 for further information regarding the assessment of visual acuity.

Near-Vision Examination

The Rosenbaum chart is used to evaluate near vision and consists of a series of numbers, Es, Xs, and Os in graduated sizes (Fig. 3.16). The patient should hold the chart 14 inches away from the face and read the smallest line possible. The nurse tests and records vision for each eye separately. Acuity is located on the right side of the chart and is recorded as distance equivalents (20/20), the Jaeger equivalent (J-1+), or point equivalent (P-3). Asking the patient to read a newspaper held at 14 inches from the face is an alternate method to evaluate near vision. The patient should be able to read the newspaper without difficulty.

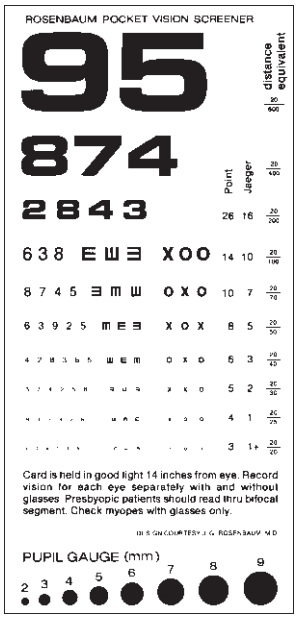


FIG. 3.16 Rosenbaum near-vision chart. (From Seidel et al., 2006.)

Ophthalmoscope

Inspection of the internal structures of the eye is accomplished using an ophthalmoscope, an instrument that consists of a series of lenses, mirrors, and light apertures. This instrument consists of a head and a handle; the handle is a power source containing batteries or connects to a wall-mounted electrical source. The head and handle fit together by a turn-and-lock system.

The head of the standard ophthalmoscope (Fig. 3.17A) consists of two movable parts: the lens selector dial and the aperture setting. The lens selector dial allows the nurse to adjust a set of lenses that control focus. The unit of strength for each lens is referred to as a *diopter*. When the lens selector dial is turned clockwise, the positive-sphere lenses (black numbers) are brought into place. The black numbers on the lens selector dial indicate increasingly positive diopter; these help the nurse focus on near objects within the patient's eye. Likewise, when the lens selector disk is turned counterclockwise, the negative-sphere lenses (red numbers) are brought into place. The red numbers indicate increasingly negative diopter and help the nurse focus on objects that are farther away within the patient's eye. The positive and negative lenses compensate for myopia or hyperopia in both the nurse's and patient's eyes and also permit focusing at different places within the patient's eye.

The aperture has several settings that permit light variations during the examination. The large light can be used for an examination of the internal eye if the patient's pupils have been dilated. The small light can be used if the patient's pupils are very small or if the pupils have not been dilated. The red-free filter actually shines a green beam of light. This filter facilitates the identification of pallor of the disc and permits the recognition of retinal hemorrhages by making the blood appear black. The slit light permits easy examination of the anterior of the eye and determination of elevation or depression of a lesion. The grid light facilitates an estimation of size, location, and pattern of a fundal lesion.

Another type of ophthalmoscope head, known as the PanOptic head, is designed to allow for a wider field of view and greater magnification, creating an improved view of the eye structures as compared with a standard ophthalmoscope head (Fig. 3.17B). The PanOptic head attaches to the same handle as the standard ophthalmoscope head. Eye examination using an ophthalmoscope is discussed further in Chapter 10.

Otoscope

Inspection of the external auditory canal and tympanic membrane is performed with an otoscope. The traditional otoscope consists of two primary components: the head and the handle. Some otoscopes also have a pneumatic attachment

