NURSING FUNDAMENTALS

Ernstmeyer & Christman (Eds.)
Chippewa Valley Technical College

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Chippewa Valley Technical College

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Detailed Licensing

About the Book

This *Nursing Fundamentals* textbook is an open educational resource with CC-BY licensing developed for entry-level nursing students. Content is based on the Wisconsin Technical College System (WTCS) statewide nursing curriculum for the Nursing Fundamentals course (543-101), the 2019 NCLEX-RN Test Plan,[1] the 2020 NCLEX-PN Test Plan,[2] and the Wisconsin Nurse Practice Act.[3]

This book introduces the entry-level nursing student to the scope of nursing practice, various communication techniques, and caring for diverse patients. The nursing process is used as a framework for providing patient care based on the following nursing concepts: safety, oxygenation, comfort, spiritual well-being, grief and loss, sleep and rest, mobility, nutrition, fluid and electrolyte imbalance, and elimination. Care for patients with integumentary disorders and cognitive or sensory impairments is also discussed. Learning activities have been incorporated into each chapter to encourage students to use critical thinking while applying content to patient care situations.

The Open Resources for Nursing (Open RN) project is supported by a $2.5 million grant from the Department of Education. This book is available for free online and can also be downloaded in multiple formats for offline use. The online version is required for interaction with adaptive learning activities included in each chapter. Affordable print versions may also be purchased from XanEdu in college bookstores and on Amazon.

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2. NCSBN. (2019). NCLEX-PN Examination: Test plan for the national council licensure examination for practical nurses.https://www.ncsbn.org/2020_NCLEXPN_TestPlan-English.pdf ↵
3. Wisconsin State Legislature. (2018). Chapter 6: Standards of practice for registered nurses and licensed practical nurses. Board of Nursing. https://docs.legis.wisconsin.gov/statutes/statutes/441 ↵

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Standards and Conceptual Approach

The Open RN *Nursing Fundamentals* textbook is based on several external standards and uses a conceptual approach.

External Standards

American Nurses Association (ANA):

The ANA provides standards for professional nursing practice including nursing standards and a code of ethics for nurses.

- https://www.nursingworld.org/ana/about-ana/standards/

The National Council Licensure Examination for Registered Nurses: NCLEX-PN and NCLEX-RN Test Plans

The NCLEX-RN and NCLEX-PN test plans are updated every three years to reflect fair, comprehensive, current, and entry-level nursing competency.

- https://www.ncsbn.org/nclex.htm

The National League of Nursing (NLN): Competencies for Graduates of Nursing Programs

NLN competencies guide nursing curricula to position graduates in a dynamic health care arena with practice that is informed by a body of knowledge and ensures that all members of the public receive safe, quality care.

- http://www.nln.org/professional-development-programs/competencies-for-nursing-education/nln-competencies-for-graduates-of-nursing-programs

Quality and Safety Education for Nurses (QSEN) Institute: Pre-licensure Competencies

Quality and safety competencies include knowledge, skills, and attitudes to be developed in nursing pre-licensure programs. QSEN competencies include patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics.

- https://qsen.org/competencies/

Wisconsin State Legislature, Administrative Code Chapter N6

The Wisconsin Administrative Code governs the Registered Nursing and Practical Nursing professions in Wisconsin.

- https://docs.legis.wisconsin.gov/code/admin_code/n/6

Healthy People 2030

Healthy People 2030 envisions a society in which all people can achieve their full potential for health and well-being across the life span. Healthy People provides objectives based on national data and includes social determinants of health.

- https://health.gov/healthypeople

Conceptual Approach

The Open RN *Nursing Fundamentals* textbook incorporates the following concepts across all chapters:

- **Holism.** Florence Nightingale taught nurses to focus on the principles of holism, including wellness and the interrelationship of human beings and their environment. This textbook encourages the application of holism by assessing the impact of developmental, emotional, cultural, religious, and spiritual influences on a patient's health status.
- **Evidence-Based Practice (EBP).** Textbook content is based on current, evidence-based practices that are referenced by footnotes. To promote digital literacy, hyperlinks are provided to credible, free online resources that supplement content. The Open RN textbooks will be updated as new EBP is established and with the release of updated NCLEX Test Plans every three years.
- **Cultural Competency.** Nurses have an ethical and moral obligation to provide culturally competent care to the patients they serve based on the ANA Code of Ethics.[1] Cultural considerations are included throughout this textbook.
- **Care Across the Life Span.** Developmental stages are addressed regarding patient assessments and procedures.

- **Health Promotion.** Focused interview questions and patient education topics are included to promote patient well-being and encourage self-care behaviors.
- **Scope of Practice.** Assessment techniques are included that have been identified as frequently performed by entry-level nurse generalists.[2] [3] [4] [5]
- **Patient Safety.** Expected and unexpected findings on assessment are highlighted in tables to promote patient safety by encouraging notification of health care providers when changes in condition occur.
- **Clear and Inclusive Language.** Content is written using clear language preferred by entry-level pre-licensure nursing students to enhance understanding of complex concepts.[6] "They" is used as a singular pronoun to refer to a person whose gender is unknown or irrelevant to the context of the usage, as endorsed by APA style. It is inclusive of all people and helps writers avoid making assumptions about gender.[7]
- **Open Source Images and Fair Use.** Images are included to promote visual learning. Students and faculty can reuse open source images by following the terms of their associated Creative Commons licensing. Some images are included based on Fair Use as described in the "Code of Best Practices for Fair Use and Fair Dealing in Open Education" presented at the OpenEd20 conference. Refer to the footnotes of images for source and licensing information throughout the text.
- **Open Pedagogy.** Students are encouraged to contribute to the Open RN textbooks in meaningful ways. In this textbook, students assisted in reviewing content for clarity for an entry-level learner and also assisted in creating open source images.[8]

Supplementary Material Provided

Several supplementary resources are provided with this textbook.

- Supplementary, free videos to promote student understanding of concepts and procedures
- Sample documentation for assessments and procedures
- Online learning activities with formative feedback
- Critical thinking questions that encourage application of content to patient scenarios
- Free downloadable versions for offline use

An affordable print version of this textbook is published by XanEdu and is available on Amazon and in college bookstores. It has been reported that over 65% of students prefer a print version of their textbooks.[9]

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CHAPTER OVERVIEW

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1.5: Nursing Education and the NCLEX
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1.7: Professional Organizations
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1.1: Scope of Practice Introduction

Learning Objectives

- Discuss nursing scope of practice and standards of care
- Compare various settings in which nurses work
- Describe contributions of interprofessional health care team members
- Describe levels of nursing education and the NCLEX
- Discuss basic legal considerations and ethics
- Outline professional nursing organizations
- Examine quality and evidence-based practice in nursing

You are probably wondering, “What is scope of practice? What does it mean for me and my nursing practice?” **Scope of practice** is defined as services that a trained health professional is deemed competent to perform and permitted to undertake according to the terms of their professional nursing license.[1] Nursing scope of practice provides a framework and structured guidance for activities one can perform based on their nursing license. As a nurse and a nursing student, is always important to consider: Just because your employer asks you to do a task…can you perform this task according to your scope of practice – or are you putting your nursing license at risk?

Nurses must also follow legal standards in when providing nursing care. Standards are set by several organizations, including the American Nurses Association (ANA), your state’s Nurse Practice Act, agency policies and procedures, and federal regulators. These standards assure safe, competent care is provided to the public.

This chapter will provide an overview of basic concepts related to nursing scope of practice and standards of care.

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1.2: History and Foundation

Brief History of Nursing

Before discussing scope and standards of nursing care, it is helpful to briefly review a history of the nursing profession. Florence Nightingale is considered to be the founder of modern nursing practice. In 1860 she established the first nursing school in the world. By establishing this school of nursing, Nightingale promoted the concept of nurses as a professional, educated workforce of caregivers for the sick.[1] See Figure 1.1[2] for a portrait of Florence Nightingale. Florence Nightingale's contributions to health care started during the Crimean War in 1854. Her team discovered that poor health care for wounded soldiers was being delivered by overworked medical staff in a dirty environment. Florence recorded the mortality rate in the hospital and created statistical models that demonstrated that out of every 1,000 injured soldiers, 600 were dying because of preventable communicable and infectious diseases. Florence's nursing interventions were simple; she focused on providing a clean environment, clean water, and good nutrition to promote healing, such as providing fruit as part of the care for the wounded soldiers. With these simple actions, the mortality rate of the soldiers decreased from 60% to 2.2%. In 1859 Nightingale wrote a book titled *Notes on Nursing* that served as the cornerstone of the Nightingale School of Nursing curriculum. Nightingale believed in the importance of placing a patient in a environment that promoted healing where they could recover from disease. She promoted this knowledge as distinct from medical knowledge. Her emphasis on the value of the environment formed many of the foundational principles that we still use in creating a healing health care setting today. She also insisted on the importance of building trusting relationships with patients and believed in the therapeutic healing that resulted from nurses' presence with patients. She promoted the concept of confidentiality, stating a nurse "should never answer questions about her sick except to those who have a right to ask them."[3] These nursing concepts formed the foundation of nursing practice as we know it today.

Figure 1.1 Florence Nightingale

Modern nursing has reinvented itself a number of times as health care has advanced and changed over the past 160 years. With more than four million members, the nursing profession represents the largest segment of the United States' health care workforce. Nursing practice covers a broad continuum, including health promotion, disease prevention, coordination of care, and palliative care when cure is not possible. Nurses directly affect patient care and provide the majority of patient assessments, evaluations, and care in hospitals, nursing homes, clinics, schools, workplaces, and ambulatory settings. They are at the front lines in ensuring that patient care is delivered safely, effectively, and compassionately. Additionally, nurses attend to patients and their families in a holistic way that often goes beyond physical health needs and recognize social, mental, emotional, and spiritual needs.[4]

American Nurses Association (ANA)

The American Nurses Association (ANA) is a national, professional nursing organization that was established in 1896. The ANA represents the interests of nurses in all 50 states of America while also promoting improved health care for everyone. The mission of the ANA is to "lead the profession to shape the future of nursing and health care."[5] The ANA states that it exists to advance the nursing profession by doing the following:

- Fostering high standards of nursing practice
- Promoting a safe and ethical work environment
- Bolstering the health and wellness of nurses
- Advocating on health care issues that affect nurses and the public[6]

The ANA sets many standard of care for professional nurses that will be discussed in the next section.

Note

Read more information about the American Nurses Association.

View the *Discover the American Nurses Association* video.[7]

1. Karimi, H., & Masoudi Alavi, N. (2015). Florence Nightingale: The mother of nursing. *Nursing and Midwifery Studies*, *4*(2), e29475. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4557413/↵
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1.3: Regulations and Standards

Standards for nursing care are set by several organizations, including the American Nurses Association (ANA), your state's Nurse Practice Act, agency policies and procedures, federal regulators, and other professional nursing organizations. These standards assure safe, competent care is provided to the public.

ANA Scope and Standards of Practice

The American Nurses Association (ANA) publishes two resources that set standards and guide professional nursing practice in the United States: *The Code of Ethics for Nurses* and *Nursing: Scope and Standards of Practice*. The *Code of Ethics for Nurses* establishes an ethical framework for nursing practice across all roles, levels, and settings. It is discussed in greater detail in the "Legal Considerations and Ethics" subsection of this chapter. The *Nursing: Scope and Standards of Practice* describes a professional nurse's scope of practice and defines the who, what, where, when, why, and how of nursing. It also sets 18 standards of professional practice that all registered nurses are expected to perform competently. [1]

The "who" of nursing practice are the nurses who have been educated, titled, and maintain active licensure to practice nursing. The "what" of **nursing** is the recently revised definition of nursing: "Nursing integrates the art and science of caring and focuses on the protection, promotion, and optimization of health and human functioning; prevention of illness and injury; facilitation of healing; and alleviation of suffering through compassionate presence. Nursing is the diagnosis and treatment of human responses and advocacy in the care of individuals, families, groups, communities, and populations in recognition of the connection of all humanity."[2] Simply put, nurses treat human responses to health problems and life processes and advocate for the care of others.

Nursing practice occurs "when" there is a need for nursing knowledge, wisdom, caring, leadership, practice, or education, anytime, anywhere. Nursing practice occurs in any environment "where" there is a health care consumer in need of care, information, or advocacy. The "why" of nursing practice is described as nursing's response to the changing needs of society to achieve positive health care consumer outcomes in keeping with nursing's social contract and obligation to society. The "how" of nursing practice is defined as the ways, means, methods, and manners that nurses use to practice professionally.[3] The "how" of nursing is further defined by the standards of practice set by the ANA. There are two sets of standards, the *Standards of Professional Nursing Practice* and the *Standards of Professional Performance*.

The **Standards of Professional Nursing Practice** are "authoritative statements of the actions and behaviors that all registered nurses, regardless of role, population, specialty, and setting, are expected to perform competently."[4] These standards define a competent level of nursing practice based on the critical thinking model known as the nursing process. The nursing process includes the components of **assessment, diagnosis, outcomes identification, planning, implementation,** and **evaluation**.[5] Each of these standards is further discussed in the "Nursing Process" chapter of this book.

The **Standards of Professional Performance** are 12 additional standards that describe a nurse's professional behavior, including activities related to ethics, advocacy, respectful and equitable practice, communication, collaboration, leadership, education, scholarly inquiry, quality of practice, professional practice evaluation, resource stewardship, and environmental health. All registered nurses are expected to engage in these professional role activities based on their level of education, position, and role. Registered nurses are accountable for their professional behaviors to themselves, health care consumers, peers, and ultimately to society. [6] The 2021 Standards of Professional Performance are as follows:

- **Ethics.** The registered nurse integrates ethics in all aspects of practice.
- **Advocacy.** The registered nurse demonstrates advocacy in all roles and settings.
- **Respectful and Equitable Practice.** The registered nurse practices with cultural humility and inclusiveness.
- **Communication.** The registered nurse communicates effectively in all areas of professional practice.
- **Collaboration.** The registered nurse collaborates with the health care consumer and other key stakeholders.
- **Leadership.** The registered nurse leads within the profession and practice setting.
- **Education.** The registered nurse seeks knowledge and competence that reflects current nursing practice and promotes futuristic thinking.
- **Scholarly Inquiry.** The registered nurse integrates scholarship, evidence, and research findings into practice.
- **Quality of Practice.** The registered nurse contributes to quality nursing practice.
- **Professional Practice Evaluation.** The registered nurse evaluates one's own and others' nursing practice.

- **Resource Stewardship.** The registered nurse utilizes appropriate resources to plan, provide, and sustain evidence-based nursing services that are safe, effective, financially responsible, and judiciously used.
- **Environmental Health.** The registered nurse practices in a manner that advances environmental safety and health.[7]

Years ago, nurses were required to recite the Nightingale pledge to publicly confirm their commitment to maintain the profession's high ethical and moral values: "I will do all in my power to maintain and elevate the standard of my profession and will hold in confidence all personal matters committed to my keeping and family affairs coming to my knowledge in the practice of my calling, with loyalty will I endeavor to aid the physician in his work, and devote myself to the welfare of those committed to my care." Although some of the words are outdated, the meaning is clear: Nursing is a calling, not just a job; to answer that call, you must be dedicated to serve your community according to the ANA standards of care and code of ethics.[8]

Nurse Practice Act

In addition to the professional standards of practice and professional performance set by the American Nurses Association, nurses must legally follow regulations set by the Nurse Practice Act and enforced by the **Board of Nursing** in the state where they are employed. The Board of Nursing is the state-specific licensing and regulatory body that sets standards for safe nursing care and issues nursing licenses to qualified candidates, based on the **Nurse Practice Act** enacted by that state's legislature. The Nurse Practice Act establishes regulations for nursing practice within that state and defines the scope of nursing practice. If nurses do not follow the standards and scope of practice set forth by the Nurse Practice Act, they can have their nursing license revoked by the Board of Nursing.

Nursing students must understand their scope of practice outlined in their state's Nurse Practice Act. Nursing students are legally accountable for the quality of care they provide to patients just as nurses are accountable. Students are expected to recognize the limits of their knowledge and experience and appropriately alert individuals in authority regarding situations that are beyond their competency. A violation of the standards of practice constitutes unprofessional conduct and can result in the Board of Nursing denying a license to a nursing graduate.

Employer Policies, Procedures, and Protocols

In addition to professional nursing standards set by the American Nurses Association and the state Nurse Practice Act where they work, nurses and nursing students must also practice according to agency policies, procedures, and protocols. For example, hospitals often set a policy that requires a thorough skin assessment must be completed and documented daily on every patient. If a nurse did not follow this policy and a patient developed a pressure injury, the nurse could be held liable. In addition, every agency has their own set of procedures and protocols that a nurse and nursing student must follow. For example, each agency has specific procedural steps for performing nursing skills, such as inserting urinary catheters. A **protocol** is defined by the Wisconsin Nurse Practice Act as a "precise and detailed written plan for a regimen of therapy." For example, agencies typically have a hypoglycemia protocol that nurses automatically implement when a patient's blood sugar falls below a specific number. The hypoglycemia protocol includes actions such as providing orange juice and rechecking the blood sugar. These agency-specific policies, procedures, and protocols supersede the information taught in nursing school, and nurses and nursing students can be held legally liable if they don't follow them. Therefore, it is vital for nurses and nursing students to always review and follow current agency-specific procedures, policies, and protocols when providing patient care.

Nurses and nursing students must continue to follow their scope of practice as defined by the Nurse Practice Act in the state they are practicing when following agency policies, procedures, and protocols. Situations have occurred when a nurse or nursing student was asked by an agency to do something outside their defined scope of practice that impaired their nursing license. It is always up to ***you*** to protect ***your*** nursing license and follow the state's Nurse Practice Act when providing patient care.

Federal Regulations

In addition to nursing scope of practice and standards being defined by the American Nurses Association, state Nurse Practice Acts, and employer policies, procedures, and protocols, nursing practice is also influenced by federal regulations enacted by agencies such as the Joint Commission and the Centers for Medicare and Medicaid.

The Joint Commission

The Joint Commission is a national organization that accredits and certifies over 20,000 health care organizations in the United States. The mission of The Joint Commission (TJC) is to continuously improve health care for the public by inspiring health care organizations to excel in providing safe and effective care of the highest quality and value.[10] The Joint Commission sets standards for providing safe, high-quality health care.

National Patient Safety Goals

The Joint Commission establishes annual National Patient Safety Goals for various types of agencies based on data regarding current national safety concerns.[11] For example, National Patient Safety Goals for hospitals include the following:

- Identify Patients Correctly
- Improve Staff Communication
- Use Medicines Safely
- Use Alarms Safely
- Prevent Infection
- Identify Patient Safety Risks
- Prevent Mistakes in Surgery

Nurses, nursing students, and other staff members are expected to incorporate actions related to these safety goals into their daily patient care. For example, SBAR (Situation, Background, Assessment, and Recommendation) handoff reporting techniques, bar code scanning equipment, and perioperative team "time-outs" prior to surgery are examples of actions incorporated at agencies based on National Patient Safety Goals. Nursing programs also use National Patient Safety Goals to guide their curriculum and clinical practice expectations. National Patient Safety Goals are further discussed in the "Safety" chapter of this book.

Use the hyperlinks provided below to read more about The Joint Commission and National Patient Safety Goals.

> **Note**
>
> The Joint Commission
>
> The Joint Commissions' National Patient Safety Goals

Joint Commission Center for Transforming Healthcare

The Joint Commission Center for Transforming Healthcare was developed in 2008 to help agencies develop effective solutions for critical safety problems with a goal to ultimately achieve zero harm to patients. Some of the projects the Center has developed include improved hand hygiene, effective handoff communications, and safe and effective use of insulin. The Center has also been instrumental in creating a focus on a safety culture in health care organizations. A **safety culture** empowers nurses, nursing students, and other staff members to speak up about their concerns about patient risks and to report errors and near misses, all of which drive improvement in patient care and reduce the incidences of patient harm.[12] Many health care agencies have implemented a safety culture in their workplace and successfully reduced incidences of patient harm. An example of a safety culture action is a nurse or nursing student creating an incident report when an error occurs when administering medication. The incident report is used by the agency to investigate system factors that contribute to errors. To read more about creating a safety culture, use the hyperlink provided below.

> **Note**
>
> Read more about Creating a Safety Culture.

Centers for Medicare & Medicaid Services

The Centers for Medicare & Medicaid Services (CMS) is another federal agency that establishes regulations that affect nursing care. CMS is a part of the U.S. Department of Health and Human Services (HHS) that administers the Medicare program and works in partnership with state governments to administer Medicaid. The CMS establishes and enforces regulations to protect patient safety in hospitals that receive Medicare and Medicaid funding. For example, one CMS regulation states that a hospital's

policies and procedures must require confirmation of specific information before medication is administered to patients. This CMS regulation is often referred to as “checking the rights of medication administration.” You can read more information about checking the rights of medication administration in the “Administration of Enteral Medications” chapter of the Open RN *Nursing Skills* textbook.[13]

CMS also enforces quality standards in health care organizations that receive Medicare and Medicaid funding. These organizations are reimbursed based on the quality of their patient outcomes. For example, organizations with high rates of healthcare-associated infections (HAI) receive less reimbursement for services they provide. As a result, many agencies have reexamined their policies, procedures, and protocols to promote optimal patient outcomes and maximum reimbursement.

Now that we have discussed various agencies that affect a nurse’s scope and standards of practice, let’s review various types of health care settings where nurses work and members of the health care team.

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1. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association ↵
2. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association ↵
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1.4: Health Care Settings and Team

Health Care Settings

There are several levels of health care including primary, secondary, and tertiary care. Each of these levels focuses on different aspects of health care and is typically provided in different settings.

Primary Care

Primary care promotes wellness and prevents disease. This care includes health promotion, education, protection (such as immunizations), early disease screening, and environmental considerations. Settings providing this type of health care include physician offices, public health clinics, school nursing, and community health nursing.

Secondary care

Secondary care occurs when a person has contracted an illness or injury and requires medical care. Secondary care is often referred to as acute care. Secondary care can range from uncomplicated care to repair a small laceration or treat a strep throat infection to more complicated emergent care such as treating a head injury sustained in an automobile accident. Whatever the problem, the patient needs medical and nursing attention to return to a state of health and wellness. Secondary care is provided in settings such as physician offices, clinics, urgent care facilities, or hospitals. Specialized units include areas such as burn care, neurosurgery, cardiac surgery, and transplant services.

Tertiary Care

Tertiary care addresses the long-term effects from chronic illnesses or conditions with the purpose to restore a patient's maximum physical and mental function. The goal of tertiary care is to achieve the highest level of functioning possible while managing the chronic illness. For example, a patient who falls and fractures their hip will need secondary care to set the broken bones, but may need tertiary care to regain their strength and ability to walk even after the bones have healed. Patients with incurable diseases, such as dementia, may need specialized tertiary care to provide support they need for daily functioning. Tertiary care settings include rehabilitation units, assisted living facilities, adult day care, skilled nursing units, home care, and hospice centers.

Health Care Team

No matter the setting, quality health care requires a team of health care professionals collaboratively working together to deliver holistic, individualized care. Nursing students must be aware of the roles and contributions of various health care team members. The health care team consists of health care providers, nurses (licensed practical nurses, registered nurses, and advanced registered nurses), unlicensed assistive personnel, and a variety of interprofessional team members.

Health Care Providers

The Wisconsin Nurse Practice Act defines a **provider** as, "A physician, podiatrist, dentist, optometrist, or advanced practice nurse."[1] Providers are responsible for ordering diagnostic tests such as blood work and X-rays, diagnosing a patient's medical condition, developing a medical treatment plan, and prescribing medications. In a hospital setting, the medical treatment plan developed by a provider is communicated in the "History and Physical" component of the patient's medical record with associated prescriptions (otherwise known as "orders"). Prescriptions or "orders" include diagnostic and laboratory tests, medications, and general parameters regarding the care that each patient is to receive. Nurses should respectfully clarify prescriptions they have questions or concerns about to ensure safe patient care. Providers typically visit hospitalized patients daily in what is referred to as "rounds." It is helpful for nurses and nursing students to attend provider rounds for their assigned patients to be aware of and provide input regarding the current medical treatment plan, seek clarification, or ask questions. This helps to ensure that the provider, nurse, and patient have a clear understanding of the goals of care and minimize the need for follow-up phone calls.

Nurses

There are three levels of nurses as defined by each state's Nurse Practice Act: Licensed Practical Nurse/Vocational Nurse (LPN/LVN), Registered Nurse (RN), and Advanced Practice Nurse (APRN).

Licensed Practical/Vocational Nurses

The NCSBN defines a **licensed practical nurse (LPN)** as, "An individual who has completed a state-approved practical or vocational nursing program, passed the NCLEX-PN examination, and is licensed by a state board of nursing to provide patient care."[2] In some states, the term licensed vocational nurse (LVN) is used. LPN/LVNs typically work under the supervision of a registered nurse, advanced practice registered nurse, or physician.[3] LPNs provide "basic nursing care" and work with stable and/or chronically ill populations. **Basic nursing care** is defined by the Wisconsin Nurse Practice Act as "care that can be performed following a defined nursing procedure with minimal modification in which the responses of the patient to the nursing care are predictable."[4] LPN/LVNs typically collect patient assessment information, administer medications, and perform nursing procedures according to their scope of practice in that state. The Open RN *Nursing Skills* textbook discusses the skills and procedures that LPNs frequently perform in Wisconsin. See the following box for additional details about the scope of practice of the Licensed Practical Nurse in Wisconsin.

Scope of Practice for Licensed Practical Nurses in Wisconsin

The Wisconsin Nurse Practice Act defines the scope of practice for Licensed Practical Nurses as the following: "In the performance of acts in basic patient situations, the LPN shall, under the general supervision of an RN or the direction of a provider:

(a) Accept only patient care assignments which the LPN is competent to perform.

(b) Provide basic nursing care.

(c) Record nursing care given and report to the appropriate person changes in the condition of a patient.

(d) Consult with a provider in cases where an LPN knows or should know a delegated act may harm a patient.

(e) Perform the following other acts when applicable:

1. Assist with the collection of data.
2. Assist with the development and revision of a nursing care plan.
3. Reinforce the teaching provided by an RN provider and provide basic health care instruction.
4. Participate with other health team members in meeting basic patient needs."[5]

Registered Nurses

The NCSBN defines a **Registered Nurse** as "An individual who has graduated from a state-approved school of nursing, passed the NCLEX-RN examination and is licensed by a state board of nursing to provide patient care."[6] Registered Nurses (RNs) use the nursing process as a critical thinking model as they make decisions and use clinical judgment regarding patient care. The nursing process is discussed in more detail in the "Nursing Process" chapter of this book. RNs may be delegated tasks from providers or may delegate tasks to LPNs and UAPs with supervision. See the following box for additional details about the scope of practice for Registered Nurses in the state of Wisconsin.

Scope of Practice for Registered Nurses in Wisconsin

(1) GENERAL NURSING PROCEDURES. An RN shall utilize the nursing process in the execution of general nursing procedures in the maintenance of health, prevention of illness or care of the ill. The nursing process consists of the steps of assessment, planning, intervention, and evaluation. This standard is met through performance of each of the following steps of the nursing process:

(a) Assessment. Assessment is the systematic and continual collection and analysis of data about the health status of a patient culminating in the formulation of a nursing diagnosis.

(b) Planning. Planning is developing a nursing plan of care for a patient, which includes goals and priorities derived from the nursing diagnosis.

(c) Intervention. Intervention is the nursing action to implement the plan of care by directly administering care or by directing and supervising nursing acts delegated to LPNs or less skilled assistants.

(d) Evaluation. Evaluation is the determination of a patient's progress or lack of progress toward goal achievement, which may lead to modification of the nursing diagnosis.

(2) PERFORMANCE OF DELEGATED ACTS. In the performance of delegated acts, an RN shall do all of the following:

(a) Accept only those delegated acts for which there are protocols or written or verbal orders.

(b) Accept only those delegated acts for which the RN is competent to perform based on his or her nursing education, training or experience.

(c) Consult with a provider in cases where the RN knows or should know a delegated act may harm a patient.

(d) Perform delegated acts under the general supervision or direction of provider.

(3) SUPERVISION AND DIRECTION OF DELEGATED ACTS. In the supervision and direction of delegated acts, an RN shall do all of the following:

(a) Delegate tasks commensurate with educational preparation and demonstrated abilities of the person supervised.

(b) Provide direction and assistance to those supervised.

(c) Observe and monitor the activities of those supervised.

(d) Evaluate the effectiveness of acts performed under supervision.[7]

Advanced Practice Nurses

Advanced Practice Nurses (APRN) are defined by the NCSBN as an RN who has a graduate degree and advanced knowledge. There are four categories of Advanced Practice Nurses: certified nurse-midwife (CNM), clinical nurse specialist (CNS), certified nurse practitioner (CNP), and certified registered nurse anesthetist (CRNA). APRNs can diagnose illnesses and prescribe treatments and medications. Additional information about advanced nursing degrees and roles is provided in the box below.

Advanced Practice Nursing Roles[8]

Nurse Practitioners: Nurse practitioners (NPs) work in a variety of settings and complete physical examinations, diagnose and treat common acute illness and manage chronic illness, order laboratory and diagnostic tests, prescribe medications and other therapies, provide health teaching and supportive counseling with an emphasis on prevention of illness and health maintenance, and refer patients to other health professionals and specialists as needed. In many states, NPs can function independently and manage their own clinics, whereas in other states physician supervision is required. NP certifications include, but are not limited to, Family Practice, Adult-Gerontology Primary Care and Acute Care, and Psychiatric/Mental Health.

To read more about NP certification, visit Nursing World's *Our Certifications* web page.

Clinical Nurse Specialists: Clinical Nurse Specialists (CNS) practice in a variety of health care environments and participate in mentoring other nurses, case management, research, designing and conducting quality improvement programs, and serving as educators and consultants. Specialty areas include, but are not limited to, Adult/Gerontology, Pediatrics, and Neonatal.

To read more about CNS certification, visit NACNS's *What is a CNS?* web page.

Certified Registered Nurse Anesthetists: Certified Registered Nurse Anesthetists (CRNAs) administer anesthesia and related care before, during, and after surgical, therapeutic, diagnostic, and obstetrical procedures, as well as provide airway management during medical emergencies. CRNAs deliver more than 65 percent of all anesthetics to patients in the United States. Practice settings include operating rooms, dental offices, and outpatient surgical centers.

To read more about CRNA certification, visit NBCRNA's website.

Certified Nurse Midwives: Certified Nurse Midwives provide gynecological exams, family planning advice, prenatal care, management of low-risk labor and delivery, and neonatal care. Practice settings include hospitals, birthing centers, community clinics, and patient homes.

To read more about CNM certification, visit AMCB Midwife's website.

Unlicensed Assistive Personnel

Unlicensed Assistive Personnel (UAP) are defined by the NCSBN as, "Any unlicensed person, regardless of title, who performs tasks delegated by a nurse. This includes certified nursing aides/assistants (CNAs), patient care assistants (PCAs), patient care technicians (PCTs), state tested nursing assistants (STNAs), nursing assistants-registered (NA/Rs), or certified medication aides/assistants (MA-Cs). Certification of UAPs varies between jurisdictions."[9]

CNAs, PCAs, and PCTs in Wisconsin generally work in hospitals and long-term care facilities and assist patients with daily tasks such as bathing, dressing, feeding, and toileting. They may also collect patient information such as vital signs, weight, and input/output as delegated by the nurse. The RN remains accountable that delegated tasks have been completed and documented by the UAP.

Interprofessional Team Members

Nurses, as the coordinator of a patient's care, continuously review the plan of care to ensure all contributions of the multidisciplinary team are moving the patient toward expected outcomes and goals. The roles and contributions of interprofessional health care team members are further described in the following box.

Interprofessional Team Member Roles [10]

Dieticians: Dieticians assess, plan, implement, and evaluate interventions including those relating to dietary needs of those patients who need regular or therapeutic diets. They also provide dietary education and work with other members of the health care team when a client has dietary needs secondary to physical disorders such as dysphagia.

Occupational Therapists (OT): Occupational therapists assess, plan, implement, and evaluate interventions, including those that facilitate the patient's ability to achieve their highest possible level of independence in their activities of daily living such as bathing, grooming, eating, and dressing. They also provide patients adaptive devices such as long shoe horns so the patient can put their shoes on, sock pulls so they can independently pull on socks, adaptive silverware to facilitate independent eating, grabbers so the patient can pick items up from the floor, and special devices to manipulate buttoning so the person can dress and button their clothing independently. Occupational therapists also assess the home for safety and the need for assistive devices when the patient is discharged home. They may recommend modifications to the home environment such as ramps, grab rails, and handrails to ensure safety and independence. Like physical therapists, occupational therapists practice in all health care environments including the home, hospital, and rehabilitation centers.

Pharmacists: Pharmacists ensure the safe prescribing and dispensing of medication and are a vital resource for nurses with questions or concerns about medications they are administering to patients. Pharmacists ensure that patients not only get the correct medication and dosing, but also have the guidance they need to use the medication safely and effectively.

Physical Therapists (PT): Physical therapists are licensed health care professionals who assess, plan, implement, and evaluate interventions including those related to the patient's functional abilities in terms of their strength, mobility, balance, gait, coordination, and joint range of motion. They supervise prescribed exercise activities according to a patient's condition and also provide and teach patients how to use assistive aids like walkers and canes and exercise regimens. Physical therapists practice in all health care environments including the home, hospital, and rehabilitation centers.

Podiatrists: Podiatrists provide care and services to patients who have foot problems. They often work with diabetic patients to clip toenails and provide foot care to prevent complications.

Prosthetists: Prosthetists design, fit, and supply the patient with an artificial body part such as a leg or arm prosthesis. They adjust prosthesis to ensure proper fit, patient comfort, and functioning.

Psychologists and Psychiatrists: Psychologists and psychiatrists provide mental health and psychiatric services to patients with mental health disorders and provide psychological support to family members and significant others as indicated.

Respiratory Therapists: Respiratory therapists treat respiratory-related conditions in patients. Their specialized respiratory care includes managing oxygen therapy; drawing arterial blood gases; managing patients on specialized oxygenation devices such as mechanical ventilators, CPAP, and Bi-PAP machines; administering respiratory medications like inhalers and

nebulizers; intubating patients; assisting with bronchoscopy and other respiratory-related diagnostic tests; performing pulmonary hygiene measures like chest physiotherapy; and serving an integral role during cardiac and respiratory arrests.

Social Workers: Social workers counsel patients and provide psychological support, help set up community resources according to patients' financial needs, and serve as part of the team that ensures continuity of care after the person is discharged.

Speech Therapists: Speech therapists assess, diagnose, and treat communication and swallowing disorders. For example, speech therapists help patients with a disorder called **expressive aphasia**. They also assist patients with using word boards and other electronic devices to facilitate communication. They assess patients with swallowing disorders called **dysphagia** and treat them in collaboration with other members of the health care team including nurses, dieticians, and health care providers.

Ancillary Department Members: Nurses also work with ancillary departments such as laboratory and radiology departments. **Clinical laboratory departments** provide a wide range of laboratory procedures that aid health care providers to diagnose, treat, and manage patients. These laboratories are staffed by medical technologists who test biological specimens collected from patients. Examples of laboratory tests performed include blood tests, blood banking, cultures, urine tests, and histopathology (changes in tissues caused by disease).[11] **Radiology departments** use imaging to assist providers in diagnosing and treating diseases seen within the body. They perform diagnostic tests such as X-rays, CTs, MRIs, nuclear medicine, PET scans, and ultrasound scans.

Chain of Command

Nurses rarely make patient decisions in isolation, but instead consult with other nurses and interprofessional team members. Concerns and questions about patient care are typically communicated according to that agency's chain of command. In the military, **chain of command** refers to a hierarchy of reporting relationships – from the bottom to the top of an organization – regarding who must answer to whom. The chain of command not only establishes accountability, but also lays out lines of authority and decision-making power. The chain of command also applies to health care. For example, a registered nurse in a hospital may consult a "charge nurse," who may consult the "nurse supervisor," who may consult the "director of nursing," who may consult the "vice president of nursing." In a long-term care facility, a licensed practical/vocational nurse typically consults the registered nurse/charge nurse, who may consult with the director of nursing. Nursing students should always consult with their nursing instructor regarding questions or concerns about patient care before "going up the chain of command."

Nurse Specialties

Registered nurses can obtain several types of certifications as a nurse specialist. **Certification** is the formal recognition of specialized knowledge, skills, and experience demonstrated by the achievement of standards identified by a nursing specialty. See the following box for descriptions of common nurse specialties.

Common Nurse Specialties

Critical Care Nurses provide care to patients with serious, complex, and acute illnesses or injuries that require very close monitoring and extensive medication protocols and therapies. Critical care nurses most often work in intensive care units of hospitals.

Public Health Nurses work to promote and protect the health of populations based on knowledge from nursing, social, and public health sciences. Public Health Nurses most often work in municipal and state health departments.

Home Health/Hospice Nurses provide a variety of nursing services for chronically ill patients and their caregivers in the home, including end-of-life care.

Occupational/Employee Health Nurses provide health screening, wellness programs and other health teaching, minor treatments, and disease/medication management services to people in the workplace. The focus is on promotion and restoration of health, prevention of illness and injury, and protection from work-related and environmental hazards.

Oncology Nurses care for patients with various types of cancer, administering chemotherapy and providing follow-up care, teaching, and monitoring. Oncology nurses work in hospitals, outpatient clinics, and patients' homes.

Perioperative/Operating Room Nurses provide preoperative and postoperative care to patients undergoing anesthesia or assist with surgical procedures by selecting and handling instruments, controlling bleeding, and suturing incisions. These nurses work in hospitals and outpatient surgical centers.

Rehabilitation Nurses care for patients with temporary and permanent disabilities within inpatient and outpatient settings such as clinics and home health care.

Psychiatric/Mental Health Nurses specialize in mental and behavioral health problems and provide nursing care to individuals with psychiatric disorders. Psychiatric nurses work in hospitals, outpatient clinics, and private offices.

School Nurses provide health assessment, intervention, and follow-up to maintain school compliance with health care policies and ensure the health and safety of staff and students. They administer medications and refer students for additional services when hearing, vision, and other issues become inhibitors to successful learning.

Other common specialty areas include a life span approach across health care settings and include maternal-child, neonatal, pediatric, and gerontological nursing.[12]

Now that we have discussed various settings where nurses work and various nursing roles, let's review levels of nursing education and the national licensure exam (NCLEX).

1. Wisconsin Administrative Code. (2018). *Chapter N 6 standards of practice for registered nurses and licensed practical nurses.*https://docs.legis.wisconsin.gov/code/admin_code/n/6.pdf↵
2. NCSBN. https://www.ncsbn.org/↵
3. NCSBN. https://www.ncsbn.org/index.htm↵
4. Wisconsin Administrative Code. (2018). *Chapter N 6 standards of practice for registered nurses and licensed practical nurses*. https://docs.legis.wisconsin.gov/code/admin_code/n/6.pdf↵
5. Wisconsin Administrative Code. (2018). *Chapter N 6 standards of practice for registered nurses and licensed practical nurses*. https://docs.legis.wisconsin.gov/code/admin_code/n/6.pdf↵
6. NCSBN. https://www.ncsbn.org/index.htm↵
7. Wisconsin Administrative Code. (2018). *Chapter N 6 standards of practice for registered nurses and licensed practical nurses*. https://docs.legis.wisconsin.gov/code/admin_code/n/6.pdf↵
8. Institute of Medicine (US) Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing at the Institute of Medicine. (2011). *The future of nursing: Leading change, advancing health.* National Academies Press. https://www.nap.edu/catalog/12956/the-future-of-nursing-leading-change-advancing-health↵
9. NCSBN. https://www.ncsbn.org/index.htm↵
10. Burke, A. (2020, January 15). *Collaboration with interdisciplinary team: NCLEX-RN*. RegisteredNursing.org. https://www.registerednursing.org/nclex/collaboration-interdisciplinary-team/#collaborating-healthcare-members-disciplines-providing-client-care↵
11. This work is a derivative of StatPearls by Bayot and Naidoo and licensed under CC BY 4.0↵
12. Institute of Medicine (US) Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing at the Institute of Medicine. (2011). *The future of nursing: Leading change, advancing health*. National Academies Press. https://www.nap.edu/catalog/12956/the-future-of-nursing-leading-change-advancing-health↵

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1.5: Nursing Education and the NCLEX

Nursing Education and the NCLEX

Everyone who wants to become a nurse has a story to tell about why they want to enter the nursing profession. What is your story? Perhaps it has been a lifelong dream to become a Life Flight nurse, or maybe you became interested after watching a nurse help you or a family member through the birth of a baby, heal from a challenging illness, or assist a loved one at the end of life. Whatever the reason, everyone who wants to become a nurse must do two things: graduate from a state-approved nursing program and pass the National Council Licensure Exam (known as the NCLEX).

Nursing Programs

There are several types of nursing programs you can attend to become a nurse. If your goal is to become a **Licensed Practical Nurse (LPN)**, you must successfully complete a one-year nursing program, pass the NCLEX-PN exam, and apply to your state board of nursing to receive a LPN license.

If you want to become a **Registered Nurse**, you can obtain either a two-year associate degree (ADN) or a four-year baccalaureate of science in nursing degree (BSN). Associate degree nursing graduates often enroll into a baccalaureate or higher degree program after they graduate. Many hospitals hire ADN nurses on a condition they complete their BSN within a specific time frame. A BSN is required for military nursing, case management, public health nursing, and school-based nursing services. Another lesser-known option to become an RN is to complete a three-year hospital-based diploma program, which was historically the most common way to become a nurse. Diploma programs have slowly been replaced by college degrees, and now only nine states offer this option.[1] After completing a diploma program, associate degree, or baccalaureate degree, nursing graduates must successfully pass the NCLEX-RN to apply for a registered nursing license from their state's Board of Nursing.

NCLEX

Nursing graduates must successfully pass the National Council Licensure Examination (NCLEX) to receive a nursing license. Registered nurses must successfully pass the NCLEX-RN exam, and Licensed Practical Nurses (LPNs) or Licensed Vocational Nurses (LVNs) must pass the NCLEX-PN exam.

The NCLEX-PN and NCLEX-RN are online, adaptive tests taken at a specialized testing center. The NCLEX tests knowledge, skills, and abilities essential to the safe and effective practice of nursing at the entry level. NCLEX exams are continually reviewed and updated based on surveys of newly graduated nurses every three years.

Both the NCLEX-RN and the NCLEX-PN are variable length tests that adapt as you answer the test items. The NCLEX-RN examination can be anywhere from 75 to 265 items, depending on how quickly you are able to demonstrate your proficiency. Of these items, 15 are unscored test items. The time limit for this examination is six hours. The NCLEX-PN examination can be anywhere from 85 to 205 items. Of these items, 25 are unscored items. The time limit for this examination is five hours.[2]

In 2023, the Next Generation NCLEX (NGN) is anticipated to go into effect. Examination questions on the NGN will use the new Clinical Judgment Measurement Model as a framework to measure prelicensure nursing graduates' clinical judgment and decision-making. The critical thinking model called the "Nursing Process" (discussed in Chapter 4 of this book) will continue to underlie the NGN, but candidates will notice new terminology used to assess their decision-making. For example, candidates may be asked to "recognize cues," "analyze cues," "create a hypothesis," "prioritize hypotheses," "generate solutions," "take actions," or "evaluate outcomes."[3] For this reason, many of the case studies and learning activities included in this book will use similar terminology as the NGN.

There will also be new types of examination questions on the NGN, including case studies, enhanced hot spots, drag and drop ordering of responses, multiple responses, and embedded answer choices within paragraphs of text. View sample NGN questions in the following hyperlink. NCSBN's rationale for including these types of questions is to "measure the nursing clinical judgment and decision-making ability of prospective entry-level nurses to protect the public's health and welfare by assuring that safe and competent nursing care is provided by licensed nurses."[4] Similar questions have been incorporated into learning activities throughout this textbook.

Use the hyperlinks below to read more information about the NCLEX and the Next Generation NCLEX.

Note

Read more information about the NCLEX & Test Plans.

Review sample Next Generation NCLEX questions at https://www.ncsbn.org/NGN-Sample-Questions.pdf.

Nurse Licensure Compact

The **Nurse Licensure Compact (NLC)** allows a nurse to have one multistate nursing license with the ability to practice in their home state, as well as in other compact states. As of 2020, 33 states have implemented NLC legislation.

Note

Read additional details about the Nurse Licensure Compact.

Advanced Nursing Degrees

After obtaining an RN license, nurses can receive advanced degrees to expand their opportunities in the nursing profession.

Master's Degree in Nursing

A Master's of Science in Nursing Degree (MSN) requires additional credits and years of schooling beyond the BSN. There are a variety of potential focuses in this degree, including Nurse Educator and Advanced Practice Nurse (APRN). Certifications associated with an MSN degree are Certified Nurse Educator (CNE), Nurse Practitioner (NP), Clinical Nurse Specialist (CNS), Certified Registered Nurse Anesthetist (CRNA), and Certified Nurse Midwife (CNM). Certifications require the successful completion of a certification exam, as well as continuing education requirements to maintain the certification. Scope of practice for advanced practice nursing roles is defined by each state's Nurse Practice Act.

Doctoral Degrees in Nursing

Doctoral nursing degrees include the Doctor of Philosophy in Nursing (PhD) and the Doctor of Nursing Practice (DNP). PhD-prepared nurses complete doctoral work that is focused on research. They often teach in a university setting or environment to conduct research. DNP-prepared nurses complete doctoral work that is focused on clinical nursing practice. They typically have work roles in advanced nursing practice, clinical leadership, or academic settings.

Lifelong Learning

No matter what nursing role or level of nursing education you choose, nursing practice changes rapidly and is constantly updated with new evidence-based practices. Nurses must commit to lifelong learning to continue to provide safe, quality care to their patients. Many states require continuing education credits to renew RN licenses, whereas others rely on health care organizations to set education standards and ongoing educational requirements.

Now that we have discussed nursing roles and education, let's review legal and ethical considerations in nursing.

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1. NCSBN. (2019). *2018 NCLEX examination statistics 77*. https://www.ncsbn.org/2018_NCLEXExamStats.pdf↵
2. NCSBN. (2019). *NCLEX & Other Exams*. https://www.ncsbn.org/nclex.htm↵
3. NCSBN. (2021). *NCSBN Next Generation NCLEX Project*. https://www.ncsbn.org/next-generation-nclex.htm↵
4. NCSBN. (2021). *NCSBN Next Generation NCLEX Project*. https://www.ncsbn.org/next-generation-nclex.htm↵

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1.6: Legal Considerations and Ethics

Legal Considerations

As discussed earlier in this chapter, nurses can be reprimanded or have their licenses revoked for not appropriately following the Nurse Practice Act in the state they are practicing. Nurses can also be held legally liable for negligence, malpractice, or breach of patient confidentiality when providing patient care.

Negligence and Malpractice

Negligence is a "general term that denotes conduct lacking in due care, carelessness, and a deviation from the standard of care that a reasonable person would use in a particular set of circumstances."[1] **Malpractice** is a more specific term that looks at a standard of care, as well as the professional status of the caregiver." [2]

To prove negligence or malpractice, the following elements must be established in a court of law:

- Duty owed the patient
- Breach of duty owed the patient
- Foreseeability
- Causation
- Injury
- Damages[3]

To avoid being sued for negligence or malpractice, it is essential for nurses and nursing students to follow the scope and standards of practice care set forth by their state's Nurse Practice Act; the American Nurses Association; and employer policies, procedures, and protocols to avoid the risk of losing their nursing license. Examples of nurses breach of duty that can be viewed as negligence include:[4]

- Failure to Assess: Nurses should assess for all potential nursing problems/diagnoses, not just those directly affected by the medical disease. For example, all patients should be assessed for fall risk and appropriate fall precautions implemented.
- Insufficient monitoring: Some conditions require frequent monitoring by the nurse, such as risk for falls, suicide risk, confusion, and self-injury.
- Failure to Communicate:
  - Lack of documentation: A basic rule of thumb in a court of law is that if an assessment or action was not documented, it is considered not done. Nurses must document all assessments and interventions, in addition to the specific type of patient documentation called a nursing care plan.
  - Lack of provider notification: Changes in patient condition should be urgently communicated to the health care provider based on patient status. Documentation of provider notification should include the date, time, and person notified and follow-up actions taken by the nurse.
- Failure to Follow Protocols: Agencies and states have rules for reporting certain behaviors or concerns. For example, a nurse is required to report suspicion of patient, child, or elder abuse based on data gathered during an assessment.

Patient Confidentiality

In addition to negligence and malpractice, patient confidentiality is a major legal consideration for nurses and nursing students. **Patient confidentiality** is the right of an individual to have personal, identifiable medical information, referred to as protected health information (PHI), kept private. This right is protected by federal regulations called the Health Insurance Portability and Accountability Act (HIPAA). HIPAA was enacted in 1996 and was prompted by the need to ensure privacy and protection of personal health records and data in an environment of electronic medical records and third-party insurance payers. There are two main sections of HIPAA law, the Privacy Rule and the Security Rule. The Privacy Rule addresses the use and disclosure of individuals' health information. The Security Rule sets national standards for protecting the confidentiality, integrity, and availability of electronically protected health information. HIPAA regulations extend beyond medical records and apply to patient information shared with others. Therefore, all types of patient information should only be shared with health care team members who are actively providing care to them.

How do HIPAA regulations affect you as a student nurse? You are required to adhere to HIPAA guidelines from the moment you begin to provide patient care. Nursing students may be disciplined or expelled by their nursing program for violating HIPAA. Nurses who violate HIPAA rules may be fired from their jobs or face lawsuits. See the following box for common types of HIPAA violations and ways to avoid them.

Common HIPAA Violations and Ways to Avoid Them [5]

1. **Gossiping in the hallways or otherwise talking about patients where other people can hear you.** It is understandable that you will be excited about what is happening when you begin working with patients and your desire to discuss interesting things that occur. As a student, you will be able to discuss patient care in a confidential manner behind closed doors with your instructor. However, as a health care professional, do not talk about patients in the hallways, elevator, breakroom, or with others who are not directly involved with that patient's care because it is too easy for others to overhear what you are saying.
2. **Mishandling medical records or leaving medical records unsecured.** You can breach HIPAA rules by leaving your computer unlocked for anyone to access or by leaving written patient charts in unsecured locations. You should never share your password with anyone else. Make sure that computers are always locked with a password when you step away from them and paper charts are closed and secured in an area where unauthorized people don't have easy access to them. NEVER take records from a facility or include a patient's name on paperwork that leaves the facility.
3. **Illegally or unauthorized accessing of patient files.** If someone you know, like a neighbor, coworker, or family member is admitted to the unit you are working on, do not access their medical record unless you are directly caring for them. Facilities have the capability of tracing everything you access within the electronic medical record and holding you accountable. This rule holds true for employees who previously cared for a patient as a student; once your shift is over as a student, you should no longer access that patient's medical records.
4. **Sharing information with unauthorized people.** Anytime you share medical information with anyone but the patient themselves, you must have written permission to do so. For instance, if a husband comes to you and wants to know his spouse's lab results, you must have permission from his spouse before you can share that information with him. Just confirming or denying that a patient has been admitted to a unit or agency can be considered a breach of confidentiality.
5. **Information can generally be shared with the parents of children until they turn 18, although there are exceptions to this rule if the minor child seeks birth control, an abortion, or becomes pregnant.** After a child turns 18, information can no longer be shared with the parent unless written permission is provided, even if the minor is living at home and/or the parents are paying for their insurance or health care. As a general rule, any time you are asked for patient information, check first to see if the patient has granted permission.
6. **Texting or e-mailing patient information on an unencrypted device.** Only use properly encrypted devices that have been approved by your health care facility for e-mailing or faxing protected patient information. Also, ensure that the information is being sent to the correct person, address, or phone number.
7. **Sharing information on social media.** Never post anything on social media that has anything to do with your patients, the facility where you are working or have clinical, or even how your day went at the agency. Nurses and other professionals have been fired for violating HIPAA rules on social media. [6] [7] [8]

Social Media Guidelines

Nursing students, nurses, and other health care team members must use extreme caution when posting to Facebook, Instagram, Twitter, Snapchat, and other social media sites. Information related to patients, patient care, and/or health care agencies should never be posted on social media; health care team members who violate this guideline can lose their jobs and may face legal action and students can be disciplined or expelled from their nursing program. Be aware that even if you think you are posting in a private group, the information can become public.

The American Nurses Association (ANA) has established the following principles for nurses using social media: [9]

- Nurses must not transmit or place online individually identifiable patient information.
- Nurses must observe ethically prescribed professional patient-nurse boundaries.
- Nurses should understand that patients, colleagues, organizations, and employers may view postings.

- Nurses should take advantage of privacy settings and seek to separate personal and professional information online.
- Nurses should bring content that could harm a patient's privacy, rights, or welfare to the attention of appropriate authorities.
- Nurses should participate in developing organizational policies governing online conduct.

In addition to these principles, the ANA has also provided these tips for nurses and nursing students using social media:[10]

- Remember that standards of professionalism are the same online as in any other circumstance.
- Do not share or post information or photos gained through the nurse-patient relationship.
- Maintain professional boundaries in the use of electronic media. Online contact with patients blurs this boundary.
- Do not make disparaging remarks about patients, employers, or coworkers, even if they are not identified.
- Do not take photos or videos of patients on personal devices, including cell phones.
- Promptly report a breach of confidentiality or privacy.

Note

Read more about the ANA's Social Media Principles.

View the *Social Media Guidelines for Nurses* video from the National Council of State Boards of Nursing (NCSBN) on using social media responsibly.

Code of Ethics

In addition to legal considerations, there are also several ethical guidelines for nursing care.

There is a difference between morality, ethical principles, and a **code of ethics**. **Morality** refers to "personal values, character, or conduct of individuals within communities and societies."[11] An **ethical principle** is a general guide, basic truth, or assumption that can be used with clinical judgment to determine a course of action. Four common ethical principles are beneficence (do good), nonmaleficence (do no harm), autonomy (control by the individual), and justice (fairness). A code of ethics is set for a profession and makes their primary obligations, values, and ideals explicit.

The American Nursing Association (ANA) guides nursing practice with the *Code of Ethics for Nurses*.[12] This code provides a framework for ethical nursing care and a guide for decision-making. The Code of Ethics for Nurses serves the following purposes:

- It is a succinct statement of the ethical values, obligations, duties, and professional ideals of nurses individually and collectively.
- It is the profession's nonnegotiable ethical standard.
- It is an expression of nursing's own understanding of its commitment to society.[13]

The ANA Code of Ethics contains nine provisions. See a brief description of each provision in the following box.

Provisions of the ANA Code of Ethics [14]

The nine provisions of the ANA Code of Ethics are briefly described below. The full code is available to read for free at Nursingworld.org.

Provision 1: The nurse practices with compassion and respect for the inherent dignity, worth, and unique attributes of every person.

Provision 2: The nurse's primary commitment is to the patient, whether an individual, family, group, community, or population.

Provision 3: The nurse promotes, advocates for, and protects the rights, health, and safety of the patient.

Provision 4: The nurse has authority, accountability, and responsibility for nursing practice; makes decisions; and takes action consistent with the obligation to promote health and to provide optimal care.

Provision 5: The nurse owes the same duties to self as to others, including the responsibility to promote health and safety, preserve wholeness of character and integrity, maintain competence, and continue personal and professional growth.

Provision 6: The nurse, through individual and collective effort, establishes, maintains, and improves the ethical environment of the work setting and conditions of employment that are conducive to safe, quality health care.

Provision 7: The nurse, in all roles and settings, advances the profession through research and scholarly inquiry, professional standards development, and the generation of both nursing and health policy.

Provision 8: The nurse collaborates with other health professionals and the public to protect human rights, promote health diplomacy, and reduce health disparities.

Provision 9: The profession of nursing, collectively through its professional organizations, must articulate nursing values, maintain the integrity of the profession, and integrate principles of social justice into nursing and health policy.

The ANA Center for Ethics and Human Rights

In addition to publishing the Code of Ethics, the ANA Center for Ethics and Human Rights was established to help nurses navigate ethical and value conflicts and life-and-death decisions, many of which are common to everyday practice.

Note

Read more information about the ANA Center for Ethics and Human Rights.

Check your knowledge with the following questions:

1. Missouri Department of Health & Senior Services. (n.d.). *Negligence and malpractice.*https://health.mo.gov/living/lpha/phnursing/negligence.php#:~:text=Negligence%20is%3A,a%20particular%20set%20of%20circumstances.↵
2. Missouri Department of Health & Senior Services. (n.d.). *Negligence and malpractice*. https://health.mo.gov/living/lpha/phnursing/negligence.php#:~:text=Negligence%20is%3A,a%20particular%20set%20of%20circumstances. ↵
3. Missouri Department of Health & Senior Services. (n.d.). *Negligence and malpractice.*https://health.mo.gov/living/lpha/phnursing/negligence.php#:~:text=Negligence%20is%3A,a%20particular%20set%20of%20circumstances. ↵
4. Vera, M. (2020). *Nursing care plan (NCP): Ultimate guide and database*. https://nurseslabs.com/nursing-care-plans/#:~:text=Collaborative%20interventions%20are%20actions%20that,to%20gain%20their%20professional%20viewpoint. ↵
5. Patterson, A. (2018, July 3). *Most common HIPAA violations with examples*. Inspired eLearning. https://inspiredelearning.com/blog/hipaa-violation-examples/↵
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1.7: Professional Organizations

Professional Nursing Organizations

In addition to the ANA's *Nursing: Scope and Standards of Practice* and *Code of Ethics for Nurses*, there are several professional nursing organizations that provide specialized standards for nursing care and promote continuous quality improvement. The following box contains examples of many organizations that significantly guide the overall nursing profession.

Examples of Professional Nursing Organizations

American Nursing Association

As described previously in this chapter, the American Nurses Association (ANA) guides professional nursing practice with publications, in addition to establishing the ANA Scope and Standards of Practice and ANA Code of Ethics. The ANA also publishes a monthly journal on nursing topics for its members called *The American Nurse*.

Read more information about the ANA.

American Nurses Credentialing Center

The American Nurses Credentialing Center (ANCC) credentials both organizations and individuals. ANCC certification provides individual nurses certification in specialized nursing knowledge.

The ANCC accreditation program recognizes the importance of high-quality continuing nursing education, interprofessional continuing education, transition to practice programs, and skills-based competency programs. Around the world, ANCC-accredited organizations provide nurses with the knowledge and skills to help improve care and patient outcomes.

Read more about the American Nurses Credentialing Center

National League for Nursing

The focus of the National League for Nursing (NLN) is to promote excellence in nursing education. The NLN establishes standards and evaluates nursing education programs, promotes faculty development, funds nursing education research, and publishes the research journal *Nursing Education Perspectives*.[1]

Read more about the National League for Nursing.

Accreditation Commission for Education in Nursing

The Accreditation Commission for Education in Nursing (ACEN) is one of the organizations that provide accreditation for nursing education to recognize educational institutions or programs that have been found to meet or exceed standards and criteria for educational quality. ACEN provides accreditation for each of the 16 technical colleges in the Wisconsin Technical College System. As a nursing student, you may be asked to provide vital feedback to ACEN site visitors on your nursing program.

Read more about ACEN accreditation.

Commission on Collegiate Nursing Education

The Commission on Collegiate Nursing Education (CCNE) ensures the quality and integrity of baccalaureate, graduate, and residency programs in nursing.

Read more about CCNE accreditation.

National Student Nurses' Association

The mission of the National Student Nurses' Association (NSNA) is to "mentor students preparing for initial licensure as registered nurses, and to convey the standards, ethics, and skills that students will need as responsible and accountable leaders and members of the profession."[2] NSNA holds national conventions and publishes the journal *Imprint*.

Read more about the National Student Nurses' Association.

Specialty Nursing Organizations

There are many specialty organizations that provide certification, publish scope of practice documents for that specialty, and issue position statements.[3] Read more about various specialty organizations using the following hyperlinks.

Academy of Medical-Surgical Nurses

Wound, Ostomy and Continence Nursing

Perioperative Nursing

Association of Women's Health, Obstetric, and Neonatal Nurses

Note

View the AMSN YouTube video[4] from the former president of the Academy of Medical-Surgical Nurses about important nursing issues.

1. Wisconsin Administrative Code. (2018). *Chapter N 6 standards of practice for registered nurses and licensed practical nurses*. https://docs.legis.wisconsin.gov/code/admin_code/n/6.pdf↵
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1.8: Quality and Evidence-Based Practice

The American Nursing Association (ANA), various professional nursing organizations, and federal agencies continually work to improve the quality of patient care. Nurses must also be individually dedicated to providing quality patient care based on current evidence-based practices.

Quality of Practice

One of the American Nurses Association (ANA) Standards of Professional Practice is "Quality of Practice." This standard emphasizes that "nursing practice is safe, effective, efficient, equitable, timely, and person-centered."[1] **Quality** is defined as, "The degree to which nursing services for healthcare consumers, families, groups, communities, and populations increase the likelihood of desirable outcomes and are consistent with evolving nursing knowledge."[2] Every nurse is responsible for providing quality care to their patients by following the standards set forth by various organizations, as well as personally incorporating evidence-based practice. Quality is everyone's responsibility and it takes the entire health care team to ensure that quality care is provided to each and every patient. For example, turning an immobile patient every two hours to prevent pressure injuries requires the dedication of many staff members throughout the day and night. Quality actions can also be formalized on a specific unit, such as the review of data related to patient falls with specific unit-based interventions formally put into place. This commitment to quality practice requires lifelong learning after you have completed your formal nursing education to remain current with new evidence-based practices.

Learning how to provide safe, quality nursing practice begins in nursing school. The Quality and Safety Education for Nurses (QSEN) project encourages future nurses to continuously improve the quality and safety of the health care systems in which they work. The vision of the QSEN project is to "inspire health care professionals to put quality and safety as core values to guide their work."[3] Nurses and nursing students are expected to participate in quality improvement (QI) initiatives by identifying gaps where change is needed and implementing initiatives to resolve these gaps. **Quality improvement** is defined as the combined and unceasing efforts of everyone – health care professionals, patients and their families, researchers, payers, planners, and educators – to make the changes that will lead to optimal patient outcomes (health), improved system performance (care), and enhanced professional development (learning).[4] As a nursing student, you can immediately begin to contribute to improving the quality of nursing practice by participating in quality improvement initiatives.

> **Note**
>
> Read more about the QSEN project.

Evidence-Based Practice in Nursing

Evidence-based practice is a component of ANA's "Scholarly Inquiry" Standard of Professional Practice. Evidence-based practice is defined as, "A lifelong problem-solving approach that integrates the best evidence from well-designed research studies and evidence-based theories; clinical expertise and evidence from assessment of the healthcare consumer's history and condition, as well as health care resources; and patient, family, group, community, and population preferences and values."[5]

Utilizing evidence-based practice means that nurses and nursing students provide patient care based on research studies and clinical expertise and do not just do something "because that's the way we've always done it." A simple example of nurses promoting evidence-based practice to help patients is using peppermint to relieve nausea. Throughout history, peppermint was used for an upset stomach and to relieve the feeling of nausea. This idea was frequently rejected in the medical field because there was no scientific evidence to support it. However, In 2016, Lynn Bayne and Helen Hawrylack, two nurse researchers, developed a peppermint inhaler for patients to use when they were feeling nauseated and found it was 93% effective in relieving nausea.[6]

Nursing students should implement evidence-based practice as they begin their nursing career by ensuring the resources they use to prepare for patient care are valid and credible. For this reason, hyperlinks to credible and reliable sources are provided throughout this textbook.

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1.9: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Apply what you have learned from this chapter by completing the following learning activities:

1. You are a nursing student observing the Critical Care Unit (CCU) as part of your clinical course. You have been assisting a critical care nurse with the care of a patient who has been experiencing significantly low blood pressures throughout the day. The nurse has to step away from the bedside to take a phone call and instructs you to increase the intravenous (IV) medication if the patient’s systolic blood pressure drops below 90 mmHg. What is the appropriate response to this instruction?

2. You are completing a clinical rotation on a medical surgical unit and are invited to join a few staff nurses in the breakroom for a lunch break. While you are in the breakroom, you notice one of the staff nurses complaining loudly about a patient and discussing sensitive patient care information. What is an appropriate response to this situation?

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1.10: Glossary

Advanced Practice Nurse (APRN): An RN who has a graduate degree and advanced knowledge. There are four categories of APRNs: certified nurse-midwife (CNM), clinical nurse specialist (CNS), certified nurse practitioner (CNP), or certified registered nurse anesthetist (CRNA). These nurses can diagnose illnesses and prescribe treatments and medications.[1]

ANA Standards of Professional Nursing Practice: Authoritative statements of the duties that all registered nurses, regardless of role, population, or specialty, are expected to perform competently. The Standards of Professional Nursing Practice describe a competent level of nursing practice as demonstrated by the critical thinking model known as the nursing process. The nursing process includes the components of assessment, diagnosis, outcomes identification, planning, implementation, and evaluation.[2]

ANA Standards of Professional Performance: Standards that describe a competent level of behavior in the professional role of the nurse, including activities related to ethics, advocacy, respectful and equitable practice, communication, collaboration, leadership, education, scholarly inquiry, quality of practice, professional practice evaluation, resource stewardship, and environmental health.[3]

Basic nursing care: Care that can be performed following a defined nursing procedure with minimal modification in which the responses of the patient to the nursing care are predictable.[4]

Board of Nursing: The state-specific licensing and regulatory body that sets the standards for safe nursing care, decides the scope of practice for nurses within its jurisdiction, and issues licenses to qualified candidates.

Chain of command: A hierarchy of reporting relationships in an agency that establishes accountability and lays out lines of authority and decision-making power.

Code of ethics: A code that applies normative, moral guidance for nurses in terms of what they ought to do, be, and seek. A code of ethics makes the primary obligations, values, and ideals of a profession explicit.

Dysphagia: Impaired swallowing.

Ethical principle: An ethical principle is a general guide, basic truth, or assumption that can be used with clinical judgment to determine a course of action. Four common ethical principles are beneficence (do good), nonmaleficence (do no harm), autonomy (control by the individual), and justice (fairness).

Evidence-based practice: A lifelong problem-solving approach that integrates the best evidence from well-designed research studies and evidence-based theories; clinical expertise and evidence from assessment of the health consumer's history and condition, as well as health care resources; and patient, family, group, community, and population preferences and values.[5]

Expressive aphasia: The impaired ability to form words and speak.

Licensed Practical Nurse/Vocational Nurse (LPN/LVN): An individual who has completed a state-approved practical or vocational nursing program, passed the NCLEX-PN examination, and is licensed by their state Board of Nursing to provide patient care.[6]

Malpractice: A specific term that looks at a standard of care, as well as the professional status of the caregiver.[7]

Morality: Personal values, character, or conduct of individuals within communities and societies.[8]

Negligence: A "general term that denotes conduct lacking in due care, carelessness, and a deviation from the standard of care that a reasonable person would use in a particular set of circumstances."[9]

Nurse Licensure Compact (NLC): Allows a nurse to have one multistate license with the ability to practice in the home state and other compact states.

Nursing: Nursing integrates the art and science of caring and focused on the protection, promotion, and optimization of health and human functioning; prevention of illness and injury; facilitation of healing; and alleviation of suffering through compassionate presence. Nursing is the diagnosis and treatment of human responses and advocacy in the care of individuals, families, groups, communities, and populations in recognition of the connection of all humanity.[10]

Nurse Practice Act (NPA): Legislation enacted by each state that establishes regulations for nursing practice within that state by defining the requirements for licensure, as well as the scope of nursing practice.

Patient confidentiality: Keeping your patient's Protected Health Information (PHI) protected and known only by those health care team members directly providing care for the patient.

Primary care: Care that is provided to patients to promote wellness and prevent disease from occurring. This includes health promotion, education, protection (such as immunizations), early disease screening, and environmental considerations.

Protocol: A precise and detailed written plan for a regimen of therapy.[11]

Provider: A physician, podiatrist, dentist, optometrist, or advanced practice nurse provider.[12]

Quality: The degree to which nursing services for health care consumers, families, groups, communities, and populations increase the likelihood of desirable outcomes and are consistent with evolving nursing knowledge."[13]

Registered Nurse (RN): An individual who has graduated from a state-approved school of nursing, passed the NCLEX-RN examination, and is licensed by a state board of nursing to provide patient care.[14]

Safety culture: A culture established within health care agencies that empowers nurses, nursing students, and other staff members to speak up about risks to patients and to report errors and near misses, all of which drive improvement in patient care and reduce the incident of patient harm.

Scope of practice: Services that a qualified health professional is deemed competent to perform and permitted to undertake – in keeping with the terms of their professional license.

Secondary care: Care that occurs when a person has contracted an illness or injury and is in need of medical care.

Tertiary care: A type of care that deals with the long-term effects from chronic illness or condition, with the purpose to restore physical and mental function that may have been lost. The goal is to achieve the highest level of functioning possible with this chronic illness.

Unlicensed Assistive Personnel: Any unlicensed person, regardless of title, who performs tasks delegated by a nurse. This includes certified nursing aides/assistants (CNAs), patient care assistants (PCAs), patient care technicians (PCTs), state tested nursing assistants (STNAs), nursing assistants-registered (NA/Rs) or certified medication aides/assistants (MA-Cs). Certification of UAPs varies between jurisdictions.[15]

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2. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
3. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
4. Wisconsin Administrative Code. (2018). *Chapter N 6 standards of practice for registered nurses and licensed practical nurses.*https://docs.legis.wisconsin.gov/code/admin_code/n/6.pdf↵
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CHAPTER OVERVIEW

2: Communication

2.1: Communication Introduction
2.2: Basic Communication Concepts
2.3: Communicating with Patients
2.4: Communicating with Health Care Team Members
2.5: Documentation
2.6: Putting It All Together
2.7: Learning Activities
2.8: II Glossary

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2.1: Communication Introduction

Learning Objectives

- Assess one's own communication skills and effectiveness[1]
- Demonstrate cultural humility, professionalism, and respect when communicating[2]
- Use communication styles and methods that demonstrate caring, respect, active listening, authenticity, and trust[3]
- Maintain communication with interprofessional team members and others to facilitate safe transitions and continuity in care delivery[4]
- Use therapeutic communication techniques
- Confirm the recipient of the communication heard and understands the message[5]
- Apply principles of distance and space
- Discuss strategies for maintaining confidentiality
- Use technology to access current and reliable information
- Use correct medical terminology and abbreviations
- Report significant patient information verbally and in writing
- Document according to legal guidelines

Strong communication skills are essential to provide safe, quality, patient-centered care. Nurses develop therapeutic relationships with patients and family members each day to ensure that health care concerns and needs are addressed. If communication breaks down, information exchange stops and needs go unidentified. Nurses optimize communication channels with patients and families by establishing trust and actively listening to health care concerns. Additionally, the nurse is vital for ensuring that information transfer occurs within the multidisciplinary team. Communication with other health care team members is professional, organized, accurate, complete, and concise. This chapter will review methods for establishing good communication.

Before getting started, view the following video and reflect on the often invisible needs of those around us and the difference we can make by creating caring human connections.

Note

View the video: Empathy: The Human Connection to Patient Care.[6]

1. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association ↵
2. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association ↵
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2.2: Basic Communication Concepts

Effective communication is one of the Standards of Professional Performance established by the American Nurses Association. The standard states, “The registered nurse communicates effectively in all areas of practice.”[1] There are several concepts related to effective communication such as demonstrating appropriate verbal and nonverbal communication, using assertive communication, being aware of personal space, and overcoming common barriers to effective communication.

Types of Communication

Verbal Communication

Effective communication requires each interaction to include a sender of the message, a clear and concise message, and a receiver who can decode and interpret that message. The receiver also provides a feedback message back to the sender in response to the received message. See Figure 2.1[2] for an image of effective communication between a sender and receiver.

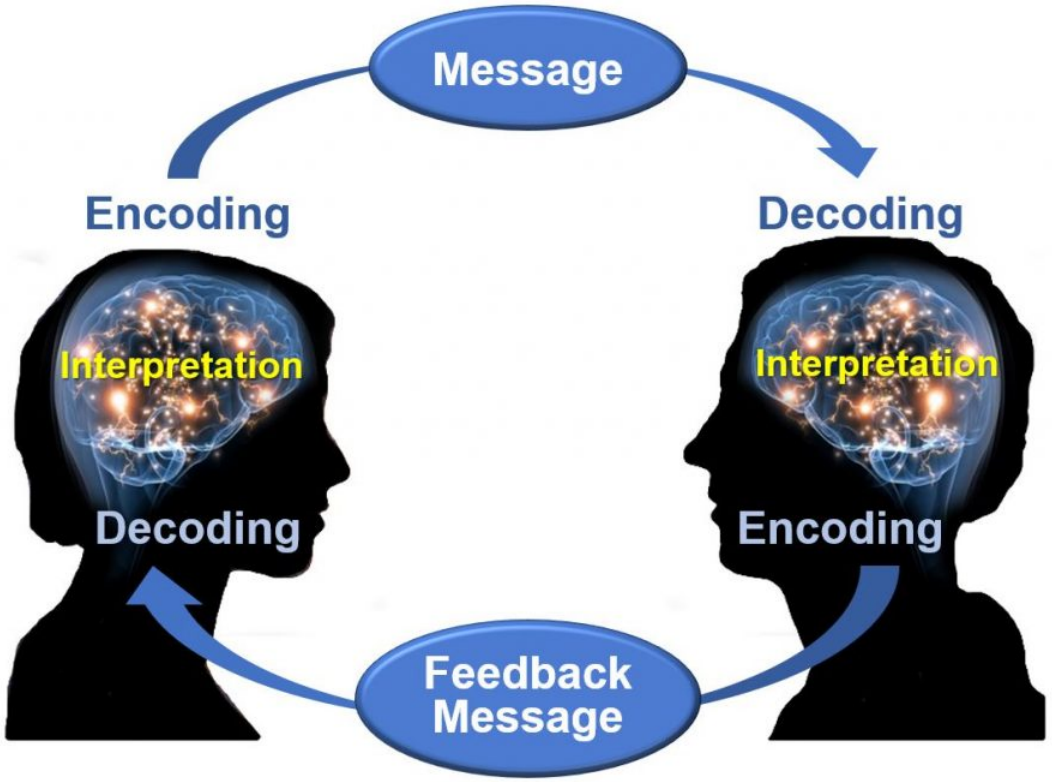

Figure 2.1 Effective Communication

Nurses assist patients and their family members to understand health care needs and treatments by using verbal, nonverbal, and written communication. Verbal communication is more than just talking. Effective **verbal communication** is defined as an exchange of information using words understood by the receiver in a way that conveys professional caring and respect.[3] Nurses who speak using extensive medical jargon or slang may create an unintended barrier to their own verbal communication processes. When communicating with others, it is important for the nurse to assess the receiver’s preferred method of communication and individual receiver characteristics that might influence communication, and subsequently adapt communication to meet the receiver’s needs. For example, the nurse may adapt postsurgical verbal instruction for a pediatric versus an adult patient. Although the information requirements regarding signs of infection, pain management, etc., might be similar, the way in which information is provided may be quite different based on developmental level. Regardless of the individual adaptations that are made, the nurse must be sure to always verify patient understanding.

Nonverbal Communication

In addition to communicating verbally, the nurse must also be aware of messages sent by **nonverbal communication**. Nonverbal communication can have a tremendous impact on the communication experience and may be much more powerful than the verbal message itself. You may have previously learned that 80% of communication is nonverbal communication (see Figure 2.2[4]). The importance of nonverbal communication during communication has also been described in percentages of 55, 38, and 7, meaning 55% of communication is body language, 38% is tone of voice, and 7% is the actual words spoken.[5]

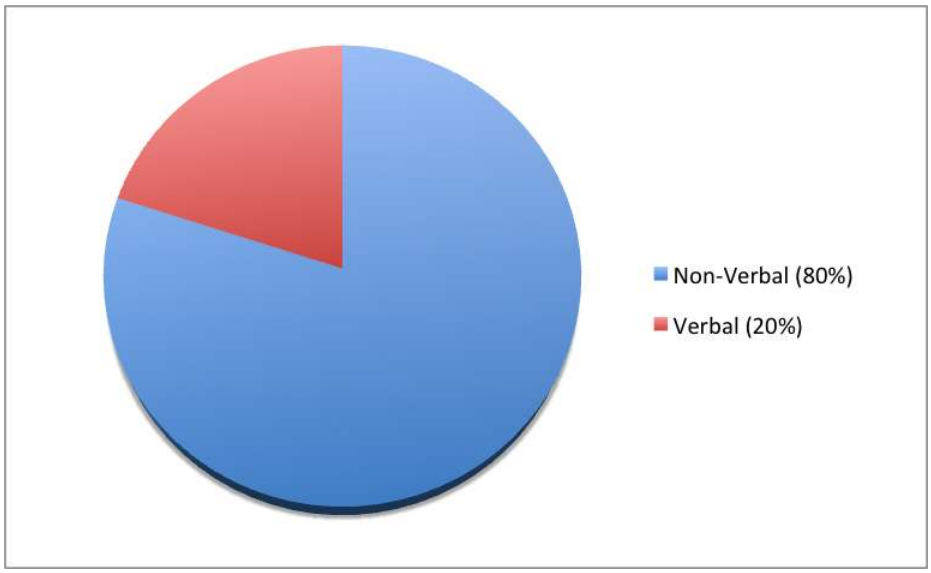

Figure 2.2 Nonverbal Communication

Nonverbal communication includes body language and facial expressions, tone of voice, and pace of the conversation. For example, compare the nonverbal communication messages in Figures 2.3[6] and 2.4.[7] What nonverbal cues do you notice about both toddlers?

Figure 2.3 Toddler’s Nonverbal Communication

Figure 2.4 Toddler's Nonverbal Communication

Nurses should be attentive to their nonverbal communication cues and the messages they provide to patients and their families. Nurses should be purposeful in their use of nonverbal communication that conveys a feeling of caring.[8] What nonverbal cues do you notice about the nurse in Figure 2.5[9] that provide a perception of professional caring?

Figure 2.5 Nurse's Nonverbal Communication

Nurses use nonverbal communication such as directly facing patients at eye level, leaning slightly forward, and making eye contact to communicate they care about what the person is telling them and they have their full attention.[10]

It is common for health care team members in an acute care setting to enter a patient's room and begin interacting with a patient who is seated or lying in bed. However, it is important to remember that initial or sensitive communication exchanges are best received by the patient if the nurse and patient are at eye level. Bringing a chair to the patient's bedside can help to facilitate engagement in the communication exchange. SOLER is common mnemonic used to facilitate nonverbal communication (**s**it with **o**pen posture and **l**ean in with good **e**ye contact in a **r**elaxed manner).

Communication Styles

In addition to verbal and nonverbal communication, people communicate with others using three styles. A passive communicator puts the rights of others before their own. Passive communicators tend to be apologetic or sound tentative when they speak and often do not speak up if they feel as if they are being wronged. Aggressive communicators, on the other hand, come across as advocating for their own rights despite possibly violating the rights of others. They tend to communicate in a way that tells others their feelings don't matter. However, assertive communicators respect the rights of others while also standing up for their own ideas and rights when communicating. An assertive person is direct, but not insulting or offensive.[11] **Assertive communication** refers to a way of conveying information that describes the facts and the sender's feelings without disrespecting the receiver's feelings. Using "I" messages such as, "I feel…," "I understand…," or "Help me to understand…" are strategies for assertive communication. This method of communicating is different from aggressive communication that uses "you" messages and can feel as if the sender is verbally attacking the receiver rather than dealing with the issue at hand. For example, instead of saying to a coworker, "Why is it always so messy in your patients' rooms? I dread following you on the next shift!," an assertive

communicator would use “I” messages to say, “I feel frustrated spending the first part of my shift decluttering our patients’ rooms. Help me understand why it is a challenge to keep things organized during your shift?”

Using assertive communication is an effective way to solve problems with patients, coworkers, and health care team members.

Note

View this humorous video demonstrating assertive communication techniques being used by the actors on a TV show: Everybody Loves Raymond Uses Active Listening – from Parent Effectiveness Training.

Personal Space

While being aware of verbal and nonverbal messages and communicating assertively, it is also important to be aware of others’ personal space. Proxemics is the study of personal space and provides guidelines for professional communication. The public zone is over 10 feet of distance between people and generally avoids physical contact. The social zone is four to 10 feet of distance between people. It is used during social interactions and business settings. The personal zone is 18 inches to four feet of space and is generally reserved for friends and family. Less than 18 inches is reserved for close relationships but may be invaded when in crowds or playing sports.[12] Nurses usually communicate within the social zone to maintain professional boundaries. However, when assessing patients and performing procedures, nurses often move into a patient’s personal zone. Nurses must be aware of patients’ feelings of psychological discomfort that can occur when invading this zone. Additionally, cultural considerations may impact the appropriateness of personal space when providing patient care. See Figure 2.6 for example of personal space zones.[13]

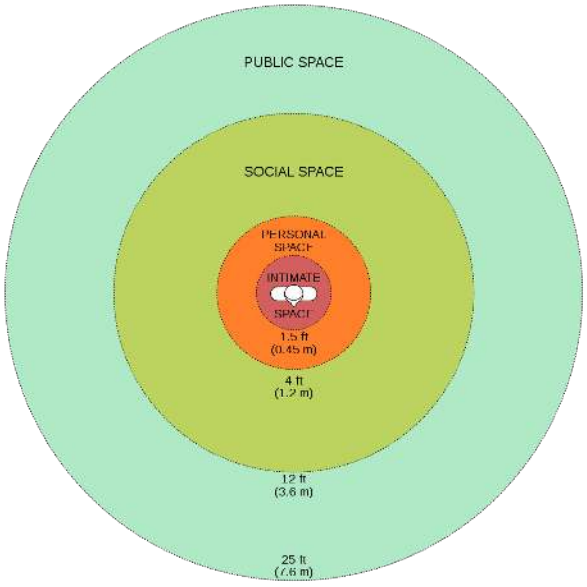

Figure 2.6 Personal Space Zones

Overcoming Common Barriers to Communication

It is important for you to reflect on personal factors that influence your ability to communicate effectively. There are many factors that can cause the message you are trying to communicate to become distorted and not perceived by the receiver in the way you intended. It is important to seek feedback that your message is clearly understood. Nurses must be aware of these potential barriers and try to reduce their impact by continually seeking feedback and checking understanding.[14]

Common barriers to communication in health care and strategies to overcome them are described in the following box.[15]

Common Barriers to Communication in Health Care

- **Jargon:** Avoid using medical terminology, complicated, or unfamiliar words. When communicating with patients, explain information in plain language that is easy to understand by those without a medical or nursing background.

- **Lack of attention:** Nurses are typically very busy with several tasks to complete for multiple patients. It is easy to become focused on the tasks instead of the patient. When entering a patient's room, it is helpful to pause, take a deep breath, and mindfully focus on the patient in front of you to give them your full attention. Patients should feel as if they are the center of your attention when you are with them, no matter how many other things you have going on.
- **Noise and other distractions:** Health care environments can be very noisy with people talking in the room or hallway, the TV blaring, alarms beeping, and pages occurring overhead. Create a calm, quiet environment when communicating with patients by closing doors to the hallway, reducing the volume of the TV, or moving to a quieter area, if possible.
- **Light:** A room that is too dark or too light can create communication barriers. Ensure the lighting is appropriate according to the patient's preference.
- **Hearing and speech problems:** If your patient has hearing or speech problems, implement strategies to enhance communication. See the "Adapting Your Communication" section below for strategies to address hearing and speech problems.
- **Language differences:** If English is not your patient's primary language, it is important to seek a medical interpreter and to also provide written handouts in the patient's preferred language when possible. Most agencies have access to an interpreter service available by phone if they are not available on-site.
- **Differences in cultural beliefs:** The norms of social interaction vary greatly in different cultures, as well as the ways that emotions are expressed. For example, the concept of personal space varies among cultures, and some patients are stoic about pain whereas others are more verbally expressive. Read more about caring for diverse patients in the "Diversity" chapter.
- **Psychological barriers:** Psychological states of the sender and the receiver affect how the message is sent, received, and perceived. For example, if nurses are feeling stressed and overwhelmed with required tasks, the nonverbal communication associated with their messages such as lack of eye contact, a hurried pace, or a short tone can affect how the patient perceives the message. If a patient is feeling stressed, they may not be able to "hear" the message or they may perceive it differently than it was intended. It is important to be aware of signs of the stress response in ourselves and our patients and implement appropriate strategies to manage the stress response. See the box below for more information about strategies to manage the stress response.
- **Physiological barriers:** It is important to be aware of patients' potential physiological barriers when communicating. For example, if a patient is in pain, they are less likely to hear and remember what was said, so pain relief should be provided as needed before providing patient education. However, it is also important to remember that sedatives and certain types of pain medications often impair the patient's ability to receive and perceive messages so health care documents cannot be signed by a patient after receiving these types of medications.
- **Physical barriers for nonverbal communication:** Providing information via e-mail or text is often less effective than face-to-face communication. The inability to view the nonverbal communication associated with a message such as tone of voice, facial expressions, and general body language often causes misinterpretation of the message by the receiver. When possible, it is best to deliver important information to others using face-to-face communication so that nonverbal communication is included with the message.
- **Differences in perception and viewpoints:** Everyone has their own beliefs and perspectives and wants to feel "heard." When patients feel their beliefs or perspectives are not valued, they often become disengaged from the conversation or the plan of care. Nurses should provide health care information in a nonjudgmental manner, even if the patient's perspectives, viewpoints, and beliefs are different from their own.

Note

Read more about Barriers to Effective Communication.

Managing the Stress Response [16]

The stress response is a common psychological barrier to effective communication. It can affect the message sent by the sender or how it is received by the receiver. The stress response is a common reaction to life events, such as a nurse feeling stressed by being overwhelmed with tasks to complete for multiple patients, or a patient feeling stressed when admitted to a hospital or

receiving a new diagnosis. Symptoms of the stress response include irritability, sweaty palms, a racing heart, difficulty concentrating, and impaired sleep. It is important to recognize symptoms of the stress response in ourselves and our patients and use strategies to manage the stress response when communicating. Strategies to manage the stress response are as follows:

1. Use **relaxation breathing**. Become aware of your breathing. Take a deep breath in your nose and blow it out through your mouth. Repeat this process at least three times in succession and then as often as needed throughout the day.
2. Make healthy diet choices. Avoid caffeine, nicotine, and junk food because these items can increase feelings of anxiety or being on edge.
3. Make time for exercise. Exercise stimulates the release of natural endorphins that reduce the body's stress response and also helps to improve sleep.
4. Get enough sleep. Set aside at least 30 minutes before going to bed to wind down from the busyness of the day. Avoid using electronic devices like cell phones before bedtime because the backlight can affect sleep.
5. Use **progressive relaxation**. There are several types of relaxation techniques that focus on reducing muscle tension and using mental imagery to induce calmness. Progressive relaxation generally includes the following steps:
    - Start by lying down somewhere comfortable and firm, like a rug or mat on the floor. Get yourself comfortable.
    - Relax and try to let your mind go blank. Breathe slowly, deeply, and comfortably, while gradually and consciously relaxing all your muscles, one by one.
    - Work around the body one main muscle area at a time, breathing deeply, calmly, and evenly. For each muscle group, clench the muscles tightly and hold for a few seconds, and then relax them completely. Repeat the process, noticing how it feels. Do this for each of your feet, calves, thighs, buttocks, stomach, arms, hands, shoulders, and face.

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2.3: Communicating with Patients

Therapeutic communication is a type of professional communication used by nurses with patients and defined as, “The purposeful, interpersonal information-transmitting process through words and behaviors based on both parties’ knowledge, attitudes, and skills, which leads to patient understanding and participation.”[1] Therapeutic communication techniques used by nurses have roots going back to Florence Nightingale, who insisted on the importance of building trusting relationships with patients and believed in the therapeutic healing that resulted from nurses’ presence with patients.[2] Since then, several professional nursing associations have highlighted therapeutic communication as one of the most vital elements in nursing.

Read an example of a nursing student effectively using therapeutic communication with patients in the following box.

An Example of Nursing Student Using Therapeutic Communication

Ms. Z. is a nursing student who enjoys interacting with patients. When she goes to patients’ rooms, she greets them and introduces herself and her role in a calm tone. She kindly asks patients about their problems and notices their reactions. She does her best to solve their problems and answer their questions. Patients perceive that she wants to help them. She treats patients professionally by respecting boundaries and listening to them in a nonjudgmental manner. She addresses communication barriers and respects patients’ cultural beliefs. She notices patients’ health literacy and ensures they understand her messages and patient education. As a result, patients trust her and feel as if she cares about them, so they feel comfortable sharing their health care needs with her.[3] [4]

Active Listening and Attending Behaviors

Listening is obviously an important part of communication. There are three main types of listening: competitive, passive, and active. Competitive listening happens when we are focused on sharing our own point of view instead of listening to someone else. Passive listening occurs when we are not interested in listening to the other person and we assume we understand what the person is communicating correctly without verifying. During **active listening**, we are communicating verbally and nonverbally that we are interested in what the other person is saying while also actively verifying our understanding with the speaker. For example, an

active listening technique is to restate what the person said and then verify our understanding is correct. This feedback process is the main difference between passive listening and active listening.[5]

Touch

Touch is a powerful way to professionally communicate caring and empathy if done respectfully while being aware of the patient's cultural beliefs. Nurses commonly use professional touch when assessing, expressing concern, or comforting patients. For example, simply holding a patient's hand during a painful procedure can be very effective in providing comfort. See Figure 2.7[6] for an image of a nurse using touch as a therapeutic technique when caring for a patient.

Figure 2.7 Using Touch as Therapeutic Communication

Therapeutic Techniques

Therapeutic communication techniques are specific methods used to provide patients with support and information while focusing on their concerns. Nurses assist patients to set goals and select strategies for their plan of care based on their needs, values, skills, and abilities. It is important to recognize the autonomy of the patient to make their own decisions, maintain a nonjudgmental attitude, and avoid interrupting. Depending on the developmental stage and educational needs of the patient, appropriate terminology should be used to promote patient understanding and rapport. When using **therapeutic communication**, nurses often ask open-ended statements and questions, repeat information, or use silence to prompt patients to work through problems on their own.[7] Table 2.3a describes a variety of therapeutic communication techniques.[8]

Table 2.3a Therapeutic Communication Techniques

	Therapeutic Technique	Description
.	Active Listening	By using nonverbal and verbal cues such as nodding and saying “I see,” nurses can encourage patients to continue talking. Active listening involves showing interest in what patients have to say, acknowledging that you’re listening and understanding, and engaging with them throughout the conversation. Nurses can offer general leads such as “What happened next?” to guide the conversation or propel it forward.
.	Using Silence	At times, it’s useful to not speak at all. Deliberate silence can give both nurses and patients an opportunity to think through and process what comes next in the conversation. It may give patients the time and space they need to broach a new topic.
.	Accepting	Sometimes it is important to acknowledge a patient’s message and affirm that they’ve been heard. Acceptance isn’t necessarily the same thing as agreement; it can be enough to simply make eye contact and say, “Yes, I hear what you are saying.” Patients who feel their nurses are listening to them and taking them seriously are more likely to be receptive to care.
.	Giving Recognition	Recognition acknowledges a patient’s behavior and highlights it. For example, saying something such as “I noticed you took all of your medications today” draws attention to the action and encourages it.
.	Offering Self	Hospital stays can be lonely and stressful at times. When nurses are present with their patients, it shows patients they value them and are willing to give them time and attention. Offering to simply sit with patients for a few minutes is a powerful way to create a caring connection.
.	Giving Broad Openings/Open-Ended Questions	Therapeutic communication is often most effective when patients direct the flow of conversation and decide what to talk about. To that end, giving patients a broad opening such as “What’s on your mind today?” or “What would you like to talk about?” can be a good way to allow patients an opportunity to discuss what’s on their mind.
.	Seeking Clarification	Similar to active listening, asking patients for clarification when they say something confusing or ambiguous is important. Saying something such as “I’m not sure I understand. Can you explain it to me?” helps nurses ensure they understand what’s actually being said and can help patients process their ideas more thoroughly.
.	Placing the Event in Time or Sequence	Asking questions about when certain events occurred in relation to other events can help patients (and nurses) get a clearer sense of the whole picture. It forces patients to think about the sequence of events and may prompt them to remember something they otherwise wouldn’t.
.	Making Observations	Observations about the appearance, demeanor, or behavior of patients can help draw attention to areas that may indicate a problem. Observing that they look tired may prompt patients to explain why they haven’t been getting much sleep lately, or

	making an observation that they haven't been eating much may lead to the discovery of a new symptom.
. Encouraging Descriptions of Perception	For patients experiencing sensory issues or hallucinations, it can be helpful to ask about these perceptions in an encouraging, nonjudgmental way. Phrases such as "What do you hear now?" or "What does that look like to you?" give patients a prompt to explain what they're perceiving without casting their perceptions in a negative light.
. Encouraging Comparisons	Patients often draw upon previous experiences to deal with current problems. By encouraging them to make comparisons to situations they have coped with before, nurses can help patients discover solutions to their problems.
. Summarizing	It is often useful to summarize what patients have said. This demonstrates to patients that the nurse was listening and allows the nurse to verify information. Ending a summary with a phrase such as "Does that sound correct?" gives patients explicit permission to make corrections if they're necessary.
. Reflecting	Patients often ask nurses for advice about what they should do about particular problems. Nurses can ask patients what they think they should do, which encourages them to be accountable for their own actions and helps them come up with solutions themselves.
. Focusing	Sometimes during a conversation, patients mention something particularly important. When this happens, nurses can focus on their statement, prompting patients to discuss it further. Patients don't always have an objective perspective on what is relevant to their case, but as impartial observers, nurses can more easily pick out the topics on which to focus.
. Confronting	Nurses should only apply this technique after they have established trust. In some situations, it can be vital to the care of patients to disagree with them, present them with reality, or challenge their assumptions. Confrontation, when used correctly, can help patients break destructive routines or understand the state of their current situation.
. Voicing Doubt	Voicing doubt can be a gentler way to call attention to incorrect or delusional ideas and perceptions of patients. By expressing doubt, nurses can force patients to examine their assumptions.
. Offering Hope and Humor	Because hospitals can be stressful places for patients, sharing hope that they can persevere through their current situation and lightening the mood with humor can help nurses establish rapport quickly. This technique can keep patients in a more positive state of mind. However, it is important to tailor humor to the patient's sense of humor.

In addition to the therapeutic techniques listed in Table 2.3a, nurses and nursing students should genuinely communicate with empathy. Communicating honestly, genuinely, and authentically is powerful. It opens the door to creating true connections with others.[9] Communicating with empathy has also been described as providing "unconditional positive regard." Research has demonstrated that when health care teams communicate with empathy, there is improved patient healing, reduced symptoms of depression, and decreased medical errors.[10]

Nurses and nursing students must be aware of potential barriers to communication. In addition to considering common communication barriers discussed in the previous section, there are several **nontherapeutic responses** to avoid. These responses often block the patient's communication of their feelings or ideas. See Table 2.3b for a description of nontherapeutic responses.[11]

Table 2.3b Nontherapeutic Responses

	Nontherapeutic Response	Description
.	Asking Personal Questions	Asking personal questions that are not relevant to the situation is not professional or appropriate. Don't ask questions just to satisfy your curiosity. For example, asking, "Why have you and Mary never married?" is not appropriate. A more therapeutic question would be, "How would you describe your relationship with Mary?"
.	Giving Personal Opinions	Giving personal opinions takes away the decision-making from the patient. Effective problem-solving must be accomplished by the patient and not the nurse. For example, stating, "If I were you, I'd put your father in a nursing home" is not therapeutic. Instead, it is more therapeutic to say, "Let's talk about what options are available to your father."
.	Changing the Subject	Changing the subject when someone is trying to communicate with you demonstrates lack of empathy and blocks further communication. It seems to say that you don't care about what they are sharing. For example, stating, "Let's not talk about your insurance problems; it's time for your walk now" is not therapeutic. A more therapeutic response would be, "After your walk, let's talk some more about what's going on with your insurance company."
.	Stating Generalizations and Stereotypes	Generalizations and stereotypes can threaten nurse-patient relationships. For example, it is not therapeutic to state the stereotype, "Older adults are always confused." It is better to focus on the patient's concern and ask, "Tell me more about your concerns about your father's confusion."
.	Providing False Reassurances	When a patient is seriously ill or distressed, the nurse may be tempted to offer hope with statements such as "You'll be fine," or "Don't worry; everything will be alright." These comments tend to discourage further expressions of feelings by the patient. A more therapeutic response would be, "It must be difficult not to know what the surgeon will find. What can I do to help?"
.	Showing Sympathy	Sympathy focuses on the nurse's feelings rather than the patient. Saying "I'm so sorry about your amputation; I can't imagine losing a leg." This statement shows pity rather than trying to help the patient cope with the situation. A more therapeutic response would be, "The loss of your leg is a major change; how do you think this will affect your life?"
.	Asking "Why" Questions	A nurse may be tempted to ask the patient to explain "why" they believe, feel, or act in a certain way. However, patients and family members interpret "why" questions as accusations and become defensive. It is best to phrase a question by avoiding the word "why." For example, instead of asking, "Why are you so upset?" it is better to rephrase the statement as, "You seem upset. What's on your mind?"
.	Approving or Disapproving	Nurses should not impose their own attitudes, values, beliefs, and moral standards on others while in the professional nursing role. Judgmental messages contain terms such as "should," "shouldn't," "ought to," "good," "bad," "right," or "wrong." Agreeing or

	disagreeing sends the subtle message that nurses have the right to make value judgments about the patient's decisions. Approving implies that the behavior being praised is the only acceptable one, and disapproving implies that the patient must meet the nurse's expectations or standards. Instead, the nurse should help the patient explore their own beliefs and decisions. For example, it is nontherapeutic to state, "You shouldn't consider elective surgery; there are too many risks involved." A more therapeutic response would be, "So you are considering elective surgery. Tell me more about it…" gives the patient a chance to express their ideas or feelings without fear of being judged.
. Giving Defensive Responses	When patients or family members express criticism, nurses should listen to what they are saying. Listening does not imply agreement. To discover reasons for the patient's anger or dissatisfaction, the nurse should listen without criticism, avoid being defensive or accusatory, and attempt to defuse anger. For example, it is not therapeutic to state, "No one here would intentionally lie to you." Instead, a more therapeutic response would be, "You believe people have been dishonest with you. Tell me more about what happened." (After obtaining additional information, the nurse may elect to follow the chain of command at the agency and report the patient's concerns for follow-up.)
. Providing Passive or Aggressive Responses	Passive responses serve to avoid conflict or sidestep issues, whereas aggressive responses provoke confrontation. Nurses should use assertive communication as described in the "Basic Communication Concepts" section.
. Arguing	Challenging or arguing against patient perceptions denies that they are real and valid to the other person. They imply that the other person is lying, misinformed, or uneducated. The skillful nurse can provide information or present reality in a way that avoids argument. For example, it is not therapeutic to state, "How can you say you didn't sleep a wink when I heard you snoring all night long!" A more therapeutic response would be, "You don't feel rested this morning? Let's talk about ways to improve your rest."

Strategies for Effective Communication

In addition to using therapeutic communication techniques, avoiding nontherapeutic responses, and overcoming common barriers to communication, there are additional strategies for promoting effective communication when providing patient-centered care. Specific questions to ask patients are as follows:

- What concerns do you have about your plan of care?
- What questions do you have about your medications?
- Did I answer your question(s) clearly or is there additional information you would like?[12]

Listen closely for feedback from patients. Feedback provides an opportunity to improve patient understanding, improve the patient-care experience, and provide high-quality care. Other suggestions for effective communication with hospitalized patients include the following:

- Round with the providers and read progress notes from other health care team members to ensure you have the most up-to-date information about the patient's treatment plan and progress. This information helps you to provide safe patient care as changes occur and also to accurately answer the patient's questions.
- Review information periodically with the patient to improve understanding.

- Use patient communication boards in their room to set goals and communicate important reminders with the patient, family members, and other health care team members. This strategy can reduce call light usage for questions related to diet and activity orders and also gives patients and families the feeling that they always know the current plan of care. However, keep patient confidentiality in mind regarding information to publicly share on the board that visitors may see.
- Provide printed information on medical procedures, conditions, and medications. It helps patients and family members to have multiple ways to provide information.[13]

Adapting Your Communication

When communicating with patients and family members, take note of your audience and adapt your message based on their characteristics such as age, developmental level, cognitive abilities, and any communication disorders. For patients with language differences, it is vital to provide trained medical interpreters when important information is communicated.

Adapting communication according to the patient's age and developmental level includes the following strategies:

- When communicating with children, speak calmly and gently. It is often helpful to demonstrate what will be done during a procedure on a doll or stuffed animal. To establish trust, try using play or drawing pictures.
- When communicating with adolescents, give freedom to make choices within established limits.
- When communicating with older adults, be aware of potential vision and hearing impairments that commonly occur and address these barriers accordingly. For example, if a patient has glasses and/or hearing aids, be sure these devices are in place before communicating. See the following box for evidence-based strategies for communication with patients who have impaired hearing and vision.[14]

Strategies for Communicating with Patients with Impaired Hearing and Vision

Impaired Hearing

- Gain the patient's attention before speaking (e.g., through touch)
- Minimize background noise
- Position yourself 2-3 feet away from the patient
- Facilitate lip-reading by facing the patient directly in a well-lit environment
- Use gestures, when necessary
- Listen attentively, allowing the patient adequate time to process communication and respond
- Refrain from shouting at the patient
- Ask the patient to suggest strategies for improved communication (e.g., speaking toward better ear and moving to well-lit area)
- Face the patient directly, establish eye contact, and avoid turning away mid sentence
- Simplify language (i.e., do not use slang but do use short, simple sentences), as appropriate
- Note and document the patient's preferred method of communication (e.g., verbal, written, lip-reading, or American Sign Language) in plan of care
- Assist the patient in acquiring a hearing aid or assistive listening device
- Refer to the primary care provider or specialist for evaluation, treatment, and hearing rehabilitation[15]

Impaired Vision

- Identify yourself when entering the patient's space
- Ensure the patient's eyeglasses or contact lenses have current prescription, are cleaned, and stored properly when not in use
- Provide adequate room lighting
- Minimize glare (i.e., offer sunglasses or draw window covering)
- Provide educational materials in large print
- Apply labels to frequently used items (i.e., mark medication bottles using high-contrasting colors)
- Read pertinent information to the patient
- Provide magnifying devices
- Provide referral for supportive services (e.g., social, occupational, and psychological)[16]

Patients with communication disorders require additional strategies to ensure effective communication. For example, aphasia is a communication disorder that results from damage to portions of the brain that are responsible for language. **Aphasia** usually occurs suddenly, often following a stroke or head injury, and impairs the patient's expression and understanding of language. **Global aphasia** is caused by injuries to multiple language-processing areas of the brain, including those known as Wernicke's and Broca's areas. These brain areas are particularly important for understanding spoken language, accessing vocabulary, using grammar, and producing words and sentences. Individuals with global aphasia may be unable to say even a few words or may repeat the same words or phrases over and over again. They may have trouble understanding even simple words and sentences.[17]

The most common type of aphasia is **Broca's aphasia**. People with Broca's aphasia often understand speech and know what they want to say, but frequently speak in short phrases that are produced with great effort. For example, they may intend to say, "I would like to go to the bathroom," but instead the words, "Bathroom, Go," are expressed. They are often aware of their difficulties and can become easily frustrated. See the hyperlink in the box below for evidence-based strategies to enhance communication with a person with impaired speech.[18]

Note

Read more about aphasia.

Strategies to Improve Communication with Patients with Impaired Speech

- Modify the environment to minimize excess noise and decrease emotional distress
- Phrase questions so the patient can answer using a simple "Yes" or "No," being aware that patients with expressive aphasia may provide automatic responses that are incorrect
- Monitor the patient for frustration, anger, depression, or other responses to impaired speech capabilities
- Provide alternative methods of speech communication (e.g., writing tablet, flash cards, eye blinking, communication board with pictures and letters, hand signals or gestures, and computer)
- Adjust your communication style to meet the needs of the patient (e.g., stand in front of the patient while speaking, listen attentively, present one idea or thought at a time, speak slowly but avoid shouting, use written communication, or solicit family's assistance in understanding the patient's speech)
- Ensure the call light is within reach and central call light system is marked to indicate the patient has difficulty with speech
- Repeat what the patient said to ensure accuracy
- Instruct the patient to speak slowly
- Collaborate with the family and a speech therapist to develop a plan for effective communication[19]

Maintaining Patient Confidentiality

When communicating with patients, their friends, their family members, and other members of the health care team, it is vital for the nurse to maintain patient confidentiality. The **Health Insurance Portability and Accountability Act (HIPAA)** provides standards for ensuring privacy of patient information that are enforceable by law. Nurses must always be aware of where and with whom they share patient information. For example, information related to patient care should not be discussed in public areas, paper charts must be kept in secure areas, computers must be logged off when walked away from, and patient information should only be shared with those directly involved in patient care. For more information about patient confidentiality, see the "Legal Considerations & Ethics" section in the "Scope of Practice" chapter.

Note

Read more information about the Health Insurance Portability and Accountability Act of 1996 (HIPAA).

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2.4: Communicating with Health Care Team Members

Professional communication with other members of the health care team is an important component of every nurse's job. See Figure 2.8[1] for an image illustrating communication between health care team members. Common types of professional interactions include reports to health care team members, handoff reports, and transfer reports.

Figure 2.8 Interprofessional Communication

Reports to Health Care Team Members

Nurses routinely report information to other health care team members, as well as urgently contact health care providers to report changes in patient status.

Standardized methods of communication have been developed to ensure that information is exchanged between health care team members in a structured, concise, and accurate manner to ensure safe patient care. One common format used by health care team members to exchange patient information is **ISBARR**, a mnemonic for the components of **I**ntroduction, **S**ituation, **B**ackground, **A**ssessment, **R**equest/Recommendations, and **R**epeat back.

- **Introduction:** Introduce your name, role, and the agency from which you are calling.
- **Situation:** Provide the patient's name and location, why you are calling, recent vital signs, and the status of the patient.
- **Background:** Provide pertinent background information about the patient such as admitting medical diagnoses, code status, recent relevant lab or diagnostic results, and allergies.
- **Assessment:** Share abnormal assessment findings and your evaluation of the current patient situation.
- **Request/Recommendations:** State what you would like the provider to do, such as reassess the patient, order a lab/diagnostic test, prescribe/change medication, etc.
- **Repeat back:** If you are receiving new orders from a provider, repeat them to confirm accuracy. Be sure to document communication with the provider in the patient's chart.

Read an example of an ISBARR report in the following box. A hyperlink is provided to a printable ISBARR reference card.

Sample ISBARR Report From a Nurse to a Health Care Provider

I: "Hello Dr. Smith, this is Jane White, RN from the Med Surg unit."

S: "I am calling to tell you about Ms. White in Room 210, who is experiencing an increase in pain, as well as redness at her incision site. Her recent vital signs were BP 160/95, heart rate 90, respiratory rate 22, O2 sat 96%, and temperature 38 degrees Celsius. She is stable but her pain is worsening."

B: "Ms. White is a 65-year-old female, admitted yesterday post hip surgical replacement. She has been rating her pain at 3 or 4 out of 10 since surgery with her scheduled medication, but now she is rating the pain as a 7, with no relief from her scheduled

medication of Vicodin 5/325 mg administered an hour ago. She is scheduled for physical therapy later this morning and is stating she won't be able to participate because of the pain this morning."

A: "I just assessed the surgical site and her dressing was clean, dry, and intact, but there is 4 cm redness surrounding the incision, and it is warm and tender to the touch. There is moderate serosanguinous drainage. Otherwise, her lungs are clear and her heart rate is regular."

R: "I am calling to request an order for a CBC and increased dose of pain medication."

R: "I am repeating back the order to confirm that you are ordering a STAT CBC and an increase of her Vicodin to 10/325 mg."

View or print an ISBARR reference card.

Handoff Reports

Handoff reports are defined by The Joint Commission as "a transfer and acceptance of patient care responsibility achieved through effective communication. It is a real-time process of passing patient specific information from one caregiver to another, or from one team of caregivers to another, for the purpose of ensuring the continuity and safety of the patient's care."[2] In 2017, The Joint Commission issued a sentinel alert about inadequate handoff communication that has resulted in patient harm such as wrong-site surgeries, delays in treatment, falls, and medication errors. Strategies for improving handoff communication have been implemented at agencies across the country.

Although many types of nursing shift-to-shift handoff reports have been used over the years, evidence strongly supports that **bedside handoff reports** increase patient safety, as well as patient and nurse satisfaction, by effectively communicating current, accurate patient information in real time.[3] See Figure 2.9[4] for an image illustrating two nurses participating in a handoff report. Bedside reports typically occur in hospitals and include the patient, along with the off-going and the oncoming nurses in a face-to-face handoff report conducted at the patient's bedside. HIPAA rules must be kept in mind if visitors are present or the room is not a private room. Family members may be included with the patient's permission. See a sample checklist for a bedside handoff report from the Agency for Healthcare Research and Quality in Figure 10.[5] Although a bedside handoff report is similar to an ISBARR report, it contains additional information to ensure continuity of care across nursing shifts. For example, the "assessment" portion of the bedside handoff report includes detailed pertinent data the oncoming nurse needs to know, such as current head-to-toe assessment findings to establish a baseline; information about equipment such as IVs, catheters, and drainage tubes; and recent changes in medications, lab results, diagnostic tests, and treatments.

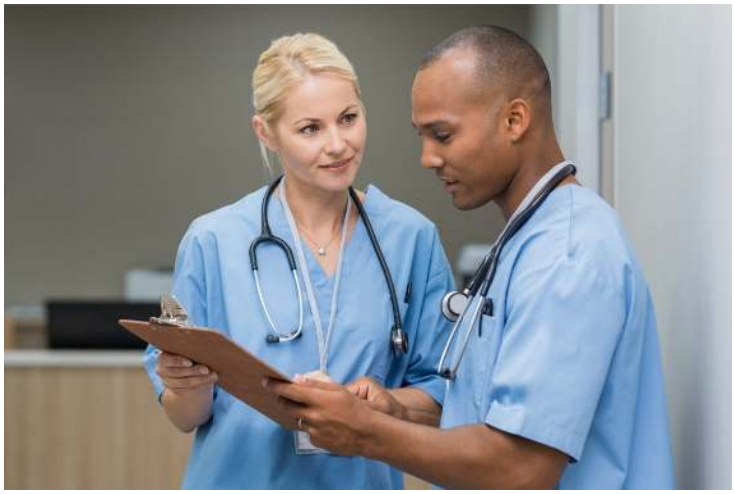
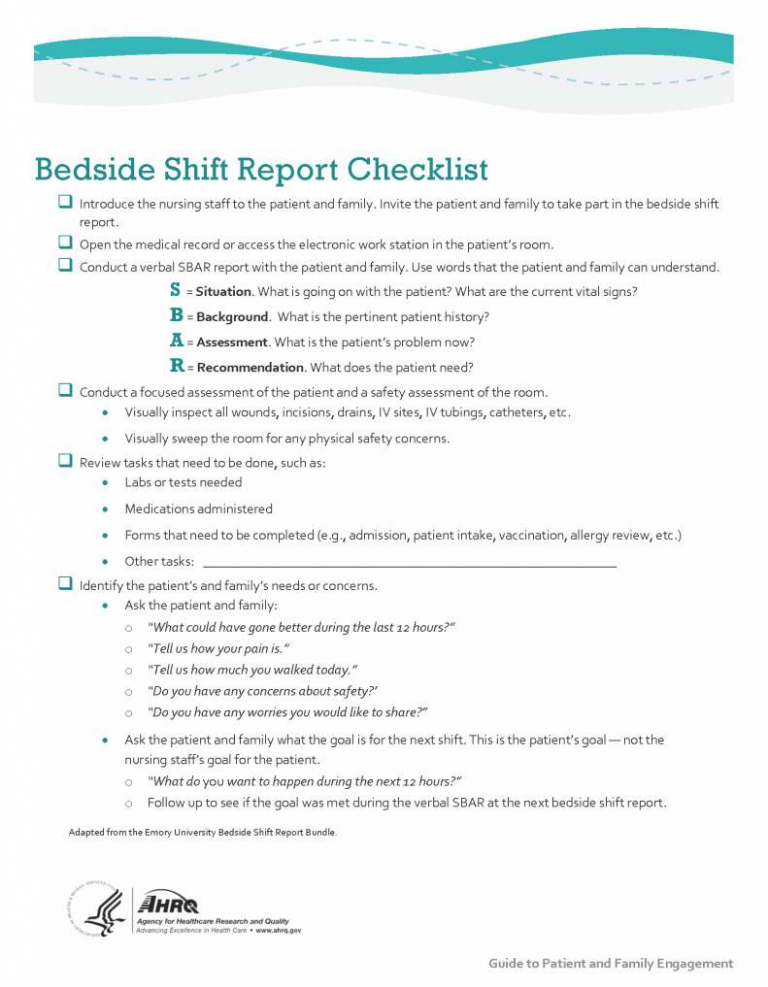


Figure 2.9 Bedside Handoff Report



Bedside Shift Report Checklist

- ❑ Introduce the nursing staff to the patient and family. Invite the patient and family to take part in the bedside shift report.
- ❑ Open the medical record or access the electronic work station in the patient's room.
- ❑ Conduct a verbal SBAR report with the patient and family. Use words that the patient and family can understand.
  - **S** = **Situation**. What is going on with the patient? What are the current vital signs?
  - **B** = **Background**. What is the pertinent patient history?
  - **A** = **Assessment**. What is the patient's problem now?
  - **R** = **Recommendation**. What does the patient need?
- ❑ Conduct a focused assessment of the patient and a safety assessment of the room.
  - Visually inspect all wounds, incisions, drains, IV sites, IV tubings, catheters, etc.
  - Visually sweep the room for any physical safety concerns.
- ❑ Review tasks that need to be done, such as:
  - Labs or tests needed
  - Medications administered
  - Forms that need to be completed (e.g., admission, patient intake, vaccination, allergy review, etc.)
  - Other tasks: _____
- ❑ Identify the patient's and family's needs or concerns.
  - Ask the patient and family:
    - *"What could have gone better during the last 12 hours?"*
    - *"Tell us how your pain is."*
    - *"Tell us how much you walked today."*
    - *"Do you have any concerns about safety?'*
    - *"Do you have any worries you would like to share?"*
  - Ask the patient and family what the goal is for the next shift. This is the patient's goal — not the nursing staff's goal for the patient.
    - *"What do you want to happen during the next 12 hours?"*
    - Follow up to see if the goal was met during the verbal SBAR at the next bedside shift report.

Adapted from the Emory University Bedside Shift Report Bundle.

AHRQ Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Guide to Patient and Family Engagement

Figure 2.10 Bedside Handoff Report Checklist

Note

Print a copy of the AHRQ Bedside Shift Report Checklist.

View Sample Information to Include in a Shift Report.

View a video on creating shift reports.[6]

Transfer Reports

Transfer reports are provided by nurses when transferring a patient to another unit or to another agency. Transfer reports contain similar information as bedside handoff reports, but are even more detailed when the patient is being transferred to another agency. Checklists are often provided by agencies to ensure accurate, complete information is shared.

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2.5: Documentation

Using Technology to Access Information

Most patient information in acute care, long-term care, and other clinical settings is now electronic and uses intranet technology for secure access by providers, nurses, and other health care team members to maintain patient confidentiality. Intranet refers to a private computer network within an institution. An **electronic health record (EHR)** is a real-time, patient-centered record that makes information available instantly and securely to authorized users.[1] Computers used to access an EHR can be found in patient rooms, on wheeled carts, in workstations, or even on handheld devices. See Figure 2.11[2] for an image of a nurse documenting in an EHR.

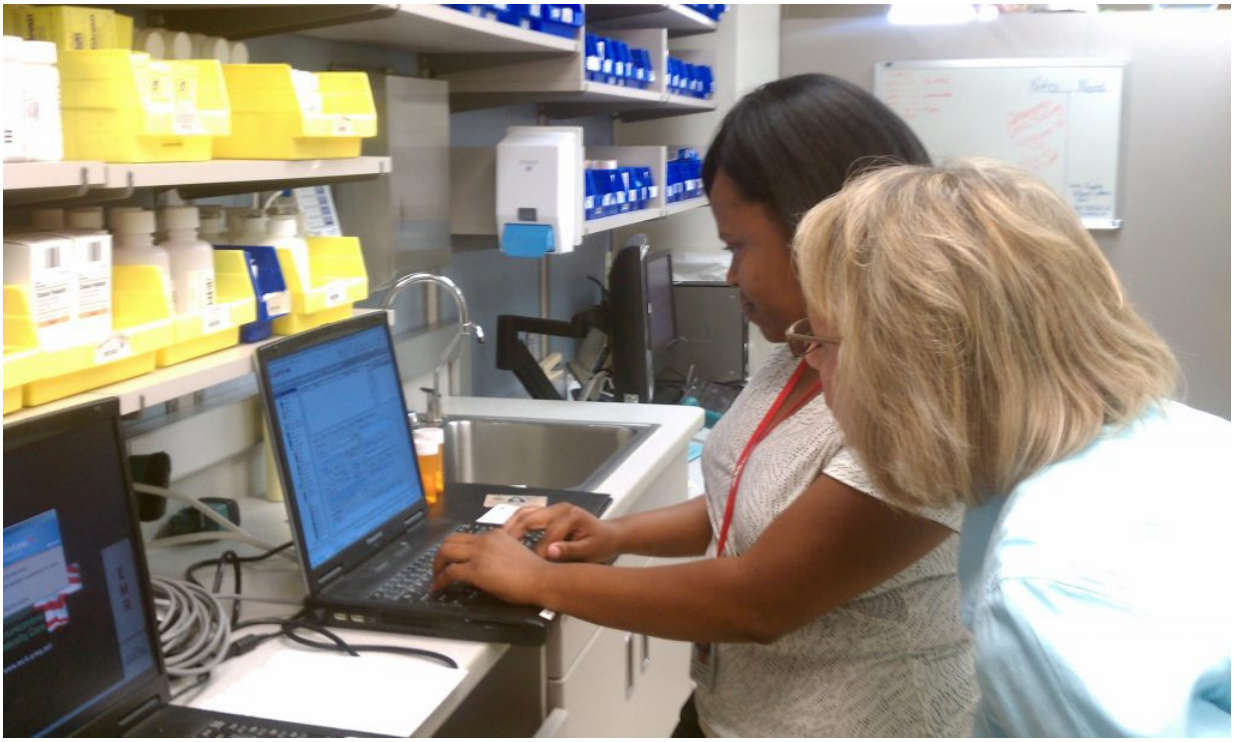

Figure 2.11 Nurse Documenting in EHR

The EHR for each patient contains a great deal of information. The most frequent pieces of information that nurses access include the following:

- **History and Physical (H&P):** A history and physical (H&P) is a specific type of documentation created by the health care provider when the patient is admitted to the facility. An H&P includes important information about the patient's current status, medical history, and the treatment plan in a concise format that is helpful for the nurse to review. Information typically includes the reason for admission, health history, surgical history, allergies, current medications, physical examination findings, medical diagnoses, and the treatment plan.
- **Provider orders:** This section includes the prescriptions, or medical orders, that the nurse must legally implement or appropriately communicate according to agency policy if not implemented.
- **Medication Administration Records (MARs):** Medications are charted through electronic medication administration records (MARs). These records interface the medication orders from providers with pharmacists and are also the location where nurses document medications administered.
- **Treatment Administration Records (TARs):** In many facilities, treatments are documented on a treatment administration record.
- **Laboratory results:** This section includes results from blood work and other tests performed in the lab.
- **Diagnostic test results:** This section includes results from diagnostic tests ordered by the provider such as X-rays, ultrasounds, etc.

- **Progress notes:** This section contains notes created by nurses and other health care providers regarding patient care. It is helpful for the nurse to review daily progress notes by all team members to ensure continuity of care.

Note

View a video of how to read a patient's chart.[3]

Legal Documentation

Nurses and health care team members are legally required to document care provided to patients. In a court of law, the rule of thumb used is, "If it wasn't documented, it wasn't done." Documentation should be objective, factual, professional, and use proper medical terminology, grammar, and spelling. All types of documentation must include the date, time, and signature of the person documenting. Any type of documentation in the EHR is considered a legal document and must be completed in an accurate and timely manner. Abbreviations should be avoided in legal documentation.

Documentation is used for many purposes. It is used to ensure continuity of care across health care team members and across shifts; monitor standards of care for quality assurance activities; and provide information for reimbursement purposes by insurance companies, Medicare, and Medicaid. Documentation may also be used for research purposes or, in some instances, for legal concerns in a court of law.

Documentation by nurses includes recording patient assessments, writing progress notes, and creating or addressing information included in nursing care plans. Nursing care plans are further discussed in the "Planning" section of the "Nursing Process" chapter.

Common Types of Documentation

Common formats used to document patient care include charting by exception, focused DAR notes, narrative notes, SOAPIE progress notes, patient discharge summaries, and Minimum Data Set (MDS) charting.

Charting by Exception

Charting by exception (CBE) documentation was designed to decrease the amount of time required to document care. CBE contains a list of normal findings. After performing an assessment, nurses confirm normal findings on the list found on assessment and write only brief progress notes for abnormal findings or to document communication with other team members.

Focused DAR Notes

Focused DAR notes are a type of progress note that are commonly used in combination with charting by exception documentation. **DAR** stands for **D**ata, **A**ction, and **R**esponse. Focused DAR notes are brief. Each note is focused on one patient problem for efficiency in documenting and reading.

- **Data:** This section contains information collected during the patient assessment, including vital signs and physical examination findings found during the "Assessment" phase of the nursing process. The Assessment phase is further discussed in the "Nursing Process" chapter.

- **Action:** This section contains the nursing actions that are planned and implemented for the patient's focused problem. This section correlates to the "Planning" and "Implementation" phases of the nursing process and are further discussed in the "Nursing Process" chapter.
- **Response:** This section contains information about the patient's response to the nursing actions and evaluates if the planned care was effective. This section correlates to the "Evaluation" phase of the nursing process that is further discussed in the "Nursing Process" chapter.

Note

View sample charting by exception paper documentation with associated DAR notes for abnormal findings.

For more information about writing DAR notes, visit What is F-DAR Charting?

View a video explaining F-DAR charting.[4]

Narrative Notes

Narrative notes are a type of progress note that chronicles assessment findings and nursing activities for the patient that occurred throughout the entire shift or visit. View sample narrative note documentation according to body system in each assessment chapter of the *Open RN* Nursing Skills textbook.

SOAPIE Notes

SOAPIE is a mnemonic for a type of progress note that is organized by six categories: **S**ubjective, **O**bjective, **A**ssessment, **P**lan, **I**nterventions, and **E**valuation. SOAPIE progress notes are written by nurses, as well as other members of the health care team.

- **Subjective:** This section includes what the patient said, such as, "I have a headache." It can also contain information related to pertinent medical history and why the patient is in need of care.
- **Objective:** This section contains the observable and measurable data collected during a patient assessment, such as the vital signs, physical examination findings, and lab/diagnostic test results.
- **Assessment:** This section contains the interpretation of what was noted in the Subjective and Objective sections, such as a nursing diagnosis in a nursing progress note or the medical diagnosis in a progress note written by a health care provider.
- **Plan:** This section outlines the plan of care based on the Assessment section, including goals and planned interventions.
- **Interventions:** This section describes the actions implemented.
- **Evaluation:** This section describes the patient response to interventions and if the planned outcomes were met.

Patient Discharge Summary

When a patient is discharged from an agency, a discharge summary is documented in the patient record, along with clear verbal and written patient education and instructions provided to the patient. Discharge summary information is frequently provided in a checklist format to ensure accuracy and includes the following:

- Time of departure and method of transportation out of the hospital (e.g., wheelchair)

- Name and relationship of person accompanying the patient at discharge
- Condition of the patient at discharge
- Patient education completed and associated educational materials or other information provided to the patient
- Discharge instructions on medications, treatments, diet, and activity
- Follow-up appointments or referrals given

See Figure 2.12[5] for an image of a nurse providing discharge instructions to a patient. Discharge teaching typically starts at admission and continues throughout the patient's stay.

Figure 2.12 Discharge Teaching

Minimum Data Set (MDS) Charting

In long-term care settings, additional documentation is used to provide information for reimbursement by private insurance, Medicare, and Medicaid. The Resident Assessment Instrument **Minimum Data Set (MDS)** is a federally mandated assessment tool created by registered nurses in skilled nursing facilities to track a patient's goal achievement, as well as to coordinate the efforts of the health care team to optimize the resident's quality of care and quality of life.[6] This tool also guides nursing care plan development.

> **Note**
>
> Read more details about MDS charting in the Long-Term Care Facility Resident Assessment User Manual established by the Centers for Medicare and Medicaid Services (CMS).

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2.6: Putting It All Together

Patient Scenario

Mr. Hernandez is a 47-year-old patient admitted to the neurological trauma floor as the result of a motor vehicle accident two days ago. The patient sustained significant facial trauma in the accident and his jaw is wired shut. His left eye is currently swollen, and he had significant bruising to the left side of his face. The nurse completes a visual assessment and notes that the patient has normal extraocular movement, peripheral vision, and pupillary constriction bilaterally. Additional assessment reveals that Mr. Hernandez also sustained a fracture of the left arm and wrist during the accident. His left arm is currently in a cast and sling. He has normal movement and sensation with his right hand. Mrs. Hernandez is present at the patient's bedside and has provided additional information about the patient. She reports that Mr. Hernandez's primary language is Spanish but that he understands English well. He has a bachelor's degree in accounting and owns his own accounting firm. He has a history of elevated blood pressure, but is otherwise healthy.

The nurse notes that the patient's jaw is wired and he is unable to offer a verbal response. He does understand English well, has appropriate visual acuity, and is able to move his right hand and arm.

Based on the assessment information that has been gathered, the nurse plans several actions to enhance communication. Adaptive communication devices such as communication boards, symbol cards, or electronic messaging systems will be provided. The nurse will eliminate distractions such as television and hallway noise to decrease sources of additional stimuli in the communication experience.

Sample Documentation

Mr. Hernandez has impaired verbal communication due to facial fracture and inability to enunciate words around his wired jaw. He understands both verbal and written communication. Mr. Hernandez has left sided facial swelling, but no visual impairment. He has a left arm fracture but is able to move and write with his right hand. The patient is supplied with communication cards and marker board. He responds appropriately with written communication and is able to signal his needs.

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2.7: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Practice what you have learned in this chapter by completing these learning activities. When accessing the online activities that contain videos, it is best to use Google Chrome or Firefox browsers.

1. To test understanding of these terms, try an online quiz:
Therapeutic Communication Techniques vs. Non-therapeutic Communication Techniques Quizlet

2. Consider the following scenario and describe actions that you might take to facilitate the patient communication experience.

You are caring for Mr. Curtis, an 87-year-old patient newly admitted to the medical surgical floor with a hip fracture. You are preparing to complete his admission history and need to collect relevant health information and complete a physical exam. You approach the room, knock at the door, complete hand hygiene, and enter. Upon entry, you see Mr. Curtis is in bed surrounded by multiple family members. The television is on in the background and you also note the sound of meal trays being delivered in the hallway.

Based on the described scenario, what actions might be implemented to aid in your communication with Mr. Curtis?

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2.8: II Glossary

Aphasia: A communication disorder that results from damage to portions of the brain that are responsible for language.

Assertive communication: A way to convey information that describes the facts, the sender's feelings, and explanations without disrespecting the receiver's feelings. This communication is often described as using "I" messages: "I feel…," "I understand…," or "Help me to understand…"

Bedside nurse handoff report: A handoff report in hospitals that involves patients, their family members, and both the off-going and the incoming nurses. The report is performed face to face and conducted at the patient's bedside.

Broca's aphasia: A type of aphasia where patients understand speech and know what they want to say, but frequently speak in short phrases that are produced with great effort. People with Broca's aphasia typically understand the speech of others fairly well. Because of this, they are often aware of their difficulties and can become easily frustrated.

Charting by exception: A type of documentation where a list of "normal findings" is provided and nurses document assessment findings by confirming normal findings and writing brief documentation notes for any abnormal findings.

DAR: A type of documentation often used in combination with charting by exception. DAR stands for Data, Action, and Response. Focused DAR notes are brief, and each note is focused on one patient problem for efficiency in documenting, as well as for reading.

Electronic Health Record (EHR): A digital version of a patient's paper chart. EHRs are real-time, patient-centered records that make information available instantly and securely to authorized users.

Global aphasia: A type of aphasia that results from damage to extensive portions of the language areas of the brain. Individuals with global aphasia have severe communication difficulties and may be extremely limited in their ability to speak or comprehend language. They may be unable to say even a few words or may repeat the same words or phrases over and over again. They may have trouble understanding even simple words and sentences.

Handoff report: A process of exchanging vital patient information, responsibility, and accountability between the off-going and incoming nurses in an effort to ensure safe continuity of care and the delivery of best clinical practices.

ISBARR: A mnemonic for the format of professional communication among health care team members that includes Introduction, Situation, Background, Assessment, Request/Recommendations, and Repeat back.

Minimum Data Set (MDS): A federally mandated assessment tool used in skilled nursing facilities to track a patient's goal achievement, as well as to coordinate the efforts of the health care team to optimize the resident's quality of care and quality of life.

Narrative note: A type of documentation that chronicles all of the patient's assessment findings and nursing activities that occurred throughout the shift.

Nontherapeutic responses: Responses to patients that block communication, expression of emotion, or problem-solving.

Progressive relaxation: Types of relaxation techniques that focus on reducing muscle tension and using mental imagery to induce calmness.

Relaxation breathing: A breathing technique used to reduce anxiety and control the stress response.

SOAPIE: A mnemonic for a type of documentation that is organized by six categories: Subjective, Objective, Assessment, Plan, Interventions, and Evaluation.

Therapeutic communication: The purposeful, interpersonal information transmitting process through words and behaviors based on both parties' knowledge, attitudes, and skills, which leads to patient understanding and participation.

Therapeutic communication techniques: Techniques that encourage patients to explore feelings, problem solve, and cope with responses to medical conditions and life events.

Verbal communication: Exchange of information using words understood by the receiver.

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CHAPTER OVERVIEW

3: Diverse Patients

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3.2: Diverse Patients Introduction
3.3: Diverse Patients Basic Concepts
3.4: Patient's Bill of Rights
3.5: Cultural Competence
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3.7: Culturally Sensitive Care
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3.1: III Glossary

Assimilation: The process of adopting or conforming to the practices, habits, and norms of a cultural group. As a result, the person gradually takes on a new cultural identity and may lose their original identity in the process.

Bias: To carry an attitude, opinion, or inclination (positive or negative) towards a group or members of a group. Bias can be a conscious attitude (explicit), or a person may not be aware of their bias (implicit).

Cultural awareness: A deliberate, cognitive process in which health care providers become appreciative and sensitive to the values, beliefs, lifeways, practices, and problem-solving strategies of a patient's culture. Cultural awareness goes beyond a simple awareness of the existence of other cultures and involves an interest, curiosity, and appreciation of other cultures.