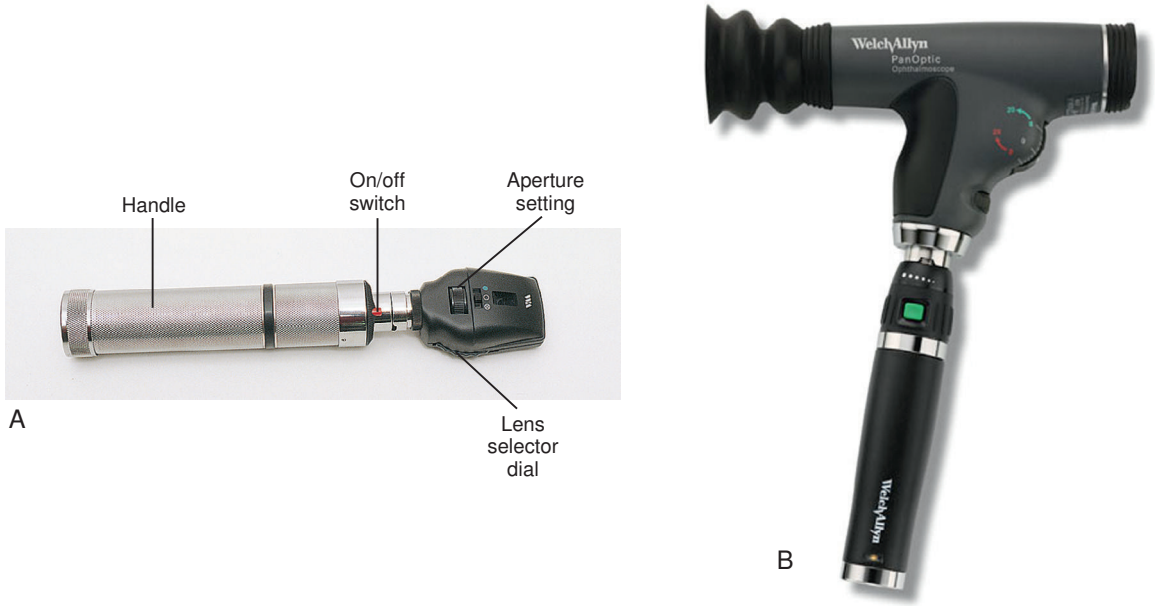


FIG. 3.17 (A) Ophthalmoscope with a standard head. (B) PanOptic head. (B, Courtesy Welch Allyn, Skaneateles Falls, NY.)

(Fig. 3.18A). The head of the otoscope consists of a magnifying lens, a light source, and a speculum that is inserted into the auditory canal. On newer models of otoscopes, such as the MacroView, an adjustable focus allows for greater magnification and field of view compared with the traditional otoscopes (Fig. 3.18B). Specula come in various sizes. Choose the largest-size speculum that fits into the patient's ear canal. The handle of the otoscope is the power source; it either contains batteries or connects to a wall-mounted electrical source. The pneumatic attachment is used to evaluate the fluctuation of the tympanic membrane. This attachment consists of a small rubber tube with a bulb attached to the head of the otoscope. When the bulb is squeezed, it produces small puffs of air against the tympanic membrane, causing the membrane to move. No fluctuation of the membrane may indicate pressure from behind the membrane. See Chapter 10 for further discussion on the use of the otoscope.

Audioscope

An audioscope is used to perform basic screening for hearing acuity. The handheld, battery-operated audioscope is inserted into the patient's external ear (Fig. 3.19) and provides a fast, simple test to detect hearing problems. It systematically and automatically creates tones at the different frequencies: 1000, 2000, 4000, and 5000 Hz. A light appears when the specific tone at a given frequency is sounded. The patient is instructed to raise an index finger when the tone is heard, which should correspond to the light seen on the audiometer. Hearing assessment is discussed further in Chapter 10.

Tuning Fork

The tuning fork has two purposes in a physical examination: auditory screening and assessment of vibratory sensation. To

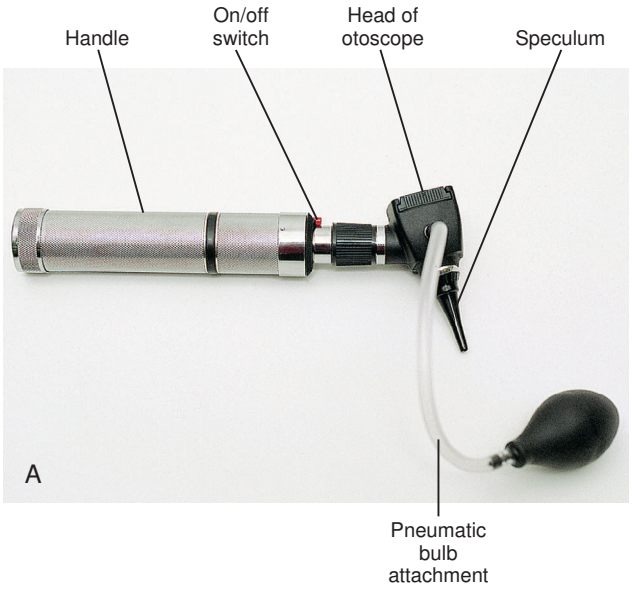


FIG. 3.18 (A) Traditional otoscope with pneumatic bulb. (B) MacroViewotoscope.