Cultural competency: The process of applying evidence-based nursing in agreement with the preferred cultural values, beliefs, worldview, and practices of patients to produce improved patient outcomes.

Cultural diversity: Cultural differences in people.

Cultural encounters: A process where the nurse directly engages in face-to-face cultural interactions and other types of encounters with clients from culturally diverse backgrounds in order to modify existing beliefs about a cultural group and to prevent possible stereotyping.

Cultural humility: A humble and respectful attitude toward individuals of other cultures that pushes one to challenge their own cultural biases, realize they cannot know everything about other cultures, and approach learning about other cultures as a lifelong goal and process.[1]

Cultural negotiation: A process where the patient and nurse seek a mutually acceptable way to deal with competing interests of nursing care, prescribed medical care, and the patient's cultural needs. Cultural negotiation is reciprocal and collaborative. When the patient's cultural needs do not significantly or adversely affect their treatment plan, the cultural needs can be accommodated.

Culturally responsive care: Nursing actions that integrate a person's cultural beliefs into their care.

Culturally safe environment: A safe space for patients to interact with health professionals, without judgment or discrimination, where the patient is free to express their cultural beliefs, values, and identity.

Culture: A set of beliefs, attitudes, and practices shared by a group of people or community that is accepted, followed, and passed down to other members of the group.

Discrimination: Unfair and different treatment of another person or group, denying them opportunities and rights to participate fully in society.

Ethnocentrism: The belief that one's culture (or race, ethnicity, or country) is better and preferable than another's.

Gender expression: A person's outward demonstration of gender in relation to societal norms, such as in style of dress, hairstyle, or other mannerisms.

Gender identity: A person's inner sensibility that they are a man, a woman, or perhaps neither.

Health disparities: Differences in health outcomes resulting from entrenched economic, sociopolitical, or environmental disadvantages. Health disparities negatively impact groups of people based on their ethnicity, gender, age, mental health, disability, sexual orientation or gender identity, socioeconomic status, geographic location, or other characteristics historically linked to discrimination or exclusion.

Health care disparities: Differences in access to health care and insurance coverage.

Holism: Treatment of the whole person, including physical, mental, spiritual, and social needs.

Intersectionality: The many ways in which a person expresses their cultural identity are not separated, but are closely intertwined.

Justice: A principle and moral obligation to act on the basis of equality and equity; a standard linked to fairness for all in society.[2]

LGBTQ: Lesbian, gay, bisexual, transgender, queer, or questioning in reference to sexual orientation.

Prejudice: To "prejudge"; a preconceived idea, often unfavorable, about a person or group of people.

Race: A socially constructed idea; there are no truly genetically or biologically distinct races. Humans are biologically similar to each other, not different.

Racism: The presumption that races are distinct from one another and there is a hierarchy to race, implying that races are unequal. In racism, expression of one's cultural beliefs is viewed as a heritable trait.

Sexual orientation: A person's physical and emotional interest or desire for others. Sexual orientation is on a continuum and is manifested in one's self-identity and behaviors.

Social determinants of health: Nonmedical factors that influence health outcomes, including conditions in which people are born, grow, work, live, and age, and the wider sets of forces and systems shaping the conditions of daily life.[3]

Social justice: Equal rights, equal treatment, and equitable opportunities for all.[4]

Stereotyping: Assuming that a person has the attributes, traits, beliefs, and values of a group because they are a member of that group.

Subculture: A smaller group of people within a larger culture, often based on a person's occupation, hobbies, interests, or place of origin.

Transcultural nursing: Incorporating cultural beliefs and practices of people to help them maintain and regain health or to face death in a meaningful way.

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3.2: Diverse Patients Introduction

Learning Objectives

- Reflect upon personal and cultural values, beliefs, biases, and heritage[1]
- Embrace diversity, equity, inclusivity, health promotion, and health care for individuals of diverse geographic, cultural, ethnic, racial, gender, and spiritual backgrounds across the life span[2]
- Demonstrate respect, equity, and empathy in actions and interactions with all health care consumers[3]
- Participate in life-long learning to understand cultural preferences, worldviews, choices, and decision-making processes of diverse patients[4]
- Protect patient dignity
- Demonstrate principles of patient-centered care and cultural humility
- Make adaptations to patient care to reduce health disparities
- Adhere to the Patient's Bill of Rights
- Identify strategies to advocate for patients
- Use evidence-based practices

No matter who we are or where we come from, every person belongs to a culture. The impact of culture on a person's health is profound because it affects many health beliefs, such as perceived causes of illness, ways to prevent illness, and acceptance of medical treatments. **Culturally responsive care** integrates these cultural beliefs into an individual's health care. Culturally responsive care is intentional and promotes trust and rapport with patients. At its heart, culturally responsive care is patient-centered care. The American Nurses Association (ANA) states, "The art of nursing is demonstrated by unconditionally accepting the humanity of others, respecting their need for dignity and worth, while providing compassionate, comforting care."[5]

Nurses provide holistic care when incorporating their patients' physical, mental, spiritual, cultural, and social needs into their health care (referred to as **holism**). As a nursing student, you are undertaking a journey of developing cultural competency with an attitude of cultural humility as you learn how to provide holistic care to your patients. **Cultural competency** is a lifelong process of applying evidence-based nursing in agreement with the cultural values, beliefs, worldview, and practices of patients to produce improved patient outcomes.[6],[7],[8] **Cultural humility** is defined by the American Nurses Association as, "A humble and respectful attitude toward individuals of other cultures that pushes one to challenge their own cultural biases, realize they cannot know everything about other cultures, and approach learning about other cultures as a life-long goal and process.[9] The bottom line is you will improve the quality of your nursing care by understanding, respecting, and responding to a patient's experiences, values, beliefs, and preferences.[10]

This chapter will focus on developing culturally competency and cultural humility and providing culturally responsive care.

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3.3: Diverse Patients Basic Concepts

Let's begin the journey of developing cultural competency by exploring basic concepts related to culture.

Culture and Subculture

Culture is a set of beliefs, attitudes, and practices shared by a group of people or community that is accepted, followed, and passed down to other members of the group. The word "culture" may at times be interchanged with terms such as ethnicity, nationality, or race. See Figure 3.1[1] for an illustration depicting culture by various nationalities. Cultural beliefs and practices bind group or community members together and help form a cohesive identity.[2],[3] Culture has an enduring influence on a person's view of the world, expressed through language and communication patterns, family connections and kinship, religion, cuisine, dress, and other customs and rituals.[4] Culture is not static but is dynamic and ever-changing; it changes as members come into contact with beliefs from other cultures. For example, sushi is a traditional Asian dish that has become popular in America in recent years.

Figure 3.1 Cultures

Nurses and other health care team members are impacted by their own personal cultural beliefs. For example, a commonly held belief in American health care is the importance of timeliness; medications are administered at specifically scheduled times, and appearing for appointments on time is considered crucial.

Most cultural beliefs are a combination of beliefs, values, and habits that have been passed down through family members and authority figures. The first step in developing cultural competence is to become aware of your own cultural beliefs, attitudes, and practices.

Nurses should also be aware of subcultures. A **subculture** is a smaller group of people within a culture, often based on a person's occupation, hobbies, interests, or place of origin. People belonging to a subculture may identify with some, but not all, aspects of their larger "parent" culture. Members of the subculture share beliefs and commonalities that set them apart and do not always conform with those of the larger culture. See Table 3.2a for examples of subcultures.

Table 3.2a Examples of Subcultures

Age/Generation	Baby Boomers, Millennials, Gen Z
Occupation	Truck Driver, Computer Scientist, Nurse
Hobbies/Interests	Birdwatchers, Gamers, Foodies, Skateboarders
Religion	Hinduism, Baptist, Islam
Gender	Male, Female, Nonbinary, Two-Spirit
Geography	Rural, Urban, Southern, Midwestern

Culture is much more than a person's nationality or ethnicity. Culture can be expressed in a multitude of ways, including the following:

- Language(s) spoken
- Religion and spiritual beliefs
- Gender identity

- Socioeconomic status
- Age
- Sexual orientation
- Geography
- Educational background
- Life experiences
- Living situation
- Employment status
- Immigration status
- Ability/Disability

People typically belong to more than one culture simultaneously. These cultures overlap, intersect, and are woven together to create a person's cultural identity. In other words, the many ways in which a person expresses their cultural identity are not separated, but are closely intertwined, referred to as **intersectionality**.

Assimilation

Assimilation is the process of adopting or conforming to the practices, habits, and norms of a cultural group. As a result, the person gradually takes on a new cultural identity and may lose their original identity in the process.[5] An example of assimilation is a newly graduated nurse, who after several months of orientation on the hospital unit, offers assistance to a colleague who is busy. The new nurse has developed self-confidence in the role and has developed an understanding that helping others is a norm for the nurses on that unit.

Assimilation is not always voluntary, however, and may become a source of distress. There are historic examples of involuntary assimilation in many countries. For example, in the past, authorities in the United States and Canadian governments required indigenous children to attend boarding schools, separated them from their families, and punished them for speaking their native language.[6],[7]

Cultural Values and Beliefs

Culture provides an important source of values and comfort for patients, families, and communities. Think of culture as a thread that is woven through a person's world and impacts one's choices, perspectives, and way of life. It plays a role in all of a person's life events and threads its way through the development of one's self-concept, sexuality, and spirituality. It affects lifelong nutritional habits, as well as coping strategies with death and dying.

Culture influences how a patient interprets "good" health, as well as their perspectives on illness and the causes of illness. The manner in which pain is expressed is also shaped by a person's culture. See Table 3.2b for additional examples of how a person's culture impacts common values and beliefs regarding family patterns, communication patterns, space orientation, time orientation, and nutritional patterns. As you read Table 3.2b, take a moment to reflect on your own cultural background and your personally held beliefs for each of these concepts.

Table 3.2b Cultural Concepts

Cultural Concepts	Examples of Culturally Influenced Values and Beliefs
Family Patterns	Family size Views on contraception Roles of family members Naming customs Value placed on elders and children Discipline/upbringing of children Rites of passage End-of-life care
Communication Patterns	Eye contact Touch Use of silence or humor Intonation, vocabulary, grammatical structure Topics considered personal (i.e., difficult to discuss) Greeting customs (handshakes, hugs)
Space Orientation	Personal distance and intimate space
Time Orientation	Focus on the past, present, or future Importance of following a routine or schedule Arrival on time for appointments
Nutritional Patterns	Common meal choices Foods to avoid Foods to heal or treat disease Religious practices (e.g., fasting, dietary restrictions) Foods to celebrate life events and holidays

A person's culture can also affect encounters with health care providers in other ways, such as the following:

- Level of family involvement in care
- Timing for seeking care
- Acceptance of treatment (as preventative measure or for an actual health problem)
- The accepted decision-maker (i.e., the patient or other family members)
- Use of home or folk remedies
- Seeking advice or treatment from nontraditional providers
- Acceptance of a caregiver of the opposite gender

Cultural Diversity and Cultural Humility

Cultural diversity is a term used to describe cultural differences among people. See Figure 3.2[8] for artwork depicting diversity. While it is useful to be aware of specific traits of a culture or subculture, it is just as important to understand that each individual is unique and there are always variations in beliefs among individuals within a culture. Nurses should, therefore, refrain from making assumptions about the values and beliefs of members of specific cultural groups.[9] Instead, a better approach is recognizing that

culture is not a static, uniform characteristic but instead realizing there is diversity within every culture and in every person. The American Nurses Association (ANA) defines **cultural humility** as, "A humble and respectful attitude toward individuals of other cultures that pushes one to challenge their own cultural biases, realize they cannot possibly know everything about other cultures, and approach learning about other cultures as a lifelong goal and process."[10]

Current demographics in the United States reveal that the population is predominantly white. People who were born in another country, but now live in the United States, comprise approximately 14% of the nation's total population. However, these demographics are rapidly changing. The United States Census Bureau projects that more than 50 percent of Americans will belong to a minority group by 2060. With an increasingly diverse population to care for, it is imperative for nurses to integrate culturally responsive care into their nursing practice.[11] [12] Creative a culturally responsive environment is discussed in a later subsection of this chapter.

Figure 3.2 Diversity

Concepts Related to Culture

There are additional concepts related to culture that can impact a nurse's ability to provide culturally responsive care, including stereotyping, ethnocentrism, discrimination, prejudice, and bias. See Table 3.2c for definitions and examples of these concepts.

Table 3.2c Concepts Related to Culture

Concepts	Definitions	Examples
Stereotyping	The assumption that a person has the attributes, traits, beliefs, and values of a cultural group because they are a member of that group.	The nurse teaches the daughter of an older patient how to make online doctor appointments, assuming that the older patient does not understand how to use a computer.
Ethnocentrism	The belief that one's culture (or race, ethnicity, or country) is better and preferable than another's.	The nurse disparages the patient's use of nontraditional medicine and tells the patient that traditional treatments are superior.
Discrimination	The unfair and different treatment of another person or group, denying them opportunities and rights to participate fully in society.	A nurse manager refuses to hire a candidate for a nursing position because she is pregnant.
Prejudice	A prejudgment or preconceived idea, often unfavorable, about a person or group of people.	The nurse withholds pain medication from a patient with a history of opioid addiction.
Bias	An attitude, opinion, or inclination (positive or negative) towards a group or members of a group. Bias can be a conscious attitude (explicit) or an unconscious attitude where the person is not aware of their bias (implicit).	A patient does not want the nurse to care for them because the nurse has a tattoo.

Race is a socially constructed idea because there are no true genetically- or biologically-distinct races. Humans are not biologically different from each other. **Racism** presumes that races are distinct from one another, and there is a hierarchy to race, implying that races are unequal. Ernest Grant, president of the American Nurses Association (ANA), recently declared that nurses are obligated "to speak up against racism, discrimination, and injustice. This is non-negotiable."[13] As frontline health care providers, nurses have an obligation to recognize the impact of racism on their patients and the communities they serve.[14]

Sexual Orientation and Gender Identity

Culture can exert a powerful influence on a person's sexual orientation and gender expression. **Sexual orientation** refers to a person's physical and emotional interest or desire for others. Sexual orientation is on a continuum and is manifested in one's self-identity and behaviors.[15] The acronym **LGBTQ** stands for lesbian, gay, bisexual, transgender, queer, or questioning in reference to sexual orientation. (A "+" is sometimes added after LGBTQ to capture additional orientations). See Figure 3.3[16] for an image of participants in a LGBTQ rally in Dublin. Historically, individuals within the LGBTQ community have experienced discrimination and prejudice from health care providers and avoided or delayed health care due to these negative experiences. Despite increased recognition of this group of people in recent years, members of the LGBTQ community continue to experience significant health disparities. Persistent cultural bias and stigmatization of lesbian, gay, bisexual, or transgender (LGBTQ) people have also been shown to contribute to higher rates of substance abuse and suicide rates in this population.[17],[18],[19]

Figure 3.3 LGBTQ Rally

Gender identity refers to a person's inner sensibility that they are a man, a woman, or perhaps neither. Cisgender is the term used to describe a person whose identity matches their sex assigned at birth.[20] To the extent that a person's gender identity does not conform with the sex assigned to them at birth, they may identify as transgender or as gender nonbinary. Transgender people, like cisgender people, "may be sexually oriented toward men, women, both sexes, or neither sex."[21] **Gender expression** refers to a person's outward demonstration of gender in relation to societal norms, such as in style of dress, hairstyle, or other mannerisms.[22] Sharing pronouns as part of a basic introduction to a patient can assist a transgender patient to feel secure sharing their pronouns in a health care setting. Asking a patient for their pronoun (he, she, they, ze, etc.) is considered part of a nursing assessment.

Related Ethical Considerations

Justice, a principle and moral obligation to act on the basis of equality and equity, is a standard linked to fairness for all in society.[23] The ANA states this obligation guarantees not only basic rights (respect, human dignity, autonomy, security, and safety) but also fairness in all operations of societal structures. This includes care being delivered with fairness, rightness, correctness, unbiasedness, and inclusiveness while being based on well-founded reason and evidence.[24]

Social justice is related to respect, equity, and inclusion. The ANA defines **social justice** as equal rights, equal treatment, and equitable opportunities for all.[25] The ANA further states, "Nurses need to model the profession's commitment to social justice and health through actions and advocacy to address the social determinants of health and promote well-being in all settings within society."[26] **Social determinants of health** are nonmedical factors that influence health outcomes, including conditions in which people are born, grow, work, live, and age, and the wider sets of forces and systems shaping the conditions of daily life.[27] Health outcomes impacted by social determinants of health are referred to as health disparities. Health disparities are further discussed in a subsection later in this chapter.

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3.4: Patient's Bill of Rights

Th Patient's Bill of Rights is an evolving document related to providing culturally competent care. In 1973 the American Hospital Association (AHA) adopted the Patient's Bill of Rights.[1] See the following box to review the original Patient's Bill of Rights. The bill has since been updated, revised, and adapted for use throughout the world in all health care settings. There are different versions of the bill, but, in general, it safeguards a patient's right to accurate and complete information, fair treatment, and self-determination when making health care decisions. Patients should expect to be treated with sensitivity and dignity and with respect for their cultural values. While the Patient's Bill of Rights extends beyond the scope of cultural considerations, its basic principles underscore the importance of cultural competency when caring for people.

Patient's Bill of Rights[2]

1. The patient has the right to considerate and respectful care.
2. The patient has the right to and is encouraged to obtain from physicians and other direct caregivers relevant, current, and understandable information concerning diagnosis, treatment, and prognosis.
3. Except in emergencies when the patient lacks decision-making capacity and the need for treatment is urgent, the patient is entitled to the opportunity to discuss and request information related to the specific procedures and/or treatments, the risks involved, the possible length of recuperation, and the medically reasonable alternatives and their accompanying risks and benefits.
4. Patients have the right to know the identity of physicians, nurses, and others involved in their care, as well as when those involved are students, residents, or other trainees.
5. The patient has the right to know the immediate and long-term financial implications of treatment choices, insofar as they are known.
6. The patient has the right to make decisions about the plan of care prior to and during the course of treatment and to refuse a recommended treatment or plan of care to the extent permitted by law and hospital policy and to be informed of the medical consequences of this action. In case of such refusal, the patient is entitled to other appropriate care and services that the hospital provides or transfer to another hospital. The hospital should notify patients of any policy that might affect patient choice within the institution.
7. The patient has the right to have an advance directive (such as a living will, health care proxy, or durable power of attorney for health care) concerning treatment or designating a surrogate decision-maker with the expectation that the hospital will honor the intent of that directive to the extent permitted by law and hospital policy. Health care institutions must advise patients of their rights under state law and hospital policy to make informed medical choices, ask if the patient has an advance directive, and include that information in patient records. The patient has the right to timely information about hospital policy that may limit its ability to implement fully a legally valid advance directive.
8. The patient has the right to every consideration of privacy. Case discussion, consultation, examination, and treatment should be conducted so as to protect each patient's privacy.
9. The patient has the right to expect that all communications and records pertaining to his/her care will be treated as confidential by the hospital, except in cases such as suspected abuse and public health hazards when reporting is permitted or required by law. The patient has the right to expect that the hospital will emphasize the confidentiality of this information when it releases it to any other parties entitled to review information in these records.
10. The patient has the right to review the records pertaining to his/her medical care and to have the information explained or interpreted as necessary, except when restricted by law.
11. The patient has the right to expect that, within its capacity and policies, a hospital will make a reasonable response to the request of a patient for appropriate and medically indicated care and services. The hospital must provide evaluation, service, and/or referral as indicated by the urgency of the case. When medically appropriate and legally permissible, or when a patient has so requested, a patient may be transferred to another facility. The institution to which the patient is to be transferred must first have accepted the patient for transfer. The patient must also have the benefit of complete information and explanation concerning the need for, risks, benefits, and alternatives to such a transfer.
12. The patient has the right to ask and be informed of the existence of business relationships among the hospital, educational institutions, other health care providers, or payers that may influence the patient's treatment and care.

13. The patient has the right to consent to or decline to participate in proposed research studies or human experimentation affecting care and treatment or requiring direct patient involvement and to have those studies fully explained prior to consent. A patient who declines to participate in research or experimentation is entitled to the most effective care that the hospital can otherwise provide.
14. The patient has the right to expect reasonable continuity of care when appropriate and to be informed by physicians and other caregivers of available and realistic patient care options when hospital care is no longer appropriate.
15. The patient has the right to be informed of hospital policies and practices that relate to patient care, treatment, and responsibilities. The patient has the right to be informed of available resources for resolving disputes, grievances, and conflicts, such as ethics committees, patient representatives, or other mechanisms available in the institution. The patient has the right to be informed of the hospital's charges for services and available payment methods.

Note

Read a current version of the "Patient Care Partnership" brochure from the American Hospital Association that has replaced the Patient's Bill of Rights.

1. American Hospital Association. (2003). *The patient care partnership*. https://www.aha.org/other-resources/patient-care-partnership↵
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3.5: Cultural Competence

The freedom to express one's cultural beliefs is a fundamental right of all people. Nurses realize that people speak, behave, and act in many different ways due to the influential role that culture plays in their lives and their view of the world. **Cultural competence** is a lifelong process of applying evidence-based nursing in agreement with the cultural values, beliefs, worldview, and practices of patients to produce improved patient outcomes.[1],[2],[3]

Culturally-competent care requires nurses to combine their knowledge and skills with awareness, curiosity, and sensitivity about their patients' cultural beliefs. It takes motivation, time, and practice to develop cultural competence, and it will evolve throughout your nursing career. Culturally competent nurses have the power to improve the quality of care leading to better health outcomes for culturally diverse patients. Nurses who accept and uphold the cultural values and beliefs of their patients are more likely to develop supportive and trusting relationships with their patients. In turn, this opens the way for optimal disease and injury prevention and leads towards positive health outcomes for all patients .

The roots of providing culturally-competent care are based on the original transcultural nursing theory developed by Dr. Madeleine Leininger. **Transcultural nursing** incorporates cultural beliefs and practices of individuals to help them maintain and regain health or to face death in a meaningful way.[4] See Figure 3.4[5] for an image of Dr. Leininger. Read more about transcultural nursing theory in the following box.

Figure 3.4 Madeleine Leininger

Madeleine Leininger and the Transcultural Nursing Theory[6]

Dr. Madeleine Leininger (1925-2012) founded the transcultural nursing theory. She was the first professional nurse to obtain a PhD in anthropology. She combined the "culture" concept from anthropology with the "care" concept from nursing and reformulated these concepts into "culture care."

In the mid-1950s, no cultural knowledge base existed to guide nursing decisions or understand cultural behaviors as a way of providing therapeutic care. Leininger wrote the first books in the field and coined the term "culturally congruent care." She developed and taught the first transcultural nursing course in 1966, and master's and doctoral programs in transcultural nursing were launched shortly after. Dr. Leininger was honored as a Living Legend of the American Academy of Nursing in 1998.

Nurses have an ethical and moral obligation to provide culturally competent care to the patients they serve.[7] The "Respectful and Equitable Practice" Standard of Professional Performance set by the American Nurses Association (ANA) states that nurses must practice with cultural humility and inclusiveness. The ANA Code of Ethics also states that the nurse should collaborate with other health professionals, as well as the public, to protect human rights, fight discriminatory practices, and reduce disparities.[8] Additionally, the ANA Code of Ethics also states that nurses "are expected to be aware of their own cultural identifications in order to control their personal biases that may interfere with the therapeutic relationship. Self-awareness involves not only examining one's culture but also examining perceptions and assumptions about the patient's culture…nurses should possess knowledge and understanding how oppression, racism, discrimination, and stereotyping affect them personally and in their work."[9]

Developing cultural competence begins in nursing school.[10],[11] Culture is an integral part of life, but its impact is often implicit. It is easy to assume that others share the same cultural values that you do, but each individual has their own beliefs, values, and preferences. Begin the examination of your own cultural beliefs and feelings by answering the questions below.[12]

Note

Reflect on the following questions carefully and contemplate your responses as you begin your journey of providing culturally responsive care as a nurse. (Questions are adapted from the Anti Defamation League's "Imagine a World Without Hate" Personal Self-Assessment Anti-Bias Behavior).[13]

- Who are you? With what cultural group or subgroups do you identify?
- When you meet someone from another culture/country/place, do you try to learn more about them?
- Do you notice instances of bias, prejudice, discrimination, and stereotyping against people of other groups or cultures in your environment (home, school, work, TV programs or movies, restaurants, places where you shop)?
- Have you reflected on your own upbringing and childhood to better understand your own implicit biases and the ways you have internalized messages you received?
- Do you ever consider your use of language to avoid terms or phrases that may be degrading or hurtful to other groups?
- When other people use biased language and behavior, do you feel comfortable speaking up and asking them to refrain?
- How ready are you to give equal attention, care, and support to people regardless of their culture, socioeconomic class, religion, gender expression, sexual orientation, or other "difference"?

The Process of Developing Cultural Competence

Dr. Josephine Campinha-Bacote is an influential nursing theorist and researcher who developed a model of cultural competence. The model asserts there are specific characteristics that a nurse becoming culturally competent possesses, including cultural awareness, cultural knowledge, cultural skill, and cultural encounters.[14]

Cultural awareness is a deliberate, cognitive process in which health care providers become appreciative and sensitive to the values, beliefs, attitudes, practices, and problem-solving strategies of a patient's culture. To become culturally aware, the nurse must undergo reflective exploration of personal cultural values while also becoming conscious of the cultural practices of others. In addition to reflecting on one's own cultural values, the culturally competent nurse seeks to reverse harmful prejudices, ethnocentric views, and attitudes they have. Cultural awareness goes beyond a simple awareness of the existence of other cultures and involves an interest, curiosity, and appreciation of other cultures. Although cultural diversity training is typically a requirement for health care professionals, **cultural desire** refers to the intrinsic motivation and commitment on the part of a nurse to develop cultural awareness and cultural competency.[15]

Acquiring cultural knowledge is another important step towards becoming a culturally competent nurse. **Cultural knowledge** refers to seeking information about cultural health beliefs and values to understand patients' world views. To acquire cultural knowledge, the nurse actively seeks information about other cultures, including common practices, beliefs, values, and customs, particularly for those cultures that are prevalent within the communities they serve.[16] Cultural knowledge also includes understanding the historical backgrounds of culturally diverse groups in society, as well as physiological variations and the incidence of certain health conditions in culturally diverse groups. Cultural knowledge is best obtained through cultural encounters with patients from diverse backgrounds to learn about individual variations that occur within cultural groups and to prevent stereotyping.

While obtaining cultural knowledge, it is important to demonstrate cultural sensitivity. **Cultural sensitivity** means being tolerant and accepting of cultural practices and beliefs of people. Cultural sensitivity is demonstrated when the nurse conveys nonjudgmental interest and respect through words and action and an understanding that some health care treatments may conflict with a person's cultural beliefs.[17] Cultural sensitivity also implies a consciousness of the damaging effects of stereotyping, prejudice, or biases on patients and their well-being. Nurses who fail to act with cultural sensitivity may be viewed as uncaring or inconsiderate, causing a breakdown in trust for the patient and their family members. When a patient experiences nursing care that contradicts with their cultural beliefs, they may experience moral or ethical conflict, nonadherence, or emotional distress.

Cultural desire, awareness, sensitivity, and knowledge are the building blocks for developing cultural skill. **Cultural skill** is reflected by the nurse's ability to gather and synthesize relevant cultural information about their patients while planning care and using culturally sensitive communication skills. Nurses with cultural skill provide care consistent with their patients' cultural needs and deliberately take steps to secure a safe health care environment that is free of discrimination or intolerance. For example, a

culturally skilled nurse will make space and seating available within a patient's hospital room for accompanying family members when this support is valued by the patient.[18]

Cultural encounters is a process where the nurse directly engages in face-to-face cultural interactions and other types of encounters with clients from culturally diverse backgrounds in order to modify existing beliefs about a cultural group and to prevent possible stereotyping.

By developing the characteristics of cultural awareness, cultural knowledge, cultural skill, and cultural encounters, a nurse develops cultural competence.

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3.6: Health Disparities

Despite decades of promoting cultural competent care and the Patient's Bill of Rights, disparities in health care continue. Vulnerable populations continue to experience increased prevalence and burden of diseases, as well as problems accessing quality health care. In 2003 the Institute of Medicine (IOM) published *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, sharing evidence that "bias, prejudice, and stereotyping on the part of health care providers may contribute to differences in care."[1] The health care system in the United States was shaped by the values and beliefs of mainstream white culture and originally designed to primarily serve English-speaking patients with financial resources.[2] In addition, most health care professionals in the United States are members of the white culture and medical treatments tend to arise from that perspective.[3] [4]

The term **health disparities** describes the differences in health outcomes that result from social determinants of health. Social determinants of health are conditions in the environment where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes. Resources that enhance quality of life can have a significant influence on population health outcomes. Examples of resources include safe and affordable housing, access to education, public safety, availability of healthy foods, local emergency/health services, and environments free of life-threatening toxins.[5]

Vulnerable populations experience increased prevalence and burden of diseases, as well as problems accessing quality health care because of social determinants of health. Health disparities negatively impact groups of people based on their ethnicity, gender, age, mental health, disability, sexual orientation, gender identity, socioeconomic status, geographic location, or other characteristics historically linked to discrimination or exclusion.[6] A related term is **health care disparity** that refers to differences in access to health care and insurance coverage. Health disparities and health care disparities can lead to decreased quality of life, increased personal costs, and lower life expectancy. More broadly, these disparities also translate to greater societal costs, such as the financial burden of uncontrolled chronic illnesses.

The Agency for Healthcare Research and Quality (AHRQ) releases an annual *National Healthcare Quality and Disparities Report* that provides a comprehensive overview of the quality of health care received by the general U.S. population and disparities in care experienced by different racial and socioeconomic groups. Quality is described in terms of patient safety, person-centered care, care coordination, effective treatment, healthy living, and care affordability.[7] Although access to health care and quality have improved since 2000 in the wake of the Affordable Care Act (ACA), the 2019 report shows continued disparities, especially for poor and uninsured populations:

- For about 40% of quality measures, Blacks, African Americans, and Alaska Natives received worse care than Whites. For more than one third of quality measures, Hispanics received worse care than Whites.
- For nearly a quarter of quality measures, residents of large metropolitan areas received worse care than residents of suburban areas. For one third of quality measures, residents of rural areas received worse care than residents of suburban areas.[8]

There are several initiatives and agencies designed to combat the problem of health disparities in the United States. See Table 3.5 for a list of hyperlinks to available resources to combat health disparities.

Table 3.5 Resources to Combat Health Disparities

(AHRQ)	AHRQ publishes the *National Healthcare Quality and Disparities Report*, a report on measures related to access to care, affordable care, care coordination, effective treatment, healthy living, patient safety, and person-centered care.
Healthy People 2030	A new Healthy People initiative is launched every ten years. The initiative guides national health promotion and disease prevention efforts to improve the health of the nation.
Office of Minority Health (OMH)	The mission of the Office of Minority Health is to improve the health of minority populations and to act as a resource for health care providers. The Office of Minority Health has published National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care (CLAS).
Racial and Ethnic Approaches to Community Health Across the United States (REACH-US)	This initiative, overseen by the Centers for Disease Control (CDC), seeks to remove barriers to health linked to race or ethnicity, education, income, location, or other social factors.
National Partnership for Action to End Health Disparities (NPA) Toolkit for Community Action	The mission of the NPA is to raise awareness and increase the effectiveness of programs targeting health disparities.
Robert Wood Johnson Foundation **(RWJF)**	RWJF is a philanthropic organization with the goal of identifying the root causes of health disparities and removing barriers to improve health outcomes.
The Sullivan Alliance	The nonprofit Sullivan Alliance was formed to increase the numbers of ethnic and racial minorities within the health professions to raise awareness about health disparities and to develop partnerships between academia and the health professions.
Transcultural Nursing Society – Many Cultures One World **(TCNS)**	The mission of TCNS is to improve the quality of culturally congruent and equitable care for people worldwide by ensuring cultural competence in nursing practice, scholarship, education, research, and administration.

See the following box for an example of nurses addressing a community health care disparity during the water crisis in Flint, Michigan.

Nurses Addressing the Flint Michigan Water Crisis [9]

In 2014 the water system in Flint, Michigan, was discovered to be contaminated with lead. The city's children were found to have perilously elevated lead levels. Children from poor households were most affected by the crisis. Lead is a dangerous neurotoxin. Elevated lead levels are linked to slowed physical development; low IQ; problems with cognition, attention, and memory; and learning disabilities.

In Flint approximately 150 local nurses and nursing students answered the call, organizing and arranging educational seminars, as well as setting up lead testing clinics to determine who had been affected by the water contamination. A nursing student involved in the effort told CBS Detroit that this situation has illustrated that "the need for health care, the need for nursing, goes way outside the hospital walls." See Figure 3.5[10] for an image of the water crisis in Flint, Michigan.

Figure 3.5 Flint Michigan Water Crisis

Reflective Questions

1. What factors led to the children from poor households being so adversely harmed by this crisis?
2. What are ways that you as a future nurse can make a difference for vulnerable or marginalized people?

Providing culturally responsive care is a key strategy for reducing health disparities.[11] While there are multiple determinants contributing to a person's health, nurses play an important role in reducing health disparities by providing a culturally sensitive environment, performing a cultural assessment, and providing culturally responsive care. These interventions will be further discussed in the following sections. On the other hand, a lack of culturally responsive care potentially contributes to miscommunication between the patient and the nurse. The patient may experience distress or loss of trust in the nurse or the health care system as a whole and may not adhere to prescribed treatments. Nurses are uniquely positioned to directly impact patient outcomes as we become more aware of unacceptable health disparities and work together to overcome them.[12]

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3.7: Culturally Sensitive Care

Providing culturally responsive care integrates an individual's cultural beliefs into their health care. Begin by conveying cultural sensitivity to patients and their family members with these suggestions:[1]

- Set the stage by introducing yourself by name and role when meeting the patient and their family for the first time. Until you know differently, address the patient formally by using their title and last name. Ask the patient how they wish to be addressed and record this in the patient's chart. Respectfully acknowledge any family members and visitors at the patient's bedside.
- Begin by standing or sitting at least arm's length from the patient.
- Observe the patient and family members in regards to eye contact, space orientation, touch, and other nonverbal communication behaviors and follow their lead.
- Make note of the language the patient prefers to use and record this in the patient's chart. If English is not the patient's primary language, determine if a medical interpreter is required before proceeding with interview questions. See the box below for guidelines in using a medical interpreter.
- Use inclusive language that is culturally sensitive and appropriate. For example, do not refer to someone as "wheelchair bound"; instead say "a person who uses a wheelchair." [2]
- Be open and honest about the extent of your knowledge of their culture. It is acceptable to politely ask questions about their beliefs and seek clarification to avoid misunderstandings.
- Adopt a nonjudgmental approach and show respect for the patient's cultural beliefs, values, and practices. It is possible that you may not agree with a patient's cultural expressions, but it is imperative that the patient's rights are upheld. As long as the expressions are not unsafe for the patient or others, the nurse should attempt to integrate them into their care.
- Assure the patient that their cultural considerations are a priority in their care.

Guidelines for Using a Medical Interpreter[3]

When caring for a patient whose primary language is not English and they have a limited ability to speak, read, write, or understand the English language, seek the services of a trained medical interpreter. Health care facilities are mandated by The Joint Commission to provide qualified medical interpreters. Use of a trained medical interpreter is linked to fewer communication errors, shorter hospital stays, reduced 30-day readmission rates, and improved patient satisfaction.

Refrain from asking a family member to act as an interpreter. The patient may withhold sensitive information from them, or family members may possibly edit or change the information provided. Unfamiliarity with medical terminology can also cause misunderstanding and errors.

Medical interpreters may be on-site or available by videoconferencing or telephone. The nurse should also consider coordinating patient and family member conversations with other health care team members to streamline communication, while being aware of cultural implications such who can discuss what health care topics and who makes the decisions. When possible, obtain a medical interpreter of the same gender as the patient to prevent potential embarrassment if a sensitive matter is being discussed.

Guidelines for working with a medical interpreter:

- Allow extra time for the interview or conversation with the patient.
- Whenever possible, meet with the interpreter beforehand to provide background.
- Document the name of the medical interpreter in the progress note.
- Always face and address the patient directly, using a normal tone of voice. Do not direct questions or conversation to the interpreter.
- Speak in the first person (using "I").
- Avoid using idioms, such as, "Are you feeling under the weather today?" Avoid abbreviations, slang, jokes, and jargon.
- Speak in short paragraphs or sentences. Ask only one question at a time. Allow sufficient time for the interpreter to finish interpreting before beginning another statement or topic.
- Ask the patient to repeat any instructions and explanations given to verify that they understood.

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3.8: Cultural Assessment

After establishing a culturally sensitive environment, nurses should incorporate a cultural assessment when caring for all patients. There are many assessment guides used for patient interviews that are adaptable to a variety of health care settings and are designed to facilitate understanding and communication. The Four Cs of Culture model[1] is an example of a quick cultural assessment tool that asks questions about what the patient **C**onsiders to be a problem, the **C**ause of the problem, how they are **C**oping with the problem, and how **C**oncerned they are about the problem. See the following box for examples of sample answers to the four Cs assessment.

Four Cs of Culture[2]

1. What do you think is wrong? What is worrying you? (In other words, discover what the patient **C**onsiders to be the problem and what they **C**all it.)

- A patient with a diagnosis of pneumonia believes his body is "unbalanced."

2. What do you think **C**aused this problem? How did this happen?

- The patient believes this illness is a punishment for a misdeed.
- The patient avoids eating certain foods to treat the illness while also using home remedies such as herbal tea.

3. How serious is this problem for you? How **C**oncerned are you?

- A patient views the illness as being "God's will" and states, "It's in God's hands."

A more comprehensive cultural assessment tool, inspired by R. E. Spector's Heritage Assessment interview,[3] is described in the following box.

Sample Cultural Assessment Interview (Adapted from Spector's Heritage Assessment Tool)[4]

- Where were you born? Where were your parents born?
- What pronoun do you use (he, she, they)?
- In what language are you most comfortable speaking and reading?
- Did you grow up in a city or a town or a rural setting?
- When you were growing up, who lived with you and your family?
- Are your friends from the same cultural background as you?
- What is your religious preference?
- Do you have any dietary preferences related to your religious or cultural beliefs?
- In your culture, how do you celebrate the birth of a baby? A wedding?
- When a woman is pregnant, are there any special customs she needs to follow? Any special foods?
- When someone in your family is ill, who cares for them? What foods are prepared? Is there anything the ill person should avoid or refrain from doing?
- What home remedies might be used if someone is ill?
- As a family member is approaching death, what actions do you find comforting?
- After a loved one dies, what rituals are performed?
- What do you think a nurse should know about your culture if a family member is hospitalized?
- Who makes the decisions in your family?
- How are elders viewed in your culture?
- Are there any special beliefs regarding organ donation or blood transfusions that are held in your culture?
- Is your culture known for any special customs (e.g., rites of passage, foods, holidays, etc.)?

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3.9: Culturally Responsive Care

After establishing a culturally sensitive environment and performing a cultural assessment, nurses and nursing students can continue to promote culturally responsive care. Culturally responsive care includes creating a culturally safe environment, using cultural negotiation, and considering the impact of culture on patients' time orientation, space orientation, eye contact, and food choices.

Culturally Safe Environment

A primary responsibility of the nurse is to ensure the environment is culturally safe for the patient. A **culturally safe environment** is a safe space for patients to interact with the nurse, without judgment or discrimination, where the patient is free to express their cultural beliefs, values, and identity. This responsibility belongs to both the individual nurse and also to the larger health care organization.

Cultural Negotiation

Many aspects of nursing care are influenced by the patient's cultural beliefs, as well as the beliefs of the health care culture. For example, the health care culture in the United States places great importance on punctuality for medical appointments, yet a patient may belong to a culture that views "being on time" as relative. In some cultures, time is determined simply by whether it is day or night or time to wake up, eat, or sleep. Making allowances or accommodations for these aspects of a patient's culture is instrumental in fostering the nurse-patient relationship. This accommodation is referred to as cultural negotiation. See Figure 3.6[1] for an image illustrating cultural negotiation. During cultural negotiation, both the patient and nurse seek a mutually acceptable way to deal with competing interests of nursing care, prescribed medical care, and the patient's cultural needs. **Cultural negotiation** is reciprocal and collaborative. When a patient's cultural needs do not significantly or adversely affect their treatment plan, their cultural needs should be accommodated when feasible.

As an example, think about the previous example of a patient for whom a fixed schedule is at odds with their cultural views. Instead of teaching the patient to take a daily medication at a scheduled time, the nurse could explain that the patient should take the medication every day when he gets up. Another example of cultural negotiation is illustrated by a scenario in which the nurse is preparing a patient for a surgical procedure. As the nurse goes over the preoperative checklist, the nurse asks the patient to remove her head covering (hijab). The nurse is aware that personal items should be removed before surgery; however, the patient wishes to keep on the hijab. As an act of cultural negotiation and respect for the patient's cultural beliefs, the nurse makes arrangements with the surgical team to keep the patient's hijab in place for the surgical procedure and covering the patient's hijab with a surgical cap.

Figure 3.6 Cultural Negotiation

Decision-Making

Health care culture in the United States mirrors cultural norms of the country, with an emphasis on individuality, personal freedom, and self-determination. This perspective may conflict with a patient whose cultural background values group decision-making and decisions made to benefit the group, not necessarily the individual. As an example, in the 2019 film *The Farewell*, a Chinese-American family decides to not tell the family matriarch she is dying of cancer and only has a few months left to live. The family keeps this secret from the woman in the belief that the family should bear the emotional burden of this knowledge, which is a collectivistic viewpoint in contrast to American individualistic viewpoint.

Space Orientation

The amount of space that a person surrounds themselves with to feel comfortable is influenced by culture. (Read more about space orientation in the "Communication" chapter.) See Figure 3.7[2] for an image illustrating space orientation. For example, for some people, it would feel awkward to stand four inches away from another person while holding a social conversation, but for others a small personal space is expected when conversing with another.[3] There are times when a nurse must enter a patient's intimate or personal space, which can cause emotional distress for some patients. The nurse should always ask for permission before entering a patient's personal space and explain why and what is about to happen.

Patients may also be concerned about their modesty or being exposed. A patient may deal with the violation of their space by removing themselves from the situation, pulling away, or closing their eyes. The nurse should recognize these cues for what they are, an expression of cultural preference, and allow the patient to assume a position or distance that is comfortable for them.

Similar to cultural influences on personal space, touch is also culturally determined. This has implications for nurses because it may be inappropriate for a male nurse to provide care for a female patient and vice versa. In some cultures, it is also considered rude to touch a person's head without permission.

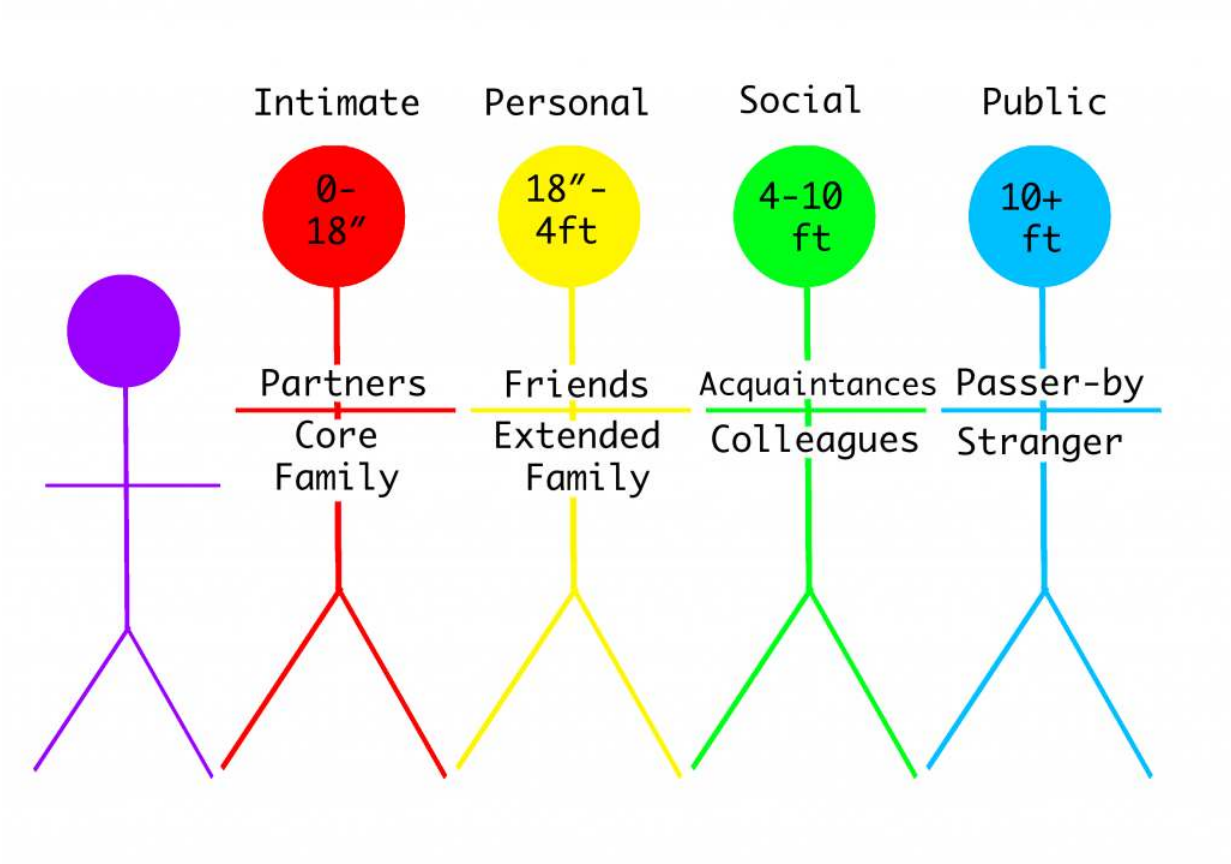

Figure 3.7 Space Orientation

Eye Contact

Eye contact is also a culturally mediated behavior. See Figure 3.8[4] for an image of eye contact. In the United States, direct eye contact is valued when communicating with others, but in some cultures, direct eye contact is interpreted as being rude or bold. Rather than making direct eye contact, a patient may avert their eyes or look down at the floor to show deference and respect to the person who is speaking. The nurse should notice these cultural cues from the patient and mirror the patient's behaviors when possible.

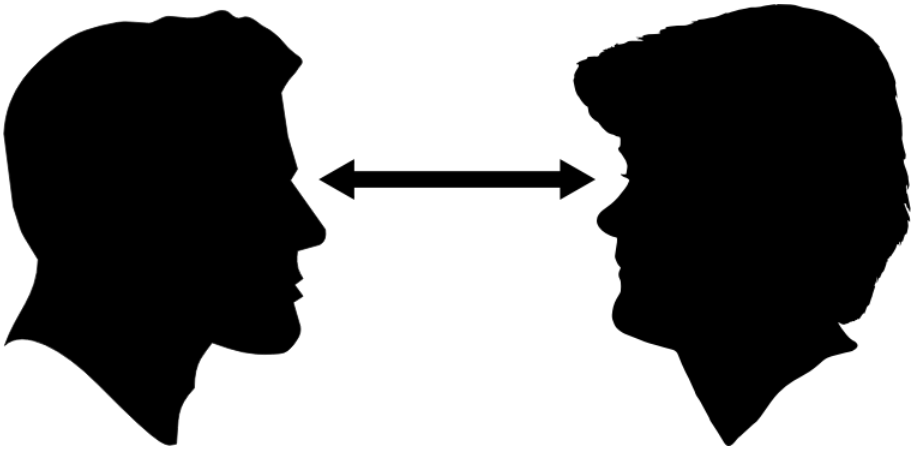

Figure 3.8 Eye Contact

Food Choices

Culture plays a meaningful role in the dietary practices and food choices of many people. Food is used to celebrate life events and holidays. Most cultures have staple foods, such as bread, pasta, or rice and particular ways of preparing foods. See Figure 3.9[5] for an image of various food choices. Special foods are prepared to heal and to cure or to demonstrate kinship, caring, and love. For example, in the United States, chicken noodle soup is often prepared and provided to family members who are ill.

Conversely, certain foods and beverages (such as meat and alcohol) are forbidden in some cultures. Nurses should accommodate or negotiate dietary requests of their patients, knowing that food holds such an important meaning to many people.

Figure 3.9 Food Choices

Summary

In summary, there are several steps in the journey of becoming a culturally competent nurse with cultural humility who provides culturally responsive care to patients. As you continue in your journey of developing cultural competency, keep the summarized points in the following box in mind.

Summary of Developing Cultural Competency

- Cultural competence is an ongoing process for nurses and takes dedication, time, and practice to develop.
- Pursuing the goal of cultural competence in nursing and other health care disciplines is a key strategy in reducing health care disparities.
- Culturally competent nurses recognize that culture functions as a source of values and comfort for patients, their families, and communities.

- Culturally competent nurses intentionally provide patient-centered care with sensitivity and respect for culturally diverse populations.
- Misunderstandings, prejudices, and biases on the part of the health care provider interfere with the patient's health outcomes.
- Culturally competent nurses negotiate care with a patient so that is congruent with the patient's cultural beliefs and values.
- Nurses should examine their own biases, ethnocentric views, and prejudices so as not to interfere with the patient's care.
- Nurses who respect and understand the cultural values and beliefs of their patients are more likely to develop positive, trusting relationships with their patients.

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1. "handshake-3378251_1920.jpg" by geralt is licensed under CC0↵
2. "Proxemics.png" by NatbrockAliciaTom is licensed under CC BY-SA 3.0↵
3. Kreuz, R., & Roberts, R. (2019). Proxemics 101: Understanding personal space across cultures. *The MITPress Reader.* https://thereader.mitpress.mit.edu/understanding-personal-space-proxemics/↵
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5. "wanna-cuppa-singapore-cafe-food-bistro-trees-dishes-craft-beer-ale-breakfast-lunch-dinner-dark-1920x1080.jpg" by Jennette Kwok is licensed under CC BY-NC-SA 4.0↵

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3.10: Putting It All Together

Patient Scenario

Mrs. Rosas is a 76-year-old patient admitted to the cardiology floor with an exacerbation of congestive heart failure. The patient's primary language is Spanish, and she has a limited understanding of English. The patient's daughter reports that the patient has been experiencing increased swelling in her ankles and increased shortness of breath over the last three weeks. Her daughter also reports that the patient has noted unexplained weight gain. During the admission assessment the nurse attempts to collect additional information related to current symptoms, diet, and history. The patient nods in response to questions and converses quietly in Spanish with her daughter.

Applying the Nursing Process

Assessment: The nurse notes that the patient does not respond to questions appropriately and is unable to converse in English. She defers to her daughter to provide interpretation of questions and relay information.

Based on the assessment information that has been gathered, the following nursing care plan is created for Mrs. Rosas.

Nursing Diagnosis: *Impaired Verbal Communication related to cultural incongruence as evidenced by inability to speak the language of the caregiver.*

Overall Goal: *The patient will use effective communication techniques.*

SMART Expected Outcome: *Mrs. Rosas will utilize interpreter services in order to receive information and express needs throughout her hospitalization.*

Planning and Implementing Nursing Interventions:

The nurse will provide patient with interpreter services in order to facilitate patient communication. In-person interpreter or language line telephone services will be utilized to ensure that the patient receives information about her care. The nurse will eliminate distractions such as the television, hallway noise, etc., to decrease sources of additional stimuli in the communication experience. The nurse will communicate directly with the patient, utilizing appropriate eye contact, and nonverbal cues to enhance the communication experience.

Sample Documentation

Mrs. Rosas has impaired verbal communication due to limited English proficiency. She requires education regarding cardiac diet, fluid restriction, and exacerbation warning signs. Interpreter services have been utilized to ensure that communication and education needs are appropriate. Mrs. Rosas communicates freely through the interpreter and acknowledges understanding of the education that has been provided.

Evaluation

During the patient's hospitalization, Mrs. Rosas engages with staff through the use of interpreter services and actively participates in her own care.

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3.11: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

1. Test yourself for implicit bias at the Learning for Justice website.

2. Consider the following scenario.

You are completing the admission assessment for Mr. Xiong, a 64-year-old patient admitted to the medical surgical floor with acute kidney injury. Mr. Xiong speaks Hmong and some English. What actions should be undertaken to ensure that you are providing culturally responsive care to Mr. Xiong?

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3.12: Supplementary Videos

View these supplementary videos regarding cultural diversity and cultural competence:

Haley Yeates | It's Past Time to Appreciate Cultural Diversity [1]

Becoming a Culturally Competent Nurse [2]

1. TED Institute. (2018, February 15). *It's (past) time to appreciate cultural diversity | Hayley Yeates | TED Institute.* [Video]. YouTube. Video licensed under CC BY–NC–ND 4.0. ↵
2. Johnson & Johnson Nursing. (2018, December 3). *Becoming a culturally competent nurse*. [Video]. YouTube. All rights reserved. https://www.youtube.com/watch?v=r62Zp99U67Y&feature=emb_title↵

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CHAPTER OVERVIEW

4: Nursing Process

4.1: Nursing Process Introduction
4.2: Basic Concepts
4.3: Assessment
4.4: Diagnosis
4.5: Outcome Identification
4.6: Planning
4.7: Implementation of Interventions
4.8: Evaluation
4.9: Summary of the Nursing Process
4.10: Learning Activities
4.11: IV Glossary

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4.1: Nursing Process Introduction

Learning Objectives

- Use the nursing process to provide patient care
- Identify nursing diagnoses from evidence-based sources
- Describe the development of a care plan
- Prioritize patient care
- Describe documentation for each step of the nursing process
- Differentiate between the role of the PN and RN

Have you ever wondered how a nurse can receive a quick handoff report from another nurse and immediately begin providing care for a patient they previously knew nothing about? How do they know what to do? How do they prioritize and make a plan?

Nurses do this activity every shift. They know how to find pertinent information and use the nursing process as a critical thinking model to guide patient care. The nursing process becomes a road map for the actions and interventions that nurses implement to optimize their patients' well-being and health. This chapter will explain how to use the **nursing process** as standards of professional nursing practice to provide safe, patient-centered care.

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4.2: Basic Concepts

Before learning how to use the nursing process, it is important to understand some basic concepts related to critical thinking and nursing practice. Let's take a deeper look at how nurses think.

Critical Thinking and Clinical Reasoning

Nurses make decisions while providing patient care by using critical thinking and clinical reasoning. **Critical thinking** is a broad term used in nursing that includes "reasoning about clinical issues such as teamwork, collaboration, and streamlining workflow."[1] Using critical thinking means that nurses take extra steps to maintain patient safety and don't just "follow orders." It also means the accuracy of patient information is validated and plans for caring for patients are based on their needs, current clinical practice, and research.

"Critical thinkers" possess certain attitudes that foster rational thinking. These attitudes are as follows:

- **Independence of thought:** Thinking on your own
- **Fair-mindedness:** Treating every viewpoint in an unbiased, unprejudiced way
- **Insight into egocentricity and sociocentricity:** Thinking of the greater good and not just thinking of yourself. Knowing when you are thinking of yourself (egocentricity) and when you are thinking or acting for the greater good (sociocentricity)
- **Intellectual humility:** Recognizing your intellectual limitations and abilities
- **Nonjudgmental:** Using professional ethical standards and not basing your judgments on your own personal or moral standards
- **Integrity:** Being honest and demonstrating strong moral principles
- **Perseverance:** Persisting in doing something despite it being difficult
- **Confidence:** Believing in yourself to complete a task or activity
- **Interest in exploring thoughts and feelings:** Wanting to explore different ways of knowing
- **Curiosity:** Asking "why" and wanting to know more

Clinical reasoning is defined as, "A complex cognitive process that uses formal and informal thinking strategies to gather and analyze patient information, evaluate the significance of this information, and weigh alternative actions."[2] To make sound judgments about patient care, nurses must generate alternatives, weigh them against the evidence, and choose the best course of action. The ability to clinically reason develops over time and is based on knowledge and experience.[3]

Inductive and Deductive Reasoning and Clinical Judgment

Inductive and deductive reasoning are important critical thinking skills. They help the nurse use clinical judgment when implementing the nursing process.

Inductive reasoning involves noticing cues, making generalizations, and creating hypotheses. **Cues** are data that fall outside of expected findings that give the nurse a hint or indication of a patient's potential problem or condition. The nurse organizes these cues into patterns and creates a generalization. A **generalization** is a judgment formed from a set of facts, cues, and observations and is similar to gathering pieces of a jigsaw puzzle into patterns until the whole picture becomes more clear. Based on generalizations created from patterns of data, the nurse creates a hypothesis regarding a patient problem. A **hypothesis** is a proposed explanation for a situation. It attempts to explain the "why" behind the problem that is occurring. If a "why" is identified, then a solution can begin to be explored.

No one can draw conclusions without first noticing cues. Paying close attention to a patient, the environment, and interactions with family members is critical for inductive reasoning. As you work to improve your inductive reasoning, begin by first noticing details about the things around you. A nurse is similar to the detective looking for cues in Figure 4.1.[4] Be mindful of your five primary senses: the things that you hear, feel, smell, taste, and see. Nurses need strong inductive reasoning patterns and be able to take action quickly, especially in emergency situations. They can see how certain objects or events form a pattern (i.e., generalization) that indicates a common problem (i.e., hypothesis).

Example: A nurse assesses a patient and finds the surgical incision site is red, warm, and tender to the touch. The nurse recognizes these cues form a pattern of signs of infection and creates a hypothesis that the incision has become infected. The provider is

notified of the patient's change in condition, and a new prescription is received for an antibiotic. This is an example of the use of inductive reasoning in nursing practice.

Figure 4.1 Inductive Reasoning Includes Looking for Cues

Deductive reasoning is another type of critical thinking that is referred to as "top-down thinking." Deductive reasoning relies on using a general standard or rule to create a strategy. Nurses use standards set by their state's Nurse Practice Act, federal regulations, the American Nursing Association, professional organizations, and their employer to make decisions about patient care and solve problems.

Example: Based on research findings, hospital leaders determine patients recover more quickly if they receive adequate rest. The hospital creates a policy for quiet zones at night by initiating no overhead paging, promoting low-speaking voices by staff, and reducing lighting in the hallways. (See Figure 4.2).[5] The nurse further implements this policy by organizing care for patients that promotes periods of uninterrupted rest at night. This is an example of deductive thinking because the intervention is applied to all patients regardless if they have difficulty sleeping or not.

Figure 4.2 Deductive Reasoning Example: Implementing Interventions for a Quiet Zone Policy

Clinical judgment is the result of critical thinking and clinical reasoning using inductive and deductive reasoning. Clinical judgment is defined by the National Council of State Boards of Nursing (NCSBN) as, "The observed outcome of critical thinking and decision-making. It uses nursing knowledge to observe and assess presenting situations, identify a prioritized patient concern, and generate the best possible evidence-based solutions in order to deliver safe patient care." [6] The NCSBN administers the national licensure exam (NCLEX) that measures nursing clinical judgment and decision-making ability of prospective entry-level nurses to assure safe and competent nursing care by licensed nurses.

Evidence-based practice (EBP) is defined by the American Nurses Association (ANA) as, "A lifelong problem-solving approach that integrates the best evidence from well-designed research studies and evidence-based theories; clinical expertise and evidence from assessment of the health care consumer's history and condition, as well as health care resources; and patient, family, group, community, and population preferences and values."[7]

Nursing Process

The nursing process is a critical thinking model based on a systematic approach to patient-centered care. Nurses use the nursing process to perform clinical reasoning and make clinical judgments when providing patient care. The nursing process is based on the Standards of Professional Nursing Practice established by the American Nurses Association (ANA). These standards are authoritative statements of the actions and behaviors that all registered nurses, regardless of role, population, specialty, and setting, are expected to perform competently.[8] The mnemonic **ADOPIE** is an easy way to remember the ANA Standards and the nursing process. Each letter refers to the six components of the nursing process: **A**ssessment, **D**iagnosis, **O**utcomes Identification, **P**lanning, **I**mplementation, and **E**valuation.

The nursing process is a continuous, cyclic process that is constantly adapting to the patient's current health status. See Figure 4.3[9] for an illustration of the nursing process.

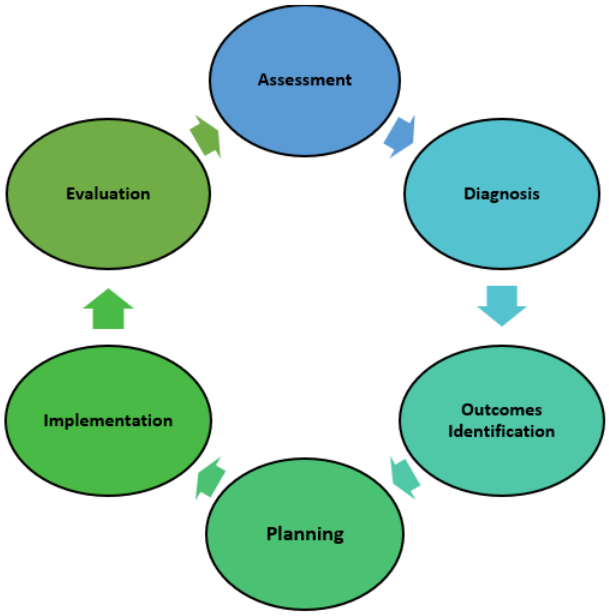

Figure 4.3 The Nursing Process

Review Scenario A in the following box for an example of a nurse using the nursing process while providing patient care.

Patient Scenario A: Using the Nursing Process [10]

A hospitalized patient has a prescription to receive Lasix 80mg IV every morning for a medical diagnosis of heart failure. During the morning assessment, the nurse notes that the patient has a blood pressure of 98/60, heart rate of 100, respirations of 18, and a temperature of 98.7F. The nurse reviews the medical record for the patient's vital signs baseline and observes the blood pressure trend is around 110/70 and the heart rate in the 80s. The nurse recognizes these cues form a pattern related to fluid imbalance and hypothesizes that the patient may be dehydrated. The nurse gathers additional information and notes the patient's weight has decreased 4 pounds since yesterday. The nurse talks with the patient and validates the hypothesis when the patient reports that their mouth feels like cotton and they feel light-headed. By using critical thinking and clinical judgment, the

> nurse diagnoses the patient with the nursing diagnosis Fluid Volume Deficit and establishes outcomes for reestablishing fluid balance. The nurse withholds the administration of IV Lasix and contacts the health care provider to discuss the patient's current fluid status. After contacting the provider, the nurse initiates additional nursing interventions to promote oral intake and closely monitor hydration status. By the end of the shift, the nurse evaluates the patient status and determines that fluid balance has been restored.

In Scenario A, the nurse is using clinical judgment and not just "following orders" to administer the Lasix as scheduled. The nurse assesses the patient, recognizes cues, creates a generalization and hypothesis regarding the fluid status, plans and implements nursing interventions, and evaluates the outcome. Additionally, the nurse promotes patient safety by contacting the provider before administering a medication that could cause harm to the patient at this time.

The ANA's Standards of Professional Nursing Practice associated with each component of the nursing process are described below.

Assessment

The "Assessment" Standard of Practice is defined as, "The registered nurse collects pertinent data and information relative to the health care consumer's health or the situation."[11] A registered nurse uses a systematic method to collect and analyze patient data. Assessment includes physiological data, as well as psychological, sociocultural, spiritual, economic, and lifestyle data. For example, a nurse's assessment of a hospitalized patient in pain includes the patient's response to pain, such as the inability to get out of bed, refusal to eat, withdrawal from family members, or anger directed at hospital staff.[12]

The "Assessment" component of the nursing process is further described in the "Assessment" section of this chapter.

Diagnosis

The "Diagnosis" Standard of Practice is defined as, "The registered nurse analyzes the assessment data to determine actual or potential diagnoses, problems, and issues."[13] A nursing diagnosis is the nurse's clinical judgment about the **client's** response to actual or potential health conditions or needs. Nursing diagnoses are the bases for the nurse's care plan and are different than medical diagnoses.[14]

The "Diagnosis" component of the nursing process is further described in the "Diagnosis" section of this chapter.

Outcomes Identification

The "Outcomes Identification" Standard of Practice is defined as, "The registered nurse identifies expected outcomes for a plan individualized to the health care consumer or the situation."[15] The nurse sets measurable and achievable short- and long-term goals and specific outcomes in collaboration with the patient based on their assessment data and nursing diagnoses.

The "Outcomes Identification" component of the nursing process is further described in the "Outcomes Identification" section of this chapter.

Planning

The "Planning" Standard of Practice is defined as, "The registered nurse develops a collaborative plan encompassing strategies to achieve expected outcomes."[16] Assessment data, diagnoses, and goals are used to select evidence-based nursing interventions customized to each patient's needs and concerns. Goals, expected outcomes, and nursing interventions are documented in the patient's nursing care plan so that nurses, as well as other health professionals, have access to it for continuity of care.[17]

The "Planning" component of the nursing process is further described in the "Planning" section of this chapter.

Nursing Care Plans

Creating nursing care plans is a part of the "Planning" step of the nursing process. A **nursing care plan** is a type of documentation that demonstrates the individualized planning and delivery of nursing care for each specific patient using the nursing process. Registered nurses (RNs) create nursing care plans so that the care provided to the patient across shifts is consistent among health care personnel. Some interventions can be delegated to Licensed Practical Nurses (LPNs) or trained Unlicensed Assistive Personnel (UAPs) with the RN's supervision. Developing nursing care plans and implementing appropriate delegation are further discussed under the "Planning" and "Implementing" sections of this chapter.

Implementation

The "Implementation" Standard of Practice is defined as, "The nurse implements the identified plan."[18] Nursing interventions are implemented or delegated with supervision according to the care plan to assure continuity of care across multiple nurses and health professionals caring for the patient. Interventions are also documented in the patient's electronic medical record as they are completed.[19]

The "Implementation" Standard of Professional Practice also includes the subcategories "Coordination of Care" and "Health Teaching and Health Promotion" to promote health and a safe environment.[20]

The "Implementation" component of the nursing process is further described in the "Implementation" section of this chapter.

Evaluation

The "Evaluation" Standard of Practice is defined as, "The registered nurse evaluates progress toward attainment of goals and outcomes."[21] During evaluation, nurses assess the patient and compare the findings against the initial assessment to determine the effectiveness of the interventions and overall nursing care plan. Both the patient's status and the effectiveness of the nursing care must be continuously evaluated and modified as needed.[22]

The "Evaluation" component of the nursing process is further described in the "Evaluation" section of this chapter.

Benefits of Using the Nursing Process

Using the nursing process has many benefits for nurses, patients, and other members of the health care team. The benefits of using the nursing process include the following:

- Promotes quality patient care
- Decreases omissions and duplications
- Provides a guide for all staff involved to provide consistent and responsive care
- Encourages collaborative management of a patient's health care problems
- Improves patient safety
- Improves patient satisfaction
- Identifies a patient's goals and strategies to attain them
- Increases the likelihood of achieving positive patient outcomes
- Saves time, energy, and frustration by creating a care plan or path to follow

By using these components of the nursing process as a critical thinking model, nurses plan interventions customized to the patient's needs, plan outcomes and interventions, and determine whether those actions are effective in meeting the patient's needs. In the remaining sections of this chapter, we will take an in-depth look at each of these components of the nursing process. Using the nursing process and implementing evidence-based practices are referred to as the "science of nursing." Let's review concepts related to the "art of nursing" while providing holistic care in a caring manner using the nursing process.

Holistic Nursing Care

The American Nurses Association (ANA) recently updated the definition of **nursing** as, "Nursing integrates the art and science of caring and focuses on the protection, promotion, and optimization of health and human functioning; prevention of illness and injury; facilitation of healing; and alleviation of suffering through compassionate presence. Nursing is the diagnosis and treatment of human responses and advocacy in the care of individuals, families, groups, communities, and populations in the recognition of the connection of all humanity."[23]

The ANA further describes nursing is a learned profession built on a core body of knowledge that integrates both the art and science of nursing. The **art of nursing** is defined as, "Unconditionally accepting the humanity of others, respecting their need for dignity and worth, while providing compassionate, comforting care."[24]

Nurses care for individuals holistically, including their emotional, spiritual, psychosocial, cultural, and physical needs. They consider problems, issues, and needs that the person experiences as a part of a family and a community as they use the nursing process. Review a scenario illustrating holistic nursing care provided to a patient and their family in the following box.

Holistic Nursing Care Scenario

A single mother brings her child to the emergency room for ear pain and a fever. The physician diagnoses the child with an ear infection and prescribes an antibiotic. The mother is advised to make a follow-up appointment with their primary provider in two weeks. While providing discharge teaching, the nurse discovers that the family is unable to afford the expensive antibiotic prescribed and cannot find a primary care provider in their community they can reach by a bus route. The nurse asks a social worker to speak with the mother about affordable health insurance options and available providers in her community and follows up with the prescribing physician to obtain a prescription for a less expensive generic antibiotic. In this manner, the nurse provides holistic care and advocates for improved health for the child and their family.

Note

Review how to provide culturally responsive care and reduce health disparities in the "Diverse Patients" chapter.

Caring and the Nursing Process

The American Nurses Association (ANA) states, "The act of caring is foundational to the practice of nursing."[25] Successful use of the nursing process requires the development of a care relationship with the patient. A **care relationship** is a mutual relationship that requires the development of trust between both parties. This trust is often referred to as the development of **rapport** and underlies the art of nursing. While establishing a caring relationship, the whole person is assessed, including the individual's beliefs, values, and attitudes, while also acknowledging the vulnerability and dignity of the patient and family. Assessing and caring for the whole person takes into account the physical, mental, emotional, and spiritual aspects of being a human being.[26] Caring interventions can be demonstrated in simple gestures such as active listening, making eye contact, touching, and verbal reassurances while also respecting and being sensitive to the care recipient's cultural beliefs and meanings associated with caring behaviors.[27] See Figure 4.4[28] for an image of a nurse using touch as a therapeutic communication technique to communicate caring.

Note

Review how to communicate with patients using therapeutic communication techniques like active listening in the "Communication" chapter.

Dr. Jean Watson is a nurse theorist who has published many works on the art and science of caring in the nursing profession. Her theory of human caring sought to balance the cure orientation of medicine, giving nursing its unique disciplinary, scientific, and professional standing with itself and the public. Dr. Watson's caring philosophy encourages nurses to be authentically present with their patients while creating a healing environment.[29]

Note

Read more about Dr. Watson's theory of caring at the Watson Caring Science Institute.

Figure 4.4 Touch as a Therapeutic Communication Technique

Now that we have discussed basic concepts related to the nursing process, let's look more deeply at each component of the nursing process in the following sections.

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4.3: Assessment

Assessment is the first step of the nursing process (and the first *Standard of Practice* set by the American Nurses Association). This standard is defined as, "The registered nurse collects pertinent data and information relative to the health care consumer's health or the situation." This includes collecting "pertinent data related to the health and quality of life in a systematic, ongoing manner, with compassion and respect for the wholeness, inherent dignity, worth, and unique attributes of every person, including but not limited to, demographics, environmental and occupational exposures, social determinants of health, health disparities, physical, functional, psychosocial, emotional, cognitive, spiritual/transpersonal, sexual, sociocultural, age-related, environmental, and lifestyle/economic assessments."[1]

Nurses assess patients to gather clues, make generalizations, and diagnose human responses to health conditions and life processes. Patient data is considered either subjective or objective, and it can be collected from multiple sources.

Subjective Assessment Data

Subjective data is information obtained from the patient and/or family members and offers important cues from their perspectives. When documenting subjective data stated by a patient, it should be in quotation marks and start with verbiage such as, *The patient reports.* It is vital for the nurse to establish rapport with a patient to obtain accurate, valuable subjective data regarding the mental, emotional, and spiritual aspects of their condition.

There are two types of subjective information, primary and secondary. **Primary data** is information provided directly by the patient. Patients are the best source of information about their bodies and feelings, and the nurse who actively listens to a patient will often learn valuable information while also promoting a sense of well-being. Information collected from a family member, chart, or other sources is known as **secondary data**. Family members can provide important information, especially for individuals with memory impairments, infants, children, or when patients are unable to speak for themselves.

See Figure 4.5[2] for an illustration of a nurse obtaining subjective data and establishing rapport after obtaining permission from the patient to sit on the bed.

Example. An example of documented subjective data obtained from a patient assessment is, "*The patient reports, 'My pain is a level 2 on a 1-10 scale.'*"

Figure 4.5 Obtaining Subjective Data in a Care Relationship

Objective Assessment Data

Objective data is anything that you can observe through your sense of hearing, sight, smell, and touch while assessing the patient. Objective data is reproducible, meaning another person can easily obtain the same data. Examples of objective data are vital signs, physical examination findings, and laboratory results. See Figure 4.6[3] for an image of a nurse performing a physical examination.

Example. An example of documented objective data is, *"The patient's radial pulse is 58 and regular, and their skin feels warm and dry."*

Figure 4.6 Physical Examination

Sources of Assessment Data

There are three sources of assessment data: interview, physical examination, and review of laboratory or diagnostic test results.

Interviewing

Interviewing includes asking the patient questions, listening, and observing verbal and nonverbal communication. Reviewing the chart prior to interviewing the patient may eliminate redundancy in the interview process and allows the nurse to hone in on the most significant areas of concern or need for clarification. However, if information in the chart does not make sense or is incomplete, the nurse should use the interview process to verify data with the patient.

After performing patient identification, the best way to initiate a caring relationship is to introduce yourself to the patient and explain your role. Share the purpose of your interview and the approximate time it will take. When beginning an interview, it may be helpful to start with questions related to the patient's **medical diagnoses** to gather information about how they have affected the patient's functioning, relationships, and lifestyle. Listen carefully and ask for clarification when something isn't clear to you. Patients may not volunteer important information because they don't realize it is important for their care. By using critical thinking and active listening, you may discover valuable cues that are important to provide safe, quality nursing care. Sometimes nursing students can feel uncomfortable having difficult conversations or asking personal questions due to generational or other cultural

differences. Don't shy away from asking about information that is important to know for safe patient care. Most patients will be grateful that you cared enough to ask and listen.

Be alert and attentive to how the patient answers questions, as well as when they do not answer a question. Nonverbal communication and body language can be cues to important information that requires further investigation. A keen sense of observation is important. To avoid making inappropriate **inferences**, the nurse should validate any cues. For example, a nurse may make an inference that a patient is depressed when the patient avoids making eye contact during an interview. However, upon further questioning, the nurse may discover that the patient's cultural background believes direct eye contact to be disrespectful and this is why they are avoiding eye contact. To read more information about communicating with patients, review the "Communication" chapter of this book.

Physical Examination

A **physical examination** is a systematic data collection method of the body that uses the techniques of inspection, auscultation, palpation, and percussion. Inspection is the observation of a patient's anatomical structures. Auscultation is listening to sounds, such as heart, lung, and bowel sounds, created by organs using a stethoscope. Palpation is the use of touch to evaluate organs for size, location, or tenderness. Percussion is an advanced physical examination technique typically performed by providers where body parts are tapped with fingers to determine their size and if fluid is present. Detailed physical examination procedures of various body systems can be found in the Open RN *Nursing Skills* textbook with a head-to-toe checklist in Appendix C. Physical examination also includes the collection and analysis of vital signs.

Registered Nurses (RNs) complete the initial physical examination and analyze the findings as part of the nursing process. Collection of follow-up physical examination data can be delegated to **Licensed Practical Nurses/Licensed Vocational Nurses (LPNs/LVNs)**, or measurements such as vital signs and weight may be delegated to trained **Unlicensed Assistive Personnel (UAP)** when appropriate to do so. However, the RN remains responsible for supervising these tasks, analyzing the findings, and ensuring they are documented .

A physical examination can be performed as a comprehensive, head-to-toe assessment or as a focused assessment related to a particular condition or problem. Assessment data is documented in the patient's **Electronic Medical Record (EMR)**, an electronic version of the patient's medical chart.

Reviewing Laboratory and Diagnostic Test Results

Reviewing laboratory and diagnostic test results provides relevant and useful information related to the needs of the patient. Understanding how normal and abnormal results affect patient care is important when implementing the nursing care plan and administering provider prescriptions. If results cause concern, it is the nurse's responsibility to notify the provider and verify the appropriateness of prescriptions based on the patient's current status before implementing them.

Types of Assessments

Several types of nursing assessment are used in clinical practice:

- **Primary Survey:** Used during every patient encounter to briefly evaluate level of consciousness, airway, breathing, and circulation and implement emergency care if needed.
- **Admission Assessment:** A comprehensive assessment completed when a patient is admitted to a facility that involves assessing a large amount of information using an organized approach.
- **Ongoing Assessment:** In acute care agencies such as hospitals, a head-to-toe assessment is completed and documented at least once every shift. Any changes in patient condition are reported to the health care provider.
- **Focused Assessment:** Focused assessments are used to reevaluate the status of a previously diagnosed problem.
- **Time-lapsed Reassessment:** Time-lapsed reassessments are used in long-term care facilities when three or more months have elapsed since the previous assessment to evaluate progress on previously identified outcomes.[4]

Putting It Together

Review Scenario C in the following box to apply concepts of assessment to a patient scenario.

Scenario C [5]

Ms. J. is a 74-year-old woman who is admitted directly to the medical unit after visiting her physician because of shortness of breath, increased swelling in her ankles and calves, and fatigue. Her medical history includes hypertension (30 years), coronary artery disease (18 years), heart failure (2 years), and type 2 diabetes (14 years). She takes 81 mg of aspirin every day, metoprolol 50 mg twice a day, furosemide 40 mg every day, and metformin 2,000 mg every day.

Ms. J.'s vital sign values on admission were as follows:

- Blood Pressure: 162/96 mm Hg
- Heart Rate: 88 beats/min
- Oxygen Saturation: 91% on room air
- Respiratory Rate: 28 breaths/minute
- Temperature: 97.8 degrees F orally

Her weight is up 10 pounds since the last office visit three weeks prior. The patient states, "I am so short of breath" and "My ankles are so swollen I have to wear my house slippers." Ms. J. also shares, "I am so tired and weak that I can't get out of the house to shop for groceries," and "Sometimes I'm afraid to get out of bed because I get so dizzy." She confides, "I would like to learn more about my health so I can take better care of myself."

The physical assessment findings of Ms. J. are bilateral basilar crackles in the lungs and bilateral 2+ pitting edema of the ankles and feet. Laboratory results indicate a decreased serum potassium level of 3.4 mEq/L.

As the nurse completes the physical assessment, the patient's daughter enters the room. She confides, "We are so worried about mom living at home by herself when she is so tired all the time!"

Critical Thinking Questions

1. Identify subjective data.
2. Identify objective data.
3. Provide an example of secondary data.

Answers are located in the Answer Key at the end of the book.

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4.4: Diagnosis

Diagnosis is the second step of the nursing process (and the second Standard of Practice set by the American Nurses Association). This standard is defined as, "The registered nurse analyzes assessment data to determine actual or potential diagnoses, problems, and issues." The RN "prioritizes diagnoses, problems, and issues based on mutually established goals to meet the needs of the health care consumer across the health–illness continuum and the care continuum." Diagnoses, problems, strengths, and issues are documented in a manner that facilitates the development of expected outcomes and a collaborative plan.[1]

Analyzing Assessment Data

After collection of assessment data, the registered nurse analyzes the data to form generalizations and create hypotheses for nursing diagnoses. Steps for analyzing assessment data include performing data analysis, clustering of information, identifying hypotheses for potential nursing diagnosis, performing additional in-depth assessment as needed, and establishing nursing diagnosis statements. The nursing diagnoses are then prioritized and drive the nursing care plan.[2]

Performing Data Analysis

After nurses collect assessment data from a patient, they use their nursing knowledge to analyze that data to determine if it is "expected" or "unexpected" or "normal" or "abnormal" for that patient according to their age, development, and baseline status. From there, nurses determine what data are "clinically relevant" as they prioritize their nursing care.[3]

Example. In Scenario C in the "Assessment" section of this chapter, the nurse analyzes the vital signs data and determines the blood pressure, heart rate, and respiratory rate are elevated, and the oxygen saturation is decreased for this patient. These findings are considered "relevant cues."

Clustering Information/Seeing Patterns/Making Hypotheses

After analyzing the data and determining relevant cues, the nurse **clusters** data into patterns. Assessment frameworks such as Gordon's **Functional Health Patterns** assist nurses in clustering information according to evidence-based patterns of human responses. See the box below for an outline of Gordon's Functional Health Patterns.[4] Concepts related to many of these patterns will be discussed in chapters later in this book.

Example. Refer to Scenario C of the "Assessment" section of this chapter. The nurse clusters the following relevant cues: elevated blood pressure, elevated respiratory rate, crackles in the lungs, weight gain, worsening edema, shortness of breath, a medical history of heart failure, and currently prescribed a diuretic medication. These cues are clustered into a generalization/pattern of fluid balance, which can be classified under Gordon's Nutritional-Metabolic Functional Health Pattern. The nurse makes a hypothesis that the patient has excess fluid volume present.

Gordon's Functional Health Patterns [5]

Health Perception-Health Management: A patient's perception of their health and well-being and how it is managed

Nutritional-Metabolic: Food and fluid consumption relative to metabolic need

Elimination: Excretory function, including bowel, bladder, and skin

Activity-Exercise: Exercise and daily activities

Sleep-Rest: Sleep, rest, and daily activities

Cognitive-Perceptual: Perception and cognition

Self-perception and Self-concept: Self-concept and perception of self-worth, self-competency, body image, and mood state

Role-Relationship: Role engagements and relationships

Sexuality-Reproductive: Reproduction and satisfaction or dissatisfaction with sexuality

Coping-Stress Tolerance: Coping and effectiveness in terms of stress tolerance

Value-Belief: Values, beliefs (including spiritual beliefs), and goals that guide choices and decisions

Identifying Nursing Diagnoses

After the nurse has analyzed and clustered the data from the patient assessment, the next step is to begin to answer the question, "What are my patient's human responses (i.e., nursing diagnoses)?" A **nursing diagnosis** is defined as, "A clinical judgment concerning a human response to health conditions/life processes, or a vulnerability for that response, by an individual, family, group, or community."[6] Nursing diagnoses are customized to each patient and drive the development of the nursing care plan. The nurse should refer to a care planning resource and review the definitions and defining characteristics of the hypothesized nursing diagnoses to determine if additional in-depth assessment is needed before selecting the most accurate nursing diagnosis.

Nursing diagnoses are developed by nurses, for use by nurses. For example, NANDA International (NANDA-I) is a global professional nursing organization that develops nursing terminology that names actual or potential human responses to health problems and life processes based on research findings.[7] Currently, there are over 220 NANDA-I nursing diagnoses developed by nurses around the world. This list is continuously updated, with new nursing diagnoses added and old nursing diagnoses retired that no longer have supporting evidence. A list of commonly used NANDA-I diagnoses are listed in Appendix A. For a full list of NANDA-I nursing diagnoses, refer to a current nursing care plan reference.

NANDA-I nursing diagnoses are grouped into 13 domains that assist the nurse in selecting diagnoses based on the patterns of clustered data. These domains are similar to Gordon's Functional Health Patterns and include health promotion, nutrition, elimination and exchange, activity/rest, perception/cognition, self-perception, role relationship, sexuality, coping/stress tolerance, life principles, safety/protection, comfort, and growth/development.

> **Note**
>
> Knowledge regarding specific NANDA-I nursing diagnoses is not assessed on the NCLEX. However, analyzing cues and creating hypotheses are part of the measurement model used to assess a candidate's clinical judgment. Read more about the NCLEX and Next Generation NCLEX in the "Scope of Practice" chapter.

Nursing Diagnoses vs. Medical Diagnoses

You may be asking yourself, "How are nursing diagnoses different from medical diagnoses?" Medical diagnoses focus on diseases or other medical problems that have been identified by the physician, physician's assistant, or advanced nurse practitioner. Nursing diagnoses focus on the *human response* to health conditions and life processes and are made independently by RNs. Patients with the same medical diagnosis will often *respond* differently to that diagnosis and thus have different nursing diagnoses. For example, two patients have the same medical diagnosis of heart failure. However, one patient may be interested in learning more information about the condition and the medications used to treat it, whereas another patient may be experiencing anxiety when thinking about the effects this medical diagnosis will have on their family. The nurse must consider these different responses when creating the nursing care plan. Nursing diagnoses consider the patient's and family's needs, attitudes, strengths, challenges, and resources as a customized nursing care plan is created to provide holistic and individualized care for each patient.

Example. A medical diagnosis identified for Ms. J. in Scenario C in the "Assessment" section is heart failure. This cannot be used as a nursing diagnosis, but it can be considered as an "associated condition" when creating hypotheses for nursing diagnoses. Associated conditions are medical diagnoses, injuries, procedures, medical devices, or pharmacological agents that are not independently modifiable by the nurse, but support accuracy in nursing diagnosis. The nursing diagnosis in Scenario C will be related to the patient's response to heart failure.

Additional Definitions Used in NANDA-I Nursing Diagnoses

The following definitions of patient, age, and time are used in association with NANDA-I nursing diagnoses:

Patient

The NANDA-I definition of a "patient" includes:

- **Individual:** a single human being distinct from others (i.e., a person).
- **Caregiver:** a family member or helper who regularly looks after a child or a sick, elderly, or disabled person.

- **Family:** two or more people having continuous or sustained relationships, perceiving reciprocal obligations, sensing common meaning, and sharing certain obligations toward others; related by blood and/or choice.
- **Group:** a number of people with shared characteristics generally referred to as an ethnic group.
- **Community:** a group of people living in the same locale under the same governance. Examples include neighborhoods and cities.[8]

Age

The age of the person who is the subject of the diagnosis is defined by the following terms:[9]

- **Fetus:** an unborn human more than eight weeks after conception, until birth.
- **Neonate:** a person less than 28 days of age.
- **Infant:** a person greater than 28 days and less than 1 year of age.
- **Child:** a person aged 1 to 9 years
- **Adolescent:** a person aged 10 to 19 years
- **Adult:** a person older than 19 years of age unless national law defines a person as being an adult at an earlier age.
- **Older adult:** a person greater than 65 years of age.

Time

The duration of the diagnosis is defined by the following terms:[10]

- **Acute:** lasting less than 3 months.
- **Chronic:** lasting greater than 3 months.
- **Intermittent:** stopping or starting again at intervals
- **Continuous:** uninterrupted, going on without stop.

New Terms Used in 2018-2020 NANDA-I Diagnoses

The 2018-2020 edition of *Nursing Diagnoses* includes two new terms to assist in creating nursing diagnoses: at-risk populations and associated conditions.[11]

At-Risk Populations are groups of people who share a characteristic that causes each member to be susceptible to a particular human response, such as demographics, health/family history, stages of growth/development, or exposure to certain events/experiences.

Associated Conditions are medical diagnoses, injuries, procedures, medical devices, or pharmacological agents. These conditions are not independently modifiable by the nurse, but support accuracy in nursing diagnosis[12]

Types of Nursing Diagnoses

There are four types of NANDA-I nursing diagnoses:[13]

- Problem-Focused
- Health Promotion – Wellness
- Risk
- Syndrome

A **problem-focused nursing diagnosis** is a "clinical judgment concerning an undesirable human response to health condition/life processes that exist in an individual, family, group, or community."[14] To make an accurate problem-focused diagnosis, related factors and defining characteristics must be present. **Related factors** (also called etiology) are causes that contribute to the diagnosis. **Defining characteristics** are cues, signs, and symptoms that cluster into patterns.[15]

A **health promotion-wellness nursing diagnosis** is "a clinical judgment concerning motivation and desire to increase well-being and to actualize human health potential." These responses are expressed by the patient's readiness to enhance specific health behaviors.[16]A health promotion-wellness diagnosis is used when the patient is willing to improve a lack of knowledge, coping, or other identified need.

A **risk nursing diagnosis** is "a clinical judgment concerning the vulnerability of an individual, family, group, or community for developing an undesirable human response to health conditions/life processes."[17] A risk nursing diagnosis must be supported by

risk factors that contribute to the increased vulnerability. A risk nursing diagnosis is different from the problem-focused diagnosis in that the problem has not yet actually occurred. Problem diagnoses should not be automatically viewed as more important than risk diagnoses because sometimes a risk diagnosis can have the highest priority for a patient.[18]

A **syndrome diagnosis** is a "clinical judgment concerning a specific cluster of nursing diagnoses that occur together, and are best addressed together and through similar interventions."[19]

Establishing Nursing Diagnosis Statements

When using NANDA-I nursing diagnoses, NANDA-I recommends the structure of a nursing diagnosis should be a statement that includes the *nursing diagnosis* and *related factors* as exhibited by *defining characteristics*. The accuracy of the nursing diagnosis is validated when a nurse is able to clearly link the defining characteristics, related factors, and/or risk factors found during the patient's assessment.[20]

To create a nursing diagnosis statement, the registered nurse completes the following steps. After analyzing the patient's subjective and objective data and clustering the data into patterns, the nurse generates hypotheses for nursing diagnoses based on how the patterns meet defining characteristics of a nursing diagnosis. **Defining characteristics** is the terminology used for observable signs and symptoms related to a nursing diagnosis.[21] Defining characteristics are included in care planning resources for each nursing diagnosis, along with a definition of that diagnosis, so the nurse can select the most accurate diagnosis. For example, objective and subjective data such as weight, height, and dietary intake can be clustered together as defining characteristics for the nursing diagnosis of nutritional status.

When creating a nursing diagnosis statement, the nurse also identifies the cause of the problem for that specific patient. **Related factors** is the terminology used for the underlying causes (etiology) of a patient's problem or situation. Related factors should not be a medical diagnosis, but instead should be attributed to the underlying pathophysiology that the nurse can treat. When possible, the nursing interventions planned for each nursing diagnosis should attempt to modify or remove these related factors that are the underlying cause of the nursing diagnosis.[22]

Creating nursing diagnosis statements has traditionally been referred to as "using PES format." The **PES** mnemonic no longer applies to the current terminology used by NANDA-I, but the components of a nursing diagnosis statement remain the same. A nursing diagnosis statement should contain the problem, related factors, and defining characteristics. These terms fit under the former PES format in this manner:

Problem (P) – the patient **p**roblem (i.e., the nursing diagnosis)

Etiology (E) – related factors (i.e., the **e**tiology/cause) of the nursing diagnosis; phrased as "related to" or "R/T"

Signs and Symptoms (S) – defining characteristics manifested by the patient (i.e., the **s**igns and **s**ymptoms/subjective and objective data) that led to the identification of that nursing diagnosis for the patient; phrased with "as manifested by" or "as evidenced by."

Examples of different types of nursing diagnoses are further explained below.

Problem-Focused Nursing Diagnosis

A problem-focused nursing diagnosis contains all three components of the **PES format**:

Problem (P) – statement of the patient response (nursing diagnosis)

Etiology (E) – related factors contributing to the nursing diagnosis

Signs and Symptoms (S) – defining characteristics manifested by that patient

Sample Problem-Focused Nursing Diagnosis Statement

Refer to Scenario C of the "Assessment" section of this chapter. The cluster of data for Ms. J. (elevated blood pressure, elevated respiratory rate, crackles in the lungs, weight gain, worsening edema, and shortness of breath) are defining characteristics for the NANDA-I Nursing Diagnosis *Excess Fluid Volume*. The NANDA-I definition of *Excess Fluid Volume* is "surplus intake and/or retention of fluid." The related factor (etiology) of the problem is that the patient has excessive fluid intake.[23]

Example

The components of a **problem-focused nursing diagnosis** statement for Ms. J. would be:

(P) Fluid Volume Excess

(E) Related to excessive fluid intake

(S) As manifested by bilateral basilar crackles in the lungs, bilateral 2+ pitting edema of the ankles and feet, increased weight of 10 pounds, and the patient reports, "*My ankles are so swollen*."

A correctly written problem-focused nursing diagnosis statement for Ms. J. would look like this:

Fluid Volume Excess related to excessive fluid intake as manifested by bilateral basilar crackles in the lungs, bilateral 2+ pitting edema of the ankles and feet, an increase weight of 10 pounds, and the patient reports, "My ankles are so swollen."

Health-Promotion Nursing Diagnosis

A health-promotion nursing diagnosis statement contains the problem (P) and the defining characteristics (S). The defining characteristics component of a health-promotion nursing diagnosis statement should begin with the phrase "expresses desire to enhance":[24]

Problem (P) – statement of the patient response (nursing diagnosis)

Signs and Symptoms (S) – the patient's expressed desire to enhance

Sample Health-Promotion Nursing Diagnosis Statement

Refer to Scenario C in the "Assessment" section of this chapter. Ms. J. demonstrates a readiness to improve her health status when she told the nurse that she would like to "learn more about my health so I can take better care of myself." This statement is a defining characteristic of the NANDA-I nursing diagnosis *Readiness for Enhanced Health Management*, which is defined as "a pattern of regulating and integrating into daily living a therapeutic regimen for the treatment of illness and its sequelae, which can be strengthened."[25]

Example

The components of a **health-promotion nursing diagnosis** for Ms. J. would be:

Problem (P): Readiness for Enhanced Health Management

Symptoms (S): Expressed desire to "learn more about my health so I can take better care of myself."

A correctly written health-promotion nursing diagnosis statement for Ms. J. would look like this:

Enhanced Readiness for Health Promotion as manifested by expressed desire to "learn more about my health so I can take better care of myself."

Risk Nursing Diagnosis

A risk nursing diagnosis should be supported by evidence of the patient's risk factors for developing that problem. Different experts recommend different phrasing. NANDA-I 2018-2020 recommends using the phrase "as evidenced by" to refer to the risk factors for developing that problem.[26]

A risk diagnosis consists of the following:

Problem (P) – statement of the patient response (nursing diagnosis)

As Evidenced By – Risk factors for developing the problem

Sample Risk Diagnosis Statement

Refer to Scenario C in the "Assessment" section of this chapter. Ms. J. has an increased risk of falling due to vulnerability from the dizziness and weakness she is experiencing. The NANDA-I definition of *Risk for Falls* is "increased susceptibility to falling, which may cause physical harm and compromise health."[27]

Example

The components of a **risk diagnosis** statement for Ms. J. would be:

Problem (P) – Risk for Falls

As Evidenced By – Dizziness and decreased lower extremity strength

A correctly written risk nursing diagnosis statement for Ms. J. would look like this:

Risk for Falls as evidenced by dizziness and decreased lower extremity strength.

Syndrome Diagnosis

A syndrome is a cluster of nursing diagnoses that occur together and are best addressed together and through similar interventions. To create a syndrome diagnosis, two or more nursing diagnoses must be used as defining characteristics (S) that create a syndrome. Related factors may be used if they add clarity to the definition, but are not required.[28]

A syndrome statement consists of these items:

Problem (P) – the syndrome

Signs and Symptoms (S) – the defining characteristics are two or more similar nursing diagnoses

Sample Syndrome Diagnosis Statement

Refer to Scenario C in the "Assessment" section of this chapter. Clustering the data for Ms. J. identifies several similar NANDA-I nursing diagnoses that can be categorized as a *syndrome*. For example, *Activity Intolerance* is defined as "insufficient physiological or psychological energy to endure or complete required or desired daily activities." *Social Isolation* is defined as "aloneness experienced by the individual and perceived as imposed by others and as a negative or threatening state." These diagnoses can be included under the the NANDA-I syndrome named *Risk for Frail Elderly Syndrome.* This syndrome is defined as a "dynamic state of unstable equilibrium that affects the older individual experiencing deterioration in one or more domains of health (physical, functional, psychological, or social) and leads to increased susceptibility to adverse health effects, in particular disability."[29]

Example

The components of a **syndrome nursing diagnosis** for Ms. J. would be:

(P) – Risk for Frail Elderly Syndrome

(S) – The nursing diagnoses of *Activity Intolerance* and *Social Isolation*

Additional related factor: Fear of falling

A correctly written syndrome diagnosis statement for Ms. J. would look like this:

Risk for Frail Elderly Syndrome related to activity intolerance, social isolation, and fear of falling

Prioritization

After identifying nursing diagnoses, the next step is prioritization according to the specific needs of the patient. Nurses prioritize their actions while providing patient care multiple times every day. **Prioritization** is the process that identifies the most significant nursing problems, as well as the most important interventions, in the nursing care plan.

It is essential that life-threatening concerns and crises are identified immediately and addressed quickly. Depending on the severity of a problem, the steps of the nursing process may be performed in a matter of seconds for life-threatening concerns. In critical situations, the steps of the nursing process are performed through rapid clinical judgment. Nurses must recognize cues signaling a change in patient condition, apply evidence-based practices in a crisis, and communicate effectively with interprofessional team members. Most patient situations fall somewhere between a crisis and routine care.

There are several concepts used to prioritize, including Maslow's Hierarchy of Needs, the "ABCs" (Airway, Breathing and Circulation), and acute, uncompensated conditions. See the infographic in Figure 4.7[30] on *The How To of Prioritization*.

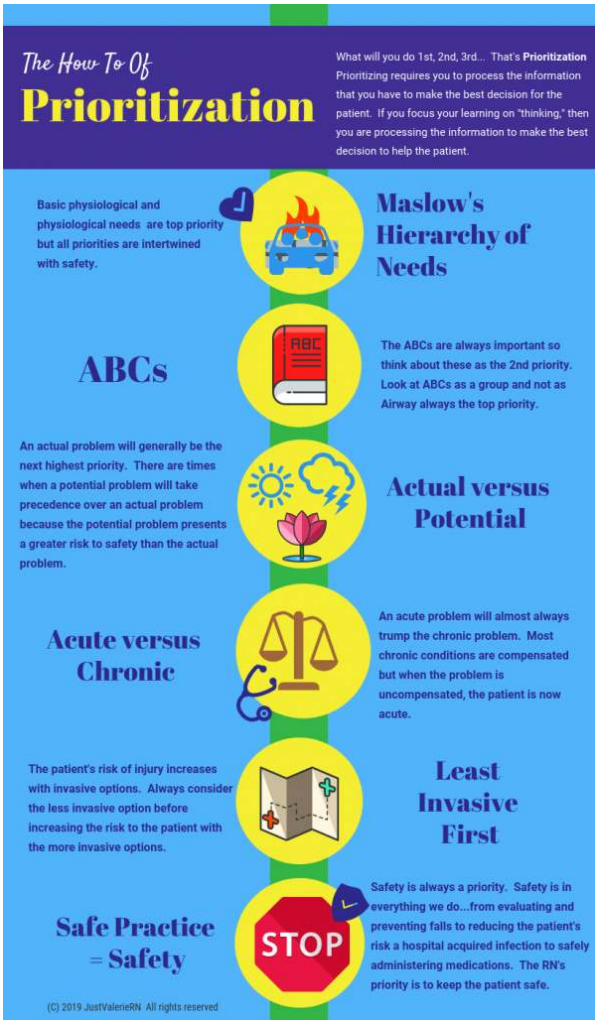

Figure 4.7 The How To of Prioritization

Maslow's Hierarchy of Needs is used to categorize the most urgent patient needs. The bottom levels of the pyramid represent the top priority needs of physiological needs intertwined with safety. See Figure 4.8[31] for an image of Maslow's Hierarchy of Needs. You may be asking yourself, "What about the ABCs – isn't airway the most important?" The answer to that question is "it depends on the situation and the associated safety considerations." Consider this scenario – you are driving home after a lovely picnic in the country and come across a fiery car crash. As you approach the car, you see that the passenger is not breathing. Using Maslow's Hierarchy of Needs to prioritize your actions, you remove the passenger from the car first due to safety even though he is not breathing. After ensuring safety and calling for help, you follow the steps to perform cardiopulmonary resuscitation (CPR) to establish circulation, airway, and breathing until help arrives.

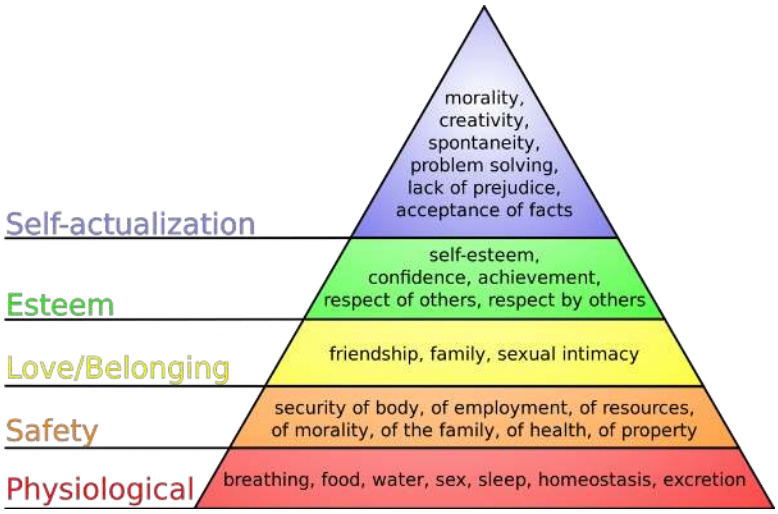

Figure 4.8 Maslow's Hierarchy of Needs

In addition to using Maslow's Hierarchy of Needs and the ABCs of airway, breathing, and circulation, the nurse also considers if the patient's condition is an acute or chronic problem. Acute, uncompensated conditions generally require priority interventions over chronic conditions. Additionally, actual problems generally receive priority over potential problems, but risk problems sometimes receive priority depending on the patient vulnerability and risk factors.

Example. Refer to Scenario C in the "Assessment" section of this chapter. Four types of nursing diagnoses were identified for Ms. J.: *Fluid Volume Excess, Enhanced Readiness for Health Promotion, Risk for Falls,* and *Risk for Frail Elderly Syndrome*. The top priority diagnosis is *Fluid Volume Excess* because it affects the physiological needs of breathing, homeostasis, and excretion. However, the *Risk for Falls* diagnosis comes in a close second because of safety implications and potential injury that could occur if the patient fell.

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31. “Maslow's hierarchy of needs.svg” by J. Finkelstein is licensed under CC BY-SA 3.0↵

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4.5: Outcome Identification

Outcome Identification is the third step of the nursing process (and the third Standard of Practice set by the American Nurses Association). This standard is defined as, "The registered nurse identifies expected outcomes for a plan individualized to the health care consumer or the situation." The RN collaborates with the health care consumer, interprofessional team, and others to identify expected outcomes integrating the health care consumer's culture, values, and ethical considerations. Expected outcomes are documented as measurable goals with a time frame for attainment.[1]

An **outcome** is a "measurable behavior demonstrated by the patient responsive to nursing interventions."[2] Outcomes should be identified before nursing interventions are planned. After nursing interventions are implemented, the nurse will evaluate if the outcomes were met in the time frame indicated for that patient.

Outcome identification includes setting short- and long-term goals and then creating specific expected outcome statements for each nursing diagnosis.

Short-Term and Long-Term Goals

Nursing care should always be individualized and patient-centered. No two people are the same, and neither should nursing care plans be the same for two people. Goals and outcomes should be tailored specifically to each patient's needs, values, and cultural beliefs. Patients and family members should be included in the goal-setting process when feasible. Involving patients and family members promotes awareness of identified needs, ensures realistic goals, and motivates their participation in the treatment plan to achieve the mutually agreed upon goals and live life to the fullest with their current condition.

The nursing care plan is a road map used to guide patient care so that all health care providers are moving toward the same patient goals. **Goals** are broad statements of purpose that describe the overall aim of care. Goals can be short- or long-term. The time frame for short- and long-term goals is dependent on the setting in which the care is provided. For example, in a critical care area, a short-term goal might be set to be achieved within an 8-hour nursing shift, and a long-term goal might be in 24 hours. In contrast, in an outpatient setting, a short-term goal might be set to be achieved within one month and a long-term goal might be within six months.

A nursing goal is the overall direction in which the patient must progress to improve the problem/nursing diagnosis and is often the opposite of the problem.

Example. Refer to Scenario C in the "Assessment" section of this chapter. Ms. J. had a priority nursing diagnosis of *Fluid Volume Excess.* A broad goal would be, "*Ms. J. will achieve a state of fluid balance.*"

Expected Outcomes

Goals are broad, general statements, but outcomes are specific and measurable. **Expected outcomes** are statements of measurable action for the patient within a specific time frame that are responsive to nursing interventions. Nurses may create expected outcomes independently or refer to classification systems for assistance. Just as NANDA-I creates and revises standardized nursing diagnoses, a similar classification and standardization process exists for expected nursing outcomes. The Nursing Outcomes Classification (NOC) is a list of over 330 nursing outcomes designed to coordinate with established NANDA-I diagnoses.[3]

Patient-Centered

Outcome statements are always patient-centered. They should be developed in collaboration with the patient and individualized to meet a patient's unique needs, values, and cultural beliefs. They should start with the phrase "The patient will…" Outcome statements should be directed at resolving the defining characteristics for that nursing diagnosis. Additionally, the outcome must be something the patient is willing to cooperate in achieving.

Outcome statements should contain five components easily remembered using the "SMART" mnemonic:[4]

- **S**pecific
- **M**easurable
- **A**ttainable/Action oriented
- **R**elevant/Realistic

- **T**imeframe

See Figure 4.9[5] for an image of the SMART components of outcome statements. Each of these components is further described in the following subsections.

Figure 4.9 SMART Components of Outcome Statements

Specific

Outcome statements should state precisely what is to be accomplished. See the following examples:

- **Not specific:** "*The patient will increase the amount of exercise.*"
- **Specific:** "*The patient will participate in a bicycling exercise session daily for 30 minutes.*"

Additionally, only one action should be included in each expected outcome. See the following examples:

- *"The patient will walk 50 feet three times a day with standby assistance of one and will shower in the morning until discharge"* is actually two goals written as one. The outcome of ambulation should be separate from showering for precise evaluation. For instance, the patient could shower but not ambulate, which would make this outcome statement very difficult to effectively evaluate.
- Suggested revision is to create two outcomes statements so each can be measured: *The patient will walk 50 feet three times a day with standby assistance of one until discharge. The patient will shower every morning until discharge.*

Measurable

Measurable outcomes have numeric parameters or other concrete methods of judging whether the outcome was met. It is important to use objective data to measure outcomes. If terms like "acceptable" or "normal" are used in an outcome statement, it is difficult to determine whether the outcome is attained. Refer to Figure 4.10[6] for examples of verbs that are measurable and not measurable in outcome statements.

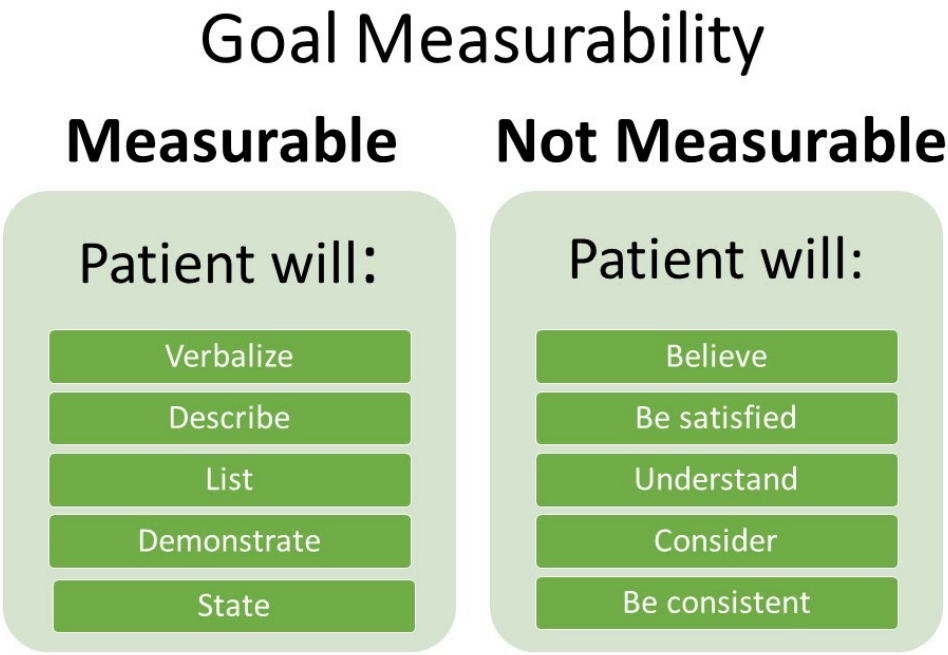

Figure 4.10 Measurable Outcomes

See the following examples:

- **Not measurable:** "*The patient will drink adequate fluid amounts every shift.*"
- **Measurable:** "*The patient will drink 24 ounces of fluids during every day shift (0600-1400).*"

Action-Oriented and Attainable

Outcome statements should be written so that there is a clear action to be taken by the patient or significant others. This means that the outcome statement should include a verb. Refer to Figure 4.11[7] for examples of action verbs.

Figure 4.11 Action Verbs

See the following examples:

- **Not action-oriented:** *"The patient will get increased physical activity."*
- **Action-oriented:** *"The patient will list three types of aerobic activity that he would enjoy completing every week."*

Realistic and Relevant

Realistic outcomes consider the patient's physical and mental condition; their cultural and spiritual values, beliefs, and preferences; and their socioeconomic status in terms of their ability to attain these outcomes. Consideration should be also given to disease processes and the effects of conditions such as pain and decreased mobility on the patient's ability to reach expected outcomes. Other barriers to outcome attainment may be related to health literacy or lack of available resources. Outcomes should always be reevaluated and revised for attainability as needed. If an outcome is not attained, it is commonly because the original time frame was too ambitious or the outcome was not realistic for the patient.

See the following examples:

- **Not realistic:** *"The patient will jog one mile every day when starting the exercise program."*
- **Realistic:** *"The patient will walk ½ mile three times a week for two weeks."*

Time Limited

Outcome statements should include a time frame for evaluation. The time frame depends on the intervention and the patient's current condition. Some outcomes may need to be evaluated every shift, whereas other outcomes may be evaluated daily, weekly, or monthly. During the evaluation phase of the nursing process, the outcomes will be assessed according to the time frame specified for evaluation. If it has not been met, the nursing care plan should be revised.

See the following examples:

- **Not time limited:** "*The patient will stop smoking cigarettes*."
- **Time limited:** "*The patient will complete the smoking cessation plan by December 12, 2021*."

Putting It Together

In Scenario C in Box 4.3, Ms. J.'s priority nursing diagnosis statement was *Fluid Volume Excess related to excess fluid intake as manifested by bilateral basilar crackles in the lungs, bilateral 2+ pitting edema of the ankles and feet, an increase weight of 10 pounds, and the patient reports, "My ankles are so swollen."* An example of an expected outcome meeting SMART criteria for Ms. J. is, *"The patient will have clear bilateral lung sounds within the next 24 hours."*

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4.6: Planning

Planning is the fourth step of the nursing process (and the fourth Standard of Practice set by the American Nurses Association). This standard is defined as, "The registered nurse develops a collaborative plan encompassing strategies to achieve expected outcomes." The RN develops an individualized, holistic, evidence-based plan in partnership with the health care consumer, family, significant others, and interprofessional team. Elements of the plan are prioritized. The plan is modified according to the ongoing assessment of the health care consumer's response and other indicators. The plan is documented using standardized language or terminology.[1]

After expected outcomes are identified, the nurse begins planning nursing interventions to implement. **Nursing interventions** are evidence-based actions that the nurse performs to achieve patient outcomes. Just as a provider makes medical diagnoses and writes prescriptions to improve the patient's medical condition, a nurse formulates nursing diagnoses and plans nursing interventions to resolve patient problems. Nursing interventions should focus on eliminating or reducing the related factors (etiology) of the nursing diagnoses when possible.[2] Nursing interventions, goals, and expected outcomes are written in the nursing care plan for continuity of care across shifts, nurses, and health professionals.

Planning Nursing Interventions

You might be asking yourself, "How do I know what evidence-based nursing interventions to include in the nursing care plan?" There are several sources that nurses and nursing students can use to select nursing interventions. Many agencies have care planning tools and references included in the electronic health record that are easily documented in the patient chart. Nurses can also refer to other care planning books our sources such as the Nursing Interventions Classification (NIC) system. Based on research and input from the nursing profession, NIC categorizes and describes nursing interventions that are constantly evaluated and updated. Interventions included in NIC are considered evidence-based nursing practices. The nurse is responsible for using clinical judgment to make decisions about which interventions are best suited to meet an individualized patient's needs.[3]

Direct and Indirect Care

Nursing interventions are considered direct care or indirect care. **Direct care** refers to interventions that are carried out by having personal contact with patients. Examples of direct care interventions are wound care, repositioning, and ambulation. **Indirect care** interventions are performed when the nurse provides assistance in a setting other than with the patient. Examples of indirect care interventions are attending care conferences, documenting, and communicating about patient care with other providers.

Classification of Nursing Interventions

There are three types of nursing interventions: independent, dependent, and collaborative. (See Figure 4.12[4] for an image of a nurse collaborating with the health care team when planning interventions.)

Figure 4.12 Collaborative Nursing Interventions

Independent Nursing Interventions

Any intervention that the nurse can independently provide without obtaining a prescription is considered an **independent nursing intervention**. An example of an independent nursing intervention is when the nurses monitor the patient's 24-hour intake/output record for trends because of a risk for imbalanced fluid volume. Another example of independent nursing interventions is the therapeutic communication that a nurse uses to assist patients to cope with a new medical diagnosis.

Example. Refer to Scenario C in the "Assessment" section of this chapter. Ms. J. was diagnosed with *Fluid Volume Excess*. An example of an evidence-based independent nursing intervention is, *"The nurse will reposition the patient with dependent edema frequently, as appropriate."*[5] The nurse would individualize this evidence-based intervention to the patient and agency policy by stating, *"The nurse will reposition the patient every 2 hours."*

Dependent Nursing Interventions

Dependent nursing interventions require a prescription before they can be performed. Prescriptions are orders, interventions, remedies, or treatments ordered or directed by an authorized primary health care provider.[6] A **primary health care provider** is a member of the health care team (usually a physician, advanced practice nurse, or physician's assistant) who is licensed and authorized to formulate prescriptions on behalf of the client. For example, administering medication is a dependent nursing intervention. The nurse incorporates dependent interventions into the patient's overall care plan by associating each intervention with the appropriate nursing diagnosis.

Example. Refer to Scenario C in the "Assessment" section of this chapter. Ms. J. was diagnosed with *Fluid Volume Excess*. An example of a dependent nursing intervention is, *"The nurse will administer scheduled diuretics as prescribed."*

Collaborative Nursing Interventions

Collaborative nursing interventions are actions that the nurse carries out in collaboration with other health team members, such as physicians, social workers, respiratory therapists, physical therapists, and occupational therapists. These actions are developed in consultation with other health care professionals and incorporate their professional viewpoint.[7]

Example. Refer to Scenario C in the "Assessment" section of this chapter. Ms. J. was diagnosed with *Fluid Volume Excess*. An example of a collaborative nursing intervention is consulting with a respiratory therapist when the patient has deteriorating oxygen saturation levels. The respiratory therapist plans oxygen therapy and obtains a prescription from the provider. The nurse would document "*The nurse will manage oxygen therapy in collaboration with the respiratory therapist*" in the care plan.

Individualization of Interventions

It is vital for the planned interventions to be individualized to the patient to be successful. For example, adding prune juice to the breakfast meal of a patient with constipation will only work if the patient likes to drink the prune juice. If the patient does not like prune juice, then this intervention should not be included in the care plan. Collaboration with the patient, family members, significant others, and the interprofessional team is essential for selecting effective interventions. The number of interventions included in a nursing care plan is not a hard and fast rule, but enough quality, individualized interventions should be planned to meet the identified outcomes for that patient.

Creating Nursing Care Plans

Nursing care plans are created by registered nurses (RNs). Documentation of individualized nursing care plans are legally required in long-term care facilities by the Centers for Medicare and Medicaid Services (CMS) and in hospitals by The Joint Commission. CMS guidelines state, "Residents and their representative(s) must be afforded the opportunity to participate in their care planning process and to be included in decisions and changes in care, treatment, and/or interventions. This applies both to initial decisions about care and treatment, as well as the refusal of care or treatment. Facility staff must support and encourage participation in the care planning process. This may include ensuring that residents, families, or representatives understand the comprehensive care planning process, holding care planning meetings at the time of day when a resident is functioning best and patient representatives can be present, providing sufficient notice in advance of the meeting, scheduling these meetings to accommodate a resident's representative (such as conducting the meeting in-person, via a conference call, or video conferencing), and planning enough time for information exchange and decision-making. A resident has the right to select or refuse specific treatment options before the care plan is instituted."[8] The Joint Commission conceptualizes the care planning process as the structuring framework for coordinating communication that will result in safe and effective care.[9]

Many facilities have established standardized nursing care plans with lists of possible interventions that can be customized for each specific patient. Other facilities require the nurse to develop each care plan independently. Whatever the format, nursing care plans should be individualized to meet the specific and unique needs of each patient. See Figure 4.13[10] for an image of a standardized care plan.

Nursing Care Plan

CLIENT ID:
NAME:
D.O.B.:
DOCTOR:
PERSION:

LIFESTYLE SUPPORT NEEDS	*GOAL OF CARE*	*CARE OR INTERVENTION REQUIRED* *Tick and/or Highlight Appropriate Response*
Links to Assessments: *Eating & Assessment (11-09a)* *Nutrition Assessments for Residents at Risk (11-41)* Dietician Assessment Speech Therapist Assessment	**RESIDENTS NUTRITION &HYDRATION IS MAINTAINED AT OPTIMUM LEVEL**	**Preferences** Size of meals: ☐ small ☐ medium ☐ large Likes:..... Dislikes:..... Preferred drinks: Tea ☐ Coffee ☐ Milk ☐ Other ☐ **Preferred eating arrangements** ☐ Breakfast in dining room/sitting room/own room ☐ Lunch in dining room/sitting room/own room ☐ Evening meal in dining room/sitting room/own room **Diet** ☐ Normal ☐ Modified ☐ Specify..... ☐ Supplements: Type: ..... Amount: .....Frequency..... **Dysphagia management** Difficulty with chewing ☐Yes ☐No Difficulty with swallowing ☐Yes ☐No Thickened fluids ☐ full thick ☐ 1/2 thick ☐ 1/4 thick **Enteral feeding** PEG feeds (type): ..... If PEG, ☐ Bolus ☐ Continuous **Assistance required:** ☐ Cut up food ☐ Butter bread & apply spreads ☐ Leave glass of fluid within reach (type): ..... ☐ Place utensils in residents hand ☐ Special utensils required ☐ Refill fluids at each attention ☐ Guide food into residents mouth ☐ Encourage finger food ☐ Place food into residents mouth ☐ Supervise eating/drinking ☐ Entire meal ☐ Part of meal ☐ Encourage to remain at table ☐ Weigh-frequency ☐ Other .....
Name		***Designation***
Signature		***Date***
Notes		

Figure 4.13 Standardized Care Plan

Nursing care plans created in nursing school can also be in various formats such as concept maps or tables. Some are fun and creative, while others are more formal. See Figure 4.14[11] for an image of a creative care plan created by a nursing student. Appendix B contains a template that can be used for creating nursing care plans.

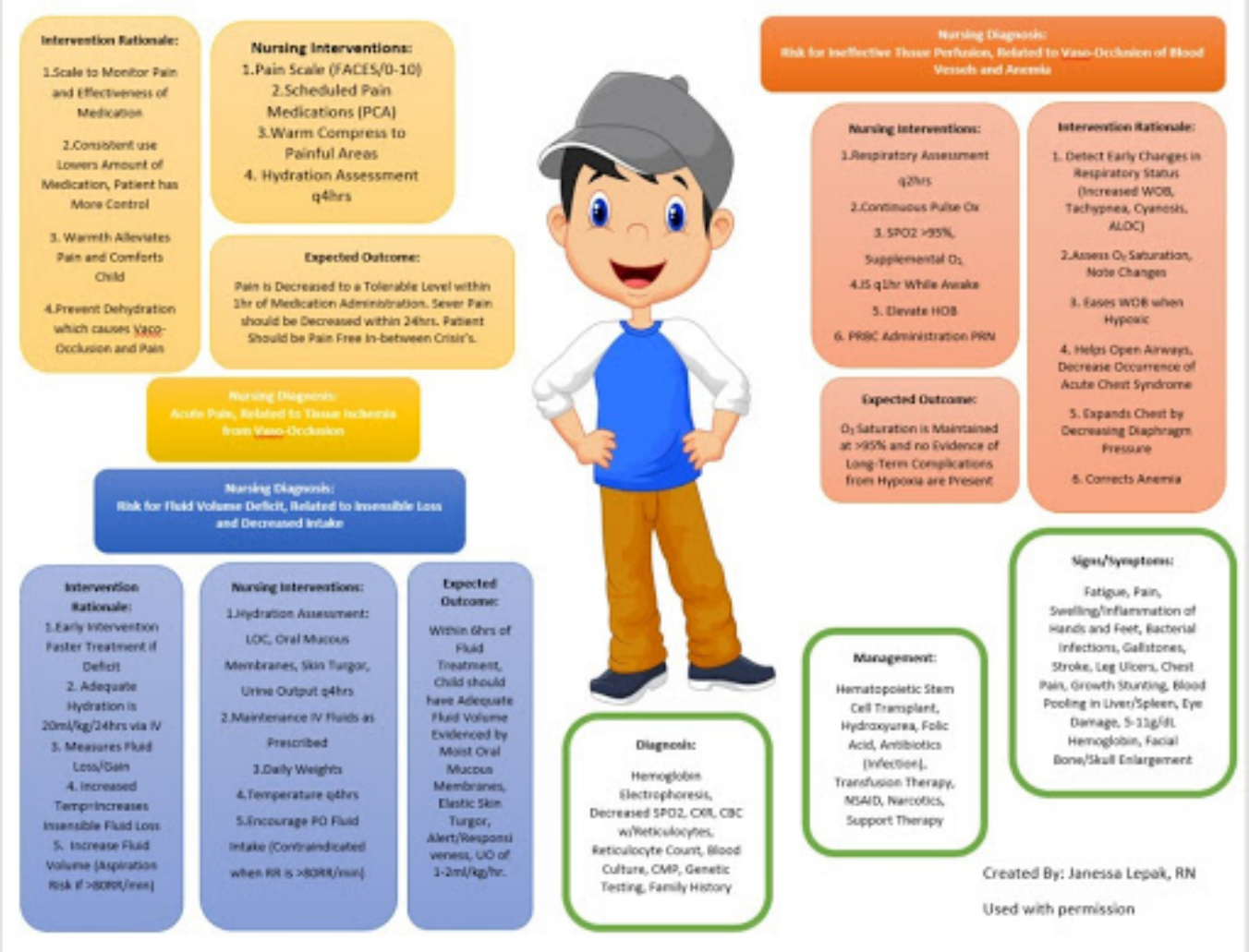

Figure 4.14 Creative Student Nurse Care Plan

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11. “Creative Student Nurse Care Plan” by Janessa Lepak, RN for Chippewa Valley Technical College is licensed under CC BY 4.0↵

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4.7: Implementation of Interventions

Implementation is the fifth step of the nursing process (and the fifth Standard of Practice set by the American Nurses Association). This standard is defined as, "The registered nurse implements the identified plan." The RN may delegate planned interventions after considering the circumstance, person, task, communication, supervision, and evaluation, as well as the state Nurse Practice Act, federal regulation, and agency policy.[1]

Implementation of interventions requires the RN to use critical thinking and clinical judgment. After the initial plan of care is developed, continual reassessment of the patient is necessary to detect any changes in the patient's condition requiring modification of the plan. The need for continual patient reassessment underscores the dynamic nature of the nursing process and is crucial to providing safe care.

During the implementation phase of the nursing process, the nurse prioritizes planned interventions, assesses patient safety while implementing interventions, delegates interventions as appropriate, and documents interventions performed.

Prioritizing Implementation of Interventions

Prioritizing implementation of interventions follows a similar method as to prioritizing nursing diagnoses. Maslow's Hierarchy of Needs and the ABCs of airway, breathing, and circulation are used to establish top priority interventions. When possible, least invasive actions are usually preferred due to the risk of injury from invasive options. Read more about methods for prioritization under the "Diagnosis" subsection of this chapter.

The potential impact on future events, especially if a task is not completed at a certain time, is also included when prioritizing nursing interventions. For example, if a patient is scheduled to undergo a surgical procedure later in the day, the nurse prioritizes initiating a NPO (nothing by mouth) prescription prior to completing pre-op patient education about the procedure. The rationale for this decision is that if the patient ate food or drank water, the surgery time would be delayed. Knowing and understanding the patient's purpose for care, current situation, and expected outcomes are necessary to accurately prioritize interventions.

Patient Safety

It is essential to consider patient safety when implementing interventions. At times, patients may experience a change in condition that makes a planned nursing intervention or provider prescription no longer safe to implement. For example, an established nursing care plan for a patient states, *"The nurse will ambulate the patient 100 feet three times daily."* However, during assessment this morning, the patient reports feeling dizzy today, and their blood pressure is 90/60. Using critical thinking and clinical judgment, the nurse decides to not implement the planned intervention of ambulating the patient. This decision and supporting assessment findings should be documented in the patient's chart and also communicated during the shift handoff report, along with appropriate notification of the provider of the patient's change in condition.

Implementing interventions goes far beyond implementing provider prescriptions and completing tasks identified on the nursing care plan and must focus on patient safety. As front-line providers, nurses are in the position to stop errors before they reach the patient.[2]

In 2000 the Institute of Medicine (IOM) issued a groundbreaking report titled *To Err Is Human: Building a Safer Health System*. The report stated that as many as 98,000 people die in U.S. hospitals each year as a result of preventable medical errors. *To Err Is Human* broke the silence that previously surrounded the consequences of medical errors and set a national agenda for reducing medical errors and improving patient safety through the design of a safer health system.[3] In 2007 the IOM published a follow-up report titled *Preventing Medication Errors* and reported that more than 1.5 million Americans are injured every year in American hospitals, and the average hospitalized patient experiences at least one medication error each day. This report emphasized actions that health care systems could take to improve medication safety.[4]

Note

Read additional information about specific actions that nurses can take to prevent medication errors; go to the "Preventing Medication Errors" section of the "Legal/Ethical" chapter of the Open RN *Nursing Pharmacology* textbook.

In an article released by the Robert Wood Johnson Foundation, errors involving nurses that endanger patient safety cover broad territory. This territory spans "wrong site, wrong patient, wrong procedure" errors, medication mistakes, failures to follow procedures that prevent central line bloodstream and other infections, errors that allow unsupervised patients to fall, and more. Some errors can be traced to shifts that are too long that leave nurses fatigued, some result from flawed systems that do not allow for adequate safety checks, and others are caused by interruptions to nurses while they are trying to administer medications or provide other care.[5]

The Quality and Safety Education for Nurses (QSEN) project began in 2005 to assist in preparing future nurses to continuously improve the quality and safety of the health care systems in which they work. The vision of the QSEN project is to "inspire health care professionals to put quality and safety as core values to guide their work."[6] Nurses and nursing students are expected to participate in quality improvement (QI) initiatives by identifying gaps where change is needed and assisting in implementing initiatives to resolve these gaps. **Quality improvement** is defined as, "The combined and unceasing efforts of everyone – health care professionals, patients and their families, researchers, payers, planners and educators – to make the changes that will lead to better patient outcomes (health), better system performance (care), and better professional development (learning)."[7]

Delegation of Interventions

While implementing interventions, RNs may elect to delegate nursing tasks. **Delegation** is defined by the American Nurses Association as, "The assignment of the performance of activities or tasks related to patient care to unlicensed assistive personnel or licensed practical nurses (LPNs) while retaining accountability for the outcome."[8] RNs are accountable for determining the appropriateness of the delegated task according to condition of the patient and the circumstance; the communication provided to an appropriately trained LPN or UAP; the level of supervision provided; and the evaluation and documentation of the task completed. The RN must also be aware of the state Nurse Practice Act, federal regulations, and agency policy before delegating. The RN cannot delegate responsibilities requiring clinical judgment.[9] See the following box for information regarding legal requirements associated with delegation according to the Wisconsin Nurse Practice Act.

Delegation According to the Wisconsin Nurse Practice Act

During the supervision and direction of delegated acts a Registered Nurse shall do all of the following:

(a) Delegate tasks commensurate with educational preparation and demonstrated abilities of the person supervised.

(b) Provide direction and assistance to those supervised.

(c) Observe and monitor the activities of those supervised.

(d) Evaluate the effectiveness of acts performed under supervision.[10]

The standard of practice for Licensed Practical Nurses in Wisconsin states, "In the performance of acts in basic patient situations, the LPN. shall, under the general supervision of an RN or the direction of a provider:

(a) Accept only patient care assignments which the LPN is competent to perform.

(b) Provide basic nursing care. Basic nursing care is defined as care that can be performed following a defined nursing procedure with minimal modification in which the responses of the patient to the nursing care are predictable.

(c) Record nursing care given and report to the appropriate person changes in the condition of a patient.

(d) Consult with a provider in cases where an LPN knows or should know a delegated act may harm a patient.

(e) Perform the following other acts when applicable:

1. Assist with the collection of data.
2. Assist with the development and revision of a nursing care plan.
3. Reinforce the teaching provided by an RN provider and provide basic health care instruction.
4. Participate with other health team members in meeting basic patient needs."[11]

Note

Read additional details about the scope of practice of registered nurses (RNs) and licensed practical nurses (LPNs) in Wisconsin's Nurse Practice Act in Chapter N 6 Standards of Practice.

Read more about the American Nurses Association's Principles of Delegation.

Table 4.7 outlines general guidelines for delegating nursing tasks in the state of Wisconsin according to the role of the health care team member.

Table 4.7 General Guidelines for Delegating Nursing Tasks

	RN	LPN	CNA
Assessment	Complete patient assessment	Assist with the collection of data for stable patients	Collect measurements such as weight, input/output, and vital signs in stable patients
Diagnosis	Analyze assessment data and create nursing diagnoses	Not applicable	Not applicable
Outcome Identification	Identify SMART patient outcomes	Not applicable	Not applicable
Planning	Plan nursing interventions	Assist with the development of a nursing care plan	Not applicable
Implementing Interventions	Implement independent, dependent, and collaborative nursing interventions; delegate interventions as appropriate, with supervision	Participate with other health team members in meeting basic patient needs Reinforce the teaching provided by an RN provider and provide basic health care instruction	Implement and document delegated interventions associated with basic nursing care such as providing assistance in ambulating or tasks within their scope of practice
Evaluation	Evaluate the attainment of outcomes and revise the nursing care plan as needed	Contribute data regarding the achievement of patient outcomes; assist in the revision of a nursing care plan	Not applicable

Documentation of Interventions

As interventions are performed, they must be documented in the patient's record in a timely manner. As previously discussed in the "Ethical and Legal Issues" subsection of the "Basic Concepts" section, lack of documentation is considered a failure to communicate and a basis for legal action. A basic rule of thumb is if an intervention is not documented, it is considered not done in a court of law. It is also important to document administration of medication and other interventions in a timely manner to prevent errors that can occur due to delayed documentation time.