FIG. 3.19 Audioscope.

activate a tuning fork, the nurse holds it at the base with one hand and squeezes the prongs together or taps the prongs against the heel of one hand. Once a tuning fork is activated, the vibrations produce sound waves described as cycles per second or hertz (Hz).

For auditory evaluation, a high-pitched tuning fork with a frequency of 500 to 1000 Hz should be used, meaning it produces 500 to 1000 cycles per second (Fig. 3.20). A fork that vibrates in this frequency range can estimate hearing loss in the range of normal speech (300 to 3000 Hz). Inaccurate results are produced if the nurse strikes the prongs together vigorously or uses a tuning fork with a lower frequency. See Chapter 10 for further discussion on using a tuning fork to assess hearing with the Rinne and Weber tests.

For an assessment of vibratory sensation, the nurse uses a tuning fork with a pitch between 100 and 400 Hz. To activate, the nurse holds the tuning fork at the base and sharply strikes the prongs on the heel of one hand. The vibrating tuning fork is then placed over a bone, such as the malleus (ankle bone), and the patient is asked to indicate if the vibration is felt. Patients who are unable to feel the vibration have reduced peripheral sensation. See Chapter 15 for further information on assessment using a vibratory sensation.

Nasal Speculum

The internal surfaces of the nose can be inspected using a nasal speculum to open the nares. Two instruments can be used as a nasal speculum. The simple nasal speculum is used in conjunction with a penlight to visualize the lower and middle turbinates of the nose (Fig. 3.21). The instrument is used by gently squeezing the handle of the speculum, causing the blades of the speculum to open and spread the nares, which permits the inspection of the internal nose. The second type of nasal speculum is a broad-tipped, cone-shaped device that is placed on the end of an otoscope. The nasal cavity can be inspected by using the light source and viewing lens of the otoscope.

Doppler

A Doppler is a device that amplifies sounds that are difficult to hear with an acoustic stethoscope. Ultrasonic waves are used to detect difficult-to-hear vascular sounds such as fetal heart tones or peripheral pulses (Fig. 3.22). A variety of Doppler devices are used for different applications (such as vascular Dopplers and fetal Dopplers). To use the device, the nurse applies a coupling gel to the patient's skin and slides the transducer over the skin surface until the blood flow is heard. The probe on the distal end of the Doppler amplifies the subtle changes in pitch as blood ebbs and flows through the vessels. The resulting sound heard is a swishing, pulsating sound. A volume control helps amplify the sound further. Depending on the type of Doppler used, the sound is amplified either through a microphone (allowing others in the room to hear) or through a headset where only the examiner can hear it.

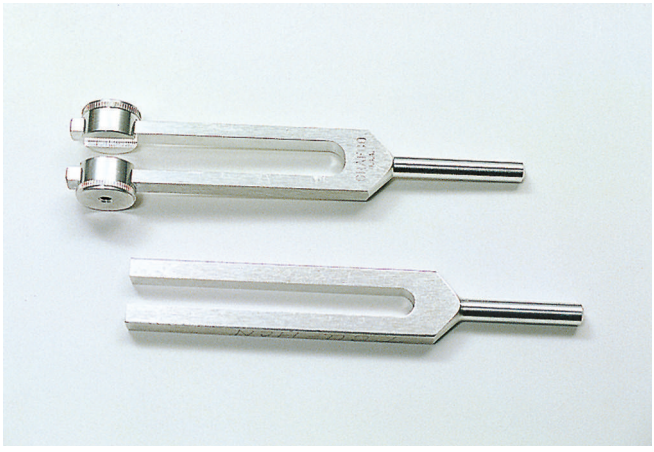


FIG. 3.20 Tuning forks for vibratory sensation *(top)* and auditory screening *(bottom)*.

FIG. 3.21 Nasal speculum.

FIG. 3.22 Doppler.