Coordination of Care and Health Teaching/Health Promotion

ANA's Standard of Professional Practice for Implementation also includes the standards *5ACoordination of Care* and *5BHealth Teaching and Health Promotion*.[12] **Coordination of Care** includes competencies such as organizing the components of the plan, engaging the patient in self-care to achieve goals, and advocating for the delivery of dignified and holistic care by the interprofessional team. **Health Teaching and Health Promotion** is defined as, "Employing strategies to teach and promote health and wellness."[13] Patient education is an important component of nursing care and should be included during every patient encounter. For example, patient education may include teaching about side effects while administering medications or teaching patients how to self-manage their conditions at home.

Putting It Together

Refer to Scenario C in the “Assessment” section of this chapter. The nurse implemented the nursing care plan documented in Appendix C. Interventions related to breathing were prioritized. Administration of the diuretic medication was completed first, and lung sounds were monitored frequently for the remainder of the shift. Weighing the patient before breakfast was delegated to the CNA. The patient was educated about her medications and methods to use to reduce peripheral edema at home. All interventions were documented in the electronic medical record (EMR).

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4.8: Evaluation

Evaluation is the sixth step of the nursing process (and the sixth Standard of Practice set by the American Nurses Association). This standard is defined as, "The registered nurse evaluates progress toward attainment of goals and outcomes."[1] Both the patient status and the effectiveness of the nursing care must be continuously evaluated and the care plan modified as needed.[2]

Evaluation focuses on the effectiveness of the nursing interventions by reviewing the expected outcomes to determine if they were met by the time frames indicated. During the evaluation phase, nurses use critical thinking to analyze reassessment data and determine if a patient's expected outcomes have been met, partially met, or not met by the time frames established. If outcomes are not met or only partially met by the time frame indicated, the care plan should be revised. Reassessment should occur every time the nurse interacts with a patient, discusses the care plan with others on the interprofessional team, or reviews updated laboratory or diagnostic test results. Nursing care plans should be updated as higher priority goals emerge. The results of the evaluation must be documented in the patient's medical record.

Ideally, when the planned interventions are implemented, the patient will respond positively and the expected outcomes are achieved. However, when interventions do not assist in progressing the patient toward the expected outcomes, the nursing care plan must be revised to more effectively address the needs of the patient. These questions can be used as a guide when revising the nursing care plan:

- Did anything unanticipated occur?
- Has the patient's condition changed?
- Were the expected outcomes and their time frames realistic?
- Are the nursing diagnoses accurate for this patient at this time?
- Are the planned interventions appropriately focused on supporting outcome attainment?
- What barriers were experienced as interventions were implemented?
- Does ongoing assessment data indicate the need to revise diagnoses, outcome criteria, planned interventions, or implementation strategies?
- Are different interventions required?

Putting It Together

Refer to Scenario C in the "Assessment" section of this chapter and Appendix C. The nurse evaluates the patient's progress toward achieving the expected outcomes.

For the nursing diagnosis *Fluid Volume Excess*, the nurse evaluated the four expected outcomes to determine if they were met during the time frames indicated:

1. *The patient will report decreased dyspnea within the next 8 hours.*
2. *The patient will have clear lung sounds within the next 24 hours.*
3. *The patient will have decreased edema within the next 24 hours.*
4. *The patient's weight will return to baseline by discharge.*

Evaluation of the patient condition on Day 1 included the following data: "*The patient reported decreased shortness of breath, and there were no longer crackles in the lower bases of the lungs. Weight decreased by 1 kg, but 2+ edema continued in ankles and calves*." Based on this data, the nurse evaluated the expected outcomes as "*Partially Met*" and revised the care plan with two new interventions:

1. *Request prescription for TED hose from provider.*
2. *Elevate patient's legs when sitting in chair.*

For the second nursing diagnosis, *Risk for Falls*, the nurse evaluated the outcome criteria as "*Met*" based on the evaluation, "*The patient verbalizes understanding and is appropriately calling for assistance when getting out of bed. No falls have occurred.*"

The nurse will continue to reassess the patient's progress according to the care plan during hospitalization and make revisions to the care plan as needed. Evaluation of the care plan is documented in the patient's medical record.

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4.9: Summary of the Nursing Process

You have now learned how to perform each step of the nursing process according to the ANA Standards of Professional Nursing Practice. Critical thinking, clinical reasoning, and clinical judgment are used when assessing the patient, creating a nursing care plan, and implementing interventions. Frequent reassessment, with revisions to the care plan as needed, is important to help the patient achieve expected outcomes. Throughout the entire nursing process, the patient always remains the cornerstone of nursing care. Providing individualized, patient-centered care and evaluating whether that care has been successful in achieving patient outcomes are essential for providing safe, professional nursing practice.

Video Review of Creating a Sample Care Plan[1]

1. RegisteredNurseRN. (2015, June11). *Nursing care plan* tutorial | *How to complete a care plan in nursing school*. [Video]. YouTube. All rights reserved. Video used with permission. https//youtu.be/07Z4ywfmLg8↵

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4.10: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Instructions: Apply what you’ve learned in this chapter by creating a nursing care plan using the following scenario. Use the template in Appendix B as a guide.

The client, Mark S., is a 57-year-old male who was admitted to the hospital with “severe” abdominal pain that was unable to be managed in the Emergency Department. The physician has informed Mark that he will need to undergo some diagnostic tests. The tests are scheduled for the morning.

After receiving the news about his condition and the need for diagnostic tests, Mark begins to pace the floor. He continues to pace constantly. He keeps asking the nurse the same question (“How long will the tests take?”) about his tests over and over again. The patient also remarked, “I’m so uptight I will never be able to sleep tonight.” The nurse observes that the client avoids eye contact during their interactions and that he continually fidgets with the call light. His eyes keep darting around the room. He appears tense and has a strained expression on his face. He states, “My mouth is so dry.” The nurse observes his vital signs to be: T 98, P 104, R 30, BP 180/96. The nurse notes that his skin feels sweaty (diaphoretic) and cool to the touch.

Critical Thinking Activity:

1. Group (cluster) the subjective and objective data.
2. Create a problem-focused nursing diagnosis (hypothesis).
3. Develop a broad goal and then identify an expected outcome in “SMART” format.
4. Outline three interventions for the nursing diagnosis to meet the goal. Cite an evidence-based source.
5. Imagine that you implemented the interventions that you identified. Evaluate the degree to which the expected outcome was achieved: Met – Partially Met – Not Met.

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4.11: IV Glossary

Advocacy: The act or process of pleading for, supporting, or recommending a cause or course of action.[1]

Art of nursing: Unconditionally acceptance of the humanity of others, respecting their need for dignity and worth, while providing compassionate, comforting care.[2]

At-risk populations: Groups of people who share a characteristic that causes each member to be susceptible to a particular human response, such as demographics, health/family history, stages of growth/development, or exposure to certain events/experiences.[3]

Associated conditions: Medical diagnoses, injuries, procedures, medical devices, or pharmacological agents. These conditions are not independently modifiable by the nurse, but support accuracy in nursing diagnosis.[4]

Basic nursing care: Care that can be performed following a defined nursing procedure with minimal modification in which the responses of the patient to the nursing care are predictable.[5]

Caring relationship: A relationship described as one in which the whole person is assessed while balancing the vulnerability and dignity of the patient and family.[6]

Client: Individual, family, or group, which includes significant others and populations.[7]

Clinical judgment: The observed outcome of critical thinking and decision-making. It is an iterative process that uses nursing knowledge to observe and access presenting situations, identify a prioritized client concern, and generate the best possible evidence-based solutions in order to deliver safe client care.[8]

Clinical reasoning: A complex cognitive process that uses formal and informal thinking strategies to gather and analyze patient information, evaluate the significance of this information, and weigh alternative actions.[9]

Clustering data: Grouping data into similar domains or patterns.

Collaborative nursing interventions: Nursing interventions that require cooperation among health care professionals and unlicensed assistive personnel (UAP).

Coordination of care: While implementing interventions during the nursing process, includes components such as organizing the components of the plan with input from the health care consumer, engaging the patient in self-care to achieve goals, and advocating for the delivery of dignified and person-centered care by the interprofessional team.[10]

Critical thinking: Reasoning about clinical issues such as teamwork, collaboration, and streamlining workflow.[11]

Cue: Subjective or objective data that gives the nurse a hint or indication of a potential problem, process, or disorder.

Deductive reasoning: "Top-down thinking" or moving from the general to the specific. Deductive reasoning relies on a general statement or hypothesis—sometimes called a premise or standard—that is held to be true. The premise is used to reach a specific, logical conclusion.

Defining characteristics: Observable cues/inferences that cluster as manifestations of a problem-focused, health-promotion diagnosis, or syndrome. This does not only imply those things that the nurse can see, but also things that are seen, heard (e.g., the patient/family tells us), touched, or smelled.[12]

Delegation: The assignment of the performance of activities or tasks related to patient care to unlicensed assistive personnel while retaining accountability for the outcome.[13]

Dependent nursing interventions: Interventions that require a prescription from a physician, advanced practice nurse, or physician's assistant.

Direct care: Interventions that are carried out by having personal contact with a patient.

Electronic Medical Record (EMR): An electronic version of the patient's medical record.

Evidence-Based Practice (EBP): A lifelong problem-solving approach that integrates the best evidence from well-designed research studies and evidence-based theories; clinical expertise and evidence from assessment of the health care consumer's history and condition, as well as health care resources; and patient, family, group, community, and population preferences and values.[14]

Expected outcomes: Statements of measurable action for the patient within a specific time frame and in response to nursing interventions. “SMART” outcome statements are specific, measurable, action-oriented, realistic, and include a time frame.

Functional health patterns: An evidence-based assessment framework for identifying patient problems and risks during the assessment phase of the nursing process.

Generalization: A judgment formed from a set of facts, cues, and observations.

Goals: Broad statements of purpose that describe the aim of nursing care.

Health teaching and health promotion: Employing strategies to teach and promote health and wellness.[15]

Independent nursing interventions: Any intervention that the nurse can provide without obtaining a prescription or consulting anyone else.

Indirect care: Interventions performed by the nurse in a setting other than directly with the patient. An example of indirect care is creating a nursing care plan.

Inductive reasoning: A type of reasoning that involves forming generalizations based on specific incidents.

Inference: Interpretations or conclusions based on cues, personal experiences, preferences, or generalizations.

Licensed Practical Nurses or Licensed Vocational Nurses (LPNs/LVNs): Nurses who have had specific training and passed a licensing exam. The training is generally less than that of a Registered Nurse. The scope of practice of an LPN/LVN is determined by the facility and the state’s Nurse Practice Act.

Medical diagnosis: A disease or illness diagnosed by a physician or advanced health care provider such as a nurse practitioner or physician’s assistant. Medical diagnoses are a result of clustering signs and symptoms to determine what is medically affecting an individual.

Nursing: Nursing integrates the art and science of caring and focuses on the protection, promotion, and optimization of health and human functioning; prevention of illness and injury; facilitation of healing; and alleviation of suffering through compassionate presence. Nursing is the diagnosis and treatment of human responses and advocacy in the care of individuals, families, groups, communities, and populations in the recognition of the connection of all humanity.[16]

Nursing care plan: Specific documentation of the planning and delivery of nursing care that is required by The Joint Commission.

Nursing process: A systematic approach to patient-centered care with steps including assessment, diagnosis, outcome identification, planning, implementation, and evaluation; otherwise known by the mnemonic “ADOPIE.”

Objective data: Data that the nurse can see, touch, smell, or hear or is reproducible such as vital signs. Laboratory and diagnostic results are also considered objective data.

Outcome: A measurable behavior demonstrated by the patient that is responsive to nursing interventions.[17]

PES Statement: The format of a nursing diagnosis statement that includes:

- Problem (P) – statement of the patient problem (i.e., the nursing diagnosis)
- Etiology (E) – related factors (etiology) contributing to the cause of the nursing diagnosis
- Signs and Symptoms (S) – defining characteristics manifested by the patient of that nursing diagnosis

Prescription: Orders, interventions, remedies, or treatments ordered or directed by an authorized primary health care provider.[18]

Primary data: Information collected from the patient.

Primary health care provider: Member of the health care team (usually a medical physician, nurse practitioner, etc.) licensed and authorized to formulate prescriptions on behalf of the client.[19]

Prioritization: The skillful process of deciding which actions to complete first, second, or third for optimal patient outcomes and to improve patient safety.

Quality improvement: The “combined and unceasing efforts of everyone — health care professionals, patients and their families, researchers, payers, planners, and educators — to make the changes that will lead to better patient outcomes (health), better system performance (care), and better professional development (learning).”[20]

Rapport: Developing a relationship of mutual trust and understanding.

Registered Nurse (RN): A nurse who has had a designated amount of education and training in nursing and is licensed by a state Board of Nursing.

Related factors: The underlying cause (etiology) of a nursing diagnosis when creating a PES statement.

Right to self-determination: Patients have the right to determine what will be done with and to their own person.

Scientific method: Principles and procedures in the discovery of knowledge involving the recognition and formulation of a problem, the collection of data, and the formulation and testing of a hypothesis.

Secondary data: Information collected from sources other than the patient.

Subjective data: Data that the patient or family reports or data that the nurse makes as an inference, conclusion, or assumption, such as *"The patient appears anxious."*

Unlicensed Assistive Personnel (UAP): Any unlicensed personnel trained to function in a supportive role, regardless of title, to whom a nursing responsibility may be delegated.[21]

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CHAPTER OVERVIEW

5: Safety

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5.2: Basic Safety Concepts
5.3: Safety Strategies
5.4: Culture of Safety
5.5: National Patient Safety Goals
5.6: Preventing Falls
5.7: Restraints
5.8: Safety Considerations Across the Life Span
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5.1: Safety Introduction

Learning Objectives

- Indicate correct identification of patient prior to performing any patient care measures
- Identify safety considerations for adults of all ages
- Include industry standards and regulations regarding microbiological, physical, and environmental safety
- Apply decision-making related to measures to minimize use of restraints
- Identify evidence-based practices

A national focus on reducing medical errors has been in place since 1999 when the Institute of Medicine (IOM) released a report titled *To Err is Human: Building a Safer Health System*. This historic report broke the silence surrounding health care errors and encouraged safety to be built into the processes of providing patient care. It was soon followed by the establishment of several safety initiatives by The Joint Commission, including the release of annual National Patient Safety Goals. Additionally, the Quality and Safety Education for Nurses (QSEN) Institute was developed to promote emphasis on high-quality, safe patient care in nursing. This chapter will discuss several safety initiatives that promote a safe health care environment.

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5.2: Basic Safety Concepts

Safety: A Basic Need

Safety is a basic foundational human need and always receives priority in patient care. Nurses typically use Maslow's Hierarchy of Needs to prioritize urgent patient needs, with the bottom two rows of the pyramid receiving top priority. See Figure 5.1[1] for an image of Maslow's Hierarchy of Needs. Safety is intertwined with basic physiological needs.

Consider the following scenario: You are driving back from a relaxing weekend at the lake and come upon a fiery car crash. You run over to the car to help anyone inside. When you get to the scene, you notice that the lone person in the car is not breathing. Your first priority is not to initiate rescue breathing inside the burning car, but to move the person to a safe place where you can safely provide CPR.

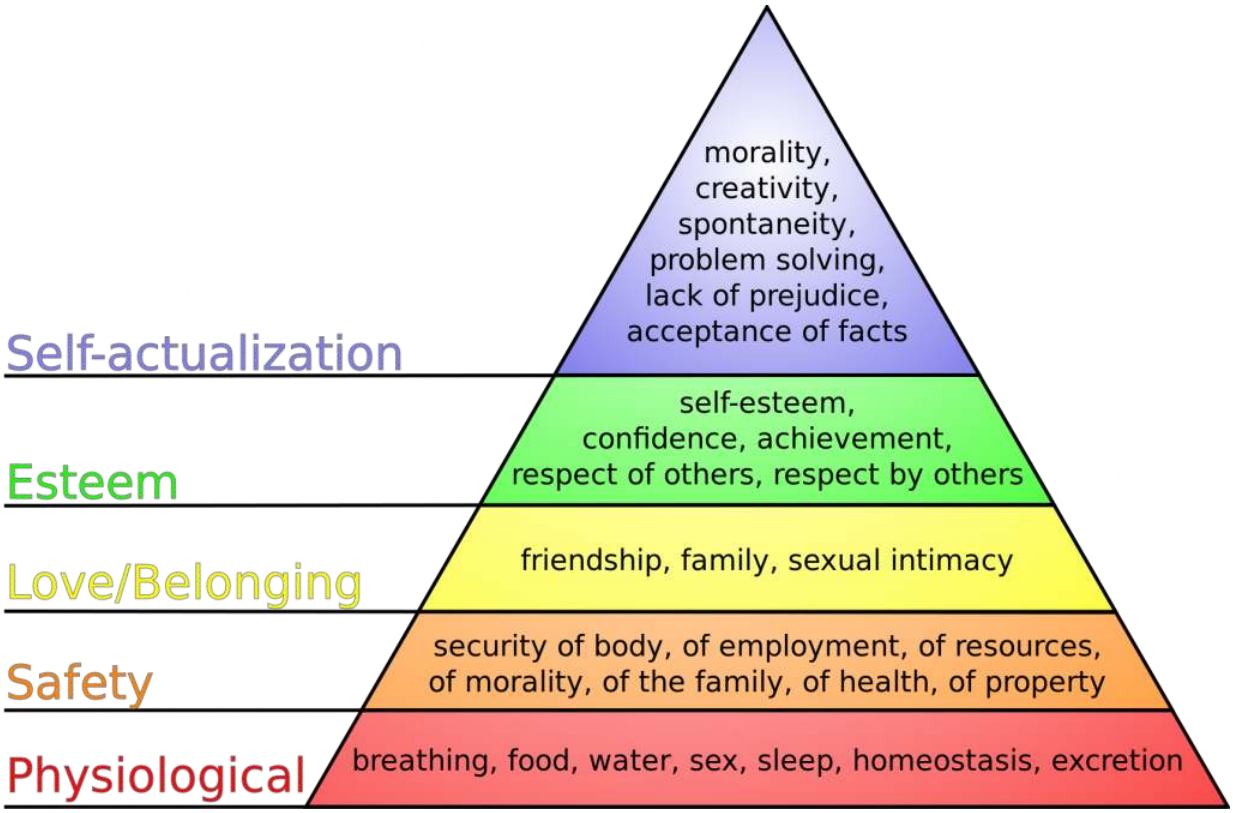

Figure 5.1 Maslow's Hierarchy of Needs

In nursing, the concept of patient safety is central to everything we do in all health care settings. As a nurse, you play a critical role in promoting patient safety while providing care. You also teach patients and their caregivers how to prevent injuries and remain safe in their homes and in the community. Safe patient care also includes measures to keep you safe in the health care environment; if you become ill or injured, you will not be able to effectively care for others.

Safe patient care is a commitment to providing the best possible care to every patient and their caregivers in every moment of every day. Patients come to health care facilities expecting to be kept safe while they are treated for illnesses and injuries. Unfortunately, you may have heard stories about situations when that did not happen. Medical errors can be devastating to patients and their families. Consider the true patient story in the following box that illustrates factors affecting patient safety.

The Josie King Story

In 2001, 18-month-old Josie King died as a result of medical errors in a well-known hospital from a hospital-acquired infection and a wrongly administered pain medication. How did this preventable death happen? Watch this video of her mother, Sorrel King, telling Josie's story and explaining how Josie's death spurred her work on improving patient safety in hospitals everywhere.[2]

Reflective Questions:

1. What factors contributed to Josie's death?
2. How could these factors be resolved?

Read more about the Josie King Foundation.

Hear more stories about patients who died from poor handoff communication at the Patient Safety Movement website.

Never Events

The event described in the Josie King story is considered a "never event." **Never events** are adverse events that are clearly identifiable, measurable, serious (resulting in death or significant disability), and preventable. In 2007 the Centers for Medicare and Medicaid Services (CMS) discontinued payment for costs associated with never events, and this policy has been adopted by most private insurance companies. Never events are publicly reported, with the goal of increasing accountability by health care agencies and improving the quality of patient care. The current list of never events includes seven categories of events:

- Surgical or procedural event, such as surgery performed on the wrong body part
- Product or device, such as injury or death from a contaminated drug or device
- Patient protection, such as patient suicide in a health care setting
- Care management, such as death or injury from a medication error
- Environmental, such as death or injury as the result of using restraints
- Radiologic, such as a metallic object in an MRI area
- Criminal, such as death or injury of a patient or staff member resulting from physical assault on the grounds of a health care setting

Sentinel Events

Sentinel events are similar to never events but are not necessarily preventable. They are defined as an "unexpected occurrence involving death or serious physiological or psychological injury, or the risk thereof." For example, injury or death from a properly prescribed and administered medication is a sentinel event. The Joint Commission mandates reporting of sentinel events and the performance of a root cause analysis by the health care agency. **Root cause analysis** is a structured method used to analyze serious adverse events to identify underlying problems that increase the likelihood of errors, while avoiding the trap of focusing on mistakes by individuals. A multidisciplinary team analyzes the sequence of events leading up to the error with the goal of identifying how and why the event occurred. The ultimate goal of root cause analysis is to prevent future harm by eliminating hidden problems within a health care system that contribute to adverse events. For example, when a medication error occurs, a root cause analysis goes beyond focusing on the mistake by the nurse and looks at other system factors that contributed to the error, such as similar-looking drug labels, placement of similar-looking medications next to each other in a medication dispensing machine, or vague instructions in a provider order.

Root cause analysis uses human factors science as part of the investigation. **Human factors** focus on the interrelationships among humans, the tools and equipment they use in the workplace, and the environment in which they work. Safety in health care is ultimately dependent on humans – the doctors, nurses, and health care professionals – providing the care.

Near Misses

In addition to investigating sentinel events and never events, agencies use root cause analysis to investigate near misses. **Near misses** are defined by the World Health Organization (WHO) as, "An error that has the potential to cause an adverse event (patient harm) but fails to do so because of chance or because it is intercepted." Errors and near misses are rarely the result of poor motivation or incompetence of the health care professional, but are often caused by key contributing factors such as poor communication, less-than-optimal teamwork, memory overload, reliance on memory for complex procedures, and lack of standardization of policies and procedures. In an effort to prevent near misses, medical errors, sentinel events, and never events, several safety strategies have been developed and implemented in health care organizations across the country. These strategies will be discussed throughout the remainder of the chapter.

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1. "Maslow's hierarchy of needs.svg" by J. Finkelstein is licensed under CC BY-SA 3.0↵
2. Healthcare.gov. (2011, May 25). *Introducing the partnerships for patients with Sorrel King*. [Video]. YouTube. https://youtu.be/ak_5X66V5Ms↵

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5.3: Safety Strategies

Safety strategies have been developed based on research to reduce the likelihood of errors and to create safe standards of care. Examples of safety initiatives include strategies to prevent medication errors, standardized checklists, and structured team communication tools.

Medication Errors

Several initiatives have been developed nationally to prevent medication errors, such as the establishment of a "Do Not Use List of Abbreviations," a "List of Error-Prone Abbreviations," "Frequently Confused Medication List," "High-Alert Medications List," and the "Do Not Crush List." Additionally, it is considered a standard of care for nurses to perform three checks of the rights of medication administration whenever administering medication. View more information about these safety initiatives to prevent medication errors using the hyperlinks provided below. Specific strategies to prevent medication errors are discussed in the "Preventing Medication Errors" of the "Legal/Ethical" chapter of the Open RN *Nursing Pharmacology* textbook. The rights of medication administration are discussed in the "Basic Concepts of Administering Medications" section of the "Administration of Enteral Medications" chapter of the Open RN *Nursing Skills* textbook.

Note

Read more about safety initiatives implemented to prevent medication errors using these hyperlinks:

- ISMP List of Error-Prone Abbreviations
- ISMP List of Confused Drug Names
- ISMP List of High-Alert Medications
- ISMP Oral Dosage Forms That Should Not Be Crushed

Checklists

Performance of complex medical procedures is often based on memory, even though humans are prone to short-term memory loss, especially when we are multitasking or under stress. The point-of-care checklist is an example of a patient care safety initiative that reduces this reliance on fallible memory. For example, a surgical checklist developed by the World Health Organization (WHO) has been adopted by most surgical providers around the world as a standard of care. It has significantly decreased injuries and deaths caused by surgeries by focusing on teamwork and communication. The Association of PeriOperative Registered Nurses (AORN) combined recommendations from The Joint Commission and the WHO to create a specific surgical checklist for nurses. See Figure 5.2[1] for an image of the WHO surgical checklist.

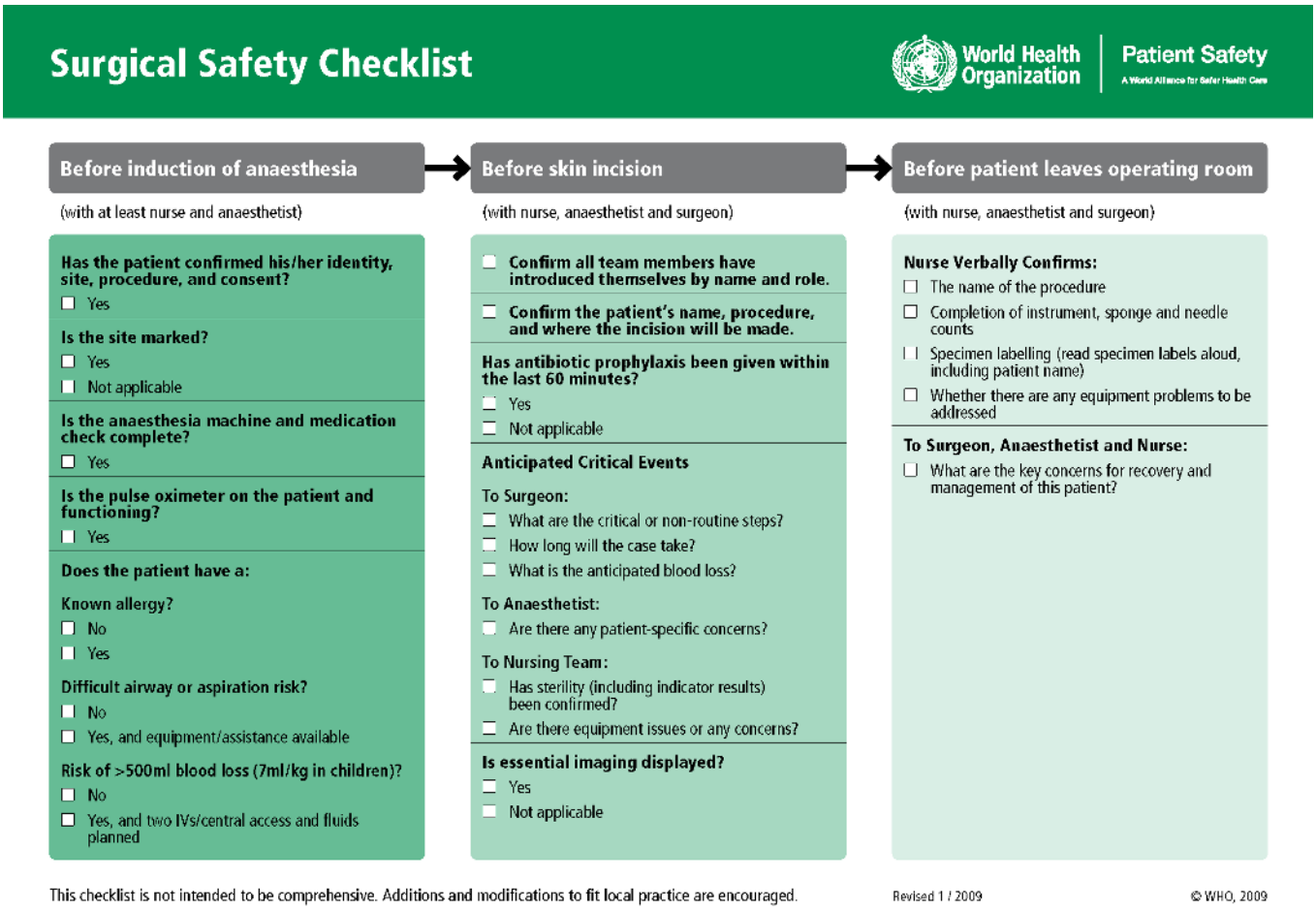


Figure 5.2 Surgical Checklist

> **Note**
>
> Review the AORN Comprehensive Surgical Checklist by the Association of PeriOperative Registered Nurses.

Team Communication

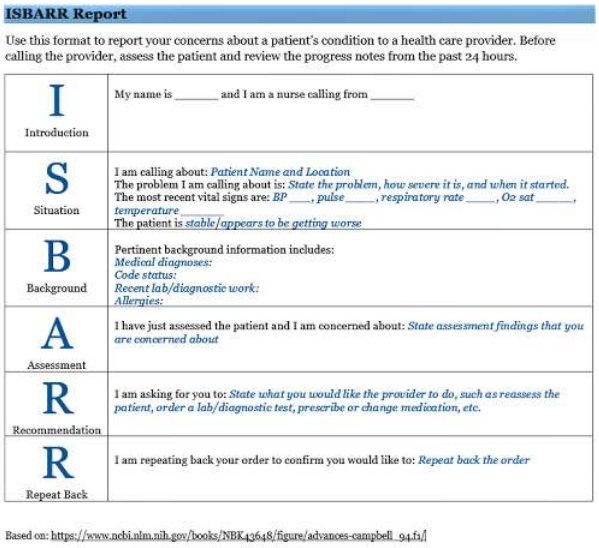
Nurses routinely communicate with multidisciplinary health care team members and contact health care providers to report changes in patient status. Serious patient harm can occur when patient information is absent, incomplete, erroneous, or delayed during team communication. Standardized methods of communication have been developed to ensure that accurate information is exchanged among team members in a structured and concise manner.

ISBARR

A common format for communication between health care team members is **ISBARR**, a mnemonic for the components of Introduction, Situation, Background, Assessment, Request/Recommendations, and Repeat back. See Figure 5.3[2] for an image of an ISBARR reference card.

- **Introduction:** Introduce your name, role, and the agency from which you are calling.
- **Situation:** Provide the patient's name and location, why you are calling, recent vital signs, and the status of the patient.
- **Background:** Provide pertinent background information about the patient such as admitting medical diagnoses, code status, recent relevant lab or diagnostic results, and allergies.
- **Assessment:** Share abnormal assessment findings and your concerns.
- **Request/Recommendations:** State what you would like the provider to do, such as reassess the patient, order a lab/diagnostic test, prescribe/change medication, etc.

- **Repeat back:** If you are receiving new orders from a provider, repeat them to confirm accuracy. Be sure to document communication with the provider in the patient's chart.



ISBARR Report

Use this format to report your concerns about a patient's condition to a health care provider. Before calling the provider, assess the patient and review the progress notes from the past 24 hours.

I Introduction	My name is _____ and I am a nurse calling from _____
S Situation	I am calling about: *Patient Name and Location* The problem I am calling about is: *State the problem, how severe it is, and when it started.* The most recent vital signs are: *BP ___, pulse ____, respiratory rate ____, O2 sat _____, temperature ____* The patient is *stable/appears to be getting worse*
B Background	Pertinent background information includes: *Medical diagnoses:* *Code status:* *Recent lab/diagnostic work:* *Allergies:*
A Assessment	I have just assessed the patient and I am concerned about: *State assessment findings that you are concerned about*
R Recommendation	I am asking for you to: *State what you would like the provider to do, such as reassess the patient, order a lab/diagnostic test, prescribe or change medication, etc.*
R Repeat Back	I am repeating back your order to confirm you would like to: *Repeat back the order*

Based on: https://www.ncbi.nlm.nih.gov/books/NBK43648/figure/advances-campbell_94.f1/

Figure 5.3 ISBARR Reference Card

Handoff Reports

Handoff reports are a specific type of team communication as patient care is transferred. Handoff reports are defined by The Joint Commission as, "A transfer and acceptance of patient care responsibility achieved through effective communication. It is a real-time process of passing patient specific information from one caregiver to another, or from one team of caregivers to another, for the purpose of ensuring the continuity and safety of the patient's care." Handoff reports occur during multiple stages of patient care, such as between nurses at the end of shifts, when a patient is transferred from one unit to another within a health care agency, or when a patient is transferred to a different facility. In 2017 The Joint Commission issued a sentinel alert about inadequate handoff communication resulting in patient harm such as wrong-site surgeries, delays in treatment, falls, and medication errors. Strategies to improve handoff communication, such as bedside handoff report checklists, have been implemented at agencies across the country.

Bedside handoff reports typically occur between nurses during inpatient care as the off-going and the incoming nurses communicate current, up-to-date details about the patient's care . The report is optimally conducted at the bedside and includes the patient. Family members may be included during the report with the patient's permission. See the hyperlink below to view a sample bedside shift report checklist from the Agency for Healthcare Research and Quality. Although a bedside handoff report is similar to an ISBARR report, it contains additional information to ensure continuity of care across nursing shifts, such as current head-to-toe assessment findings to establish baseline status; information about equipment such as IVs, catheters, and drainage tubes; and recent changes in medications, lab results, diagnostic tests, and treatments.

Note

View a Bedside Shift Report Checklist from the Agency for Healthcare Research and Quality.

1. "9789241598590_eng_Checklist.pdf" by WHO is in the Public Domain↵
2. "ISBARR Reference Card" by Kim Ernstmeyer at Chippewa Valley Technical College is licensed under CC BY 4.0↵

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5.4: Culture of Safety

In addition to implementing safety strategies to improve safe patient care, leaders of a health care agency must also establish a culture of safety. A **culture of safety** reflects the behaviors, beliefs, and values within and across all levels of an organization as they relate to safety and clinical excellence, with a focus on people. In 2017 The Joint Commission released a sentinel event regarding the essential role of leadership in establishing a culture of safety. Three components of a culture of safety are the following:

- **Just Culture:** A culture where people feel safe raising questions and concerns and report safety events in an environment that emphasizes a nonpunitive response to errors and near misses. Clear lines are drawn between human error, at-risk, and reckless behaviors.
- **Reporting Culture:** People realize errors are inevitable and are encouraged to speak up for patient safety by reporting errors and near misses.
- **Learning Culture:** People regularly collect information and learn from errors and successes while openly sharing data and information and applying best evidence to improve work processes and patient outcomes.

The American Nurses Association further describes a culture of safety as one that includes openness and mutual respect when discussing safety concerns and solutions without shifting to individual blame, a learning environment with transparency and accountability, and reliable teams. In contrast, complexity, lack of clear measures, hierarchical authority, the “blame game,” and lack of leadership are examples of barriers that do not promote a culture of safety. See the following box for an example of safety themes established during a health care institution’s implementation of a culture of safety.

Safety Themes in a Culture of Safety [1]

Kaiser Permantente implemented a culture of safety in 2001 that focused on instituting the following six strategic themes:

- **Safe culture:** Creating and maintaining a strong patient safety culture, with patient safety and error reduction embraced as shared organizational values.
- **Safe care:** Ensuring that the actual and potential hazards associated with high-risk procedures, processes, and patient care populations are identified, assessed, and managed in a way that demonstrates continuous improvement and ultimately ensures that patients are free from accidental injury or illness.
- **Safe staff:** Ensuring that staff possess the knowledge and competence to perform required duties safely and contribute to improving system safety performance.
- **Safe support systems:** Identifying, implementing, and maintaining support systems—including knowledge-sharing networks and systems for responsible reporting—that provide the right information to the right people at the right time.
- **Safe place:** Designing, constructing, operating, and maintaining the environment of health care to enhance its efficiency and effectiveness.
- **Safe patients:** Engaging patients and their families in reducing medical errors, improving overall system safety performance, and maintaining trust and respect.

A strong safety culture encourages all members of the health care team to identify and reduce risks to patient safety by reporting errors and near misses so that root cause analysis can be performed and identified risks are removed from the system. However, in a poorly defined and implemented culture of safety, staff often conceal errors due to fear or shame. Nurses have been traditionally trained to believe that clinical perfection is attainable and that “good” nurses do not make errors. Errors are perceived as being caused by carelessness, inattention, indifference, or uninformed decisions. Although expecting high standards of performance is appropriate and desirable, it can become counterproductive if it creates an expectation of perfection that impacts the reporting of errors and near misses. If employees feel shame when they make an error, they may feel pressure to hide or cover up errors. Evidence indicates that approximately three of every four errors are detected by those committing them, as opposed to being detected by an environmental cue or another person. Therefore, employees need to be able to trust that they can fully report errors without fear of being wrongfully blamed. This provides the agency with the opportunity to learn how to further improve processes and prevent future errors from occurring. For many organizations, the largest barrier in establishing a culture of safety is the

establishment of trust. A model called “Just Culture” has successfully been implemented in many agencies to decrease the “blame game,” promote trust, and improve the reporting of errors.

Just Culture

The American Nurses Association (ANA) officially endorses the Just Culture model. In 2019 the ANA published a position statement on Just Culture, stating, “Traditionally, healthcare’s culture has held individuals accountable for all errors or mishaps that befall patients under their care. By contrast, a Just Culture recognizes that individual practitioners should not be held accountable for system failings over which they have no control. A Just Culture also recognizes many individual or ‘active’ errors represent predictable interactions between human operators and the systems in which they work. However, in contrast to a culture that touts ‘no blame’ as its governing principle, a Just Culture does not tolerate conscious disregard of clear risks to patients or gross misconduct (e.g., falsifying a record or performing professional duties while intoxicated).”

The Just Culture model categorizes human behavior into three causes of errors. Consequences of errors are based on whether the error is a simple human error or caused by at-risk or reckless behavior.

- **Simple human error:** A simple human error occurs when an individual inadvertently does something other than what should have been done. Most medical errors are the result of human error due to poor processes, programs, education, environmental issues, or situations. These errors are managed by correcting the cause, looking at the process, and fixing the deviation. For example, a nurse appropriately checks the rights of medication administration three times, but due to the similar appearance and names of two different medications stored next to each other in the medication dispensing system, administers the incorrect medication to a patient. In this example, a root cause analysis reveals a system issue that must be modified to prevent future patient errors (e.g., change the labelling and storage of look alike-sound alike medication).
- **At-risk behavior:** An error due to at-risk behavior occurs when a behavioral choice is made that increases risk where the risk is not recognized or is mistakenly believed to be justified. For example, a nurse scans a patient’s medication with a bar code scanner prior to administration, but an error message appears on the scanner. The nurse mistakenly interprets the error to be a technology problem and proceeds to administer the medication instead of stopping the process and further investigating the error message, resulting in the wrong dosage of a medication being administered to the patient. In this case, ignoring the error message on the scanner can be considered “at-risk behavior” because the behavioral choice was considered justified by the nurse at the time.
- **Reckless behavior:** Reckless behavior is an error that occurs when an action is taken with conscious disregard for a substantial and unjustifiable risk.[2] For example, a nurse arrives at work intoxicated and administers the wrong medication to the wrong patient. This error is considered due to reckless behavior because the decision to arrive intoxicated was made with conscious disregard for substantial risk.

These examples show three different causes of medication errors that would result in different consequences to the employee based on the Just Culture model. Under the Just Culture model, after root cause analysis is completed, system-wide changes are made to decrease factors that contributed to the error. Managers appropriately hold individuals accountable for errors if they were due to simple human error, at-risk behavior, or reckless behaviors.

If an individual commits a simple human error, managers console the individual and consider changes in training, procedures, and processes. In the “simple human error” above, system-wide changes would be made to change the label and location of the medication to prevent future errors from occurring with the same medication.

Individuals committing at-risk behavior are held accountable for their behavioral choice and often require coaching with incentives for less risky behaviors and situational awareness. In the “at-risk behavior” example above where the nurse ignored an error message on the bar code scanner, mandatory training on using a bar code scanner and responding to errors would be implemented, and the manager would track the employee’s correct usage of the bar code scanner for several months following training.

If an individual demonstrates reckless behavior, remedial action and/or punitive action is taken.[3] In the “reckless behavior” example above, the manager would report the nurse’s behavior to the state’s Board of Nursing with mandatory substance abuse counseling to maintain their nursing license. Employment may be terminated with consideration of patterns of behavior.

A Just Culture in which employees aren’t afraid to report errors is a highly successful way to enhance patient safety, increase staff and patient satisfaction, and improve outcomes. Success is achieved through good communication, effective management of

resources, and an openness to changing processes to ensure the safety of patients and employees. The infographic in Figure 5.4 [4] illustrates the components of a culture of safety and Just Culture.

Figure 5.4 Just Culture. Used with permission.

The principles of culture of safety, including Just Culture, Reporting Culture, and Learning Culture are also being adopted in nursing education. It's understood that mistakes are part of learning and that a shared accountability model promotes individual- and system-level learning for improved patient safety. Under a shared accountability model, students are responsible for the following:

- being fully prepared for clinical experiences, including laboratory and simulation assignments
- being rested and mentally ready for a challenging learning environment
- accepting accountability for their part in contributing to a safe learning environment
- behaving professionally
- reporting their own errors and near mistakes
- keeping up-to-date with current evidence-based practice
- adhering to ethical and legal standards [5]

Students know they will be held accountable for their actions, but will not be blamed for system faults that lie beyond their control. They can trust that a fair process will be used to determine what went wrong if a patient care error or near miss occurs. Student errors and near misses are addressed based on an investigation determining if it was simple human error, an at-risk behavior, or reckless behavior. For example, a simple human error by a student can be addressed with coaching and additional learning opportunities to remedy the knowledge deficit. However, if a student acts with recklessness (for example, repeatedly arrives to clinical unprepared despite previous faculty feedback or falsely documents an assessment or procedure), they are appropriately and fairly disciplined, which may include dismissal from the program. [6]

1. Institute of Medicine (US) Committee on the Work Environment for Nurses and Patient Safety. (2004). Creating and sustaining a culture of safety. In *Keeping patients safe: Transforming the work environment of nurses*. National Academies Press. https://www.ncbi.nlm.nih.gov/books/NBK216181↵
2. American Nursing Association. (2010). *Position statement: Just culture*. https://www.nursingworld.org/~4afe07/globalassets/practiceandpolicy/health-and-safety/just_culture.pdf↵
3. American Nursing Association. (2010). *Position statement: Just culture*. https://www.nursingworld.org/~4afe07/globalassets/practiceandpolicy/health-and-safety/just_culture.pdf↵
4. "Just Culture Infographic.png" by Valeria Palarski 2020. Used with permission. ↵
5. Barnsteiner, J., & Disch, J. (2017). Creating a fair and just culture in schools of nursing. *American Journal of Nursing*, *117*(11). https://www.ncsbn.org/Barnsteiner_Creating_a_fair_and_just_culture_in_schools_of_nursing.pdf↵
6. Barnsteiner, J., & Disch, J. (2017). Creating a fair and just culture in schools of nursing. *American Journal of Nursing*, *117*(11). https://www.ncsbn.org/Barnsteiner_Creating_a_fair_and_just_culture_in_schools_of_nursing.pdf↵

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5.5: National Patient Safety Goals

Every year, national patient safety goals are published by The Joint Commission to improve patient safety. **National Patient Safety Goals** are goals and recommendations tailored to seven different types of health care agencies based on patient safety data from experts and stakeholders. The seven health care areas include ambulatory health care settings, behavioral health care settings, critical access hospitals, home care, hospital settings, laboratories, nursing care centers, and office-based surgery settings. These goals are updated annually based on safety data and include evidence-based interventions. It is important for nurses and nursing students to be aware of the current National Patient Safety Goals for the settings in which they provide patient care and use the associated recommendations.

The National Patient Safety Goals for nursing care settings (otherwise known as long-term care centers) are described in Table 5.5. (Note that the term "bedsore" is used in the last goal. This is a historic term for the current term "pressure injuries.")

Table 5.5 National Patient Safety Goals for Nursing Care Centers[1]

Goal	Recommendations and Rationale
Identify residents correctly	Use at least two ways to identify patients or residents. For example, use the patient's or resident's name and date of birth. This is done to make sure that each patient or resident gets the correct medicine and treatment.
Use medicines safely	Take extra care with patients and residents who take medications to thin their blood. Record and pass along correct information about a patient's or resident's medications. Find out what medications the patient or resident is taking. Compare those medications to new medications given to the patient or resident. Give the patient or resident written information about the medications they need to take. Tell the patient or resident it is important to bring their up-to-date list of medications every time they visit a doctor.
Prevent infection	Use the hand hygiene guidelines from the Centers for Disease Control and Prevention or the World Health Organization. Set goals for improving hand cleaning.
Prevent residents from falling	Find out which patients and residents are most likely to fall. For example, is the patient or resident taking any medicines that might make them weak, dizzy, or sleepy? Take action to prevent falls for these patients and residents.
Prevent bed sores	Find out which patients and residents are most likely to have pressure injuries. Take action to prevent pressure injuries in these patients and residents. Per agency protocol, recheck patients and residents frequently for pressure injuries.

Note

Read more about National Patient Safety Goals established by The Joint Commission.

Read more details about how to identify patients correctly, administer medications safely, and prevent infection by visiting the following sections in Open RN *Nursing Skills*:

- Initiating Patient Interaction
- Aseptic Technique Basic Concepts
- Basic Concepts of Administering Medications

Read more about "Pressure Injuries" (the newest term used for bed sores) in the "Integumentary" chapter of this book.

1. The Joint Commission. (n.d.). *2021 National patient safety goals*. https://www.jointcommission.org/standards/national-patient-safety-goals/↵

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5.6: Preventing Falls

"Prevent residents from falling" is one of the National Patient Safety Goals for nursing care centers. Patient falls, whether in the nursing care center, home, or hospital, are very common and can cause serious injury and death. Older adults have the highest risk of falling. Each year, 3 million older people are treated in emergency departments for fall injuries, and over 800,000 patients a year are hospitalized because of a head injury or hip fracture resulting from a fall. Many older adults who fall, even if they're not injured, become afraid of falling. This fear may cause them to limit their everyday activities. However, when a person is less active, they become weaker, which further increases their chances of falling.[1]

Many conditions contribute to patient falls, including the following:[2]

- Lower body weakness
- Vitamin D deficiency
- Difficulties with walking and balance
- Medications, such as tranquilizers, sedatives, antihypertensives, or antidepressants
- Vision problems
- Foot pain or poor footwear
- Environmental hazards, such as throw rugs or clutter that can cause tripping

Most falls are caused by a combination of risk factors. The more risk factors a person has, the greater their chances of falling. Many risk factors can be changed or modified to help prevent falls.

The Centers for Disease Control has developed a program called "STEADI – Stopping Elderly Accidents, Deaths & Injuries" to help reduce the risk of older adults from falling at home. Three screening questions to determine risk for falls are as follows:

- Do you feel unsteady when standing or walking?
- Do you have worries about falling?
- Have you fallen in the past year? If yes, how many times? Were you injured?

If the individual answers "Yes" to any of these questions, further assessment of risk factors is performed.[3]

> **Note**
>
> Read more about the CDC's STEADI initiative at STEADI – Stopping Elderly Accidents, Deaths & Injuries.
> Read more information about preventing falls in older adults at CDC's Older Adult Fall Prevention.

Fall Assessment Tools

By virtue of being ill, all hospitalized patients are at risk for falls, but some patients are at higher risk than others. Assessment is an ongoing process with the goal of identifying a patient's specific risk factors and implementing interventions in their care plan to decrease their risk of falling. Commonly used fall assessment tools used to identify patients at high risk for falls are the Morse Fall Scale and the Hendrich II Fall Risk Model. Read more about these fall risk assessment tools using the hyperlinks provided below. Key risk factors for falls in hospitalized patients are as follows:[4]

- **History of falls:** All patients with a recent history of falls, such as a fall in the past three months, should be considered at higher risk for future falls.
- **Mobility problems and use of assistive devices:** Patients who have problems with their gait or require an assistive device (such as a cane or a walker) for mobility are more likely to fall.
- **Medications:** Patients on a large number of prescription medications or patients taking medicines that could cause sedation, confusion, impaired balance, or orthostatic blood pressure changes are at higher risk for falls.
- **Mental status:** Patients with delirium, dementia, or psychosis may be agitated and confused, putting them at risk for falls.
- **Incontinence:** Patients who have urinary frequency or who have frequent toileting needs are at higher fall risk.
- **Equipment:** Patients who are tethered to equipment such as an IV pole or a Foley catheter are at higher risk of tripping.
- **Impaired vision:** Patients with impaired vision or those who require glasses but who are not wearing them are at a higher fall risk because of their decreased recognition of an environmental hazard.

- **Orthostatic hypotension:** Patients whose blood pressure drops upon standing often experience light-headedness or dizziness that can cause falls.[5]

> **Note**
>
> View common fall risk assessment tools using the following hyperlinks:
>
> - Morse Fall Scale [6]
> - Hendrich II Fall Risk Model [7]

Interventions to Prevent Falls

Universal fall precautions are established for all patients to reduce their risk for falling. In addition to universal fall precautions, a care plan is created based on the patient's fall risk assessment findings to address their specific risks and needs.

Universal Fall Precautions

Falls are the most commonly reported patient safety incidents in the acute care setting. Hospitals pose an inherent fall risk due to the unfamiliarity of the environment and various hazards in the hospital room that pose a risk. During inpatient care, nurses assess their patients' risk for falling during every shift and implement interventions to reduce the risk of falling. Universal fall precautions have been developed that apply to all patients all the time. Universal fall precautions are called "universal" because they apply to all patients, regardless of fall risk, and revolve around keeping the patient's environment safe and comfortable.[8]

Universal fall precautions include the following:

- Familiarize the patient with the environment.
- Have the patient demonstrate call light use.
- Maintain the call light within reach. See Figure 5.5[9] for an image of a call light.
- Keep the patient's personal possessions within safe reach.
- Have sturdy handrails in patient bathrooms, rooms, and hallways.
- Place the hospital bed in the low position when a patient is resting. Raise the bed to a comfortable height when the patient is transferring out of bed.
- Keep the hospital bed brakes locked.
- Keep wheelchair wheels in a "locked" position when stationary.
- Keep no-slip, comfortable, and well-fitting footwear on the patient.
- Use night lights or supplemental lighting.
- Keep floor surfaces clean and dry. Clean up all spills promptly.
- Keep patient care areas uncluttered.
- Follow safe patient handling practices.[10]

Figure 5.5 Call Light

Interventions Based on Risk Factors

Patients at elevated risk for falling require multiple, individualized interventions, in addition to universal fall precautions. There are many interventions available to prevent falls and fall-related injuries based on the patient's specific risk factors. See Table 5.6a for interventions categorized by risk factor.[11]

Table 5.6a Interventions Based on Fall Risk Factors

Risk Factor	Interventions
Altered Mental Status	Patients with new altered mental status should be assessed for delirium and treated by a trained nurse or physician. See a tool for assessing delirium in the hyperlink below. For cognitively impaired patients who are agitated or trying to wander, more intense supervision (e.g., sitter or checks every 15 minutes) may be needed. Some hospitals implement designated safety zones that include low beds, mats for each side of the bed, nightlight, gait belt, and a “STOP” sign to remind patients not to get up.
Impaired Gait or Mobility	Patients with impaired gait or mobility will need assistance with mobility during their hospital stay. All patients should have any needed assistive devices, such as canes or walkers, in good repair at the bedside and within safe reach. If patients bring their assistive devices from home, staff should make sure these devices are safe for use in the hospital environment. Even with assistive devices, patients often need staff assistance when transferring out of bed or walking.
Frequent Toileting Needs	Patients with frequent toileting needs should be taken to the toilet on a regular basis via a scheduled rounding protocol. See Table 5.6b for a rounding protocol.
Visual Impairment	Patients with visual impairment should have clean corrective lenses easily within reach and applied when walking.
High-Risk Medications (medicines that could cause sedation, confusion, impaired balance, orthostatic blood pressure changes, or cause frequent urination)	Patients on high-risk medications should have their medications reviewed by a pharmacist with fall risk in mind and recommendations made to the prescribing provider for discontinuation, substitution, or dose adjustment when possible. If a pharmacist is not immediately available, the prescribing provider should carry out a medication review. See Table 5.6c for a tool to review medications for fall risk. Patients on medications that cause orthostatic hypotension should have their orthostatic blood pressure routinely checked and reported. The patient and their caregivers should be educated about fall risk and steps to prevent falls when the patient is taking these medications.
Frequent Falls	Patients with a history of frequent falls should have their risk for injury assessed, including checking for a history of osteoporosis and use of aspirin and anticoagulants.

Scheduled Hourly Rounding

Scheduled hourly rounds are scheduled hourly visits to each patient’s room to integrate fall prevention activities with the rest of a patient’s care. Scheduled hourly rounds have been found to greatly decrease the incidence of falls. See below for a list of activities to complete during hourly rounds. These activities can be completed by unlicensed assistive personnel, nurses, or nurse managers.[12]

Hourly Rounding Protocol.[13]

- Assess patient pain levels using a pain-assessment scale. (If staff other than a nurse is doing the rounding and the patient is in pain, contact the nurse immediately so the patient does not have to use the call light for pain medication.)
- Put pain medication that is ordered “as needed” on an RN’s task list and offer the dose when it is due.
- Offer toileting assistance.

- Ensure the pCheck that the bed is in the locked position.atient is using correct footwear (e.g., specific shoes/slippers, no-skid socks).
- Place the hospital bed in a low position when the patient is resting; ask if the patient needs to be repositioned and is comfortable.
- Make sure the call light/call bell button is within the patient's reach and the patient can demonstrate accurate use.
- Put the telephone within the patient's reach.
- Put the TV remote control and bed light switch within the patient's reach.
- Put the bedside table next to the bed or across the bed.
- Put the tissue box and water within the patient's reach.
- Put the garbage can next to the bed.
- Prior to leaving the room, ask, "Is there anything I can do for you before I leave?"
- Tell the patient that a member of the nursing staff (use names on white board) will be back in the room in an hour to round again.

Medications Causing Elevated Risk for Falls

Evaluate medication-related fall risk for patients on admission and at regular intervals thereafter. Add up the point value (risk level) in Table 5.6b for every medication the patient is taking. If the patient is taking more than one medication in a particular risk category, the score should be calculated by (risk level score) x (number of medications in that risk level category). For a patient at risk, a pharmacist should review the patient's list of medications and determine if medications may be tapered, discontinued, or changed to a safer alternative.[14]

Table 5.6b Medications Causing High Risk for Falls[15]

Point Value (Risk Level)	Medication Class	Fall Risks
3 (High)	Antipsychotics, anticonvulsants, and benzodiazepines	Sedation, dizziness, postural disturbances, altered gait and balance, and impaired cognition
2 (Medium)	Antihypertensives, cardiac drugs, antiarrhythmics, and antidepressants	Induced orthostasis, impaired cerebral perfusion, and poor health status
1 (Low)	Diuretics	Increased ambulation and induced orthostasis
Score ≥ 6		Elevated risk for falls; ask pharmacist or prescribing provider to evaluate medications for possible modification to reduce risk

Note

View tools used to assess delirium and confusion in the Delirium Evaluation Bundle shared by the Agency for Healthcare Research and Quality.

1. Centers for Disease Control and Prevention. (2020, October 8). *Older adult fall prevention.*https://www.cdc.gov/falls/index.html↵
2. Centers for Disease Control and Prevention. (2020, October 8). *Older adult fall prevention.* https://www.cdc.gov/falls/index.html↵
3. Centers for Disease Control and Prevention. (2020, October 16). *STEADI - Older adult fall prevention*. https://www.cdc.gov/steadi/index.html ↵
4. Agency for Healthcare Research and Quality. (2018, July). *Preventing falls in hospitals.*https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/index.html↵

5. Agency for Healthcare Research and Quality. (2018, July). *Preventing falls in hospitals.*https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/index.html↵
6. Agency for Healthcare Research and Quality. (2021, March). *Preventing falls in hospitals: Tool 3H: Morse Fall Scale for identifying fall risk factors*. https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/morse-fall-scale.html↵
7. The Hartford Institute for Geriatric Nursing, New York University, Rory Meyers School of Nursing. (n.d.). *Assessment tools for best practices of care for older adults.*https://hign.org/consultgeri-resources/try-this-series↵
8. Agency for Healthcare Research and Quality. (2018, July). *Preventing falls in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/index.html↵
9. "Hill-Rom_hospital_bed_TV_remote_control.JPG" by BrokenSphere is licensed under CC BY-SA 3.0. ↵
10. Agency for Healthcare Research and Quality. (2018, July). *Preventing falls in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/index.html↵
11. Agency for Healthcare Research and Quality. (2018, July). *Preventing falls in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/index.html↵
12. Agency for Healthcare Research and Quality. (2018, July). *Preventing falls in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/index.html↵
13. Agency for Healthcare Research and Quality. (2018, July). *Preventing falls in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/index.html↵
14. Agency for Healthcare Research and Quality. (2018, July). *Preventing falls in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/index.html↵
15. Agency for Healthcare Research and Quality. (2018, July). *Preventing falls in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/index.html↵

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5.7: Restraints

Definition of Restraints

Restraints are devices used in health care settings to prevent patients from causing harm to themselves or others when alternative interventions are not effective. A restraint is a device, method, or process that is used for the specific purpose of restricting a patient's freedom of movement without the permission of the person. See Figure 5.6[1] for an image of a simulated patient with restraints applied.

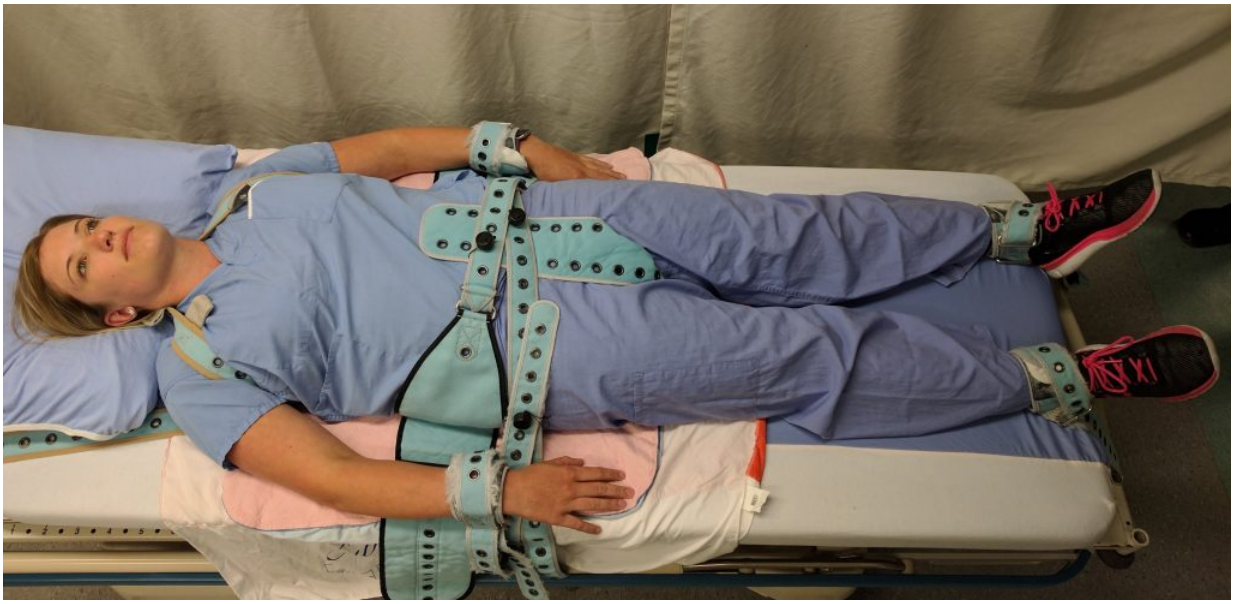

Figure 5.6 Restraints Used in a Psychiatric Setting

Restraints include mechanical devices such as a tie wrist device, chemical restraints, or seclusion. The Joint Commission defines **chemical restraint** as a drug used to manage a patient's behavior, restrict the patient's freedom of movement, or impair the patient's ability to appropriately interact with their surroundings that is not standard treatment or dosage for the patient's condition. It is important to note that the definition states the medication "is not standard treatment or dosage for the patient's condition."[2] **Seclusion** is defined as the confinement of a patient in a locked room from which they cannot exit on their own. It is generally used as a method of discipline, convenience, or coercion. Seclusion limits freedom of movement because, although the patient is not mechanically restrained, they cannot leave the area.

Although restraints are used with the intention to keep a patient safe, they impact a patient's psychological safety and dignity and can cause additional safety issues and death. A restrained person has a natural tendency to struggle and try to remove the restraint and can fall or become fatally entangled in the restraint. Furthermore, immobility that results from the use of restraints can cause pressure injuries, contractures, and muscle loss. Restraints take a large emotional toll on the patient's self-esteem and may cause humiliation, fear, and anger.

Restraint Guidelines

The American Nurses Association (ANA) has established evidence-based guidelines that state a restraint-free environment is the standard of care. The ANA encourages the participation of nurses to reduce patient restraints and seclusion in all health care settings. Restraining or secluding patients is viewed as contrary to the goals and ethical traditions of nursing because it violates the fundamental patient rights of autonomy and dignity. However, the ANA also recognizes there are times when there is no viable option other than restraints to keep a patient safe, such as during an acute psychotic episode when patient and staff safety are in jeopardy due to aggression or assault. The ANA also states that restraints may be justified in some patients with severe dementia or delirium when they are at risk for serious injuries such as a hip fracture due to falling.

The ANA provides the following guidelines: "When restraint is necessary, documentation should be done by more than one witness. Once restrained, the patient should be treated with humane care that preserves human dignity. In those instances where

restraint, seclusion, or therapeutic holding is determined to be clinically appropriate and adequately justified, registered nurses who possess the necessary knowledge and skills to effectively manage the situation must be actively involved in the assessment, implementation, and evaluation of the selected emergency measure, adhering to federal regulations and the standards of The Joint Commission (2009) regarding appropriate use of restraints and seclusion."[3] Nursing documentation typically includes information such as patient behavior necessitating the restraint, alternatives to restraints that were attempted, the type of restraint used, the time it was applied, the location of the restraint, and patient education regarding the restraint.

Any health care facility that accepts Medicare and Medicaid reimbursement must follow federal guidelines for the use of restraints. These guidelines include the following:

- When a restraint is the only viable option, it must be discontinued at the earliest possible time.
- Orders for the use of seclusion or restraint can never be written as a standing order or PRN (as needed).
- The treating physician must be consulted as soon as possible if the restraint or seclusion is not ordered by the patient's treating physician.
- A physician or licensed independent practitioner must see and evaluate the need for the restraint or seclusion within one hour after the initiation.
- The patient must be continually assessed. Generally, the best practice is every 15 minutes for continued use of the restraint, and in the case of an applied restraint, the restraint should be removed and the area assessed every hour. Some agencies require a 1:1 patient sitter when restraints are applied.
- Each written order for a physical restraint or seclusion is limited to 4 hours for adults, 2 hours for children and adolescents ages 9 to 17, or 1 hour for patients under 9. The original order may only be renewed in accordance with these limits for up to a total of 24 hours. After the original order expires, a physician or licensed independent practitioner (if allowed under state law) must see and assess the patient before issuing a new order.[4]

Side Rails and Enclosed Beds

Side rails and enclosed beds may also be considered a restraint, depending on the purpose of the device. Recall the definition of a restraint as "a device, method, or process that is used for the specific purpose of restricting a patient's freedom of movement or access to movement without the permission of the person." If the purpose of raising the side rails is to prevent a patient from voluntarily getting out of bed or attempting to exit the bed, then use of the side rails would be considered a restraint. On the other hand, if the purpose of raising the side rails is to prevent the patient from inadvertently falling out of bed, then it is not considered a restraint. If a patient does not have the physical capacity to get out of bed, regardless if side rails are raised or not, then the use of side rails is not considered a restraint.[5]

Hand Mitts

A hand mitt is a large, soft glove that covers a confused patient's hand to prevent them from inadvertently dislodging medical equipment. Hand mitts are considered a restraint by The Joint Commission if used under these circumstances:

- Are pinned or otherwise attached to the bed or bedding
- Are applied so tightly that the patient's hands or finger are immobilized
- Are so bulky that the patient's ability to use their hands is significantly reduced
- Cannot be easily removed intentionally by the patient in the same manner it was applied by staff, considering the patient's physical condition and ability to accomplish the objective[6]

It is important for the nurse to be aware of current best practices and guidelines for restraint use because they are continuously changing. For example, meal trays on chairs were previously used in long-term care facilities to prevent residents from getting out of the chair and falling. However, by the definition of a restraint, this action is now considered a restraint and is no longer used. Instead, several alternative interventions to restraints are now being used.

Alternatives to Restraints

Many alternatives to using restraints in long-term care centers have been developed. Most interventions focus on the individualization of patient care and elimination of medications with side effects that cause aggression and the need for restraints.

Common interventions used as alternatives to restraints include routine daily schedules, regular feeding times, easing the activities of daily living, and reducing pain.[7]

Diversionary techniques such as television, music, games, or looking out a window can also be used to help to calm a restless patient. Encouraging restless patients to spend time in a supervised area, such as a dining room, lounge, or near the nurses' station, helps to prevent their desire to get up and move around. If these techniques are not successful, bed and chair alarms or the use of a sitter at the bedside are also considered alternatives to restraints.

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1. "PinelRestraint.jpg" by James Heilman, MD is licensed under CC BY-SA 4.0↵
2. The Joint Commission. https://www.jointcommission.org/↵
3. American Nurses Association. (2012). *Position statement: Reduction of patient restraint and seclusion in health care settings*. https://www.nursingworld.org/practice-policy/nursing-excellence/official-position-statements/id/reduction-of-patient-restraint-and-seclusion-in-health-care-settings/ ↵
4. HealthPartners. (n.d.). *Patients' bill of rights (federal)*. https://www.healthpartners.com/care/hospitals/regions/patient-guest-support/federal-rights/↵
5. The Joint Commission. (2020, June 29). *Restraint and seclusion - Enclosure beds, side rails, and mitts.*https://www.jointcommission.org/standards/standard-faqs/critical-access-hospital/provision-of-care-treatment-and-services-pc/000001668/ ↵
6. The Joint Commission. (2020, June 29). *Restraint and seclusion - Enclosure beds, side rails, and mitts.*https://www.jointcommission.org/standards/standard-faqs/critical-access-hospital/provision-of-care-treatment-and-services-pc/000001668/ ↵
7. Raveesh, B. N., Gowda, G. S., & Gowda, M. (2019). Alternatives to use of restraint: A path toward humanistic care. *Indian Journal of Psychiatry, 61*(Suppl 4), S693–S697. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6482675/↵

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5.8: Safety Considerations Across the Life Span

To promote safety for patients of all ages, nurses should be knowledgeable about safety risks according to age and developmental stages because the types and frequencies of accidents vary among age groups. Information from the Centers for Disease Control (CDC) regarding safety tips for each age group is summarized in the following subsections.[1]

Infants and Preschoolers

Drowning is the leading cause of death in children aged 1-3 years. Motor vehicle accidents, falls, choking, and accidental poisoning are also safety concerns for this age group. Infants and toddlers are curious, but they lack the judgement to recognize the dangers of their actions, so childproofing the home and providing adult supervision are essential for this developmental age group.[2] See Figure 5.7[3] for an image of an infant car seat used to protect infants in the event of a motor vehicle accident. Nurses help educate parents about the proper use, positioning, and installation of car seats.

Figure 5.7 Infant Car Seat

School-Aged Children

In children aged 4-11, motor vehicle injuries are a major cause of unintentional injury, along with drowning and poisoning. This age group is more aware of dangers and limitations, but adult supervision is still important. The nurse should educate parents of school-aged children about safety seats, booster seats, or shoulder seat belts while riding in the car.[4]

Bicycle accidents are also a common concern in this age group. Many bike accidents involve the head or face because of the lack of helmet use. Nurses provide health teaching to school-aged children regarding bicycle safety and helmet use. See Figure 5.8[5] for an image of a girl wearing a bike helmet.

Figure 5.8 Bike Helmet

Because this age group is beginning to enjoy more independence, basic instructions and education on how to recognize and respond to potentially dangerous situations with strangers should also be provided. Parents should also be educated about the AMBER alert system that can be activated if a child is missing and believed to be kidnapped or in danger. This AMBER alert system uses the resources of law enforcement and the media to notify the public about a possible abduction or a missing child in danger.[6]

Nurses must also be aware of signs of maltreatment and child abuse because millions of children are affected each year. Child abuse includes physical, sexual, emotional abuse, and neglect. According to the American Academy of Child and Adolescent Psychiatry (AACAP), after abuse or violence, many children develop mental health problems, including depression and posttraumatic stress disorder. These children may also have serious medical problems, learning problems, and problems getting along with friends and family members. Every state has laws that require health care professionals to report suspected child abuse no matter what form this abuse takes.[7]

Note

Read more about trauma and child abuse at the AACAP Trauma and Child Abuse Resource Center.

Adolescents

Motor vehicle accidents are the number one cause of death for adolescents. Teens aged 16-19 are three times more likely to be in a fatal crash than drivers older than age 20. Adolescent males are twice as likely to die in a motor vehicle accident than females of

the same age. Texting while driving is a common cause of distracted driving and accidents in adolescents. Because much of an adolescent's time is spent away from the home, it is difficult for parents to control many of the decisions that adolescents make. Nurses educate teenagers to use seat belts, obey speed limits, and never use a cell phone or text while driving.[8] See Figure 5.9[9] for an image reminding teenage drivers to not text and drive.

Figure 5.9 No Texting While Driving

Traumatic brain injuries (TBI) may occur in this age group due to participation in sports and recreation-related activities. TBI results from a blow, jolt, or hit to the head that causes a disruption in blood function or flow to the brain. Nurses should always be alert for indications of a concussion when a sports injury has occurred. Signs of a concussion requiring immediate medical attention include the following:

- Headache, vomiting, balance problems, fatigue, or drowsiness
- A dazed and confused appearance or difficulty concentrating or remembering; confusion
- Emotional irritability, nervousness, or a change in personality

The CDC has comprehensive information and education materials for parents, coaches, players, and health care providers as part of their "Heads Up" program.[10]

Substance abuse is another significant concern in the adolescent population and includes substances such as tobacco, alcohol, illicit drugs, prescription medication, over-the-counter medications, and bath salts. The National Institutes of Health provides many resources for educating teens and their parents about substance abuse.[11]

Adults

Intimate partner violence and substance abuse are common safety issues in the adult population.

Intimate Partner Violence

Intimate partner violence (IPV) is widespread in the United States and is the most prevalent adult safety issue. Intimate partner violence includes physical or sexual violence, stalking, and psychological or coercive aggression by current or former intimate partners. Victims can be female or male, and sexual orientation can be heterosexual or LGBTQ+. The nurse is often the initial health care professional in contact with a victim of IPV. Prompt recognition of a potential or actual threat to patient and staff safety is crucial. It is often the nurse's assessment that plays an important role in identifying a patient experiencing IPV. Compassion and understanding are important to show to this vulnerable population. Effective communication is necessary to help victims come forward and share their experiences of abuse. IPV is a complex issue, and the patient may not initially consider leaving the abuser as an option. See Figure 5.10[12] for an image of a sign in a community demonstrating support against domestic violence.

Figure 5.10 Community Sign Against IPV

See the following hyperlinks for tools and resources to share with patients experiencing IPV. For example, the Danger Assessment Tool is a self-administered survey that is free to use and is available in several languages.[13] Nurses can refer patients experiencing IPV to the National Center on Domestic Violence, the Trauma and Mental Health database for resources,[14] and the National Domestic Violence Hotline for free, confidential support.[15] Most importantly, nurses should assist patients experiencing IPV to create a safety plan.

Note

View the tools and resources available at these hyperlinks to share with individuals experiencing intimate partner violence:

- Danger Assessment Tool
- National Center on Domestic Violence, Trauma & Mental Health
- National Domestic Violence Hotline

Substance Abuse

Substance abuse is defined by the World Health Organization (WHO) as a maladaptive pattern of using alcohol and/or drugs despite it causing persistent social, occupational, psychological, or physical problems that can be physically hazardous. Substance abuse continues to be a safety issue that affects adults across all socioeconomic levels. In America over 450,000 people died between 1999 and 2018 as a result of an opioid overdose.[16] The abuse of prescription pain medication (such as oxycontin and fentanyl) and heroin is a national crisis that plagues social and economic welfare. Substance abuse not only affects an individual, but also causes harm to their family members. Early identification of substance abuse, rehabilitation interventions, and continued support are key for helping the individual, as well as their family members, in the recovery process. See Figure 5.11[17] for an image of a heroin needle found in a community setting.

Figure 5.11 Substance Abuse in the Community

Older Adults

According to the Centers for Disease Control and Prevention, falls and motor vehicle accidents are leading causes of injury in older adults. However, several other issues pose significant hazards for this population, such as fires, accidental overdosing on medications (due to poor eyesight and confusion), elder abuse, and financial exploitation.[18] In most reported cases of elder abuse, a caregiver or a person in trusted relationship is the perpetrator. For various reasons such as fear and disappointment, most of these cases go unreported. Abuse, including neglect and exploitation, is experienced by about 1 in 10 people aged 60 and older who live at home. From 2002 to 2016, more than 643,000 older adults were treated in the emergency department for nonfatal assaults and over 19,000 homicides occurred.[19] Read an example of an older adult experiencing financial exploitation in the following box.

Financial Exploitation of an Older Adult

Consider the story of John, a 92-year-old male who lost his wife over a year ago and has been lonely ever since. He lives alone in a large home in the country. John hired a repairman to fix his roof. The repairman befriended John, bringing him homemade cookies and pies and even running errands for him. The repairman often stayed for coffee, and the two of them spent time talking about fishing and gardening. The repairman convinced John to take out a reverse mortgage to pay for additional improvements on his home. Then, knowing John's bank account numbers and login information, the repairman stole $250,000 that John received for his reverse mortgage.

Most victims of elder abuse are frequently seen in the emergency department several times before they are admitted to the hospital. Nurses must be alert to any indications of elder abuse, such as suspicious injuries or behaviors, and report suspected incidents to local adult protective services agencies. Commons signs of elder abuse or maltreatment include the following:[20]

- Bruises, cuts, burns, or broken bones that are unexplainable or suspiciously explained
- Malnourishment or weight loss
- Poor hygiene, an unkempt appearance, unclean clothing, or dirty, matted hair
- Foul odor from clothing or body

- Anxiety, depression, or confusion
- Unexplained transactions or loss of money
- Withdrawal from family members or friends

> **Note**
>
> Download the Elder Mistreatment Assessment tool from The Hartford Institute for Geriatric Nursing.[21]

View additional resources related to elder abuse using the hyperlinks in the following box.

> **Note**
>
> Additional resources for older adults suspected as being victims of elder abuse:
>
> - NAPSA Help in Your Area
> - Financial Exploitation of Older Adults
> - National Clearinghouse on Abuse in Later Life (NCALL)

1. Centers for Disease Control and Prevention. (2020, October 8). *Parent information*. https://www.cdc.gov/parents/index.html↵
2. Centers for Disease Control and Prevention. (2020, October 8). *Parent information*. https://www.cdc.gov/parents/index.html↵
3. "ARISE Newborn in Car Seat 144049.jpg" by ARISE project is licensed under CC BY 4.0↵
4. Centers for Disease Control and Prevention. (2020, October 8). *Parent information*. https://www.cdc.gov/parents/index.html↵
5. "539478754.jpg" by thechatat is used under license from Shutterstock.com ↵
6. Amber Alert. https://amberalert.ojp.gov/ ↵
7. American Academy of Child & Adolescent Psychiatry. (2020, April). *Trauma and child abuse resource center*. https://www.aacap.org/AACAP/Families_and_Youth/Resource_Centers/Child_Abuse_Resource_Center/Home.aspx↵
8. Centers for Disease Control and Prevention. (2020, October 8). *Parent information*. https://www.cdc.gov/parents/index.html↵
9. "texting-while-driving/man-texting-while-driving-md.jpg" by unknown at QuoteInspector.com is licensed under CC BY-ND 4.0. ↵
10. Centers for Disease Control and Prevention. (2020, November 20). *Helmet safety*. https://www.cdc.gov/headsup/helmets/index.html↵
11. National Institute on Drug Abuse. (n.d.). *NIDA for teens*. https://teens.drugabuse.gov/↵
12. "Domestic_violence_free-zone.jpg" by Ben Pollard is licensed under CC BY-SA 2.0↵
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14. National Center on Domestic Violence, Trauma & Mental Health. (n.d.). *National domestic violence organizations*. http://www.nationalcenterdvtraumamh.org/resources/national-domestic-violence-organizations/↵
15. National Domestic Violence Hotline. https://www.thehotline.org/↵
16. Centers for Disease Control and Prevention. (2020, December 17). *Opioid overdose*. https://www.cdc.gov/drugoverdose/↵
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18. Centers for Disease Control and Pevention (n.d.) *Injury Prevention and Control*. https://www.cdc.gov/injury/index.html↵
19. Centers for Disease Control and Prevention (n.d.) *Elder Abuse*. https://www.cdc.gov/violenceprevention/elderabuse/↵
20. Nursing Home Abuse Center. (2020, January 8). *Signs of elder abuse*. https://www.nursinghomeabusecenter.com/elder-abuse/signs/ ↵
21. The Hartford Institute for Geriatric Nursing, New York University, Rory Meyers School of Nursing. (n.d.). *Assessment tools for best practices of care for older adults.* https://hign.org/consultgeri-resources/try-this-series↵

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5.9: Environmental Safety

In addition to promoting safety for patients and their families, it is important for nurses to be aware of safety risks in the environments and to take measures to protect themselves. Common safety risks to nurses include sharps injuries, exposure to blood-borne pathogens, lifting injuries, and lack of personal protective equipment (PPE).

Workplace Safety

The World Health Organization (WHO) defines a **healthy environment** as a place of physical, mental, and social well-being supporting optimal health and safety. The American Nurses Association (ANA) created the Nurses' Bill of Rights, a document that sets forth seven basic principles concerning expectations for workplace environments. One of the ANA principles states, "Nurses have the right to a work environment that is safe for themselves and their patients." [1] *Environmental Health* is also one of the ANA Standards of Professional Performance. This standard includes "creating a safe and healthy workplace and professional environment."[2]

Preventing Sharps Injuries and Blood-Borne Pathogen Exposure

Exposure to sharps and blood-borne pathogens is a critical safety issue that nurses face in the workplace.[3]Blood-borne pathogen exposure can cause life-threatening illnesses such as hepatitis B, hepatitis C, and HIV. Regulations and laws, such as the Blood-borne Pathogen Standard from the Occupational Safety and Health Administration (OSHA) and the Needlestick Safety and Prevention Act of 2002, have been effective in significantly reducing sharps injuries and blood exposures among health care workers. Areas covered by these regulations include sharps disposal practices, evaluation and selection of safety-engineered sharps devices and personal protective equipment (PPE), training, record keeping for needlestick injuries, hepatitis B vaccination, and post exposure follow-up. Medical device manufacturers have also played an important role in reducing sharps injury risks to health care workers by developing innovative safety-engineered technology, such as needleless IV access devices.[4] While substantial progress has been made to reduce injuries, preventable sharps injuries and blood exposures continue to occur in health care settings. According to the Centers for Disease Control and Prevention (CDC), around 385,000 sharps-related injuries occur annually among health care workers in hospitals, but it has been estimated that as many as half of injuries go unreported.[5] See Figure 5.12[6] of a sharps container used to prevent sharps-related injuries.

Figure 5.12 Sharps Container

Note

Read more information about evidence-based practices to prevent needlestick injuries in the "Administration of Parental Medications" chapter in Open RN *Nursing Skills*.

Read more information from OSHA about "Protecting Yourself When Handling Contaminated Sharps."

If you do experience a sharps injury or are exposed to the blood or other body fluid of a patient, follow agency and school policy and immediately follow these steps:

- Wash needlesticks and cuts with soap and water.
- Flush splashes to the nose, mouth, or skin with water.
- Irrigate eyes with clean water, saline, or sterile irrigants.
- Report the incident to your supervisor.
- Immediately seek medical treatment.[7]

Safe Patient Handling

Back injuries and other musculoskeletal disorders can be caused by one bad patient lift or from the daily wear and tear of manually lifting patients. At least 56% of nurses have reported pain from musculoskeletal disorders that were exacerbated by requirements of their job. Consequences of these injuries can be devastating to nurses and their careers; musculoskeletal injuries related to patient handling are responsible for more lost work time, long-term medical care needs, and permanent disabilities than any other work-related injury. Even using proper body mechanics and the use of gait belts can result in patient handling injuries in nurses and health care workers. The ANA has established safe patient handling and mobility initiatives with the goal of complete elimination of manual patient handling.[8] See Figure 5.13[9] for an example of safe patient handling equipment.

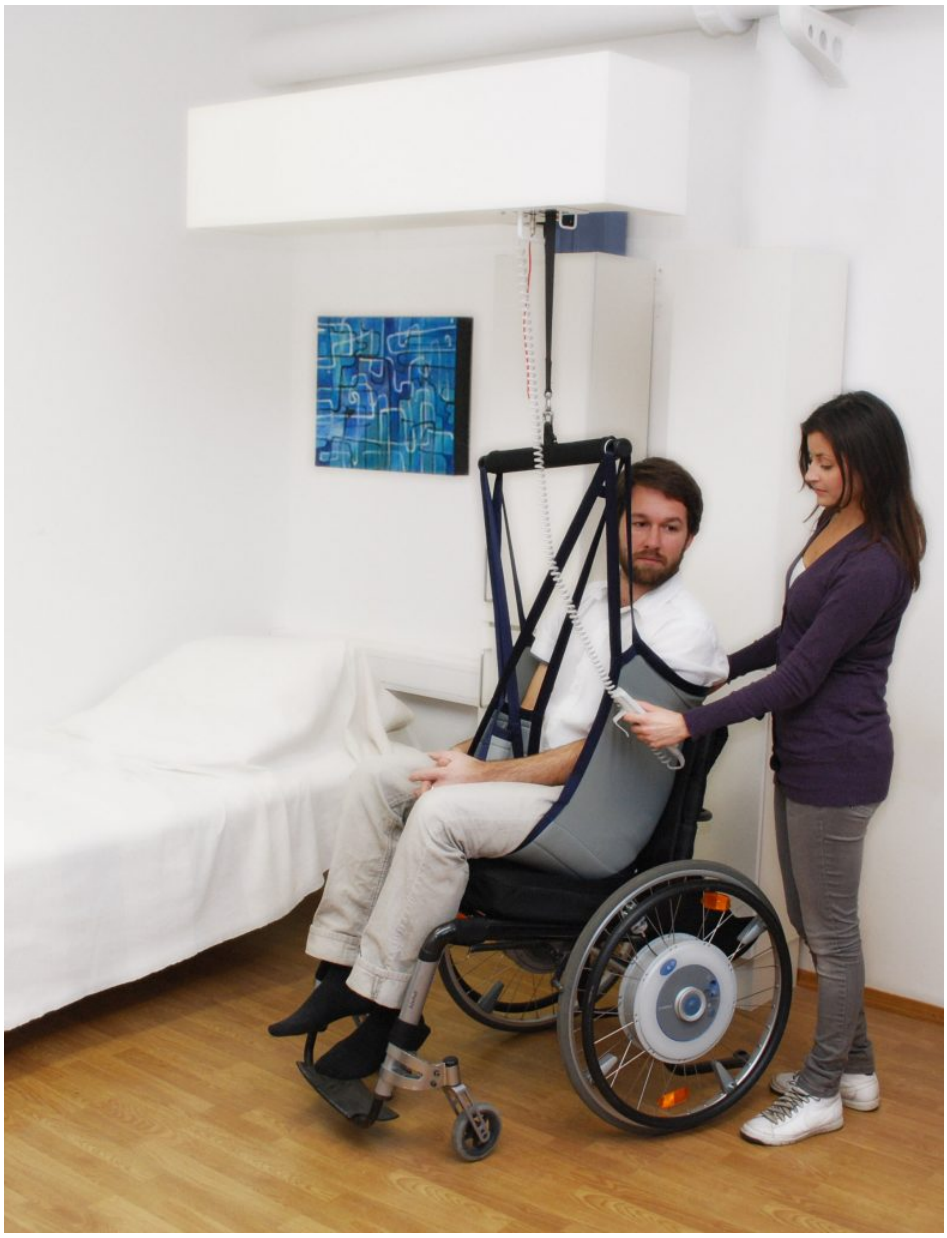

Figure 5.13 Safe Patient Handling Equipment

Note

Read more about Safe Patient Handling and Mobility from the American Nurses Association.

View these videos on safe patient handling and mobility from the ANA:

Preventing Nurse Injuries [10]

ANA Presents Safe Patient Handling and Mobility [11]

Personal Protective Equipment

The Occupational Safety and Health Administration (OSHA) requires employers to provide personal protective equipment (PPE) to their workers and ensure its proper use.[12] In health care settings, the use of PPE includes gloves, gowns, goggles, face shields, and N95 respirators according to a patient's condition. Health care workers rely on personal protective equipment to protect themselves and their patients from being infected and infecting others. It is vital to follow agency procedures regarding PPE and transmission

precautions to avoid exposure to infectious disease. See Figure 5.14[1,3] for an image of health care team members wearing PPE. Unfortunately, the COVID-19 pandemic created global shortages of PPE, resulting in many nurses and health care workers being exposed to the fatal disease. The ANA continues to advocate for adequate PPE for nurses in their work environments. Read more about PPE shortages in the hyperlink below.

Note

Read more about PPE and transmission precautions in the "Aseptic Technique" chapter of the Open RN *Nursing Skills* textbook.

Figure 5.14 Personal Protective Equipment

Note

Explore the *Healthy Work Environment* web page by the American Nursing Association (ANA) for additional strategies that promote safe work environments for nurses, including the Nurses' Bill of Rights and ways to put this plan into action.

1. American Nurses Association. (n.d.). *Healthy work environment*. https://www.nursingworld.org/practice-policy/work-environment/ ↵
2. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
3. American Nurses Association. (n.d.). *Healthy work environment*. https://www.nursingworld.org/practice-policy/work-environment/ ↵
4. American Nurse. (2012, September 11). *Moving the sharps safety agenda forward: Consensus statement and call to action*. https://www.myamericannurse.com/moving-the-sharps-safety-agenda-forward-consensus-statement-and-call-to-action/↵
5. American Nurses Association. (n.d.). *Healthy work environment*. https://www.nursingworld.org/practice-policy/work-environment/ ↵
6. "Sharps Container.jpg" by William Rafti of the William Rafti Institute is licensed under CC BY 2.5↵
7. Centers for Disease Control and Prevention. (2016, October 5). *Bloodborne infectious diseases: HIV/AIDS, hepatitis B, hepatitis C*. National Institute for Occupational Safety and Health. https://www.cdc.gov/niosh/topics/bbp/emergnedl.html↵
8. American Nurses Association. (2015, September). *Safe patient handling & mobility: Understanding the benefits of a comprehensive SPHM program* [Brochure]. https://www.nursingworld.org/~498de8/globalassets/practiceandpolicy/work-

environment/health--safety/ana-sphmcover__finalapproved.pdf↵
9. “User-Integra-lifter1.jpg” by Integracp is licensed under CC BY-SA 3.0↵
10. American Nurses Association. (2015, July 7). *Preventing nurse injuries*. [Video]. YouTube. All rights reserved. https://youtu.be/qJH-91w5PHA↵
11. American Nurses Association. (2016, April 6). *ANA presents safe patient handling and mobility*. [Video]. YouTube. All rights reserved. https://youtu.be/Bss2VEvrdcw↵
12. United States Department of Labor. (n.d.). *Personal protective equipment*. Occupational Safety and Health Administration. https://www.osha.gov/personal-protective-equipment↵
13. “Healthcare_workers_wearing_PPE_03.jpg” by Javed Anees is licensed under CC0 1.0↵

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5.10: Putting It All Together

Patient Scenario

Mr. Olson is a 64-year-old patient admitted to the medical surgical floor with a diagnosis of pneumonia. The patient has severe macular degeneration and limited visual acuity. He is alert and oriented but notes that he has suffered a “few stumbles” at home over the last few weeks. He ambulates without assistance but relies heavily on tactile cues to help provide guidance.

Applying the Nursing Process

Assessment: The nurse notes that Mr. Olson’s macular degeneration and limited visual acuity pose a significant safety risk. He has reported “stumbling” at home and uses tactile cues to establish room boundaries.

Based on the assessment information that has been gathered, the following nursing care plan is created for Mr. Olson.

Nursing Diagnosis: *Risk for Injury related to physical barrier associated with alteration in visual acuity.*

Overall Goal: *The patient will be free from injury or falls.*

SMART Expected Outcome: *Mr. Olson will be free from injury throughout his hospitalization.*

Planning and Implementing Nursing Interventions:

The nurse will provide the patient with education regarding the room layout and tactile boundary cues. The nurse will keep the patient’s room free from clutter and provide appropriate lighting. The nurse will instruct the patient to utilize the call light and request assistance when ambulating throughout the room. The nurse will provide the patient with nonskid footwear to enhance safety during ambulation.

Sample Documentation

Mr. Olson is at risk for injury as a result of his decreased visual acuity and hospitalization in an unfamiliar environment. The patient has been provided education and safety equipment to decrease his risk of injury. The patient has received education regarding the room layout and has been encouraged to request assistance when ambulating about the room.

Evaluation:

During the patient’s hospitalization, Mr. Olson utilizes the recommended safety equipment and requests assistance when ambulating and no falls occurred. SMART outcome was “met.”

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5.11: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Assessing a patient’s risk for falls and planning interventions to prevent falls are common safety strategies completed by nurses. This section uses a patient scenario to demonstrate how to use the nursing process to assess a patient and then create a nursing care plan to prevent falls. Begin by reading the Handoff Report received from the nurse on the previous shift.

Figure 5.15 Simulated Patient

Handoff Report

Mr. Moore is a 72-year-old widower recovering in the hospital after sustaining injuries he received from a fall he sustained at home. See Figure 5.15 for an image of Mr. Moore.[1] He fractured his right hip and underwent surgical repair two days ago. He is receiving IV fluids and morphine for pain control. He has a history of hypertension and cardiovascular disease. He wears glasses and hearing aids. Per recommendations from the physical therapist, he is able to transfer with one assist with a walker, but is weak on his right side. He has an order to ambulate at least 100 feet four times daily with a wheeled walker. He is 6 feet tall and weighs 165 pounds. Prior to the fall, he lived at home alone independently, and he is looking forward to returning home.

Assessment

The nurse collects the following assessment findings:

- Vital Signs: Blood pressure 90/60, heart rate 56, respiratory rate 18, temperature 37 degrees Celsius, pulse oximetry reading 92%, current pain level 0
- Alert and oriented x 3 to person, place, and time
- Lungs clear
- Cardiovascular Assessment: Heart rate is regular, capillary refill less than 3 seconds in fingers and toes, pedal pulses 2+
- Right lower extremity strength is 1+ (weak)
- Ambulates with walker with assistance; gait is unsteady

Critical Thinking Questions

1. Describe the fall risk factors for Mr. Moore.

2. Use the Morse Fall Risk Assessment tool to assess Mr. Moore's risk for falling.

Diagnosis

The NANDA-I nursing diagnosis is established: *Risk for Falls as evidenced by lower extremity weakness and difficulty with gait.*

Outcome Identification

Overall Goal: *Mr. Moore will remain free from falls during his hospitalization stay.*

SMART Expected Outcomes:

- *Mr. Moore will not experience a fall during hospitalization.*
- *Mr. Moore will correctly use his assistive device (walker) every time he ambulates during hospitalization.*

Planning Interventions

The following interventions are planned based on Mr. Moore's fall risk factors.

- Remove clutter from the floor.
- Provide adequate lighting with a night-light at the bedside.
- Use half side rails to prevent falls from the bed.
- Monitor gait, balance, and fatigue with ambulation and encourage resting as needed.
- Place personal items within easy reach of the patient at the bedside.
- Provide an elevated toilet seat.
- Encourage the use of prescribed glasses and hearing aids when walking.
- Obtain orthostatic blood pressures daily and notify the provider as indicated.
- Ensure the patient wears shoes that fit properly, are fastened securely, and have no-skid soles.
- Suggest home adaptations to improve safety after discharge, such as adjusting the toilet seat height, installing grab bars in the bathroom, and using a rubber mat in the shower.

Critical Thinking Question

3. What additional interventions could be implemented for Mr. Moore to reduce his risk of falls that target his specific risk factors?

Implementation of Interventions

The following day, upon entering the room, you find Mr. Moore has climbed out of bed and is on his way to the bathroom. He states, "I need to go to the bathroom for a bowel movement and didn't have time to ring the call light and wait." You assist him with his walker, but he seems unsteady on his feet as he walks toward the bathroom. You're not sure if he will make it to the toilet without falling. He says, "We need to hurry or I'm not going to make it."

Critical Thinking Question:

4. What is the best response?

Evaluation

The nurse evaluates Mr. Moore's progress based on the established expected outcomes:

- *Mr. Moore will not experience a fall during hospitalization: Outcome Met.*
- *Mr. Moore will use his assistive device (walker) correctly during hospitalization: Outcome Partially Met.*

Mr. Moore forgets to call for assistance and uses a walker when he needs to go to the bathroom. A "stop" sign has been placed within patient view to remind him to use the call light before getting up. In addition to hourly rounding, toileting will be performed at scheduled intervals every two hours. An icon has been posted on the doorframe to alert staff that the patient is at high risk for falls. In addition to the bed being kept low and locked, a mat will be placed next to the bed at night. If Mr. Moore continues to forget to call for assistance, a bed alarm will be placed to alert staff of movement so that quick assistance can be offered.

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1. "old-man-1208210_960_720.jpg" by Free-Photos at Pixabay is licensed under CC0↵

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5.12: V Glossary

At-risk behavior: According to the Just Culture model, an error that occurs when a behavioral choice is made that increases risk where risk is not recognized or is mistakenly believed to be justified.

Chemical restraint: A drug used to manage a patient's behavior, restrict the patient's freedom of movement, or impair the patient's ability to appropriately interact with their surroundings that is not a standard treatment or dosage for the patient's condition.

Culture of safety: The behaviors, beliefs, and values within and across all levels of an organization as they relate to safety and clinical excellence, with a focus on people.

Handoff reports: A transfer and acceptance of patient care responsibility achieved through effective communication. It is a real-time process of passing patient specific information from one caregiver to another, or from one team of caregivers to another, for the purpose of ensuring the continuity and safety of the patient's care.

Healthy environment: A place of physical, mental, and social well-being supporting optimal health and safety.

Human factors: A science that focuses on the interrelationships between humans, the tools and equipment they use in the workplace, and the environment in which they work.

Intimate Partner Violence (IPV): Physical or sexual violence, stalking, and psychological or coercive aggression by current or former intimate partners.

ISBARR: A mnemonic for the components of health care team member communication that stands for Introduction, Situation, Background, Assessment, Request/Recommendations, and Repeat back.

Just Culture: A quality of an institutional culture of safety where people feel safe raising questions and concerns and reporting safety events in an environment that emphasizes a nonpunitive response to errors and near misses, but clear lines are drawn between human error, at-risk, and reckless behaviors.

Learning Culture: A quality of an institutional culture of safety where people regularly collect information and learn from errors and successes. Data is openly shared and evidence-based practices are used to improve work processes and patient outcomes.

National Patient Safety Goals: Annual patient safety goals and recommendations tailored for seven different types of health care agencies based on patient safety data from experts and stakeholders.

Near misses: An unplanned event that did not result in a patient injury or illness but had the potential to.

Never events: Adverse events that are clearly identifiable, measurable, serious (resulting in death or significant disability), and preventable.

Reckless behavior: According to the Just Culture model, an error that occurs when an action is taken with conscious disregard for a substantial and unjustifiable risk.

Reporting Culture: A quality of an institutional culture of safety where people realize errors are inevitable and are encouraged to speak up for patient safety by reporting errors and near misses.

Restraint: A device, method, or process that is used for the specific purpose of restricting a patient's freedom of movement without the permission of the person.

Root cause analysis: A structured method used to analyze serious adverse events to identify underlying problems that increase the likelihood of errors, while avoiding the trap of focusing on mistakes by individuals.

Scheduled hourly rounds: Scheduled hourly visits to each patient's room to integrate fall prevention activities with the rest of a patient's care.

Seclusion: The confinement of a patient in a locked room from which they cannot exit on their own. It is generally used as a method of discipline, convenience, or coercion.

Sentinel event: An unexpected occurrence involving death or serious physiological or psychological injury or the risk thereof.

Simple human error: According to the Just Culture model, this is an error that occurs when an individual inadvertently does something other than what should have been done. Most errors are the result of human error due to poor processes, programs, education, environmental issues, or situations. These are managed by correcting the cause, looking at the process, and fixing the deviation.

Substance abuse: A maladaptive pattern of continued use of alcohol or a drug despite it causing persistent social, occupational, psychological, or physical problems that can be physically hazardous.

Universal fall precautions: A set of interventions to reduce the risk of falls for all patients and focus on keeping the environment safe and comfortable.

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CHAPTER OVERVIEW

6: Sensory Impairments

6.1: Sensory Impairments Introduction
6.2: Sensory Impairments Basic Concepts
6.3: Applying the Nursing Process
6.4: Putting It All Together
6.5: Learning Activities
6.6: VII Glossary

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6.1: Sensory Impairments Introduction

Learning Objectives

- Collect data to identify patients experiencing alterations in sensory perception
- Identify factors related to sensory impairments across the life span
- Demonstrate respect for the dignity of the patient with a sensory impairment
- Detail support for family/significant others caring for patients with a sensory impairment
- Include community resources available for patients and families with a sensory impairment
- Include adaptations to the environment to maintain safety for the patient with a sensory impairment
- Incorporate nursing strategies to maximize sensory perception
- Outline nursing interventions for specific sensory disorders
- Identify evidence-based practices

Our five basic senses of sight (vision), hearing (auditory), touch (tactile), smell (olfactory), and taste (gustatory) help us perceive and act in the world around us. See Figure 7.1[1] for an illustration of our five senses.

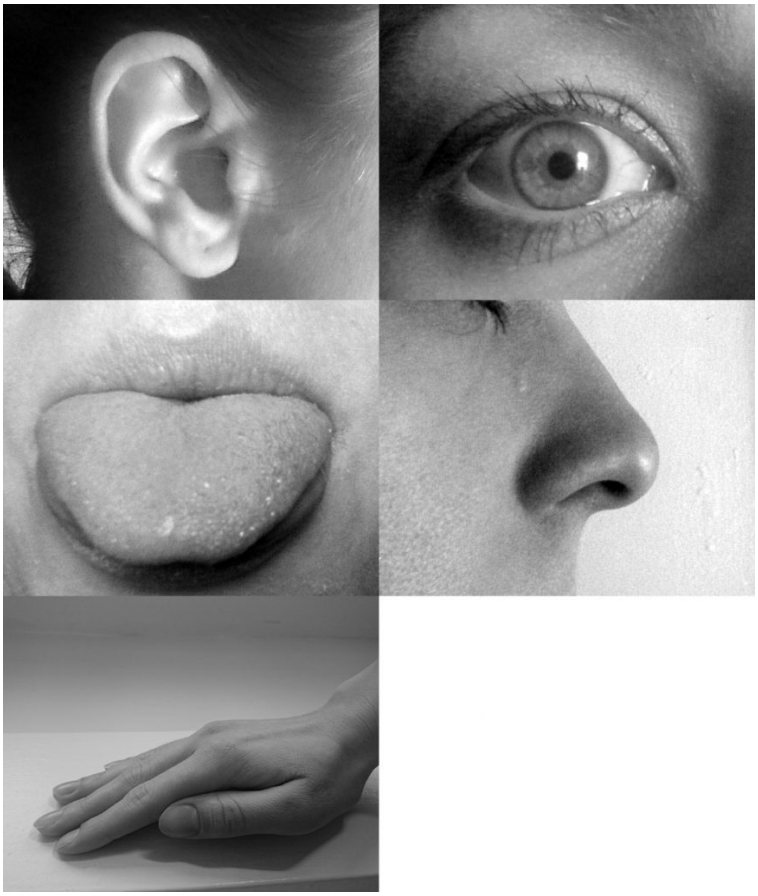

Figure 7.1 Five Senses

We may not often consider the importance of our sensory input. As nurses, we especially rely on our senses when providing patient care as we gather assessment data. We ask questions and listen to patient responses, we listen to their heart and lung sounds, we evaluate the appearance of their skin, we may smell an infectious process when changing a wound dressing, and we feel the sensation of pulses when assessing circulation.

When an individual experiences sensory impairment because of the loss of one or more senses or is affected by the amount of stimuli (too much or too little), their ability to safely function is impacted. Nurses identify patients' sensory impairments and implement interventions to improve their safety, functioning, and quality of life. The nurse's goal is to provide support and dignity

to individuals and their families by using strategies and resources that will help them to engage with their surroundings and others to the best of their ability.

This chapter will review common sensory impairments and related nursing care.

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6.2: Sensory Impairments Basic Concepts

Interpreting Sensations

Before learning about sensory function, it is important to understand how the nervous system works. An intact nervous system is necessary for information to be delivered from the environment to the brain to trigger responses from the body. For neurons to transmit these messages, they are in the form of an action potential. Sensory receptors perceive a stimulus and then change the sensation to an electrical signal so that it can be transmitted to the brain and then out to the body. For example, a pain receptor perceives pain as your hand touches a hot tray. The signal is transmitted to the brain where it is interpreted, and then signals are quickly sent to the hand to pull away from the hot stimuli.[1]

Our bodies interpret sensations through a process using reception, perception, and reaction. **Reception** is the first part of the sensory process when a nerve cell or sensory receptor is stimulated by a sensation. Sensory receptors are activated by mechanical, chemical, or temperature stimuli. In addition to our five senses, we also have somatosensation. **Somatosensation** refers to sensory receptors that respond to stimuli such as pain, pressure, temperature, and vibration. It also includes **vestibular sensation**, a sense of spatial orientation and balance, and **proprioception**, the sense of the position of our bones, joints, and muscles. Although these sensory systems are all very different, they share a common purpose. They change a stimulus into an electrical signal that is transmitted in the nervous system.[2]

The sensory receptors for each of our senses work differently from one another. Light receptors, sound receptors, and touch receptors are each activated by different stimuli with specialized receptor specificity. For example, touch receptors are sensitive to pressure but do not have sensitivity to sound or light. Nerve impulses from sensory receptors travel along pathways to the spinal cord or directly to the brain. Some stimuli are also combined in the brain, such as our sense of smell that can affect our sense of taste.[3]

As an individual becomes aware of a stimulus and it is transmitted to the brain, perception occurs. **Perception** is the interpretation of a sensation. All sensory signals, except olfactory system input, are transmitted to the thalamus and to the appropriate region of the cortex of the brain. The thalamus, which is in the forebrain, acts as a relay station for sensory and motor signals. When a sensory signal leaves the thalamus, it is sent to the specific area of the cortex that processes that sense.[4] However, conditions that affect a person's consciousness also affect the ability to perceive and interpret stimuli.

Reaction is the response that individuals have to a perception of a received stimulus. The brain determines what sensations are significant because it is impossible to react to all stimuli that are constantly received from our environment. A healthy brain maintains a balance between sensory stimuli received and those reaching awareness. However, sensory overload can occur if the amount of stimuli the brain is receiving is overwhelming to an individual. Sensory deprivation can also occur if there are insufficient sensations from the environment.[5]

Sensory Impairment

Alterations in sensory function include sensory impairment, sensory overload, and sensory deprivation. **Sensory impairment** includes any type of difficulty that an individual has with one of their five senses. When an individual experiences loss of a sensory function, such as vision, the way they interact with the environment is affected. For example, when an individual gradually loses their vision, their reliance on other senses to receive information from the environment is often enhanced.

Safety is always a nursing consideration for a patient with a sensory impairment. Intact senses are required to make decisions about functioning safely within the environment. For example, an individual who has impaired hearing may not be able to hear a smoke alarm and requires visual indicators when the alarm is triggered.

Sensory impairments are very common in older adults. Most older adults develop impaired near vision called presbyopia. See Figure 7.2[6] for an image of simulated presbyopia.

Deficits in taste and smell are also prevalent in this age group. Additionally, **kinesthetic impairment** (an altered sense of touch) can occur in adults as young as 55. Kinesthetic impairment can cause difficulty in daily functioning, such as buttoning one's shirt or performing other fine motor tasks. These sensory losses can greatly impact how older adults live and function.[7]

Figure 7.2 Simulated Impaired Vision Due to Presbyopia

Vision Impairments

Several types of visual impairments commonly occur in older adults, including macular degeneration, cataracts, glaucoma, diabetic retinopathy, and presbyopia. See Table 7.2 for more information about each of these visual conditions.

Table 7.2 Common Visual Conditions

Macular Degeneration	**Macular degeneration is the leading cause of legal blindness**

sinindividualsover60yearsofage.Riskfactorsincludeadva

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ng. In macular degeneration, there is loss of central vision wi

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vision that causes difficulty driving and reading, and there q

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	isualactivities.[8]
Cataracts	**Cataracts** are the opacity of the lens of

they eye that causes clouded, blurred, or diminished vision. About th

all of individuals ages 65 to 75 will develop cataracts, with

rtherincidenceoccurringafterage75.Cataractscanberemov

edwithsurgerythatreplacesthelenswithanartificiallens.

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Glaucoma

Glaucoma is caused by elevated intraocular pressure that

leads to progressive damage to the optic nerve, resulting in gr

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adual loss of peripheral vision. It affects about 4% of individ

	ualsoverage70.[10]
Diabetic Retinopathy	**Diabetic retinopathy is the leading cau**

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Patientswithdiabetesareencouragedtoreceive

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treated early. Treatments, such as laser treatment that can heal

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	surgery, can prevent permanent vision loss.[1,2]
Presbyopia	As a person

ages, the lenses of the eye gradually become thicker and less flexible

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exibility. It stops focusing light on the retina accorrectly, ca

using impaired near vision and accommodation and distances

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. **Presbyopia** starts in the early to mid-forties and worsens with

hanging. It can lead to significant visual impairment but does n

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otusually causeblindness.[13]

Note

See simulated images of these visual conditions in the "Eye and Ear Basic Concepts" section of the "Eye and Ear Assessment" chapter of the Open RN *Nursing Skills* book.

Hearing Loss and Ear Problems

Approximately one third of individuals aged 70 and older have hearing loss. Good hearing depends on a series of events that change sound waves in the air into electrical signals. The auditory nerve conducts these electrical signals from the ear to the brain through a series of steps. The structures of the ear, such as the tympanic membrane and cochlea, must be intact and functioning appropriately for conduction of sound to occur. Age-related hearing loss (**presbycusis**) gradually occurs in most individuals as they age.[14] Typically, low-pitched sounds are easiest to hear, but it often becomes increasingly difficult to hear normal conversation, especially over loud background noise. Hearing aids are commonly used to enhance hearing. See Figure 7.3[15] for an image of common hearing aids used to treat hearing loss.

Figure 7.3 Common Hearing Aids

Hearing loss can be caused by other factors in addition to aging. A build-up of ear wax in the ear canal can cause temporary hearing loss. Sounds that are too loud or long-term exposure to loud noises can cause noise-induced hearing loss. For example, a loud explosion or employment using loud machinery without ear protection can damage the sensory hair cells in the ear. After these hair cells are damaged, the ability to hear is permanently diminished. **Tinnitus**, a medical term for ringing in the ears, can also occur. Some medications, such as high doses of aspirin or loop diuretics, can cause toxic effects to the sensory cells in the ear and lead to hearing loss or tinnitus.[16],[17] In addition to hearing loss, ear problems can also cause problems with balance, dizziness, and vertigo due to vestibular dysfunction.

Kinesthetic Impairments

Kinesthetic impairments, such as peripheral neuropathy, affect the ability to feel sensations. Symptoms of peripheral neuropathy include sensations of pain, burning, tingling, and numbness in the extremities that decrease a person's ability to feel touch, pressure, and vibration. Position sense can also be affected and makes it difficult to coordinate complex movements, such as walking, fastening buttons, or maintaining balance when one's eyes are closed. Peripheral neuropathy is caused by nerve damage that commonly occurs in patients with diabetes mellitus or peripheral vascular disease. It can also be caused by physical injuries, infections, autoimmune diseases, vitamin deficiencies, kidney diseases, liver diseases, and some medications.[18]

Life Span Considerations

Impaired sensory functioning increases the risk for social isolation in older adults. For example, when individuals are not able to hear well, they may pretend to hear in an attempt to avoid embarrassment when asking for the information to be repeated. They may begin to avoid noisy environments or stop participating socially in conversations around them.

Infants and children are also at risk for vision and hearing impairments related to genetic or prenatal conditions. Early determination of sensory impairments is crucial so that problems can be addressed with accommodations to minimize the impact on a child's development. For example, a screening hearing test is completed on all newborns before discharge to evaluate for hearing impairments that can affect their speech development.

Sensory Overload and Sensory Deprivation

Stimuli are continually received from a variety of sources in our environment and from within our bodies. When an individual receives too many stimuli or cannot selectively filter out meaningful stimuli, sensory overload can occur. Symptoms of **sensory overload** include irritability, restlessness, covering ears or eyes to shield them from sensory input, and increased sensitivity to tactile input (i.e., scratchy fabric or sensations of medical equipment).[19] Sensory overload affects an individual's ability to interpret stimuli from their environment and can lead to confusion and agitation. See Figure 7.4[20] of an image of a patient reacting to sensory overload.

The health care environment with its frequent noisy alarms, treatments, staff interruptions, and noisy hallway conversations can cause sensory overload for patients. Individuals have different tolerances for the amount of stimuli that will affect them adversely. Tolerance to stimuli is impacted by factors such as pain, stress levels, sleep patterns, physical health, and emotional health. When sensory overload occurs in a hospitalized patient, it can lead to delirium and acute confusion. It is important for the nurse to limit unnecessary awakenings and interactions with the health care team members when a patient is experiencing sensory overload.

Figure 7.4 Sensory Overload

Conversely, symptoms of **sensory deprivation** may occur when there are a lack of stimuli. People experiencing sensory deprivation often report perceptual disturbances such as hallucinations. Symptoms of sensory deprivation can mimic delirium, so it is important for a nurse to further investigate new perceptual disturbances.[21]

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6.3: Applying the Nursing Process

This section outlines the steps of the nursing process when providing care for individuals with altered sensory function in any setting.

Assessment

When assessing a patient for sensory impairments, it is important to first establish a therapeutic relationship. Individuals may be hesitant to discuss sensory problems. By establishing a good rapport, patients are more likely to share their sensory concerns and effects on functioning. The health history should include questions regarding current status of sensory function, as well as risk for development of sensory impairment. For example, medications that can be ototoxic should be considered a risk factor for hearing impairment. Additionally, opioids and sedatives depress the central nervous system and can impair stimuli perception and reaction. Techniques to identify deficits in vision, hearing, smell, taste, and sensation are used during the physical exam. Read additional information about assessment techniques using the following hyperlinks.

> **Note**
>
> Read about common disorders of the eyes and ears in the "Eye and Ear Assessment" chapter of the Open RN *Nursing Skills* textbook.
>
> Read more about assessing sensory functioning in the "Neurological Assessment" chapter of the Open RN *Nursing Skills* textbook.

There are several factors to consider when assessing a patient's sensory functioning, such as age, their perception of the impairment, and the impact of the sensory impairment on their daily functioning. Age is an important consideration because many sensory functions can be affected by the aging process. However, it should not be assumed that all sensory problems are a normal part of the aging process. It is important to assess the patient's perception of sensory impairment and its impact on their functioning, as well for any changes in recent behavior, mental status, emotional status, or cognitive function changes. For example, individuals experiencing hearing loss may be more irritable or anxious and avoid social gatherings due to their hearing impairment. If a patient is experiencing confusion, it is important to evaluate underlying factors that can cause confusion.

The environment is also an important consideration when assessing an individual's sensory functioning. It is important to understand the patient's daily activities and their ability to perform them; their work and living environment; their use of protective equipment, such as ear protection when working with loud equipment; and their adherence with routine screenings, such as vision and hearing exams. Individuals with sensory impairments are at increased risk for falls and injury, so it is important to encourage basic safety features in the environment, including adequate lighting, availability of handrails and grab bars, hazard-free walkways, and appropriate settings on water heater controls.

When sensory impairments are identified, they should be documented in the patient's chart and communicated to collaborative team members working with the individual. For example, when an individual has a hearing impairment, it is important to consider their alternative communication needs. They may use lipreading and require face-to-face views when communicating. The use of assistive devices for sensory functioning, such as glasses and hearing aids, should also be documented and communicated. It is important to ensure proper functioning of the devices for optimal patient outcomes. In fact, a hospitalized older adult is at greater risk for developing delirium when their typical glasses and hearing aids (i.e., their "eyes and ears") are not available, causing sensory deprivation.

See Table 7.3a for a comparison of expected versus unexpected findings on assessment, including those that require notification of the health care provider.

Table 7.3a Expected Versus Unexpected Findings

Assessment	Expected Findings	Unexpected Findings
Hearing and Ears: Assess ability to appropriately answer questions individually and in a group setting. Assess the ear canal for excess cerumen. Perform a whisper test while standing behind the seated patient. Observe the patient's balance and gait.	The patient can converse and answer questions. Presbycusis can occur with aging.	Inability to communicate; complaints of ringing in ears (tinnitus), decreased attention, and withdrawal from conversations. Poor coordination, loss of proprioception, increased falls. Report to the health care provider recent changes in hearing, new tinnitus, imbalance, or dizziness.
Vision: Assess near vision by the ability to read printed material. Use the Snellen chart to assess distant vision. In a long-term care or home setting, observe the patient's ability to perform ADLs.	Around age 40, reading glasses may become necessary for close work.	Report to the health care provider new changes in vision.
Touch: Assess ability to feel stimuli by lightly touching the extremities, bottom of the feet, and fingers. Ask if the patient has unusual sensations in their extremities (e.g., tingling, burning, pain).	The patient can feel light touch and discriminate between warm and cold.	Inability to feel light touch; reported new numbness, tingling, or pain in the extremities. Report to the health care provider sudden changes in sensation or peripheral neuropathy or new onset of facial numbness (such as in the case of a cerebrovascular accident, commonly referred to as a stroke).
Smell: Assess ability to identify odors with eyes closed.	The patient can identify smells such as vanilla, lemon, or coffee. The sense of smell often diminishes with advancing age.	Inability to differentiate odors or decreased sensitivity to strong odors.
Taste: Ask about food intake and taste.	The patient can determine if food is salty, sweet, or spicy.	Inability to discriminate taste, leading to changes in appetite, weight loss, excess use of salt or sugar, and depression.
Sensory Input: Assess for cognitive, perceptual, and affective changes.	Sensory stimulation is adequate to maintain awareness.	Irritability, restlessness, covering ears or eyes to shield themselves from sensory input, increased sensitivity to tactile input. Reduced learning capacity or inability to think. Confusion, boredom, changes in visual/motor coordination. Report to health care provider sudden changes in cognitive, perceptual, or affective abilities.

Diagnoses

Commonly used NANDA-I nursing diagnoses for patients experiencing alterations in sensory function include the following:[1]

- Risk for Injury
- Risk for Falls
- Impaired Verbal Communication
- Social Isolation

A common NANDA diagnosis related to sensory alterations is *Risk for Injury*, which is defined as, "Susceptible to physical damage due to environmental conditions interacting with the individual's adaptive and defensive resources, which may compromise health." "Alteration in sensation" is an associated condition for this nursing diagnosis. For risk diagnoses, there are no related

factors (etiological factors) because you are identifying a vulnerability in a patient for a potential problem that is not yet present. Additionally, the nurse cannot resolve sensory alteration, so it should not be listed as a related factor to which interventions are directed. Instead, the phrase "as evidenced by" is used to refer to the evidence of risk that exists.

Therefore, a sample NANDA-I diagnosis in current PES format would be as follows: *"Risk for Injury as evidenced by alteration in vision."*

Outcomes

An overall goal for a patient at risk for injury related to alteration in sensation is as follows:

- *The patient will remain free from injury.*

An example of a "SMART" expected outcome for a patient with impaired vision is as follows:

- *The patient will be able to verbalize the layout of the room within four hours of admission.*

Planning Interventions

There are many nursing interventions that can be implemented for individuals with impaired sensory function. To assist patients to communicate effectively and to promote their quality of life, it is important for the nurse to customize appropriate interventions based on their individual needs. As always, refer to an evidence-based nursing care planning resource when customizing interventions for specific patients. See Table 7.3b for basic nursing interventions to implement for a variety of sensory alterations.[2]

Table 7.3b Nursing Interventions to Address Sensory Alterations[3]

Sensory Alteration	Nursing Interventions
Impaired Vision	Ensure that patients have access to their glasses or contacts that are cleaned properly and have a current prescription. Provide magnifying glasses if needed. Identify yourself whenever entering the room. Monitor functional implications of diminished vision. Provide adequate room lighting. Minimize glare (i.e., offer sunglasses or draw the window covering). Describe the environment to the patient as needed. Avoid rearranging the environment. Maintain an uncluttered environment and remove hazards such as scatter rugs and oxygen tubing when possible. Provide verbal explanations of the location of items or food. Provide reading materials in large print, as needed. Apply labels to frequently used items (e.g., mark medication bottles using high-contrasting colors). Encourage and assist in arranging annual eye exams, including screening for glaucoma.
Hearing Impairment	Perform or arrange for routine hearing assessments. Assist the patient in acquiring a hearing aid or assistive hearing device when needed. Ensure appropriate use of assistive hearing aids as needed; maintain batteries and cleanliness of the equipment. Gain patient's attention before speaking. Avoid noisy background environments when speaking. Avoid communicating more than 2-3 feet away from the patient. Use gestures, when necessary. Simplify language (i.e., do not use slang but do use short, simple sentences) as appropriate. Facilitate lipreading by facing the patient directly in good lighting, allowing them to see your mouth while speaking. Avoid speaking with anything in your mouth (such as gum or a mint) and do not turn from them while speaking. Use a low, deep voice when speaking. For patients with severe hearing impairment, document their preferred method of communication (e.g., verbal, written, lipreading, or American Sign Language) in their plan of care.
Impaired Sensitivity to Odor	Advise the patient to check pilot lights in home appliances visually. Encourage the patient to check expiration dates on food items and marking dates on leftovers in the refrigerator.
Impaired Tactile Sensation	Maintain water heater temperature at a safe range to avoid burns. Check the temperature of bath water with a thermometer.
Impaired Oral Communication	Listen to the patient and provide sufficient time for their answer. Avoid childlike phrases and words. Ask questions that only require short or "yes" or "no" answers for patients with expressive aphasia. Keep explanations simple.

	Provide a communication board or other alternative methods of communication as appropriate. Collaborate with a speech therapist to develop a plan for effective communication. Provide education to family/caregivers to facilitate communication.
Sensory Overload	Plan and combine nursing activities to avoid interrupting rest time. Decrease noise level in the room and the hallway outside as much as possible, including both noises from medical devices and conversations. Close the room door if possible.
Sensory Deprivation	Provide meaningful stimuli such as the patient's choice of television, radio, reading material, calendars, photos of family members, and pets. Provide social interaction as appropriate; encourage family members/caregivers to engage in meaningful conversations with individuals.

Standards of Care

National Patient Safety Goals established by The Joint Commission include prevention of falls. Appropriately assessing the risk of falls for patients with sensory impairments and implementing effective nursing interventions to prevent falls help to meet this standard of care.[4]

Evaluation

Evaluate a patient's progress toward the expected outcomes established. Include safety, functioning, ability to communicate, and satisfaction with quality of life when evaluating the effectiveness of interventions. Determine if changes in the plan of care are needed to better meet the needs of the individual.

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6.4: Putting It All Together

Review how to apply the nursing process for a patient with impaired sensation in the following scenario.

Figure 7.5 Simulated Patient Image

Patient Scenario

Mr. Mitchell, age 87, is accompanied to the primary care clinic with his daughter Elise. See Figure 7.5[1] for a simulated image of Mr. Mitchell. Elise tells the nurse that her father has been increasingly withdrawn and she has difficulty getting in contact with him during the week by phone. She is concerned that he is experiencing depression. Mr. Mitchell is alert, well-groomed, and smiling. As the nurse begins the initial assessment interview, it is noted that Mitchell smiles and nods a lot, but does not answer direct questions appropriately. Elise has shared that she has not noted problems with her father's ability to care for himself; he is paying his own bills and orders groceries online for delivery.

When questioned further about his answers, Mr. Mitchell admits that he is unsure what was asked of him. He is embarrassed about this and avoids asking people to repeat themselves. He also explains that his father had a hearing device, and it always "rang loudly" so he has not considered this option.

The nurse performs a whisper test and discovers he is unable to report any of the six words whispered behind him. She notes that Mr. Mitchell is interested in improving his ability to hear and participate in conversations with others.

Applying the Nursing Process

Assessment: The nurse performs a whisper test and discovers he is unable to report any of the six words whispered behind him. He is interested in improving his ability to hear and participate in conversations with others.

Based on the interview and assessment information, the following nursing care plan is created for Mr. Mitchell.

Nursing Diagnosis: *Readiness for Enhanced Communication as evidenced by expressed desire to enhance hearing and communication.*

Overall Goal: *The patient will experience enhanced communication with improved hearing.*

SMART Expected Outcome: *Mr. Mitchell will attend an appointment arranged with an audiologist within two weeks.*

Planning and Implementing Nursing Interventions

The nurse provides education about available hearing devices and encourages the patient to attend an appointment with an audiologist. While speaking to the patient, she faces him directly and provides good lighting so that he can read her lips. She shuts the door to the exam room to provide a quiet environment and uses short, simple sentences. She does not interpret nodding to indicate understanding. She shares her assessment findings with the provider and requests a referral to an audiologist and then assists the patient in making the appointment. She asks the patient and his daughter if they have any questions before they leave the clinic.

Sample Documentation

During the intake interview, the patient did not answer questions inappropriately or did not answer at all. Exhibited embarrassment when asking people to repeat their statements. Daughter states, "He is becoming increasingly withdrawn." Ear canals are clear without cerumen present. Unable to report six out of six words during the whisper test. Provided brief explanation of new technology available for hearing loss while standing directly in front of the patient, and he appeared to be able to slightly read lips. Encouraged consultation with an audiologist and notified the provider of assessment findings. Appointment made with the audiologist and communicated place, date, and time to the patient and his daughter.

Evaluation

During the next clinic appointment in two weeks, Mr. Mitchell is wearing a hearing aid device and answers questions appropriately. He reports that he has been attending more social events "now that I can hear better." The SMART outcome was "met."

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6.5: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Practice Activity

Data Collection/Assessment

1. Working with a partner or a “simulated patient,” use the following questions and actions listed to perform a sensory function assessment. Use critical thinking to ask as-needed follow up questions.

Vision:

- Do you wear glasses or contact lenses?
- Do you have problems reading or doing close work? Do you have problems seeing far away objects?
- Do you have any floaters in your vision (spots)?
- When have you last had your eyes examined by an eye doctor?
- Is there a family history of glaucoma or other eye diseases?
- Have you ever had eye trauma or surgery?
- Read words from a book or newspaper.

Hearing:

- Do you currently have any ear pain, discharge, or hearing changes?
- Do you note yourself having trouble hearing in certain situations?
- Do you note any dizziness or ringing in your ears (tinnitus)?
- Do you work in an environment where you are exposed to loud noise on a regular basis? Do you wear protection on your ears from the noise?
- Have you taken any medications that came with a warning to report any changes in hearing?
- Have family members or friends mentioned that you seem not to hear?
- Perform the whisper test.

Smell:

- How is your sense of smell?
- Identify some scents like coffee or lemons with eyes closed.

Touch:

- Are you able to feel when someone is touching you?
- Do you have unusual sensations or numbness and tingling?
- Identify an object with eyes closed like a key.

Taste:

- Have you noted any changes in your ability to taste foods?
- Is your appetite “normal” for you? Have you noted a decrease?
- Taste and identify a food like sugar or salt.

Analysis and Care Planning

2. Create a nursing diagnoses based on your assessment findings.

3. Identify a patient-centered goal and SMART expected outcomes.

4. Outline nursing interventions to help the patient to meet the established goal and expected outcome.

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6.6: VII Glossary

Cataracts: Opacity of the lens of the eye that causes clouded, blurred, or dim vision. Cataracts can be removed with surgery that replaces the lens with an artificial lens.

Diabetic retinopathy: A complication of diabetes mellitus due to damaged blood vessels in the retina. If found early, treatments, such as laser treatment that can help shrink blood vessels, injections that can reduce swelling, or surgery, can prevent permanent vision loss.

Glaucoma: Gradual loss of peripheral vision caused by elevated intraocular pressure that leads to progressive damage to the optic nerve.

Kinesthetic impairment: An altered sense of touch that can cause difficulty in performing fine motor tasks.

Macular degeneration: Loss of central vision with symptoms such as blurred central vision, distorted vision that causes difficulty driving and reading, and the requirement for brighter lights and magnification for close-up visual activities.

Perception: The interpretation of sensation during the sensory process.

Presbycusis: Age-related hearing loss.

Presbyopia: The impairment of near vision and accommodation as the lens of the eye gradually becomes thicker and loses flexibility as a person ages.

Proprioception: The sense of the position of our bones, joints, and muscles.

Reaction: The response that individuals have to a perception of a received stimulus.

Reception: The initial part of the sensory process when a nerve cell or sensory receptor is stimulated by a sensation.

Sensory deprivation: A condition that occurs when there is a lack of sensations due to sensory impairments or when the environment has few quality stimuli.

Sensory impairment: Any type of difficulty that an individual has with one of their five senses or sensory function.

Sensory overload: A condition that occurs when an individual receives too many stimuli or cannot selectively filter meaningful stimuli.

Somatosensation: Sensory receptors that respond to specific stimuli such as pain, pressure, temperature, and vibration; includes vestibular sensation and proprioception.

Tinnitus: Hearing ringing in the ears.

Vestibular sensation: A sense of spatial orientation and balance.

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CHAPTER OVERVIEW

7: Oxygenation

7.1: Oxygenation Introduction
7.2: Oxygenation Basic Concepts
7.3: Applying the Nursing Process
7.4: Putting It All Together
7.5: Learning Activities
7.6: VIII Glossary

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7.1: Oxygenation Introduction

Learning Objectives

- Assess the patient for objective and subjective manifestations of impaired oxygenation
- Distinguish normal and abnormal assessment data
- Adapt care based on oxygenation assessment data
- Interpret diagnostic tests and lab values indicative of a disturbance in oxygenation
- Identify evidence-based practices

Sufficient oxygenation is vital to maintain life. When prioritizing nursing interventions, we often refer to using the "ABCs," an acronym used to signify the importance of maintaining a patient's airway, breathing, and circulation. Several body systems work collaboratively during the oxygenation process to take in oxygen from the air, carry it through the bloodstream, and adequately oxygenate tissues. It is important that all parts of the system work together to ensure that oxygen is delivered appropriately to tissues within each system. Any alteration in these systems can have catastrophic implications on a patient's health. First, the airway must be open and clear. The chest and lungs must mechanically move air in and out of the lungs. The bronchial airways must be open so that air can reach the alveoli, where the exchange of oxygen and carbon dioxide occurs. The heart must effectively pump oxygenated blood from the lungs and through the systemic arteries. There must be adequate amounts of hemoglobin in the blood to sufficiently carry the oxygen molecules to the tissues. However, several medical conditions such as asthma, chronic obstructive pulmonary disease (COPD), pneumonia, heart disease, and anemia can impair the body's ability to effectively complete this oxygenation process.[1] This chapter will review these basic concepts related to oxygenation and apply the nursing process to patients who are experiencing alterations in oxygenation.

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7.2: Oxygenation Basic Concepts

Several body systems contribute to a person's oxygenation status, including the respiratory, cardiovascular, and hematological systems. These systems are reviewed in the following sections.

Respiratory System

The main function of our respiratory system is to provide the body with a constant supply of oxygen and to remove carbon dioxide. To achieve these functions, muscles and structures of the thorax create the mechanical movement of air into and out of the lungs called **ventilation**. Gas exchange occurs at the alveolar level where blood is oxygenated and carbon dioxide is removed, which is called **respiration**. Several respiratory conditions can affect a patient's ability to maintain adequate ventilation and respiration, and there are several medications used to enhance a patient's oxygenation status. Use the following hyperlinks to review information regarding the anatomy and physiology of the respiratory system, common respiratory conditions, and classes of respiratory medications.

Note

Read additional information about the "Respiratory System" in Open RN *Nursing Pharmacology* or use the following hyperlinks to go to specific subsections of the chapter:

- Review the anatomy and physiology of the respiratory system.
- Learn about common respiratory disorders.
- Read about common respiratory medications.

Cardiovascular System

In order for oxygenated blood to move from the alveoli in the lungs to the various organs and tissues of the body, the heart must adequately pump blood through the systemic arteries. The amount of blood that the heart pumps in one minute is referred to as **cardiac output**. The passage of blood through arteries to an organ or tissue is referred to as **perfusion**. Several cardiac conditions can adversely affect cardiac output and perfusion in the body. There are several medications used to enhance a patient's cardiac output and maintain adequate perfusion to organs and tissues throughout the body. Use the following hyperlinks to review information regarding the anatomy and physiology of the cardiovascular system, common cardiac disorders, and various cardiovascular system medications.

Note

Read additional information about the cardiovascular system in the "Cardiovascular & Renal" chapter in Open RN *Nursing Pharmacology* or use the following hyperlinks to go to specific subsections of this chapter:

- Review the anatomy and physiology of the cardiovascular system.
- Learn about common cardiac disorders.
- Read about common cardiovascular system medications.

Hematological System

Although the bloodstream carries small amounts of dissolved oxygen, the majority of oxygen molecules are transported throughout the body by attaching to hemoglobin within red blood cells. Each hemoglobin protein is capable of carrying four oxygen molecules. When all four hemoglobin structures contain an oxygen molecule, it is referred to as "saturated."[1] See Figure 8.1[2] for an image of hemoglobin protein within a red blood cell with four sites for carrying oxygen molecules.