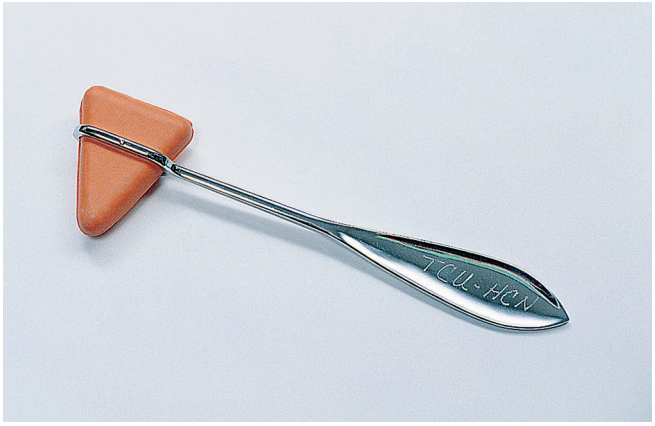


FIG. 3.24 Percussion hammer.

Goniometer

The degree of flexion or extension of a joint can be measured using a goniometer, which is a two-piece ruler joined in the middle with a protraction-type measuring device (Fig. 3.23). After the goniometer is placed over a joint, the patient extends or flexes the joint allowing the nurse to measure the degree of flexion and extension on the protractor. Goniometer use is discussed further in Chapter 14.

Percussion Hammer and Neurologic Hammer

Deep tendon reflexes are tested with a percussion (reflex) hammer. This device consists of a triangular rubber component on the end of a metal handle (Fig. 3.24). The hammer is configured so either the flat or the pointed surfaces can be used to elicit the reflex response. The flat surface is commonly used when striking a tendon directly and observing the patient response. The pointed surface may be used either to strike the tendon directly or to strike the nurse's finger, which is placed on a small tendon such as the patient's biceps tendon. A neurologic hammer can also be used to test deep tendon reflexes. It is similar to a percussion hammer, but the rubber-striking end is rounded on both sides. The technique to assess deep tendon reflexes is found in Chapter 15.

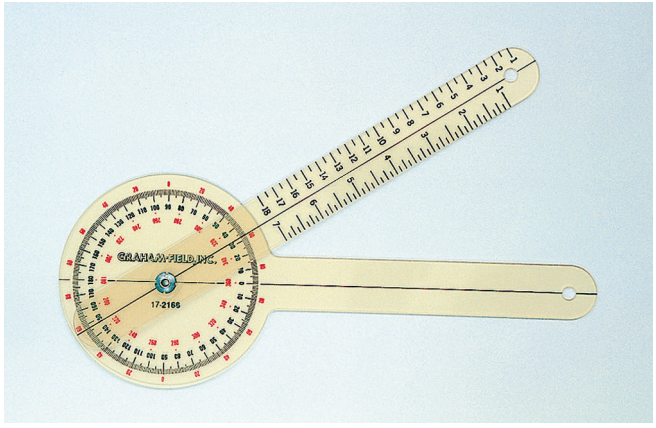


FIG. 3.23 Goniometer.

Monofilament

A monofilament is a small, flexible, wire-like device attached to a handle used to test for sensation on the lower extremities (Fig. 3.25). The wire is placed on the skin surface and then bent (the wire bends at 10 g of linear pressure). The patient should indicate when and where the monofilament is felt. Patients who are unable to feel the monofilament when it is bent have reduced peripheral sensation. Typically the monofilament is used to assess sensation to the foot in several locations, including the plantar aspect of the foot, great toe, heel, and ball of the foot. It is used only over areas with intact skin. Examination of peripheral sensation with a monofilament is discussed further in Chapter 15.

Vaginal Speculum

A vaginal speculum is used to spread the walls of the vaginal canal as part of the pelvic examination. This allows the nurse to inspect the vaginal walls and cervix and collect samples for diagnostic testing. There are three types of vaginal specula: the Graves, the Pederson, and the pediatric or virginal. All of the specula are composed of two blades and a handle and are available as either reusable metal or disposable plastic models (Fig. 3.26). The Graves speculum is available in a variety of sizes, with blades ranging from 3.5 to 5 inches in length and 0.75 to 1.25 inch in width. The bottom blade is slightly longer than the top blade. This configuration conforms to the longer posterior vaginal wall and aids visualization. The Pederson

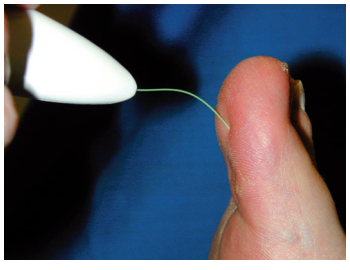


FIG. 3.25 Monofilament assessing peripheral sensation. (From Walker et al., 2014.)