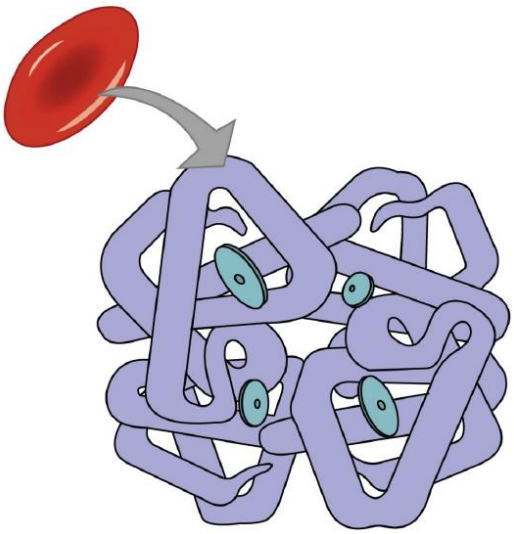

Figure 8.1 Hemoglobin

When oxygenated blood reaches tissues within the body, oxygen is released from the hemoglobin, and carbon dioxide is picked up and transported to the lungs for release on exhalation. Carbon dioxide is transported throughout the body by three major mechanisms: dissolved carbon dioxide, attachment to water as HCO3-, and attachment to the hemoglobin in red blood cells.[3] See Figure 8.2[4] for an illustration of carbon dioxide transport.[5]

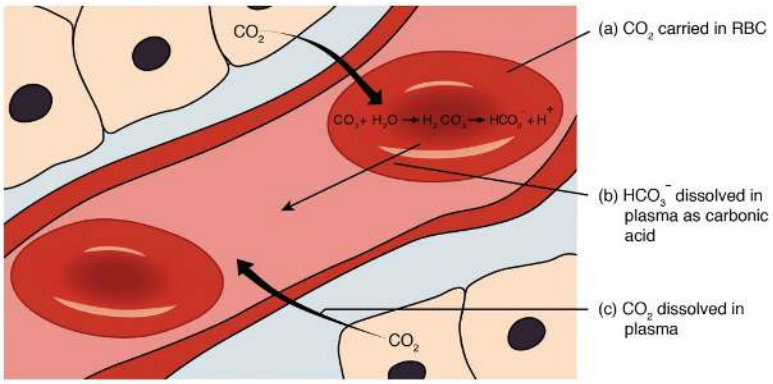

Figure 8.2 Carbon Dioxide Transport

Measuring Oxygen, Carbon Dioxide, and Acid Base Levels

Because the majority of oxygen transported in the blood is attached to hemoglobin, a patient's oxygenation status is easily assessed using pulse oximetry, referred to as **SpO2**. See Figure 8.3[6] for an image of a pulse oximeter. This reading refers to the amount of hemoglobin that is saturated. The target range of SpO2 for an adult is 94-98%.[7] For patients with chronic oxygenation conditions such as COPD, the target range for SpO2 is often lower at 88% to 92%. Although SpO2 is an efficient, noninvasive method for assessing a patient's oxygenation status, it is not always accurate. For example, if a patient is severely anemic, the patient has a decreased amount of hemoglobin in the blood available to carry the oxygen, which subsequently affects the SpO2 reading. Decreased perfusion of the extremities can also cause inaccurate SpO2 levels because less blood delivered to the tissues causes a false low SpO2. Additionally, other substances can attach to hemoglobin such as carbon monoxide, causing a falsely elevated SpO2.

Figure 8.3 Portable Pulse Oximeter

A more specific measurement of oxygen and carbon dioxide in the blood is obtained using an **arterial blood gas (ABG)**. ABG results are often used for patients who have deteriorating or unstable respiratory status requiring emergency treatment. An ABG is a blood sample that is typically drawn from the radial artery by a respiratory therapist. ABG results indicate oxygen, carbon dioxide, pH, and bicarbonate levels. The partial pressure of oxygen in the arterial blood is referred to as **PaO2**. PaO2 measures the pressure of oxygen dissolved in the arterial blood and how well oxygen is able to move from the lungs into the blood. The normal PaO2 level of a healthy adult is 80 to 100 mmHg. The PaO2 reading is more accurate than a SpO2 reading because it is not affected by hemoglobin levels. The partial pressure of carbon dioxide in the arterial blood is the **PaCO2** level. The PaCO2 level measures the pressure of carbon dioxide dissolved in the blood and how well carbon dioxide is able to move out of the body. It is typically used to determine if sufficient ventilation is occurring at the alveolar level. The normal PaCO2 level of a healthy adult is 35-45 mmHg. The normal range of **pH** level for arterial blood is 7.35-7.45, and the normal range for the bicarbonate (**HCO3-**) level is 22-26. The **SaO2** level is also calculated in ABG results, which is the calculated arterial oxygen saturation level.[8]

Hypoxia and Hypercapnia

Hypoxia is defined as a reduced level of tissue oxygenation. Hypoxia has many causes, ranging from respiratory and cardiac conditions to anemia. **Hypoxemia** is a specific type of hypoxia that is defined as decreased partial pressure of oxygen in the blood (PaO2) indicated in an arterial blood gas (ABG) result.

Early signs of hypoxia are anxiety, confusion, and restlessness. As hypoxia worsens, the patient's level of consciousness and vital signs will worsen with an increased respiratory rate and heart rate and decreased pulse oximetry readings. Late signs of hypoxia include bluish discoloration of the skin and mucous membranes called cyanosis. See Figure 8.4[9] for an image of cyanosis.

Figure 8.4 Cyanosis

Hypercapnia, also referred to as hypercarbia, is an elevated level of carbon dioxide in the blood. This level is measured by the PaCO2 level in an ABG test and is indicated when the PaCO2 level is greater than 45. Hypercapnia is caused by hypoventilation or when the alveoli are ventilated but not perfused. In a state of hypercapnia, the accumulation of carbon dioxide in the blood causes the pH of the blood to drop, leading to a state of respiratory acidosis. You can read more about respiratory acidosis in the "Acid-Base Balance" section of the "Fluids and Electrolytes" chapter. Patients with hypercapnia have symptoms such as tachycardia, dyspnea, flushed skin, confusion, headaches, and dizziness. If the hypercapnia develops gradually over time, symptoms may be mild or may not be present at all. Hypercapnia is managed by addressing its underlying cause. A noninvasive positive pressure device such as a BiPAP may be used to help eliminate the excess carbon dioxide, but if this is not sufficient, intubation may be required.[10] You can read more about BiPAP devices and intubation in the "Oxygen Therapy" chapter in Open RN *Nursing Skills*.

It is important for a nurse to recognize early signs of respiratory distress and report changes in patient condition to prevent respiratory failure. See Table 8.2a for symptoms and signs of respiratory distress.[11]

Table 8.2a Symptoms and Signs of Respiratory Distress

Signs and Symptoms	Description
Shortness of breath (Dyspnea)	**Dyspnea** is a subjective symptom of not getting enough air. Depending on severity, dyspnea causes increased levels of anxiety.
Restlessness	An early sign of hypoxia.
Tachycardia	An elevated heart rate (above 100 beats per minute in adults) can be an early sign of hypoxia.
Tachypnea	An increased respiration rate (above 20 breaths per minute in adults) is an indication of respiratory distress.
Oxygen saturation level (SpO2)	Oxygen saturation levels should be above 94% for an adult without an underlying respiratory condition.
Use of accessory muscles	Use of neck or intercostal muscles when breathing is an indication of respiratory distress.
Noisy breathing	Audible noises with breathing are an indication of respiratory conditions. Further assess lung sounds with a stethoscope for adventitious sounds such as wheezing, rales, or crackles. Secretions can plug the airway, thereby decreasing the amount of oxygen available for gas exchange in the lungs.
Flaring of nostrils	Nasal flaring is a sign of respiratory distress, especially in infants.
Skin color (Cyanosis)	Bluish changes in skin color and mucus membranes is a late sign of hypoxia.
Position of patient	Patients in respiratory distress often automatically sit up and lean over by resting arms on their legs, referred to as the tripod position. The **tripod position** enhances lung expansion. Conversely, patients who are hypoxic often feel worse dyspnea when lying flat in bed and avoid the supine position.
Ability of patient to speak in full sentences	Patients in respiratory distress may be unable to speak in full sentences or may need to catch their breath between sentences.
Confusion or change in level of consciousness (LOC)	Confusion can be an early sign of hypoxia and changing level of consciousness is a worsening sign of hypoxia.

Treating Hypoxia and Hypercapnia

Hypoxia and/or hypercapnia are medical emergencies and should be treated promptly by calling for assistance as indicated by agency policy.

Failure to initiate oxygen therapy when needed can result in serious harm or death of the patient. Although oxygen is considered a medication that requires a prescription, oxygen therapy may be initiated without a physician's order in emergency situations as part of the nurse's response to the "ABCs," a common abbreviation for airway, breathing, and circulation. Most agencies have a protocol in place that allows nurses to apply oxygen in emergency situations and obtain the necessary order at a later time.[12]

In addition to administering oxygen therapy, there are several other interventions a nurse can implement to assist an hypoxic patient. Additional interventions used to treat hypoxia in conjunction with oxygen therapy are outlined in Table 8.2b.

Table 8.2b Interventions to Manage Hypoxia

Interventions	Additional Information
Raise the head of the bed.	Raising the head of the bed to high Fowler's position promotes effective chest expansion and diaphragmatic descent, maximizes inhalation, and decreases the work of breathing.
Use tripod positioning.	Situate the patient in a tripod position. Patients who are short of breath may gain relief by sitting upright and leaning over a bedside table while in bed, which is called a three-point or tripod position.
Encourage enhanced breathing and coughing techniques.	Enhanced breathing and coughing techniques such as using pursed-lip breathing, coughing and deep breathing, huffing technique, incentive spirometry, and flutter valves may assist patients to clear their airway while maintaining their oxygen levels. See the "Enhanced Breathing and Coughing Techniques" section below for additional information regarding these techniques.
Manage oxygen therapy and equipment.	If the patient is already on supplemental oxygen, ensure the equipment is turned on, set at the required flow rate, and is properly connected to an oxygen supply source. If a portable tank is being used, check the oxygen level in the tank. Ensure the connecting oxygen tubing is not kinked, which could obstruct the flow of oxygen. Feel for the flow of oxygen from the exit ports on the oxygen equipment. In hospitals where medical air and oxygen are used, ensure the patient is connected to the oxygen flow port. Various types of oxygenation equipment are prescribed for patients requiring oxygen therapy. Oxygenation equipment is typically managed in collaboration with a respiratory therapist in hospital settings. Equipment includes devices such as nasal cannula, masks, Continuous Positive Airway Pressure (CPAP), Bilevel Positive Airway Pressure (BiPAP), and mechanical ventilators. For more information, see the "Oxygenation Equipment" section of the "Oxygen Therapy" chapter in Open RN *Nursing Skills*.
Assess the need for respiratory medications.	Pharmacological management is essential for patients with respiratory disease such as asthma, COPD, or severe allergic response. Bronchodilators effectively relax smooth muscles and open airways. Glucocorticoids relieve inflammation and also assist in opening air passages. Mucolytics decrease the thickness of pulmonary secretions so that they can be expectorated more easily.
Provide suctioning, if needed.	Some patients may have a weakened cough that inhibits their ability to clear secretions from the mouth and throat. Patients with muscle disorders or those who have experienced a stroke (i.e., cerebral vascular accident) are at risk for aspiration, which could lead to pneumonia and hypoxia. Provide oral suction if the patient is unable to clear secretions from the mouth and pharynx. See the "Tracheostomy Care and Suctioning" chapter in Open RN *Nursing Skills* for additional details on suctioning.
Provide pain relief, If needed.	Provide adequate pain relief if the patient is reporting pain. Pain increases anxiety and metabolic demands, which, in turn, increase the need for more oxygen supply.
Consider side effects of pain medication.	A common side effect of pain medication is respiratory depression. For more information about managing respiratory depression, see

	the "Pain Management" section of the "Comfort" chapter.
Consider other devices to enhance clearance of secretions.	Chest physiotherapy and specialized devices assist with secretion clearance, such as handheld flutter valves or vests that inflate and vibrate the chest wall. Consult with a respiratory therapist as needed based on the patient's situation.
Plan frequent rest periods between activities.	Plan interventions for patients with dyspnea so they can rest frequently and decrease oxygen demand.
Consider other potential causes of dyspnea.	If a patient's level of dyspnea is worsening, assess for other underlying causes in addition to the primary diagnosis. For example, are there other respiratory, cardiovascular, or hematological conditions occurring? Start by reviewing the patient's most recent hemoglobin and hematocrit lab results, as well as any other diagnostic tests such as chest X-rays and ABG results. Completing a thorough assessment may reveal abnormalities in these systems to report to the health care provider.
Consider obstructive sleep apnea.	Patients with obstructive sleep apnea (OSA) are often not previously diagnosed prior to hospitalization. The nurse may notice the patient snores, has pauses in breathing while snoring, has decreased oxygen saturation levels while sleeping, or awakens feeling not rested. These signs may indicate the patient is unable to maintain an open airway while sleeping, resulting in periods of apnea and hypoxia. If these apneic periods are noticed but have not been previously documented, the nurse should report these findings to the health care provider for further testing and follow-up. A prescription for a CPAP or BiPAP device while sleeping may be needed to prevent adverse outcomes.
Monitor patient's anxiety.	Assess patient's anxiety. Anxiety often accompanies the feeling of dyspnea and can worsen it. Anxiety in patients with COPD is chronically undertreated. It is important for the nurse to address the feelings of anxiety in addition to the feelings of dyspnea. Anxiety can be relieved by teaching enhanced breathing and coughing techniques, encouraging relaxation techniques, or administering antianxiety medications.

Enhanced Breathing and Coughing Techniques

In addition to oxygen therapy and the interventions listed in Table 8.2b, there are several techniques a nurse can teach a patient to use to enhance their breathing and coughing. These techniques include pursed-lip breathing, incentive spirometry, coughing and deep breathing, and the huffing technique. Additionally, vibratory positive expiratory pressure (PEP) therapy can be incorporated in collaboration with a respiratory therapist.

Pursed-lip Breathing

Pursed-lip breathing is a technique that decreases dyspnea by teaching people to control their oxygenation and ventilation. See Figure 8.5[13] for an illustration of pursed-lip breathing. The technique teaches a person to inhale through the nose and exhale through the mouth at a slow, controlled flow. This type of exhalation gives the person a puckered or pursed-lip appearance. By prolonging the expiratory phase of respiration, a small amount of positive end-expiratory pressure (PEEP) is created in the airways that helps to keep them open so that more air can be exhaled. This subsequently reduces air trapping that commonly occurs in conditions such as chronic obstructive pulmonary disease (COPD). Pursed-lip breathing relieves the feeling of shortness of breath, decreases the work of breathing, and improves gas exchange. People also regain a sense of control over their breathing while simultaneously increasing their relaxation.[14]

Figure 8.5 Pursed-Lip Breathing

Incentive Spirometry

An **incentive spirometer** is a medical device commonly prescribed after surgery to expand the lungs, reduce the buildup of fluid in the lungs, and prevent pneumonia. See Figure 8.6[15] for an image of a patient using an incentive spirometer. While sitting upright, if possible, the patient should place the mouthpiece in their mouth and create a tight seal with their lips around it. They should breathe in slowly and as deeply as possible through the tubing with the goal of raising the piston to their prescribed level. The resistance indicator on the right side should be monitored to ensure they are not breathing in too quickly. The patient should attempt to hold their breath for as long as possible (at least 5 seconds) and then exhale and rest for a few seconds. Coughing is expected. Encourage the patient to expel the mucus and not swallow it. This technique should be repeated by the patient 10 times every hour while awake.[16] The nurse may delegate this intervention to unlicensed assistive personnel, but the frequency in which it is completed and the volume achieved should be documented and monitored by the nurse.

Figure 8.6 Using an Incentive Spirometer

Using an incentive spirometer can feel monotonous to patients, resulting in the lack of performing this important activity to prevent pneumonia. It is helpful to encourage patients to create easy reminders to complete the activity. For example, many

patients watch television. Create the reminder to use the incentive spirometer each time they view a commercial. This is a helpful trigger to use the incentive spirometer frequently.

Coughing and Deep Breathing

Coughing and deep breathing is a breathing technique similar to incentive spirometry but no device is required. The patient is encouraged to take deep, slow breaths and then exhale slowly. After each set of breaths, the patient should cough. This technique is repeated 3 to 5 times every hour.

Huffing Technique

The **huffing technique** is helpful to teach patients who have difficulty coughing. Teach the patient to inhale with a medium-sized breath and then make a sound like “ha” to push the air out quickly with the mouth slightly open.

Vibratory PEP Therapy

Vibratory Positive Expiratory Pressure (PEP) Therapy uses handheld devices such as flutter valves or Acapella devices for patients who need assistance in clearing mucus from their airways. These devices require a prescription and are used in collaboration with a respiratory therapist or advanced health care provider. To use vibratory PEP therapy, the patient should sit up, take a deep breath, and blow into the device. A flutter valve within the device creates vibrations that help break up the mucus so the patient can cough and spit it out. Additionally, a small amount of positive end-expiratory pressure (PEEP) is created in the airways that helps to keep them open so that more air can be exhaled. See the supplementary video below regarding how to use the flutter valve device.

Note

View this video on Using a Flutter Valve Device (Acapella).[17]

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7.3: Applying the Nursing Process

Now that we have discussed various concepts related to oxygenation and hypoxia, we will explain how a nurse uses the nursing process to care for patients with alterations in oxygenation.

Assessment

When assessing a patient's oxygenation status, there are several subjective and objective assessments to include.

Subjective Assessment

The primary symptom to assess when a patient is experiencing decreased oxygenation is their level of dyspnea, the medical term for the subjective feeling of shortness of breath or difficulty breathing. Patients can be asked to rate their dyspnea on a scale of 0-10, similar to using a pain rating scale.[1] The feeling of dyspnea can be very disabling for patients. There are many interventions that a nurse can implement to help improve the feeling of dyspnea and, thus, improve a patient's overall quality of life.

It is also important to ask patients if they are experiencing a cough. If a cough is present, determine if sputum is present, and if so, the color and amount of sputum. **Sputum** is mucus and other secretions that are coughed up from the mouth. The body always produces mucus to keep the delicate tissues of the respiratory tract moist so small particles of foreign matter can be trapped and forced out, but when there is an infection in the lungs, an excess of mucus is produced. The body attempts to get rid of this excess by coughing it up as sputum. The color of a patient's sputum can provide cues for underlying medical conditions. For example, sputum caused by a respiratory infection is often yellow or green and often referred to as **purulent sputum**.[2] See Figure 8.7[3] for an image of purulent sputum.

Figure 8.7 Purulent Sputum

Patients should be asked if they are experiencing chest pain. Chest pain can occur with several types of respiratory and cardiac conditions, some which are emergent. If the patient reports chest pain, first determine if it is an emergency by asking questions such as:

- "Does it feel like something is sitting on your chest?"
- "Is the pain radiating into your jaw or arm?"
- "Do you feel short of breath, dizzy, or nauseated?"

If any of these symptoms are occurring, seek emergency medical assistance according to agency policy. If it is not a medical emergency, perform a focused assessment on the chest pain, including onset, location, duration, characteristics, alleviating or aggravating factors, radiation, and if any treatment has been used for the pain.[4]

Objective Assessment

Focused objective assessments for a patient experiencing decreased oxygenation include assessing airway, evaluating respiratory rate and heart rate, analyzing pulse oximetry readings, and auscultating lung sounds for adventitious sounds.

> **Note**
>
> Review detailed interview questions and how to perform a physical examination of the respiratory system in the "Respiratory Assessment" chapter in the Open RN *Nursing Skills* textbook.

Signs of cyanosis or clubbing should be noted. **Clubbing** is the enlargement of the fingertips that occurs with chronic hypoxia such as in chronic obstructive pulmonary disease (COPD) or congenital deficits in pediatric patients. See Figure 8.8[5] for an image of clubbing.

Figure 8.8 Clubbing of Fingertips

Another sign of chronic hypoxia that often occurs in patients with chronic obstructive pulmonary disease (COPD) includes an increased anterior-posterior chest diameter, often referred to as a **barrel chest**. A barrel chest results from air trapping in the alveoli. See Figure 8.9[6] for an image of a barrel chest.

Figure 8.9 Comparison of Chest with Normal Anterior/Posterior Diameter (A) to a Barrel Chest(B)

Diagnostic Tests and Lab Work

Diagnostic tests and lab work are based on the patient's medical condition that is causing the decreased oxygenation. For example, patients with a productive cough may have a chest X-ray or sputum culture ordered, and patients experiencing respiratory distress often have arterial blood gas (ABG) tests performed.

A chest X-ray is a fast and painless imaging test that uses certain electromagnetic waves to create pictures of the structures in and around the chest. This test can help diagnose and monitor conditions such as pneumonia, heart failure, lung cancer, and tuberculosis. Health care providers also use chest X-rays to see how well certain treatments are working and to check for complications after certain procedures or surgeries. Chest X-rays are contraindicated during pregnancy.[7],[8] See Figure 8.10[9] for an image of a chest X-ray.

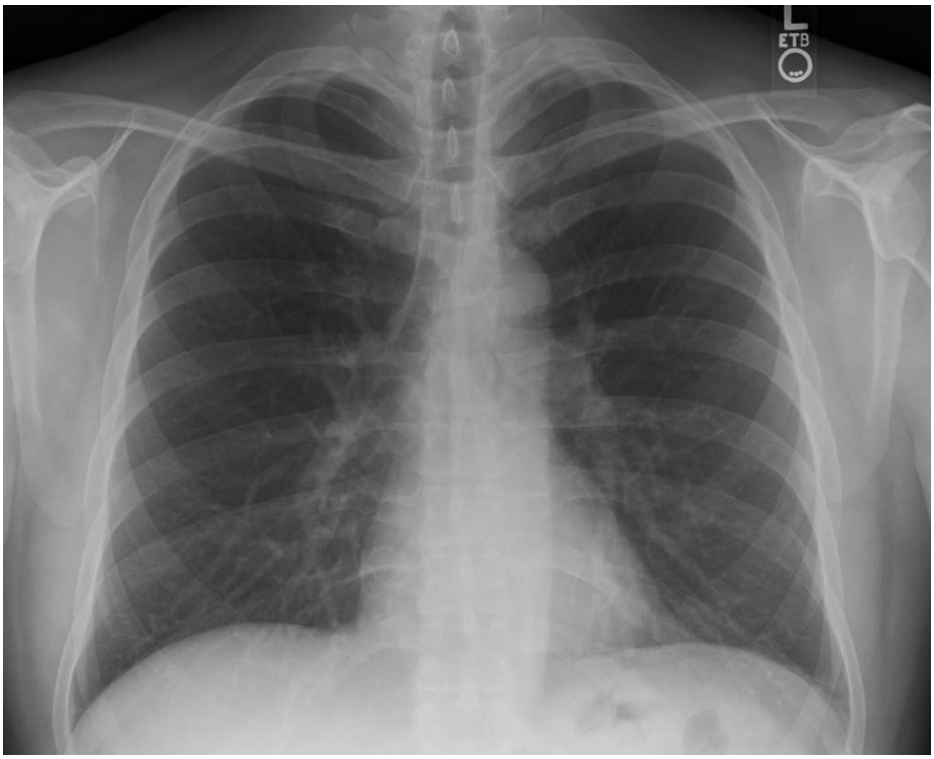

Figure 8.10 Chest X-ray

A sputum culture is a diagnostic test that evaluates the type and number of bacteria present in sputum. The patient is asked to cough deeply and spit any mucus that comes up into a sterile specimen container. The sample is sent to a lab where it is placed in a special dish and is watched for two to three days or longer to see if bacteria or other disease-causing germs grow.[10] See Figure 8.11[11] for an image of a sputum culture.

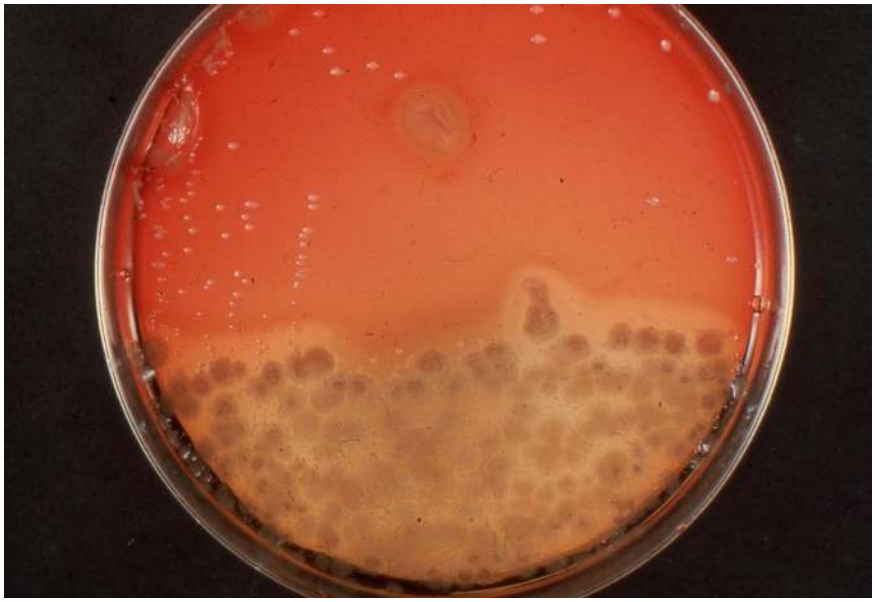

Figure 8.11 Sputum Culture

For patients experiencing respiratory distress, arterial blood gas (ABG) tests are often ordered. Additional details about ABG tests are discussed in the "Oxygenation Basic Concepts" section of this chapter, as well as in the "Acid-Base Balance" section of the "Fluid and Electrolytes" chapter. See Table 8.3a for a summary of normal ranges of ABG values in adults.

Table 8.3a Normal Ranges of ABG Values in Adults

Value	Description	Normal Range
pH	Acid-base balance of blood	7.35-7.45
PaO2	Partial pressure of oxygen	80-100 mmHg
PaCO2	Partial pressure of carbon dioxide	35-45 mmHg
HCO3	Bicarbonate level	22-26 mEq/L
SaO2	Calculated oxygen saturation	95-100%

Diagnoses

Commonly used NANDA-I nursing diagnoses for patients experiencing decreased oxygenation and dyspnea include *Impaired Gas Exchange*, *Ineffective Breathing Pattern*, *Ineffective Airway Clearance*, *Decreased Cardiac Output*, and *Activity Intolerance*. See Table 8.3b for definitions and selected defining characteristics for these commonly used nursing diagnoses.[12] Use a current, evidence-based nursing care plan resource when creating a care plan for a patient.

Table 8.3b NANDA-I Nursing Diagnoses Related to Decreased Oxygenation and Dyspnea

NANDA-I Nursing Diagnoses	Definition	Selected Defining Characteristics
Impaired Gas Exchange	Excess or deficit in oxygenation and/or carbon dioxide elimination at the alveolar-capillary membrane.	• Abnormal ABG results • Abnormal breathing pattern • Confusion • Abnormal skin color • Irritability • Restlessness • Tachycardia • Sleepiness
Ineffective Breathing Pattern	Inspiration and/or expiration that does not provide adequate ventilation.	• Abnormal breathing pattern • Bradypnea (Decreased respiratory rate) • Dyspnea • Increased anterior-posterior chest diameter • Nasal flaring • Orthopnea • Pursed-lip breathing • Tachypnea • Use of accessory muscles to breathe • Use of three-point positioning
Ineffective Airway Clearance	Inability to clear secretions or obstructions from the respiratory tract to maintain a clear airway.	• Adventitious breath sounds • Alteration in respiratory rate • Dyspnea • Excessive sputum • Ineffective cough • Orthopnea • Restlessness
Decreased Cardiac Output	Inadequate blood pumped by the heart to meet the metabolic demands of the body.	• Adventitious breath sounds • Abnormal skin color • Tachycardia • Restlessness • Fatigue • Edema • Weight gain • Decreased peripheral pulses
Activity Intolerance	Activity Intolerance: Insufficient physiological or psychological energy to endure or complete required or desired daily activities.	• Exertional dyspnea • Fatigue • Abnormal heart rate response to activity • Generalized weakness

For example, nurses commonly care for patients with chronic obstructive pulmonary disease (COPD). To select an accurate nursing diagnosis for a specific patient with COPD, the nurse compares findings obtained on patient assessment with the defining characteristics of various nursing diagnosis. The nurse selects *Ineffective Breathing Pattern* after validating this patient is demonstrating the associated signs and symptoms related to this nursing diagnosis:

- Dyspnea
- Increase in anterior-posterior chest diameter (e.g., barrel chest)
- Nasal flaring
- Orthopnea
- Prolonged expiration phase

- Pursed-lip breathing
- Tachypnea
- Use of accessory muscles to breathe
- Use of three-point position

Outcome Identification

A broad goal(s) for patients experiencing alterations in oxygenation is:

- *The patient will have adequate movement of air into and out of the lungs.* [13]

A sample "SMART" outcome criteria for a patient experiencing dyspnea is:

- *The patient's reported level of dyspnea will be within their stated desired range of 1-2 throughout their hospital stay.*

Planning Interventions

According to *NOC and NIC Linkages to NANDA-I and Clinical Conditions*[14] and *Nursing Interventions Classification (NIC)*,[15] *Anxiety Reduction* and *Respiratory Monitoring* are common categories of independent nursing interventions used to care for patients experiencing dyspnea and alterations in oxygenation. *Anxiety Reduction* is defined as, "Minimizing apprehension, dread, foreboding, or uneasiness related to an unidentified source of anticipated danger."[16] *Respiratory Monitoring* is defined as, "Collection and analysis of patient data to ensure airway patency and adequate gas exchange."[17] Selected nursing interventions related to anxiety reduction and respiratory monitoring are listed in the following box.

Selected Nursing Interventions to Reduce Anxiety and Perform Respiratory Monitoring

Anxiety Reduction

- Use a calm, reassuring approach
- Explain all procedures, including sensations likely to be experienced during the procedure
- Provide factual information concerning diagnosis, treatment, and prognosis
- Stay with the patient to promote safety and reduce fear
- Encourage the family to stay with the patient, as appropriate
- Listen attentively
- Create an atmosphere of trust
- Encourage verbalization of feelings, perceptions, and fears
- Identify when level of anxiety changes
- Provide diversional activities geared toward the reduction of tension
- Instruct the patient on the use of relaxation techniques
- Administer medications to reduce anxiety, as appropriate

Respiratory Monitoring

- Monitor rate, rhythm, depth, and effort of respirations
- Note chest movement, watching for symmetry and use of accessory muscles
- Monitor for noisy respirations such as snoring
- Monitor breathing patterns
- Monitor oxygen saturation levels in sedated patients
- Provide for noninvasive continuous oxygen sensors with appropriate alarm systems in patients with risk factors per agency policy and as indicated
- Auscultate lung sounds, noting areas of decreased or absent ventilation and presence of adventitious sounds
- Monitor patient's ability to cough effectively
- Note onset, characteristics, and duration of cough
- Monitor the patient's respiratory secretions
- Provide frequent intermittent monitoring of respiratory status in at-risk patients
- Monitor for dyspnea and events that improve and worsen it

- Monitor chest X-ray reports as appropriate
- Note changes in ABG values as appropriate
- Institute resuscitation efforts as needed
- Institute respiratory therapy treatments as needed

In addition to the independent nursing interventions listed in the preceding box, several nursing interventions can be implemented to manage hypoxia, such as teaching enhanced breathing and coughing techniques, repositioning, managing oxygen therapy, administering medications, and providing suctioning. Refer to Table 8.2b in the "Oxygenation Basic Concepts" section earlier in this chapter for information about these interventions.

Note

For additional details regarding managing oxygen therapy, see the "Oxygen Therapy" chapter in Open RN *Nursing Skills*.

Read more information about respiratory medications in the "Respiratory" chapter in Open RN *Nursing Pharmacology*.

Patients should also receive individualized health promotion patient education to enhance their respiratory status. Health promotion education includes encouraging activities such as the following:

- Receiving an annual influenza vaccine
- Receiving a pneumococcal vaccine every five years as indicated
- Stopping smoking
- Drinking adequate fluids to thin respiratory secretions
- Participating in physical activity as tolerated

Implementing Interventions

When implementing interventions that have been planned to enhance oxygenation, it is always important to assess the patient's current level of dyspnea and modify interventions based on the patient's current status. For example, if dyspnea has worsened, some interventions may no longer be appropriate (such as ambulating), and additional interventions may be needed (such as consulting with a respiratory therapist or administering additional medication).

Evaluation

After implementing interventions, the effectiveness of interventions should be documented and the overall nursing care plan evaluated. Focused reassessments for evaluating improvement of oxygenation status include analyzing the patient's heart rate, respiratory rate, pulse oximetry reading, and lung sounds, in addition to asking the patient to rate their level of dyspnea.

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7.4: Putting It All Together

The following patient care scenario applies information from this chapter to create an abbreviated nursing care plan and sample documentation note.

Patient Scenario

Mr. Smith is an 82-year-old patient in a long-term care facility and has a history of chronic obstructive pulmonary disease (COPD).

This morning Mr. Smith told the CNA as he was getting ready for breakfast, “I’m feeling short of breath and tired today.” The CNA obtained vital signs and reported them to you: respiratory rate 24, O2 sat 86%, pulse 88, and temperature 36.8 C.

Applying the Nursing Process

Assessment: You auscultate Mr. Smith’s breath sounds and find scattered wheezing and rhonchi anteriorly, with diminished breath sounds in the posterior lower lobes. You ask Mr. Smith to rate his shortness of breath now on a scale from 0-10 and he reports it is a “4,” but usually a “2” during activity. While assessing Mr. Smith, you note he is using accessory muscles to breathe and is sitting up in the tripod position. He also has a barrel chest. You quickly check his chart and note the following orders and scheduled medications:

- Tiotropium (Spiriva) inhaler daily
- Fluticasone (Flovent) inhalers daily
- Oxygen via nasal cannula at 1-2 L per minute as needed to maintain O2 saturation greater than 90%
- Albuterol nebulizer as needed for wheezing

Based on this information, you formulate the following nursing care plan:

Nursing Diagnosis: *Ineffective Breathing Pattern related to respiratory muscle fatigue as manifested by tachypnea and use of accessory muscles to breathe and patient stating, “I’m feeling short of breath and tired today.”*

Overall Goal: *The patient will have adequate movement of air into and out of the lungs.*

SMART Expected Outcome: *Mr. Smith’s reported level of dyspnea will be within his stated desired range of 1-2 by the end of the shift.*

Planned Nursing Interventions with Rationale:

Interventions	Rationale
1. Implement NIC interventions for *Respiratory Monitoring* NIC (as outlined in Box 8.3).	Establish a baseline status for today and continue to monitor for improvement or worsening as interventions are implemented.
2. Implement NIC Interventions for *Anxiety Reduction* (as outlined in Box 8.3).	Dyspnea creates feelings of anxiety. Decreasing the patient's anxiety levels will help decrease the feeling of dyspnea.
3. Place patient in high Fowler's or tripod position as needed to reduce feelings of dyspnea.	Positioning will assist in maximum expansion of lungs.
4. Apply oxygen via nasal cannula, starting at 1 L/min and titrate until 90% pulse oximetry reading is obtained per standing order.	Oxygen therapy will reduce the work of breathing.
5. Administer scheduled and PRN medications: • Albuterol nebulizer • Tiotropium inhaler • Fluticasone inhaler	Each medication has a different mechanism of action that will assist Mr. Smith's dyspnea. • Albuterol is a rapid-acting bronchodilator that will open the airways and improve the amount of oxygen reaching the alveoli with each inhalation. • Tiotropium is a long-acting bronchodilator. • Fluticasone is an inhaled corticosteroid that will reduce inflammation in the airways.
6. Encourage Mr. Smith to use pursed-lip breathing and Huff coughing.	Pursed-lip breathing will help keep the airways open longer on expiration so that more air can then be inhaled on inspiration. Huff coughing will help clear secretions.
7. Encourage fluids (2000 mL/24 hours) and monitor intake and output.	Additional fluids will help thin secretions so they can more easily be coughed up. Mr. Smith does not have fluid restrictions, but it is important to monitor intake/output when encouraging fluids, especially in elderly patients who have increased risk for developing fluid overload.
8. Schedule care activities to allow frequent rest periods.	Resting frequently decreases oxygen demand.
9. Encourage ambulation as tolerated, with the CNA, in the hallway, after the O2 saturation is greater than 90%.	Ambulation will help to mobilize the secretions so they can be removed.

Evaluation:

After administering medications and applying the oxygen, you reassess Mr. Smith and find the following: respiratory rate 16, pulse 78, and O2 sat 90% with NC at 1 L/min. The wheezing and rhonchi in the anterior lungs have diminished. You ask Mr. Smith how he is feeling. He rates his current level of dyspnea as a "2" and states, "I feel less short of breath but I am still tired." The SMART outcome was "met." You encourage Mr. Smith to rest after eating breakfast, but encourage a walk in the hallway later that morning. You enter the following documentation note in the patient record.

Sample Documentation Note

Upon awakening, the patient reported a dyspnea level of a "4" and stated, "I'm feeling short of breath and tired today." Vital signs were respiratory rate 24, O2 sat 86%, pulse 88, and temperature 36.8 C. Scattered wheezing and rhonchi present anteriorly, with diminished breath sounds in the posterior lower lobes. Oxygen applied via nasal cannula at 1 L/min; albuterol nebulizer and scheduled medications were administered. Patient was placed in tripod position at edge of bed and encouraged to use pursed-lip breathing and Huff coughing. Post albuterol administration, vital signs were respiratory rate 16, pulse 78, and O2 sat 90% on room air. The wheezing and rhonchi in the anterior lungs were diminished. Patient reported dyspnea decreased to a "2" but stated, "I feel less short of breath but I am still tired." Encouraged patient to push fluids and ambulate as tolerated today, along with

frequent rest breaks. Will continue to monitor respiratory rate, pulse, lung sounds, and reported level of dyspnea every four hours today.

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7.5: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

1. You are providing care for Mrs. Jones, an 83-year-old female patient admitted to the medical surgical floor with worsening pneumonia. Upon auscultation of the patient’s lung fields, you note scattered crackles and diminished breath sounds throughout all lung fields. Mrs. Jones requires 4L O2 via nasal cannula to maintain an oxygen saturation of 94%. You have constructed a nursing care diagnosis of *Ineffective Breathing Pattern*. What nursing interventions might you consider to help improve the patient’s breathing pattern?

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7.6: VIII Glossary

Apnea: Temporary cessation of breathing. When apnea occurs during sleep, it is often caused by the condition called Obstructive Sleep Apnea (OSA).

Arterial Blood Gas (ABG): Diagnostic test performed on an arterial sample of blood to determine its pH level, oxygenation status, and carbon dioxide status.

Barrel chest: An increased anterior-posterior chest diameter, resulting from air trapping in the alveoli, that occurs in chronic respiratory disease.

Bilevel Positive Airway Pressure (BiPAP): A BiPAP is an oxygenation device similar to a CPAP device in its use to prevent airways from collapsing, but it has two pressure settings. One setting occurs during inhalation and a lower pressure setting is used during exhalation. BiPAP devices may be used in the home to treat obstructive sleep apnea or in hospitals to treat patients in acute respiratory distress. For more information, see the "Oxygenation Equipment" section of the "Oxygen Therapy" chapter in Open RN *Nursing Skills*.

Bradypnea: Decreased respiratory rate less than the normal range according to the patient's age.

Cardiac output: The amount of blood the heart pumps in one minute.

Continuous Positive Airway Pressure (CPAP): A CPAP is an oxygenation device is typically used for patients who are able to breath spontaneously but need assistance in keeping their airway unobstructed, such as those with obstructive sleep apnea. The CPAP device consists of a mask that covers the patient's nose, or nose and mouth, and is attached to a machine that continuously applies mild air pressure to keep the airways from collapsing. For more information, see the "Oxygenation Equipment" section of the "Oxygen Therapy" chapter in Open RN *Nursing Skills*.

Clubbing: Enlargement of the fingertips that occurs with chronic hypoxia.

Coughing and deep breathing: A breathing technique where the patient is encouraged to take deep, slow breaths and then exhale slowly. After each set of breaths, the patient should cough. This technique is repeated 3 to 5 times every hour.

Cyanosis: Bluish discoloration of the skin and mucous membranes.

Dyspnea: A subjective feeling of not getting enough air. Depending on severity, dyspnea causes increased levels of anxiety.

Endotracheal Tube (ET tube): An ET tube is inserted by an advanced practitioner to maintain a secure airway when a patient is experiencing respiratory failure or is receiving general anesthesia. For more information, see the "Oxygenation Equipment" section of the "Oxygen Therapy" chapter in Open RN *Nursing Skills*.

HCO3: Bicarbonate level of arterial blood indicated in an arterial blood gas (ABG) result. Normal range is 22-26.

Huffing technique: A technique helpful for patients who have difficulty coughing. Teach the patient to inhale with a medium-sized breath and then make a sound like "ha" to push the air out quickly with the mouth slightly open.

Hypercapnia: Elevated level of carbon dioxide in the blood.

Hypoxemia: A specific type of hypoxia that is defined as decreased partial pressure of oxygen in the blood (PaO2) indicated in an arterial blood gas (ABG) result.

Hypoxia: A reduced level of tissue oxygenation. Hypoxia has many causes, ranging from respiratory and cardiac conditions to anemia.

Incentive spirometer: A medical device commonly prescribed after surgery to reduce the buildup of fluid in the lungs and to prevent pneumonia. While sitting upright, the patient should breathe in slowly and deeply through the tubing with the goal of raising the piston to a specified level. The patient should attempt to hold their breath for 5 seconds, or as long as tolerated, and then rest for a few seconds. This technique should be repeated by the patient 10 times every hour while awake.

Mechanical ventilator: A mechanical ventilator is a machine attached to an endotracheal tube to assist or replace spontaneous breathing. For more information, see the "Oxygenation Equipment" section of the "Oxygen Therapy" chapter in Open RN *Nursing Skills*.

Orthopnea: Difficulty in breathing that occurs when lying down and is relieved upon changing to an upright position.

PaCO2: Partial pressure of carbon dioxide level in arterial blood indicated in an ABG result. Normal range is 35-45 mmHg.

PaO2: Partial pressure of oxygen level in arterial blood indicated in an ABG result. Normal range is 80-100 mmHg.

Perfusion: The passage of blood through the arteries to an organ or tissue.

Pursed-lip breathing: A breathing technique that encourages a person to inhale through the nose and exhale through the mouth at a slow, controlled flow.

Purulent sputum: Yellow or green sputum that often indicates a respiratory infection.

Respiration: Gas exchange occurs at the alveolar level where blood is oxygenated and carbon dioxide is removed.

SaO2: Calculated oxygen saturation level in an ABG result. Normal range is 95-100%.

SpO2: Hemoglobin saturation level measured by pulse oximetry. Normal range is 94-98%.

Sputum: Mucus and other secretions that are coughed up from the mouth.

Tachypnea: Elevated respiratory rate above normal range according to the patient's age.

Tripod position: A position that enhances air exchange when a patient sits up and leans over by resting their arms on their legs or on a bedside table; also referred to as a three-point position.

Ventilation: Mechanical movement of air into and out of the lungs.

Vibratory Positive Expiratory Pressure (PEP) Therapy: Handheld devices such as flutter valves or Acapella devices used with patients who need assistance in clearing mucus from their airways.

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CHAPTER OVERVIEW

8: Infection

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8.1: IX Glossary

Acute, self-limiting infections: Infections that develop rapidly and generally last only 10-14 days. Colds, ear infections, and coughs are considered acute, self-limiting infections.

Antibodies: Y proteins created by B cells that are specific to each pathogen and lock onto its surface and mark it for destruction by other immune cells. The five classes of antibodies are IgG, IgM, IgA, IgD, and IgE.

Aseptic technique: The purposeful reduction of pathogens to prevent the transfer of microorganisms from one person or object to another during a medical procedure. For example, a nurse administering parenteral medication or performing urinary catheterization uses aseptic technique. When performed properly, aseptic technique prevents contamination and transfer of pathogens to the patient from caregiver hands, surfaces, and equipment during routine care or procedures.

B cells: Immune cells that mature in the bone marrow. B cells make Y-shaped proteins called antibodies that are specific to each pathogen and lock onto its surface and mark it for destruction by other immune cells.

Bacteremia: The presence of bacteria in blood.

Chronic infections: Infections that may persist for months. Hepatitis and mononucleosis are examples of chronic infections.

Cytokines: Plasma proteins that communicate with other body organs and cells in the body to respond to and initiate inflammation.

Cytokine storm: A severe immune reaction in which the body releases too many cytokines into the blood too quickly. A cytokine storm can occur as a result of an infection, autoimmune condition, or other disease. Signs and symptoms include high fever, inflammation, severe fatigue, and nausea. A cytokine storm can be severe or life-threatening and lead to multiple organ failure.[1]

Disease: Infections can lead to disease that causes signs and symptoms resulting in a deviation from the normal structure or functioning of the host.

Disinfection: Removal of organisms from inanimate objects and surfaces. However, disinfection does not typically destroy all spores and viruses.

Exposure: An encounter with a potential pathogen.

Hand hygiene: Cleaning the hands by either washing hands with soap and water or using hand sanitizer.

Healthcare-Associated Infection (HAI): An infection that is contracted in a health care facility or under medical care.

Incubation period: The period of a disease after the initial entry of the pathogen into the host but before symptoms develop.

Infection: The invasion and growth of a microorganism within the body.

Inflammation: A response triggered by a cascade of chemical mediators that occur when pathogens successfully breach the nonspecific physical defenses of the immune system or when an injury occurs.

Invasion: The spread of a pathogen throughout local tissues or the body.

Local infection: Infection confined to a small area of the body, typically near the portal of entry, and usually presents with signs of redness, warmth, swelling, warmth, and pain. Purulent drainage may be present and extensive tissue involvement can cause decreased function.

Microbiome: Every human being carries their own individual suite of microorganisms in and on their body referred to as their microbiome. A person's microbiome is acquired at birth and evolves over their lifetime. It is different across body sites and between individuals.

Mode of transmission: The vehicle by which the organism is transferred such as physical contact, droplets, or airborne. The most common vehicles are a cough, sneeze, or on the hands.

Nonspecific innate immunity: A system of defenses in the body that targets invading pathogens in a nonspecific manner that is present from the moment we are born. Nonspecific innate immunity includes physical defenses, chemical defenses, and cellular defenses.

Normal flora: Microorganisms that live on our skin and in the nasopharynx and gastrointestinal tracts and don't cause an infection unless the host becomes susceptible.

Opportunistic pathogen: A pathogen that only causes disease in situations that compromise the host's defenses, such as the body's protective barriers, immune system, or normal microbiota. Individuals susceptible to opportunistic infections include the very young, the elderly, women who are pregnant, patients undergoing chemotherapy, people with immunodeficiencies (such as acquired immunodeficiency syndrome [AIDS]), patients who are recovering from surgery, and those who have had a breach of protective barriers (such as a severe wound or burn).

Pathogen: Microorganisms that cause disease.

Pathogenicity: The ability of a microorganism to cause disease.

Peristalsis: A series of muscular contractions in the digestive tract that moves digested material and microbes through the intestine and excretes it in the feces.

Personal Protective Equipment (PPE): Gloves, gowns, face shields, goggles, and masks used to prevent the spread of infection to and from patients and health care providers.

Portal of entry: An anatomic site through which pathogens can pass into a host, such as mucous membranes, skin, respiratory, or digestive systems.

Portal of exit: The method by which the organism leaves the reservoir as through secretions, blood, urine, breast milk, or feces.

Primary pathogen: A pathogen that can cause disease in a host regardless of the host's resident microbiota or immune system.

Prodromal period: The disease stage after the incubation period when the pathogen continues to multiply and the host begins to experience general signs and symptoms of illness that result from activation of the immune system, such as fever, pain, soreness, swelling, or inflammation. Usually, such signs and symptoms are too general to indicate a particular disease.

Reservoir: The place the organism grows such as a wound, blood, or food.

Secondary infection: A localized pathogen that spreads to a secondary location.

Sepsis: An existing infection that triggers an exaggerated inflammatory reaction called SIRS throughout the body. If left untreated, sepsis causes tissue damage and quickly spreads to multiple organs. It is a life-threatening medical emergency.

Septicemia: Bacteria that are both present and multiplying in the blood.

Septic shock: Severe sepsis that leads to a life-threatening decrease in blood pressure (systolic pressure <90 mm Hg), preventing cells and other organs from receiving enough oxygen and nutrients. It can cause multi-organ failure and death.

Specific adaptive immunity: The immune response that is activated when the nonspecific innate immune response is insufficient to control an infection. There are two types of adaptive responses: the cell-mediated immune response, which is carried out by T cells, and the humoral immune response, which is controlled by activated B cells and antibodies.

Standard precautions: The minimum infection prevention practices that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where health care is delivered.

Sterile technique: A process, also called surgical asepsis, used to eliminate every potential microorganism in and around a sterile field while also maintaining objects as free from microorganisms as possible. It is the standard of care for surgical procedures, invasive wound management, and central line care. Sterile technique requires a combination of meticulous hand washing, creating a sterile field, using long-lasting antimicrobial cleansing agents such as Betadine, donning sterile gloves, and using sterile devices and instruments.

Sterilization: A process used to destroy all pathogens from inanimate objects, including spores and viruses.

Susceptible host: The person whose body the organism has entered.

Systemic infection: An infection that becomes disseminated throughout the body.

Systemic Inflammatory Response Syndrome (SIRS): An exaggerated inflammatory response to a noxious stressor (including, but not limited to, infection and acute inflammation) that affects the entire body.

T cells: Immune cells that mature in the thymus. T cells are categorized into three classes: helper T cells, regulatory T cells, and cytotoxic T cells. Helper T cells stimulate B cells to make antibodies and help killer cells develop. Killer T cells directly kill cells that have already been infected by a pathogen. T cells also use cytokines as messenger molecules to send chemical instructions to the rest of the immune system to ramp up its response.

Transmission-based precautions: Precautions used for patients with documented or suspected infection, or colonization, of highly-transmissible pathogens, such as *C. difficile* (C-diff), *Methicillin-resistant Staphylococcus aureus* (MRSA), *Vancomycin-resistant enterococci* (VRE), Respiratory Syncytial Virus (RSV), measles, and tuberculosis (TB). Three categories of transmission-based precautions are contact precautions, droplet precautions, and airborne precautions.

Virulence: The degree to which a microorganism is likely to become a disease.

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1. National Cancer Institute. (n.d.) *NCI Dictionary of Cancer Terms.* https://www.cancer.gov/publications/dictionaries/cancer-terms/def/cytokine-storm↵

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8.2: Infection Introduction

Learning Objectives

- Outline the factors that put patients at risk for infection
- Identify factors related to infection across the life span
- Outline personal practices that reduce the risk of infection transmission
- Base your care decision on the signs and symptoms of infection
- Base your response on an interpretation of the diagnostic tests related to patient's infectious process
- Detail the nursing interventions to support or minimize the physical and psychological effects of the infectious process
- Demonstrate the ability to correlate nursing interventions to methods used to prevent or disrupt the chain of infection
- Follow industry standards for transmission-based precautions
- Identify evidence-based practices

Have you ever wondered how nurses can be exposed to patients with communicable diseases day after day and not become ill? There are many factors that affect the body's ability to defend against infection and place some individuals at greater risk of developing an infection. When an infection does occur, early recognition is important to prevent it from spreading within the individual, as well as to others. Protecting people from developing an infection, as well as preventing the spread of infection, is a major concern for nurses. This chapter will discuss the physiology of the inflammation and infectious processes and nursing interventions to prevent the spread of infection.

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8.3: Basic Concepts

Normal Flora and Microbiome

Microorganisms occur naturally and are present everywhere in our environment. Some microorganisms live on the skin, in the nasopharynx, and in the gastrointestinal tract, but don't become an infection unless the host becomes susceptible. These microorganisms are called **normal flora**. Over the past several, it has been discovered that every human being carries their own individual suite of microorganisms in and on their body referred to as their **microbiome**. A person's microbiome is acquired at birth and evolves over their lifetime. It is different across body sites and between individuals. A person's gut microbiome has recently been found to impact their immune system.[1],[2]

Pathogens

Microorganisms that cause disease are called **pathogens**. There are four common types of pathogens, including viruses, bacteria, fungi, and parasites.

Viruses

Viruses are made up of a piece of genetic code, such as DNA or RNA, and are protected by a coating of protein. After a host (i.e., the person) becomes infected by a virus, the virus invades the body's cells and uses the components of the cell to replicate and produce more viruses. After the virus replication cycle is complete, the new viruses are released into the body, causing damage or destruction of the host's cells.[3]

Antiviral medications can be used to treat some viral infections. Antibiotics do not kill viruses and are ineffective as a treatment for viral infections. See Figure 9.1[4] for an image of a virus.

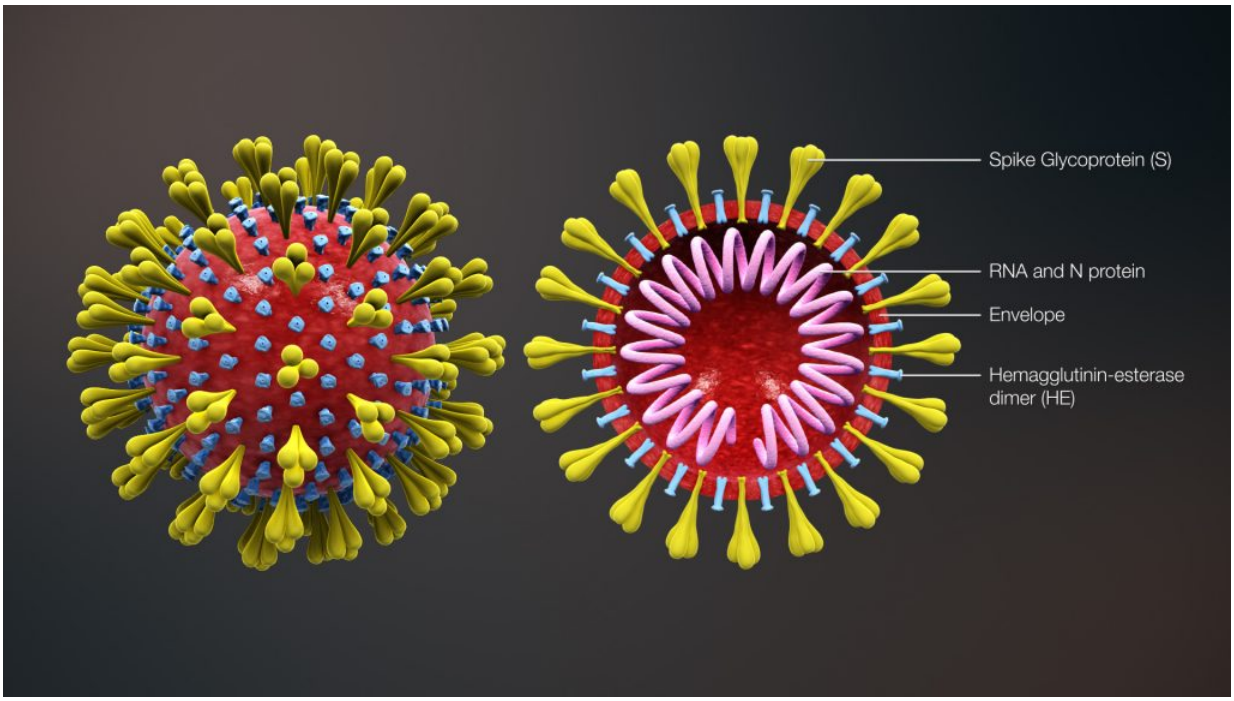

Figure 9.1 Coronavirus

Bacteria

Bacteria are microorganisms made of a single cell. They are very diverse, have a variety of shapes and features, and have the ability to live in any environment, including your body. However, not all bacteria cause infections. Those that cause infection are called pathogenic bacteria. See Figure 9.2[5] for an image of a bacterium called *Escherichia coli* (E. coli).

A patient is susceptible to bacterial infections when their immune system is compromised by chronic diseases or certain types of medications. Antibiotics are used to treat bacterial infections. However, some strains of bacteria have become resistant to

antibiotics, making them difficult to treat. For example, infections caused by *methicillin-resistant Staphylococcus Aureus* (MRSA) are resistant to many types of antibiotics and have the capability of producing severe and life-threatening infections. MRSA infections usually require IV antibiotics and may require treatment for long periods of time.[6]

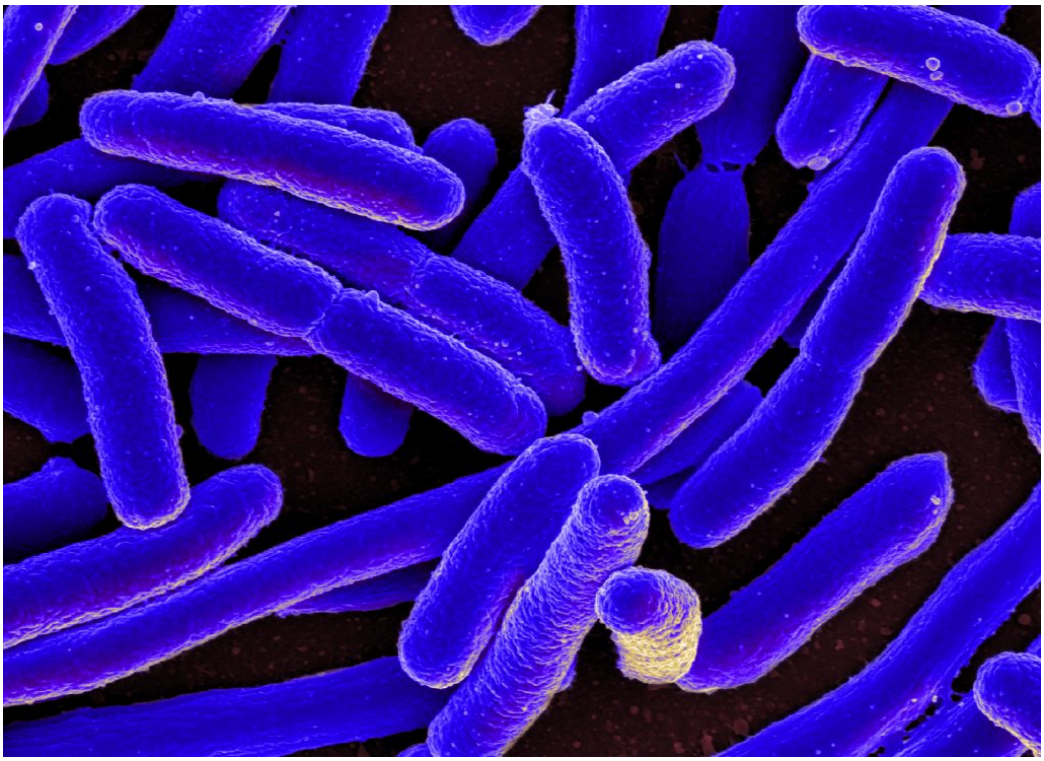

Figure 9.2 E. coli Bacteria

Fungi

There are millions of different fungal species on Earth. Fungi can be found everywhere in the environment, including indoors, outdoors, and on human skin, but only about 300 species cause infection when they overgrow. *Candida albicans* is a type of fungus that can cause oral thrush and vaginal yeast infections, especially in susceptible patients or those taking antibiotics.[7] See Figure 9.3[8] for an image of oral thrush.

Fungi cells contain a nucleus and other components protected by a membrane and a thick cell wall. This structure can make them harder to kill. Some new strains of fungal infections are proving to be especially dangerous, such as *Candida auris*, which is difficult to diagnose and treat, and can cause outbreaks in health care facilities.[9]

Figure 9.3 Oral Thrush

Parasites

Parasites are organisms that behave like tiny animals, living in or on a host, and feeding at the expense of the host. Three main types of parasites can cause disease in humans. These include the following:

- Protozoa: Single-celled organisms that can live and multiply in your body
- Helminths: Multi-celled organisms that can live inside or outside your body and are commonly known as worms
- Ectoparasites: Multi-celled organisms that live on or feed off skin, including ticks and mosquitos

Parasites can be spread several ways, including through contaminated soil, water, food, and blood, as well as through sexual contact and insect bites.[10] See Figure 9.4[11] for an image of a helminth infection causing intestinal obstruction in a child.

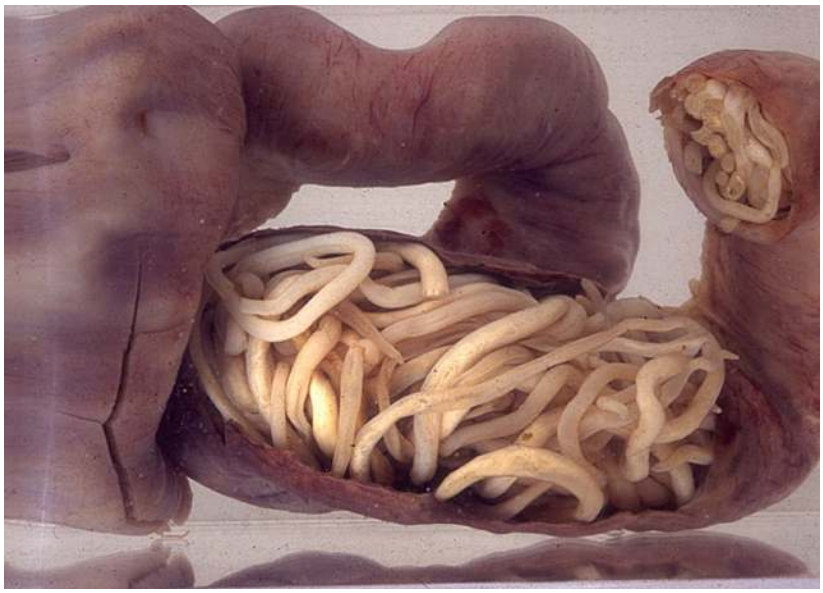

Figure 9.4 Helminth Infection

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8.4: Natural Defenses Against Infection

There are two basic ways the body defends against pathogens: nonspecific innate immunity and specific adaptive immunity.

Nonspecific Innate Immunity

Nonspecific innate immunity is a system of defenses in the body that targets invading pathogens in a nonspecific manner. It is called “innate” because it is present from the moment we are born. Nonspecific innate immunity includes physical defenses, chemical defenses, and cellular defenses.[1]

Physical Defenses

Physical defenses are the body’s most basic form of defense against infection. They include physical barriers to microbes, such as skin and mucous membranes, as well as mechanical defenses that physically remove microbes and debris from areas of the body where they might cause harm or infection. In addition, a person’s microbiome provides physical protection against disease as normal flora compete with pathogens for nutrients and cellular-binding sites.[2]

Skin

One of the body’s most important physical barriers is the skin barrier, which is composed of three layers of closely packed cells. See Figure 9.5[3] for an illustration of the layers of skin. The topmost layer of skin called the epidermis consists of cells that are packed with keratin. Keratin makes the skin’s surface mechanically tough and resistant to degradation by bacteria. Infections can occur when the skin barrier is broken, allowing the entry of opportunistic pathogens that infect the skin tissue surrounding the wound and possibly spread to deeper tissues.[4]

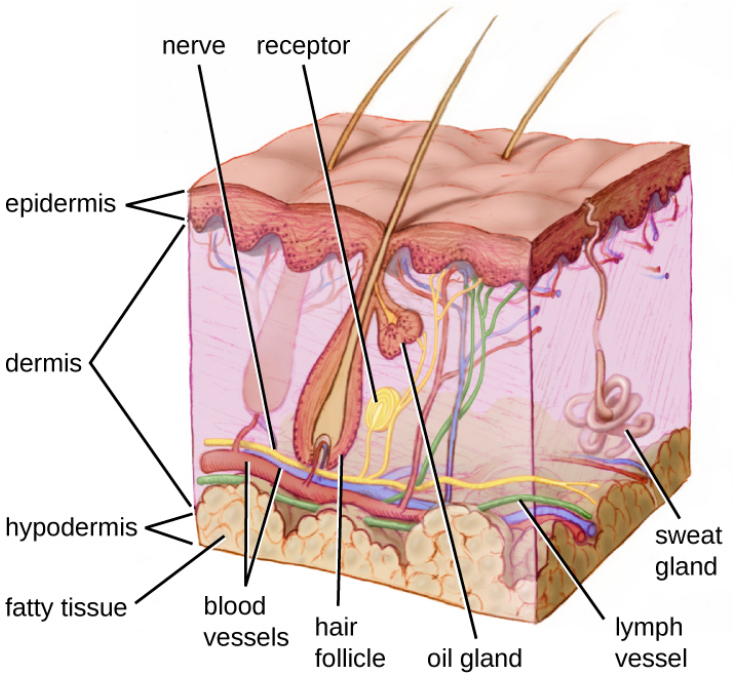

Figure 9.5 Layers of Skin

Mucus Membranes

The mucous membranes lining the nose, mouth, lungs, and urinary and digestive tracts provide another nonspecific barrier against potential pathogens. Mucous membranes consist of a layer of epithelial cells bound by tight junctions. The epithelial cells secrete a moist, sticky substance called mucous. Mucous covers and protects the fragile cell layers beneath it and also traps debris, including microbes. Mucus secretions also contain antimicrobial peptides.[5]

In many regions of the body, mechanical actions flush mucus (along with trapped or dead microbes) out of the body or away from potential sites of infection. For example, in the respiratory system, inhalation can bring microbes, dust, mold spores, and other small airborne debris into the body. This debris becomes trapped in the mucus lining the respiratory tract. The epithelial cells lining

the upper parts of the respiratory tract have hair-like appendages known as cilia. Movement of the cilia propels debris-laden mucus out and away from the lungs. The expelled mucus is then swallowed and destroyed in the stomach, coughed up, or sneezed out. This system of removal is often called the mucociliary escalator. Disruption of the mucociliary escalator by the damaging effects of smoking can lead to increased colonization of bacteria in the lower respiratory tract and frequent infections, which highlights the importance of this physical barrier to host defenses.[6] See Figure 9.6[7] for an image of a magnified mucociliary escalator.

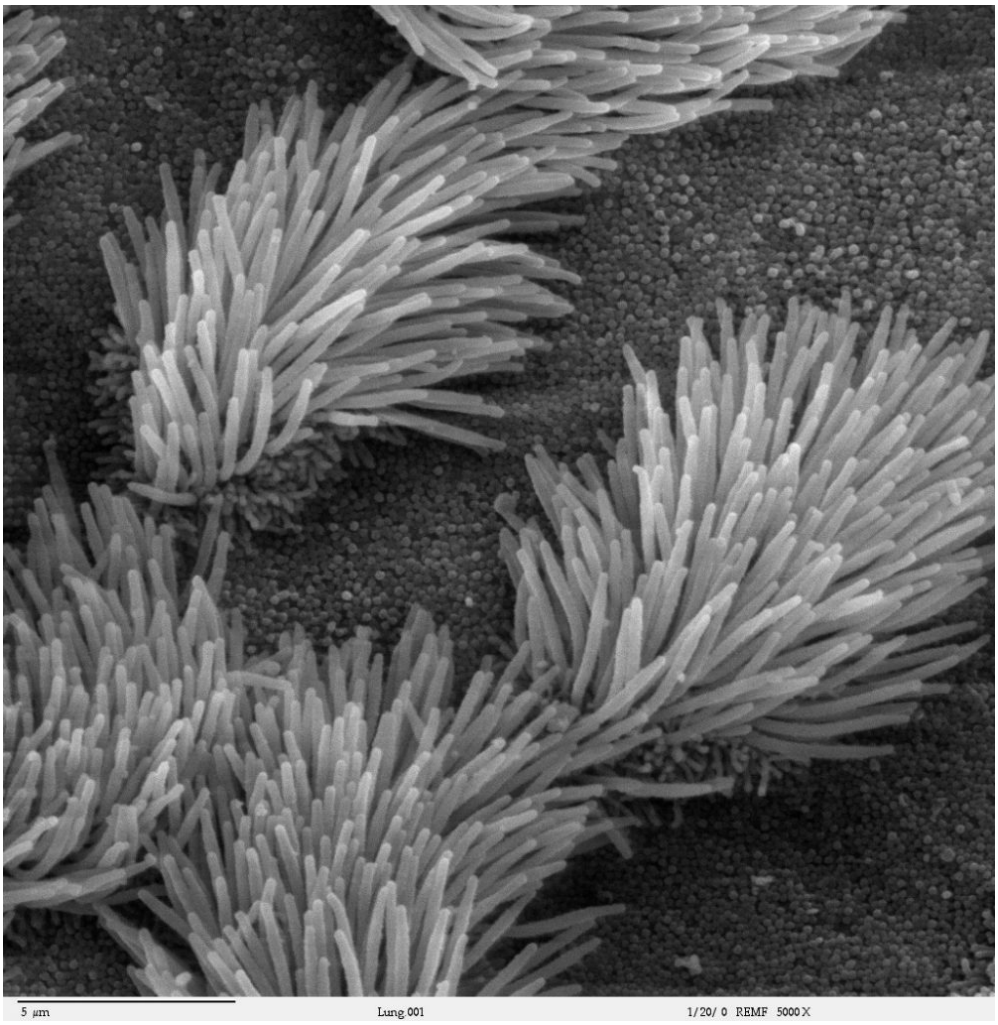

Figure 9.6 Mucociliary Escalator

Like the respiratory tract, the digestive tract is a portal of entry through which microbes enter the body, and the mucous membranes lining the digestive tract provide a nonspecific physical barrier against ingested microbes. The intestinal tract is lined with epithelial cells, interspersed with mucus-secreting goblet cells. This mucus mixes with material received from the stomach, trapping foodborne microbes and debris, and the mechanical action of **peristalsis** (a series of muscular contractions in the digestive tract) moves this mixture through the intestines and excretes it in feces.[8] For this reason, feces can contain microorganisms that can cause the spread of infection; therefore, good hand hygiene is vital.

Endothelia

The epithelial cells lining the urogenital tract, blood vessels, lymphatic vessels, and other tissues are known as endothelia. These tightly packed cells provide an effective frontline barrier against invaders. The endothelia of the blood-brain barrier, for example, protects the central nervous system (CNS) from microorganisms. Infection of the CNS can quickly lead to serious and often fatal inflammation. The protection of the blood-brain barrier keeps the cerebrospinal fluid that surrounds the brain and spinal cord sterile.[9] See Figure 9.7[10] for an illustration of the blood-brain barrier.

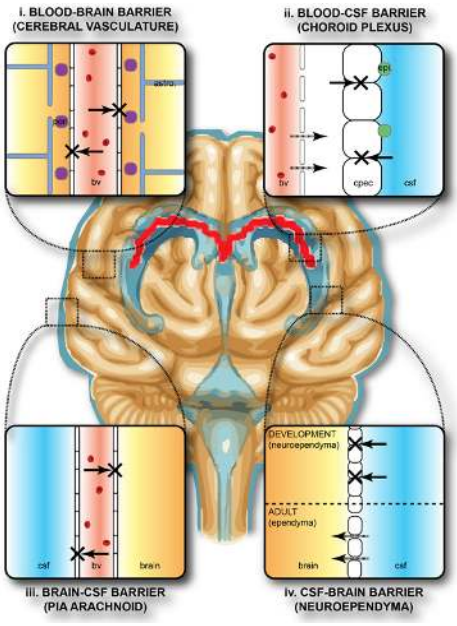

Figure 9.7 Blood-Brain Barrier

Mechanical Defenses

In addition to physical barriers that keep microbes out, the body has several mechanical defenses that physically remove pathogens from the body and prevent them from taking up residence. For example, the flushing action of urine and tears serves to carry microbes away from the body. The flushing action of urine is responsible for the normally sterile environment of the urinary tract. The eyes have additional physical barriers and mechanical mechanisms for preventing infections. The eyelashes and eyelids prevent dust and airborne microorganisms from reaching the surface of the eye. Any microbes or debris that make it past these physical barriers are flushed out by the mechanical action of blinking, which bathes the eye in tears, washing debris away.[11] See Figure 9.8[12] for an image of an infant's eyelashes that prevent dust from reaching the surface of the eye.

Figure 9.8 Eyelashes Are Mechanical Defenses

Microbiome

Normal flora that contribute to an individual's microbiome serve as an important first-line defense against invading pathogens. Through their occupation of cellular binding sites and competition for available nutrients, normal flora prevent the early steps of pathogen attachment and proliferation required for the establishment of an infection. For example, in the vagina, normal flora compete with opportunistic pathogens like *Candida albicans*. This competition prevents yeast infection by limiting the availability of nutrients and inhibiting the growth of *Candida*, keeping its population in check. Similar competitions occur between normal flora and potential pathogens on the skin, in the upper respiratory tract, and in the gastrointestinal tract.[13]

The importance of the normal flora in host defenses is highlighted by a person's increased susceptibility to infectious diseases when their microbiome is disrupted or eliminated. For example, treatment with antibiotics can significantly deplete the normal flora of the gastrointestinal tract, providing an advantage for pathogenic bacteria such as *Clostridium difficile* (C-diff) to colonize and cause diarrheal infection. Diarrhea caused by C-diff can be severe and potentially lethal. In fact, a recent strategy for treating recurrent C-diff infections is fecal transplantation that involves the transfer of fecal material from a donor into the intestines of the patient as a method of restoring their normal flora.[14]

Chemical Defenses

In addition to physical defenses, our nonspecific innate immune system uses several chemical mediators that inhibit microbial invaders. The term chemical mediators encompasses a wide array of substances found in various fluids and tissues throughout the body. For example, sebaceous glands in the dermis secrete an oil called sebum that is released onto the skin surface through hair follicles. Sebum provides an additional layer of defense by helping seal off the pore of the hair follicle and preventing bacteria on the skin's surface from invading sweat glands and surrounding tissue. Environmental factors can affect these chemical defenses of the skin. For example, low humidity in the winter makes the skin more dry and susceptible to pathogens normally inhibited by the skin's low pH. Application of skin moisturizer restores moisture and essential oils to the skin and helps prevent dry skin from becoming infected.[15]

Examples of other chemical defenses are enzymes, pH level, and chemical mediators. Enzymes in saliva and the digestive tract eliminate most pathogens that manage to survive the acidic environment of the stomach. In the urinary tract, the slight acidity of urine inhibits the growth of potential pathogens in the urinary tract. The respiratory tract also uses various chemical mediators in the nasal passages, trachea, and lungs that have antibacterial properties.[16]

Plasma Protein Mediators

In addition to physical, mechanical, and chemical defenses, there are also nonspecific innate immune factors in plasma, the fluid portion of blood, such as acute-phase proteins, complement proteins, and cytokines. These plasma protein mediators contribute to the inflammatory response.[17]

An example of an acute-phase protein is C-reactive protein. High levels of C-reactive protein indicate a serious infection or other medical condition that causes inflammation is occurring.[18]

Complement proteins are always present in the blood and tissue fluids, allowing them to be activated quickly. They aid in the destruction of pathogens by piercing their outer membranes (cell lysis) or by making them more attractive to phagocytic cells such as macrophages.[19]

Cytokines are proteins that affect interaction and communication between cells. When a pathogen enters the body, the first immune cell to notice the pathogen is like the conductor of an orchestra. That cell directs all the other immune cells by creating and sending out messages (cytokines) to the rest of the organs or cells in the body to respond to and initiate inflammation. Too many cytokines can have a negative effect and result in what's known as a **cytokine storm**.[20][21] A cytokine storm is a severe immune reaction in which the body releases too many cytokines into the blood too quickly. A cytokine storm can occur as a result of an infection, autoimmune condition, or other disease. Signs and symptoms include high fever, inflammation, severe fatigue, and nausea. A cytokine storm can be severe or life-threatening and lead to multiple organ failure. For example, many COVID-19 complications and deaths were caused by a cytokine storm.[22][23]

Inflammation

Inflammation is a response triggered by a cascade of chemical mediators and occurs when pathogens successfully breach the nonspecific innate immune system or when an injury occurs. Although inflammation is often perceived as a negative consequence of injury or disease, it is a necessary process that recruits cellular defenses needed to eliminate pathogens, remove damaged and dead cells, and initiate repair mechanisms. Excessive inflammation, however, can result in local tissue damage, and in severe cases, such as sepsis, it can become deadly.[24]

An immediate response to tissue injury is acute inflammation. Vasoconstriction occurs to minimize blood loss if injury has occurred. Vasoconstriction is followed by vasodilation with increased permeability of the blood vessels due to the release of histamine by mast cells. Histamine contributes to the five observable signs of the inflammatory response: erythema (redness),

edema (swelling), heat, pain, and altered function. It is also associated with an influx of phagocytes at the site of injury and/or infection. See Figure 9.9[25] for an illustration of the inflammatory response, with (a) demonstrating when mast cells detect injury to nearby cells and release histamine, initiating an inflammatory response and (b) illustrating where histamine increases blood flow to the wound site and the associated increased vascular permeability allows fluid, proteins, phagocytes, and other immune cells to enter infected tissue. These events result in the swelling and reddening of the injured site. The increased blood flow to the injured site causes it to feel warm. Inflammation is also associated with pain due to these events stimulating nerve pain receptors in the tissue. Increasing numbers of neutrophils are then recruited to the area to fight pathogens. As the fight rages on, white blood cells are recruited to the area, and pus forms from the accumulation of neutrophils, dead cells, tissue fluids, and lymph. Typically, after a few days, macrophages clear out this pus.[26] During injury, if this nonspecific inflammatory process does not successfully kill the pathogens, infection occurs.

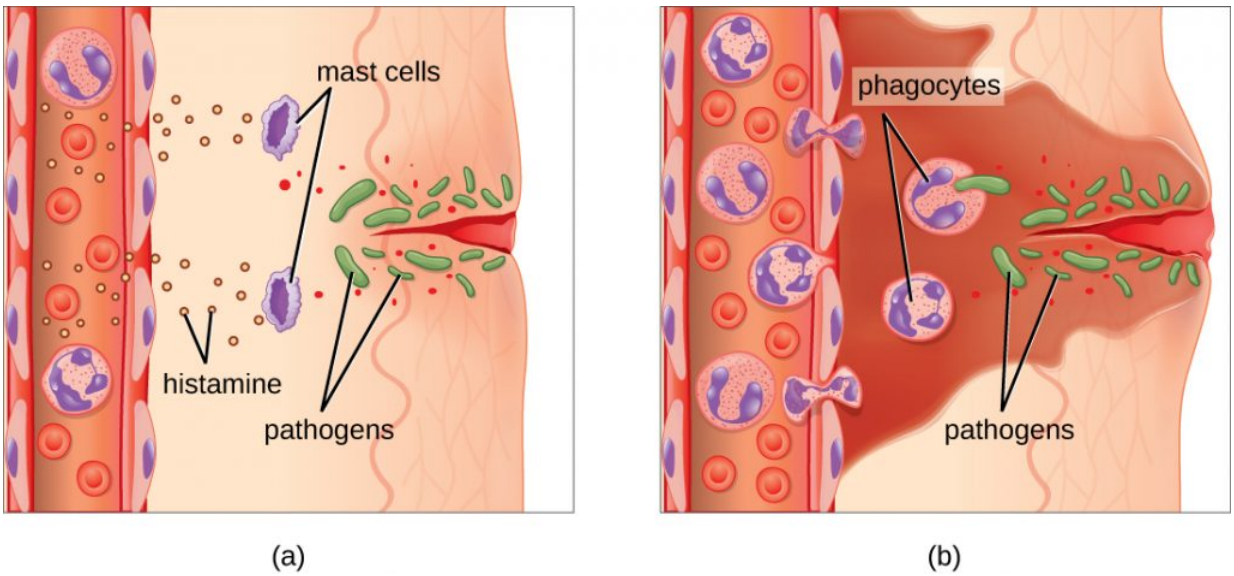

Figure 9.9 Inflammatory Response

Fever

A fever is part of the inflammatory response that extends beyond the site of infection and affects the entire body, resulting in an overall increase in body temperature. Like other forms of inflammation, a fever enhances the nonspecific innate immune defenses by stimulating white blood cells to kill pathogens. The rise in body temperature also inhibits the growth of many pathogens. During fever, the patient's skin may appear pale due to vasoconstriction of the blood vessels in the skin to divert blood flow away from extremities, minimize the loss of heat, and raise the body's core temperature. The hypothalamus also stimulates the shivering of muscles to generate heat and raise the core temperature.[27]

A low-level fever is thought to help an individual overcome an illness. However, in some instances, this immune response can be too strong, causing tissue and organ damage and, in severe cases, even death. For example, *Staphylococcus aureus* and *Streptococcus pyogenes* are capable of producing superantigens that cause toxic shock syndrome and scarlet fever, respectively. Both of these conditions are associated with extremely high fevers in excess of 42 °C (108 °F) that must be managed to prevent tissue injury and death.[28]

When a fever breaks, the hypothalamus stimulates vasodilation, resulting in a return of blood flow to the skin and a subsequent release of heat from the body. The hypothalamus also stimulates sweating, which cools the skin as the sweat evaporates.[29]

Specific Adaptive Immunity

Now that we have discussed several nonspecific innate defenses against a pathogen, let's discuss specific adaptive immunity. Specific adaptive immunity is the immune response that is activated when the nonspecific innate immune response is insufficient to control an infection. There are two types of adaptive responses: the cell-mediated immune response, which is carried out by T cells, and the humoral immune response, which is controlled by activated B cells and antibodies.[30]

B cells mature in the bone marrow. B cells make Y-shaped proteins called **antibodies** that are specific to each pathogen and lock onto its surface and mark it for destruction by other immune cells. The five classes of antibodies are IgG, IgM, IgA, IgD, and IgE. They also turn into memory B cells.[31]

T cells mature in the thymus. T cells are categorized into three classes: helper T cells, regulatory T cells, and cytotoxic T cells. Helper T cells stimulate B cells to make antibodies and help killer cells develop. Killer T cells directly kill cells that have already been infected by a pathogen. T cells also use cytokines as messenger molecules to send chemical instructions to the rest of the immune system to ramp up its response.[32]

Specific adaptive immunity also creates memory cells for each specific pathogen that provides the host with long-term protection from reinfection with that pathogen. On reexposure, these memory cells facilitate an efficient and quick immune response. For example, when an individual recovers from chicken pox, the body develops a memory of the *varicella-zoster* virus that will specifically protect it from reinfection if it is exposed to the virus again.[33]

See Figure 9.10[34] for an illustration of innate immunity and specific adaptive immunity that occurs in response to a pathogen entering the body through the nose.

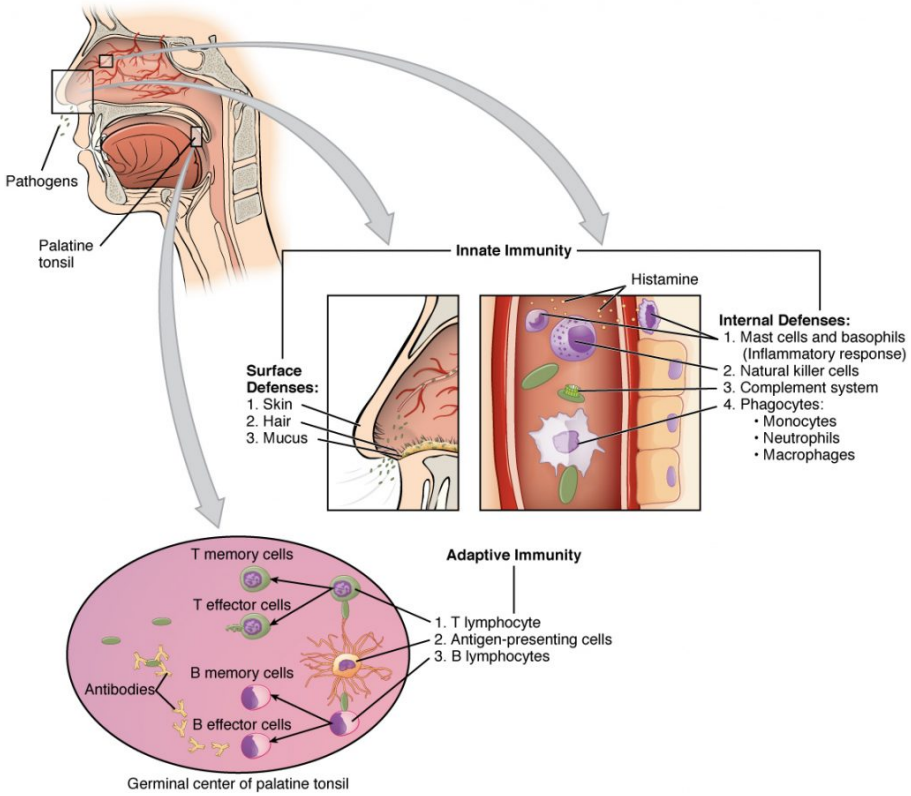

Figure 9.10 Innate Immunity and Specific Adaptive Immunity

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8.5: Infection

An **infection** is the invasion and growth of a microorganism within the body. Infection can lead to **disease** that causes signs and symptoms resulting in a deviation from the normal structure or functioning of the host. Infection occurs when nonspecific innate immunity and specific adaptive immunity defenses are inadequate to protect an individual against the invasion of a pathogen. The ability of a microorganism to cause disease is called **pathogenicity**, and the degree to which a microorganism is likely to become a disease is called virulence. **Virulence** is a continuum. On one end of the spectrum are organisms that are not harmful, but on the other end are organisms that are highly virulent. Highly virulent pathogens will almost always lead to a disease state when introduced to the body, and some may even cause multi-organ and body system failure in healthy individuals. Less virulent pathogens may cause an initial infection, but may not always cause severe illness. Pathogens with low virulence usually result in mild signs and symptoms of disease, such as a low-grade fever, headache, or muscle aches, and some individuals may even be asymptomatic.[1]

An example of a highly virulent microorganism is *Bacillus anthracis*, the pathogen responsible for anthrax. The most serious form of anthrax is inhalation anthrax. After *B. anthracis* spores are inhaled, they germinate. An active infection develops, and the bacteria release potent toxins that cause edema (fluid buildup in tissues), hypoxia (a condition preventing oxygen from reaching tissues), and necrosis (cell death and inflammation). Signs and symptoms of inhalation anthrax include high fever, difficulty breathing, vomiting, coughing up blood, and severe chest pains suggestive of a heart attack. With inhalation anthrax, the toxins and bacteria enter the bloodstream, which can lead to multi-organ failure and death of the patient.[2]

Primary Pathogens Versus Opportunistic Pathogens

Pathogens can be classified as either primary pathogens or opportunistic pathogens. A **primary pathogen** can cause disease in a host regardless of the host's microbiome or immune system. An **opportunistic pathogen**, by contrast, can cause disease only in situations that compromise the host's defenses, such as the body's protective barriers, immune system, or normal microbiome. Individuals susceptible to opportunistic infections include the very young, the elderly, women who are pregnant, patients undergoing chemotherapy, people with immunodeficiencies (such as acquired immunodeficiency syndrome [AIDS]), patients who are recovering from surgery, and those who have nonintact skin (such as a severe wound or burn).[3]

An example of a primary pathogen is enterohemorrhagic *E. coli* that produces a toxin that leads to severe and bloody diarrhea, inflammation, and renal failure, even in patients with healthy immune systems. *Staphylococcus epidermidis*, on the other hand, is an opportunistic pathogen that is a frequent cause of health-care acquired infection.[4] *S. epidermidis*, often referred to as "staph," is a member of the normal flora of the skin. However, in hospitals, it can grow in biofilms that form on catheters, implants, or other devices that are inserted into the body during surgical procedures. Once inside the body, it can cause serious infections such as endocarditis.[5]

Other members of normal flora can cause opportunistic infections. For example, some microorganisms that reside harmlessly in one location of the body can cause disease if they are passed to a different body system. For example, *E. coli* is normally found in the large intestine, but can cause a urinary tract infection if it enters the bladder.[6]

Normal flora can also cause disease when a shift in the environment of the body leads to overgrowth of a particular microorganism. For example, the yeast *Candida* is part of the normal flora of the skin, mouth, intestine, and vagina, but its population is kept in check by other organisms of the microbiome. When an individual takes antibiotics, bacteria that would normally inhibit the growth of *Candida* can be killed off, leading to a sudden growth in the population of *Candida*. An overgrowth of *Candida* can manifest as oral thrush (growth on mouth, throat, and tongue) or a vaginal yeast infection. Other scenarios can also provide opportunities for *Candida* to cause infection. For example, untreated diabetes can result in a high concentration of glucose in a patient's saliva that provides an optimal environment for the growth of *Candida*, resulting in oral thrush. Immunodeficiencies, such as those seen in patients with HIV, AIDS, and cancer, also lead to *Candida* infections.[7]

Stages of Pathogenesis

To cause disease, a pathogen must successfully achieve four stages of pathogenesis to become an infection: exposure, adhesion (also called colonization), invasion, and infection. The pathogen must be able to gain entry to the host, travel to the location where

it can establish an infection, evade or overcome the host's immune response, and cause damage (i.e., disease) to the host. In many cases, the cycle is completed when the pathogen exits the host and is transmitted to a new host.[8]

Exposure

An encounter with a potential pathogen is known as **exposure**. The food we eat and the objects we touch are all ways that we can come into contact with potential pathogens. Yet, not all contacts result in infection and disease. For a pathogen to cause disease, it needs to be able to gain access into host tissue. An anatomic site through which pathogens can pass into host tissue is called a **portal of entry**. Portals of entry are locations where the host cells are in direct contact with the external environment, such as the skin, mucous membranes, respiratory, and digestive systems. Portals of entry are illustrated in Figure 9.11.[9] [10]

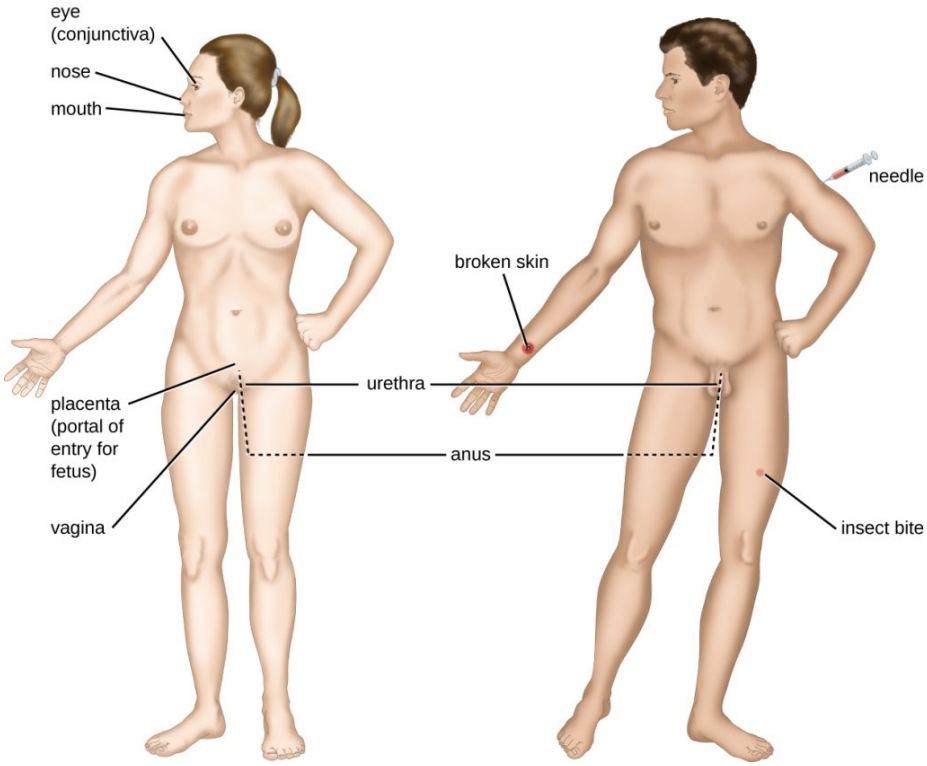

Figure 9.11 Sites of Portal of Entry

Adhesion

Following initial exposure, the pathogen adheres at the portal of entry. The term **adhesion** refers to the capability of pathogenic microbes to attach to the cells of the body, also referred to as colonization.[11]

Invasion

After successful adhesion, the invasion proceeds. **Invasion** means the spread of a pathogen throughout local tissues or the body. Pathogens may also produce virulence factors that protect them against immune system defenses and determine the degree of tissue damage that occurs. Intracellular pathogens like viruses achieve invasion by entering the host's cells and reproducing.[12]

Infection

Following invasion, successful multiplication of the pathogen leads to infection. Infections can be described as local, secondary, or systemic, depending on the extent of the infection.[13]

A **local infection** is confined to a small area of the body, typically near the portal of entry. For example, a hair follicle infected by *Staphylococcus aureus* infection may result in a boil around the site of infection, but the bacterium is largely contained to this small location. Other examples of local infections that involve more extensive tissue involvement include urinary tract infections confined to the bladder or pneumonia confined to the lungs. Localized infections generally demonstrate signs of inflammation, such as redness, swelling, warmth, pain, and purulent drainage. However, extensive tissue involvement can also cause decreased functioning of the organ affected.[14]

In a **secondary infection** a localized pathogen, or the toxins it produces, can spread to a secondary location. For example, a dental hygienist nicking a patient's gum with a sharp tool can cause a local infection in the gum by *Streptococcus* bacteria found in the oral normal flora. The *Streptococcus* bacteria may then gain access to the bloodstream and make their way to other locations within the body such as the heart valves, resulting in a secondary infection.[15]

When an infection becomes disseminated throughout the body, it is called a **systemic infection**. For example, infection by the *varicella-zoster* virus typically gains entry through a mucous membrane of the upper respiratory system. It then spreads throughout the body, resulting in a classic red rash associated with chicken pox. Because these lesions are not sites of initial infection, they are signs of a systemic infection. Systemic infections can cause fever, increased heart and respiratory rates, lethargy, malaise, anorexia, and tenderness and enlargement of the lymph nodes.[16]

Sometimes a primary infection can lead to a secondary infection by an opportunistic pathogen. For example, when a patient experiences a primary infection from influenza, it can damage and decrease the defense mechanisms of the lungs, making the patient more susceptible to a secondary pneumonia by a bacterial pathogen like *Haemophilus influenzae*. Additionally, treatment of the primary infection may lead to a secondary infection caused by an opportunistic pathogen. For example, antibiotic therapy targeting the primary infection alters the normal flora and creates an opening for opportunistic pathogens like *Clostridium difficile* or *Candida Albicans* to cause a secondary infection.[17]

Bacteremia, SIRS, Sepsis, and Septic Shock

When infection occurs, pathogens can enter the bloodstream. The presence of bacteria in blood is called **bacteremia.** If bacteria are both present and multiplying in the blood, it is called **septicemia**.[18]

Systemic inflammatory response syndrome (SIRS) is an exaggerated inflammatory response that affects the entire body. It is the body's reaction to a noxious stressor, including causes such as infection and acute inflammation, but other conditions can trigger it as well. Signs of SIRS are as follows:

- Body temperature over 38 or under 36 degrees Celsius
- Heart rate greater than 90 beats/minute
- Respiratory rate greater than 20 breaths/minute or PaCO2 less than 32 mmHg
- White blood cell count greater than 12,000 or less than 4,000 /microliters or over 10% of immature forms (bands)[19]

Even though the purpose of SIRS is to defend against a noxious stressor, the uncontrolled release of massive amounts of cytokines, called cytokine storm, can lead to organ dysfunction and even death.[20]

Sepsis refers to SIRS that is caused by an infection. Sepsis occurs when an existing infection triggers an exaggerated inflammatory reaction throughout the body. If left untreated, sepsis causes tissue and organ damage. It can quickly spread to multiple organs and is a life-threatening medical emergency.

Sepsis causing damage to one or more organs (such as the kidneys) is called severe sepsis. Severe sepsis can lead to septic shock, a life-threatening decrease in blood pressure (systolic pressure <90 mm Hg) that prevents cells and other organs from receiving enough oxygen and nutrients, causing multi-organ failure and death. See Figure 9.12[21] for an illustration of the progression of sepsis from SIRS to **septic shock**.

Unfortunately, almost any type of infection in any individual can lead to sepsis. Infections that lead to sepsis most often start in the lungs, urinary tract, gastrointestinal tract, or skin. Some people are especially at risk for developing sepsis, such as adults over age 65; children younger than one year old; people who are immunocompromised or have chronic medical conditions, such as diabetes, lung disease, cancer, and kidney disease; and survivors of a previous sepsis episode.[22]

In addition to exhibiting signs of SIRS, patients with sepsis may also have additional signs such as elevated fever and shivering, confusion, shortness of breath, pain or discomfort, and clammy or sweaty skin. Diligent nursing care is vital for recognizing when patients with a diagnosed infection are developing sepsis. It is important to know the early signs of SIRS and sepsis and to act quickly by notifying the health care provider and/or following sepsis protocols in place at your health care facility.[23]

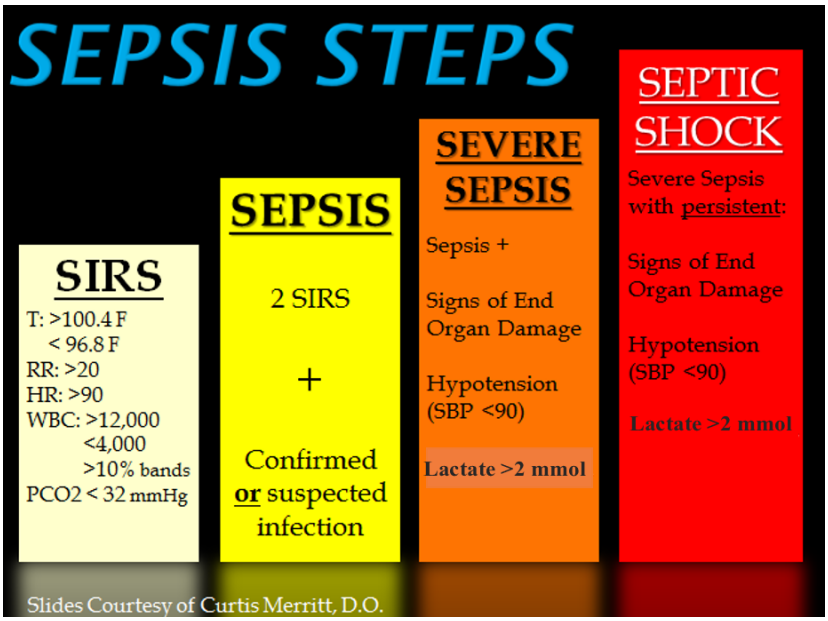

Figure 9.12 Progression of Sepsis

Note

Use the following hyperlinks to read more information about sepsis.

- Read more information about sepsis at the CDC's Sepsis web page.
- Read the CDC infographic on Protect Your Patients from Sepsis.
- Read an article about caring for patients with sepsis titled Something Isn't Right: The Subtle Changes of Early Deterioration.
- Read more about the Surviving Sepsis Campaign with early recognition and treatment of sepsis using the Hour-1 Bundle.

Toxins

Some pathogens release toxins that are biological poisons that assist in their ability to invade and cause damage to tissues. For example, *Botulinum toxin* (also known as botox) is a neurotoxin produced by the gram-positive bacterium *Clostridium botulinum* that is an acutely toxic substance because it blocks the release of the neurotransmitter acetylcholine. The toxin's blockage of acetylcholine results in muscle paralysis with the potential to stop breathing due to its effect on the respiratory muscles. This condition is referred to as botulism, a type of food poisoning that can be caused by improper sterilization of canned foods. However, because of its paralytic action, low concentrations of botox are also used for beneficial purposes such as cosmetic procedures to remove wrinkles and in the medical treatment of overactive bladder.[24]

Another type of neurotoxin is tetanus toxin, which is produced by the gram-positive bacterium *Clostridium tetani*. Tetanus toxin inhibits the release of GABA, resulting in permanent muscle contraction. The first symptom of tetanus is typically stiffness of the jaw. Violent muscle spasms in other parts of the body follow, typically culminating with respiratory failure and death. Because of the severity of tetanus, it is important for nurses to encourage individuals to regularly receive tetanus vaccination boosters throughout their lifetimes.[25]

Stages of Disease

When a pathogen becomes an infection-causing disease, there are five stages of disease, including the incubation, prodromal, illness, decline, and convalescence periods. See Figure 9.13[26] for an illustration of the stages of disease.

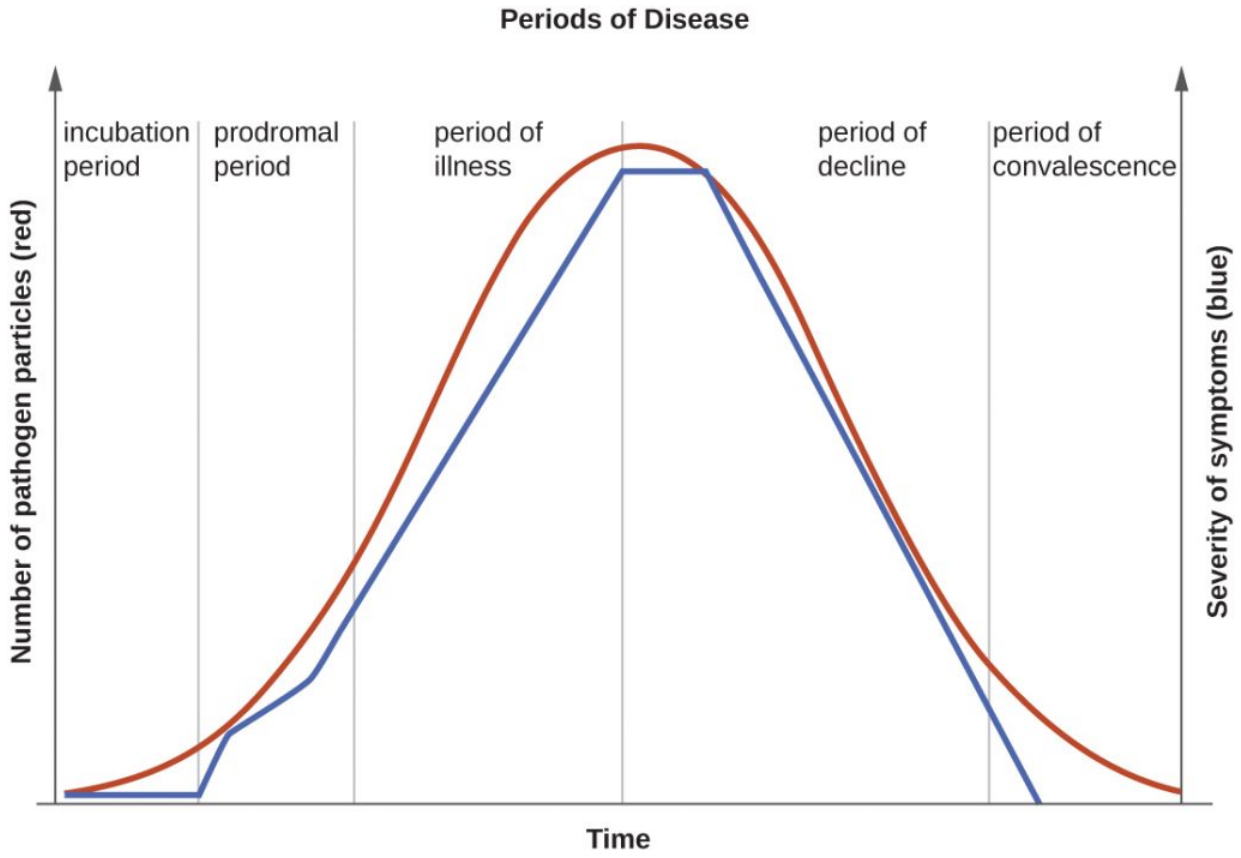

Figure 9.13 Progression of Infectious Disease

Incubation Period

The **incubation period** occurs after the initial entry of the pathogen into the host when it begins to multiply, but there are insufficient numbers of the pathogen present to cause signs and symptoms of disease. Incubation periods can vary from a day or two in acute disease to months or years in chronic disease, depending upon the pathogen. Factors involved in determining the length of the incubation period are diverse and can include virulence of the pathogen, strength of the host immune defenses, site of infection, and the amount of the pathogen received during exposure. During this incubation period, the patient is unaware that a disease is beginning to develop.[27]

Prodromal Period

The **prodromal period** occurs after the incubation period. During this phase, the pathogen continues to multiply, and the host begins to experience general signs and symptoms of illness caused from activation of the nonspecific innate immunity, such as not feeling well (malaise), low-grade fever, pain, swelling, or inflammation. These signs and symptoms are often too general to indicate a particular disease is occurring.[28]

Acute Phase

Following the prodromal period is the period of acute illness, during which the signs and symptoms of a specific disease become obvious and can become severe. This period of acute illness is followed by the period of decline as the immune system overcomes the pathogen. The number of pathogen particles begins to decline and thus the signs and symptoms of illness begin to decrease. However, during the decline period, patients may become susceptible to developing secondary infections because their immune systems have been weakened by the primary infection.[29]

Convalescent Period

The final period of disease is known as the **convalescent period**. During this stage, the patient generally returns to normal daily functioning, although some diseases may inflict permanent damage that the body cannot fully repair.[30] For example, if a strep

infection becomes systemic and causes a secondary infection of the patient's heart valves, the heart valves may never return to full function and heart failure may develop.

Infectious diseases can be contagious during all five of the periods of disease. The transmissibility of an infection during these periods depends upon the pathogen and the mechanisms by which the disease develops and progresses. For example, with many viral diseases associated with rashes (e.g., chicken pox, measles, rubella, roseola), patients are contagious during the incubation period up to a week before the rash develops. In contrast, with many respiratory infections (e.g., colds, influenza, diphtheria, strep throat, and pertussis) the patient becomes contagious with the onset of the prodromal period. Depending upon the pathogen, the disease, and the individual infected, transmission can still occur during the periods of decline, convalescence, and even long after signs and symptoms of the disease disappear. For example, an individual recovering from a diarrheal disease may continue to carry and shed the pathogen in feces for a long time, posing a risk of transmission to others through direct or indirect contact.[31]

Types of Infection

Acute vs. Chronic

Acute, self-limiting infections develop rapidly and generally last only 10-14 days. Colds and ear infections are considered acute, self-limiting infections. See Figure 9.14[32] for an image of an individual with an acute, self-limiting infection. Conversely, **chronic infections** may persist for months. Hepatitis and mononucleosis are examples of chronic infections.[33]

Figure 9.14 Acute Infection

Healthcare-Associated Infections

An infection that is contracted in a health care facility or under medical care is known as a **healthcare-associated infection (HAI)**, formerly referred to as a nosocomial infection. On any given day, about one in 31 hospital patients has at least one healthcare-

associated infection. HAIs increase the cost of care and delay recovery and are associated with permanent disability, loss of wages, and even death.[34],[35]

The U.S. Department of Health and Human Services (HHS) has established these goals to reduce these common healthcare-associated infections in health care institutions:

- Reduce central line-associated bloodstream infections (CLABSI)
- Reduce catheter-associated urinary tracts infections (CAUTI)
- Reduce the incidence of invasive health care-associated *Methicillin-resistant Staphylococcus aureus* (MRSA)
- Reduce hospital-onset MRSA bloodstream infections
- Reduce hospital-onset *Clostridium difficile* infections
- Reduce the rate of *Clostridium difficile* hospitalizations
- Reduce surgical site infections (SSI)[36],[37]

> **Note**
>
> Read more about Health Care-Associated Infections.

Blood-borne Pathogens

Blood-borne pathogens are potentially present in a patient's blood and body fluids, placing other patients and health care providers at risk for infection if they are exposed. The most common blood-borne pathogens include hepatitis B, hepatitis C, and human immunodeficiency virus (HIV).

When a nurse or other health care worker experiences exposure due to a needlestick injury or the splashing of body fluids, it should be immediately reported so that careful monitoring can occur. When the source of the exposure is known, the health care worker and patient are initially tested. Repeat testing and medical prophylaxis may be warranted for the health care worker, depending on the results.[38],[39]

Needlesticks and sharps injuries are the most common causes of blood-borne pathogen exposure for nurses. The National Institute for Occupational Safety and Health (NIOSH) has developed a comprehensive Sharps Injury Prevention Program to decrease needle and sharps injury in health care workers.[40],[41]

Needles are also used in the community, such as at home, work, in airports, or public restrooms as individuals use needles to administer prescribed medications or to inject illegal drugs. Nurses can help prevent needlestick and sharps injuries in their community by implementing a community needle disposal program.

> **Note**
>
> Read more about needlestick and sharps injury prevention in the "Aseptic Technique" chapter in Open RN *Nursing Skills*.

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8.6: Treating Infection

Antibiotics are used to treat bacterial infections. They either kill bacteria or stop them from reproducing, allowing the body's natural defenses to eliminate the pathogens. Used properly, antibiotics can save lives. However, growing antibiotic resistance is curbing the effectiveness of these drugs. Taking an antibiotic as directed, even after symptoms disappear, is key to curing an infection and preventing the development of resistant bacteria.

Antibiotics do not work against viral infections such as colds or influenza. Antiviral drugs, which fight infection either by inhibiting a virus's ability to reproduce or by strengthening the body's immune response to the infection, are used for some viral infections. There are several different classes of drugs in the antiviral family, and each is used for specific kinds of viral infections.

Antifungal medications are used to treat fungal and yeast infections. Antiparasitic medication is used to treat parasites, and anthelmintic medication is used to treat worm infections.

Note

Read more about antibiotic, antiviral, antifungal, and antihelminthic medication in the "Antimicrobials" chapter in Open RN *Nursing Pharmacology*.

Antibiotic Stewardship

Microorganisms can quickly develop new features that make them resistant to the drugs that were once able to kill them. People infected with antibiotic-resistant organisms are more likely to have longer, more expensive hospital stays and may be more likely to die as a result of an infection.[1]

Misuse of antimicrobials is one of the world's most pressing public health problems because of these consequences. Many factors contribute to resistance, including overprescription of antibiotics for nonbacterial infections, use of inappropriate antibiotics for the infectious microorganism, and lack of completion of prescribed antibiotic therapy. Some infections, such as *Methicillin-resistant Staphylococcus aureus* (MRSA) and *Vancomycin-resistant Enterococci* (VRE), are becoming increasingly hard to treat and some microorganisms cannot be effectively destroyed by any known antibiotic.[2]

Antimicrobial stewardship is a coordinated program that promotes the appropriate use of antimicrobials (including antibiotics), improves patient outcomes, reduces microbial resistance, and decreases the spread of infections caused by multidrug-resistant organisms. The Centers for Disease Control (CDC) has developed core elements for antibiotic stewardship to serve as a guide to improve antibiotic use for improved patient safety and outcomes.[3] See Figure 9.15[4] for an image from the CDC explaining antibiotic resistance.

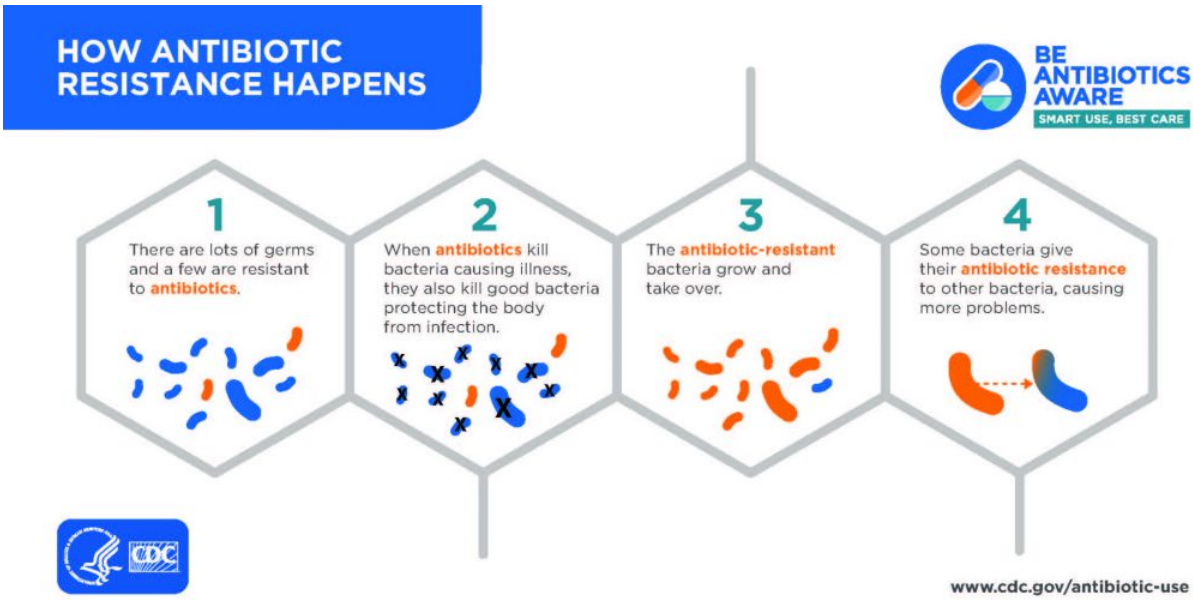

Figure 9.15 Antibiotic Resistance

The nurse plays an important role in antimicrobial stewardship through patient education. For example, many patients expect to receive an antibiotic when they seek treatment for an illness or symptom. However, because antibiotics are only effective in treating bacteria, the patient should be educated regarding effective treatment for the type of pathogen causing their symptoms. If an antibiotic is prescribed, patients should be advised to complete the entire course of therapy or contact their provider if they are unable to do so. For example, patients often feel better after a few days of treatment and decide not to take the remaining medication, or they may experience side effects from the antibiotic (such as nausea and diarrhea) and stop taking the medication. All of these behaviors can lead to antibiotic resistance and should be addressed when providing patient education regarding prescribed antibiotic therapy.

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8.7: Preventing Infection

In addition to recognizing signs of infection and educating patients about the treatment of their infection, nurses also play an important role in preventing the spread of infection. A cyclic process known as the chain of infection describes the transmission of an infection. By implementing interventions to break one or more links in the chain of infection, the spread of infection can be stopped. See Figure 9.16[1] for an illustration of the links within the chain of infection. These links are described as the following:

- **Infectious Agent:** A causative organism, such as bacteria, virus, fungi, parasite.
- **Reservoir:** A place where the organism grows, such as in blood, food, or a wound.
- **Portal of Exit:** The method by which the organism leaves the reservoir, such as through respiratory secretions, blood, urine, breast milk, or feces.
- **Mode of Transmission:** The vehicle by which the organism is transferred such as physical contact, inhalation, or injection. The most common vehicles are respiratory secretions spread by a cough, sneeze, or on the hands. A single sneeze can send thousands of virus particles into the air.
- **Portal of Entry:** The method by which the organism enters a new host, such as through mucous membranes or nonintact skin.
- **Susceptible Host:** The susceptible individual the organism has invaded.[2]

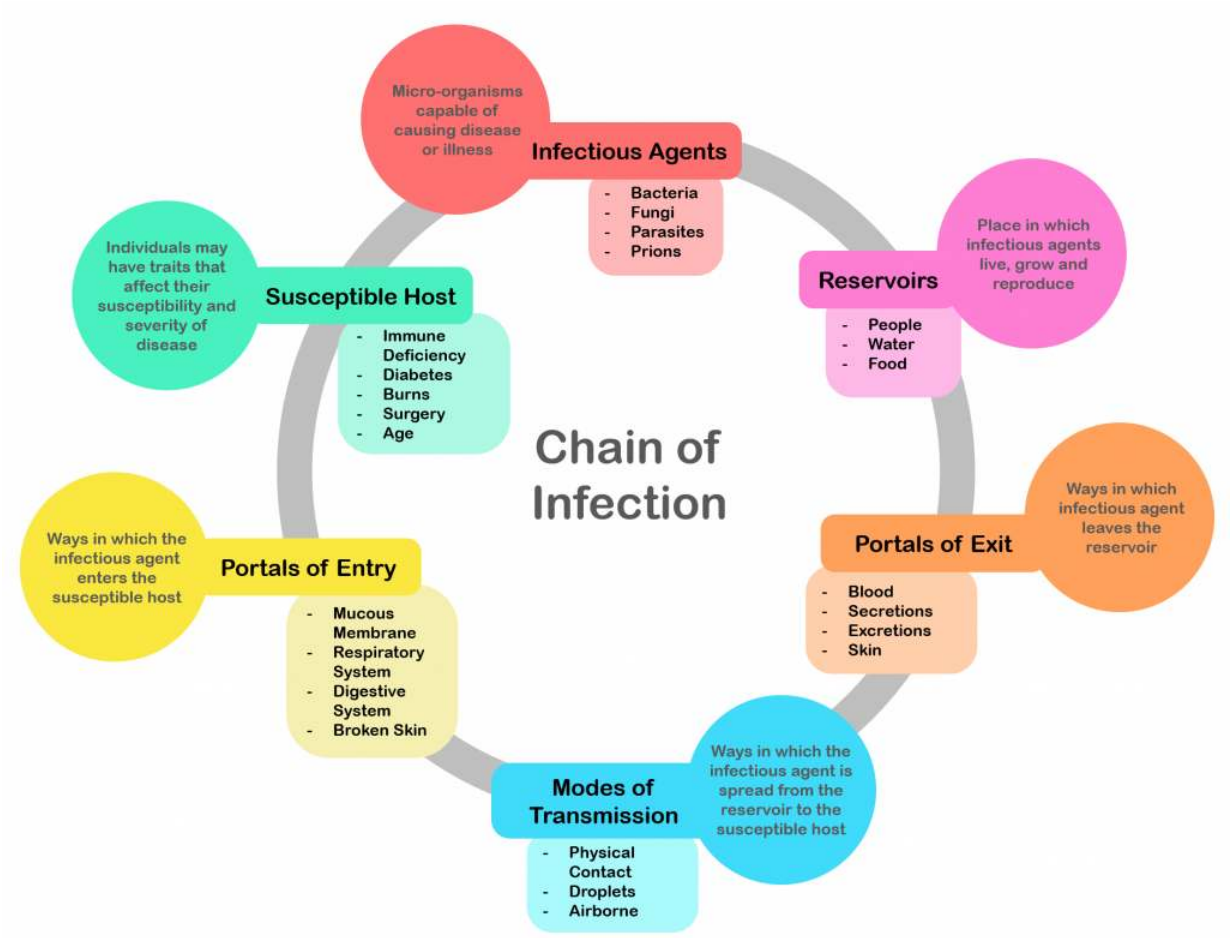

Figure 9.16 Chain of Infection

For a pathogen to continue to exist, it must put itself in a position to be transmitted to a new host, leaving the infected host through a portal of exit. Similar to portals of entry, the most common portals of exit include the skin and the respiratory, urogenital, and gastrointestinal tracts. Coughing and sneezing can expel thousands of pathogens from the respiratory tract into the environment. Other pathogens are expelled through feces, urine, semen, and vaginal secretions. Pathogens that rely on insects for transmission exit the body in the blood extracted by a biting insect.[3]

The pathogen enters a new individual via a portal of entry, such as mucous membranes or nonintact skin. If the individual has a weakened immune system or their natural defenses cannot fend off the pathogen, they become infected.

Interventions to Break the Chain of Infection

Infections can be stopped from spreading by interrupting this chain at any link. Chain links can be broken by disinfecting the environment, sterilizing medical instruments and equipment, covering coughs and sneezes, using good hand hygiene, implementing standard and transmission-based precautions, appropriately using personal protective equipment, encouraging patients to stay up-to-date on vaccines (including the flu shot), following safe injection practices, and promoting the optimal functioning of the natural immune system with good nutrition, rest, exercise, and stress management.

Disinfection and Sterilization

Disinfection and **sterilization** are used to kill microorganisms and remove harmful pathogens from the environment and equipment to decrease the chance of spreading infection. Disinfection is the removal of microorganisms. However, disinfection does not destroy all spores and viruses. Sterilization is a process used on equipment and the environment to destroy all pathogens, including spores and viruses. Sterilization methods include steam, boiling water, dry heat, radiation, and chemicals. Because of the harshness of these sterilization methods, skin can only be disinfected and not sterilized.[4]

Standard and Transmission-Based Precautions

To protect patients and health care workers from the spread of pathogens, the CDC has developed precautions to use during patient care that address portals of exit, methods of transmission, and portals of entry. These precautions include standard precautions and transmission-based precautions.

Standard Precautions

Standard precautions are used when caring for all patients to prevent healthcare-associated infections. According to the Centers for Disease Control and Prevention (CDC), **standard precautions** are the minimum infection prevention practices that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where health care is delivered. These precautions are based on the principle that all blood, body fluids (except sweat), nonintact skin, and mucous membranes may contain transmissible infectious agents. These standards reduce the risk of exposure for the health care worker and protect the patient from potential transmission of infectious organisms.[5] See Figure 9.17[6] for an image of some of the components of standard precautions.

Current standard precautions according to the CDC include the following:

- Appropriate hand hygiene
- Use of personal protective equipment (e.g., gloves, gowns, masks, eyewear) whenever infectious material exposure may occur
- Appropriate patient placement and care using transmission-based precautions when indicated
- Respiratory hygiene/cough etiquette
- Proper handling and cleaning of environment, equipment, and devices
- Safe handling of laundry
- Sharps safety (i.e., engineering and work practice controls)
- Aseptic technique for invasive nursing procedures such as parenteral medication administration[7]

Figure 9.17 Components of Standard Precautions

Hand Hygiene

Hand hygiene, although simple, is still the best and most effective way to prevent the spread of infection. The 2021 National Patient Safety Goals from The Joint Commission encourages infection prevention strategy practices such as implementing the hand hygiene guidelines from the Centers for Disease Control.[8] Accepted methods for hand hygiene include using either soap and water or alcohol-based hand sanitizer. It is essential for all health care workers to use proper hand hygiene at the appropriate times, such as the following:

- Immediately before touching a patient
- Before performing an aseptic task or handling invasive devices
- Before moving from a soiled body site to a clean body site on a patient
- After touching a patient or their immediate environment
- After contact with blood, body fluids, or contaminated surfaces (with or without glove use)
- Immediately after glove removal[9]

Hand hygiene also includes health care workers keeping their nails short with tips less than 0.5 inches and no nail polish. Nails should be natural, and artificial nails or tips should not be worn. Artificial nails and chipped nail polish have been associated with a higher level of pathogens carried on the hands of the nurse despite hand hygiene.[10]

Note

Read more about using appropriate hand hygiene in the "Aseptic Technique" chapter in Open RN *Nursing Skills*.

Respiratory Hygiene/Cough Etiquette

Respiratory hygiene is targeted at patients, accompanying family members and friends, and staff members with undiagnosed transmissible respiratory infections. It applies to any person with signs of illness, including cough, congestion, or increased production of respiratory secretions when entering a health care facility. The elements of respiratory hygiene include the following:

- Education of health care facility staff, patients, and visitors
- Posted signs, in language(s) appropriate to the population served, with instructions to patients and accompanying family members or friends

- Source control measures for a coughing person (e.g., covering the mouth/nose with a tissue when coughing and prompt disposal of used tissues, or applying surgical masks on the coughing person to contain secretions)
- Hand hygiene after contact with one's respiratory secretions
- Spatial separation, ideally greater than 3 feet, of persons with respiratory infections in common waiting areas when possible[11]

Health care personnel are advised to wear a mask and use frequent hand hygiene when examining and caring for patients with signs and symptoms of a respiratory infection. Health care personnel who have a respiratory infection are advised to stay home or avoid direct patient contact, especially with high-risk patients. If this is not possible, then a mask should be worn while providing patient care.[12]

Personal Protective Equipment

Personal Protective Equipment (PPE) includes gloves, gowns, face shields, goggles, and masks used to prevent the spread of infection to and from patients and health care providers. See Figure 9.18[13] for an image of a nurse wearing PPE. Depending upon the anticipated exposure and type of pathogen, PPE may include the use of gloves, a fluid-resistant gown, goggles or a face shield, and a mask or respirator. When used while caring for a patient with transmission-based precautions, PPE supplies are typically stored in an isolation cart next to the patient's room.

Figure 9.18 Personal Protective Equipment

Note

Read more about how to properly use personal protective equipment in the "Aseptic Technique" chapter in Open RN *Nursing Skills*.

Transmission-Based Precautions

In addition to standard precautions, transmission-based precautions are used for patients with documented or suspected infection of highly-transmissible pathogens, such as *C. difficile* (C-diff), *Methicillin-resistant Staphylococcus aureus* (MRSA), *Vancomycin-*

resistant enterococci (VRE), Respiratory Syncytial Virus (RSV), measles, and tuberculosis (TB). For patients with these types of pathogens, standard precautions are used along with specific transmission-based precautions.[14]

There are three categories of transmission-based precautions: contact precautions, droplet precautions, and airborne precautions. Transmission-based precautions are used when the route(s) of transmission of a specific disease are not completely interrupted using standard precautions alone.

Some diseases, such as tuberculosis, have multiple routes of transmission so more than one transmission-based precaution category must be implemented. See Table 9.6 outlining the categories of transmission precautions with associated PPE and other precautions. When possible, patients with transmission-based precautions should be placed in a single occupancy room with dedicated patient care equipment (e.g., blood pressure cuffs, stethoscope, and thermometer stay in the patient's room). A card is posted outside the door alerting staff and visitors to required precautions before entering the room. See Figure 9.19[15] for an example of signage used for a patient with contact precautions. Transport of the patient and unnecessary movement outside the patient room should be limited. When transmission-based precautions are implemented, it is also important for the nurse to make efforts to counteract possible adverse effects of these precautions on patients, such as anxiety, depression, perceptions of stigma, and reduced contact with clinical staff.[16]

Table 9.6 Transmission-Based Precautions[17]

Precaution	Implementation	PPE and Other Precautions
Contact	Known or suspected infections with increased risk for contact transmission (e.g., draining wounds, fecal incontinence) or with epidemiologically important organisms, such as C-diff, MRSA, VRE, or RSV	Gloves Gown Dedicated equipment Limit patient transport out of room Prioritized disinfection of the room Note: Use only soap and water for hand hygiene in patients with *C. difficile* infection.
Droplet	Known or suspected infection with pathogens transmitted by large respiratory droplets generated by coughing, sneezing, or talking, such as influenza or pertussis	Mask Goggles or face shield
Airborne	Known or suspected infection with pathogens transmitted by small respiratory droplets, such as measles and coronavirus	Fit-tested N-95 respirator Airborne infection isolation room Single-patient room Patient door closed Restricted susceptible personnel room entry

Figure 9.19 Contact Precautions Sign

Note

View a list of Transmission Based Precautions for specific medical conditions on the CDC's Infection Control web page.

Patient Transport

Several principles are used to guide transport of patients requiring transmission-based precautions. In the inpatient and residential settings, these principles include the following:

- Limit transport for essential purposes only, such as diagnostic and therapeutic procedures that cannot be performed in the patient's room
- When transporting, use appropriate barriers on the patient consistent with the route and risk of transmission (e.g., mask, gown, covering the affected areas when infectious skin lesions or drainage is present)
- Notify health care personnel in the receiving area of the impending arrival of the patient and of the precautions necessary to prevent transmission[18]

Enteric Precautions

Enteric precautions are used when there is the presence, or suspected presence, of gastrointestinal pathogens such as *Clostridium difficile* (C-diff) or norovirus. These pathogens are present in feces, so health care workers should always wear a gown in the patient room to prevent inadvertent fecal contamination of their clothing from contact with contaminated surfaces.

In addition to contact precautions, enteric precautions include the following:

- Using only soap and water for hand hygiene. Do not use hand sanitizer because it is not effective against C-diff.
- Using a special disinfecting process. Special disinfecting should be used after patient discharge and includes disinfection of the mattress.

Reverse Isolation

Reverse isolation, also called neutropenic precautions, is used for patients who have compromised immune systems and low neutrophil levels. This type of isolation protects the patient from pathogens in their environment. In addition to using contact precautions to protect the patient, reverse isolation precautions include the following:

- Meticulous hand hygiene by all visitors, staff, and the patient
- Frequently monitoring for signs and symptoms of infection and sepsis
- Not allowing live plants, fresh flowers, fresh raw fruits or vegetables, sushi, deli foods, or cheese into the room due to bacteria and fungi
- Placement in a private room or a positive pressure room
- Limited transport and movement of the patient outside of the room
- Masking of the patient for transport with a surgical mask[19]

> **Note**
>
> Read additional information about Neutropenia and Risk for Infection.

Psychological Effects of Isolation

Although the use of transmission-based precautions is needed to prevent the spread of infection, it is important for nurses to be aware of the potential psychological impact on the patient. Research has shown that isolation can cause negative impact on patient mental well-being and behavior, including higher scores for depression, anxiety, and anger among isolated patients. It has also been found that health care workers spend less time with patients in isolation, resulting in a negative impact on patient safety.[20]

Patient and family education at the time of instituting transmission-based precautions is a critical component of the process to reduce anxiety and distress. Patients often feel stigmatized when placed in isolation, so it is important for them to understand the rationale of the precautions to keep themselves and others free from the spread of disease. Preparing patients emotionally will also help decrease their anxiety and help them cope with isolation.[21] It is also important to provide distractions from boredom, such as music, television, video games, magazines, or books, as appropriate.

Aseptic and Sterile Techniques

In addition to using standard precautions and transmission-based precautions, **aseptic technique** (also called medical asepsis) is used to prevent the transfer of microorganisms from one person or object to another during a medical procedure. For example, a nurse administering parenteral medication or performing urinary catheterization uses aseptic technique. When performed properly, aseptic technique prevents contamination and transfer of pathogens to the patient from caregiver hands, surfaces, and equipment during routine care or procedures. It is important to remember that potentially infectious microorganisms can be present in the environment, on instruments, in liquids, on skin surfaces, or within a wound.[22]

There is often misunderstanding between the terms aseptic technique and sterile technique in the health care setting. Both asepsis and sterility are closely related with the shared concept being the removal of harmful microorganisms that can cause infection. In the most simplistic terms, aseptic technique involves creating a protective barrier to prevent the spread of pathogens, whereas sterile technique is a purposeful attack on microorganisms. **Sterile technique** (also called surgical asepsis) seeks to eliminate every potential microorganism in and around a sterile field while also maintaining objects as free from microorganisms as possible. Sterile fields are implemented during surgery, as well as during nursing procedures such as the insertion of a urinary catheter, changing dressings on open wounds, and performing central line care. See Figure 9.20[23] for an image of a sterile field during surgery. Sterile technique requires a combination of meticulous hand washing, creating and maintaining a sterile field, using long-lasting antimicrobial cleansing agents such as Betadine, donning sterile gloves, and using sterile devices and instruments.[24]

Figure 9.20 Surgical Asepsis

> **Note**
>
> Read additional information about aseptic and sterile technique in the "Aseptic Technique" in Open RN *Nursing Skills*.
>
> Read a continuing education article about Sterile Technique and surgical scrubbing.

Other Hygienic Patient Care Interventions

In addition to implementing standard and transmission-based precautions and utilizing aseptic and sterile technique when performing procedures, nurses implement many interventions to place a patient in the best health possible to prevent an infection or treat infection. These interventions include actions like encouraging rest and good nutrition, teaching stress management, providing good oral care, encouraging daily bathing, and changing linens. It is also important to consider how gripper socks, mobile devices, and improper glove usage can contribute to the transmission of pathogens.

Oral Care

Patient hygiene is important in the prevention and spread of infection. Although oral care may be given a low priority, research has found that poor oral care is associated with the spread of infection, poor health outcomes, and poor nutrition. Oral care should be performed in the morning, after meals, and before bed.[25]

Daily Bathing

Daily bathing is another intervention that may be viewed as time-consuming and receive low priority, but it can have a powerful impact on decreasing the spread of infection. Studies have shown a significant decrease in healthcare-associated infections with daily bathing using chlorhexidine gluconate (CHG) wipes or solution. The use of traditional soap and water baths do not reduce infection rates as significantly as CHG products, and wash basins have also been shown to be a reservoir for pathogens.[26]

Linens

Changing bed linens, towels, and a gown regularly eliminates potential reservoirs of bacteria. Fresh linens also promote patient comfort.

Gripper Socks

Have you ever thought about what happens to the bed linens when a patient returns from a walk in the hallway with gripper socks and gets back into bed with these socks? Research demonstrates that pathogens from the floor are transferred to the patient bed linens from the gripper socks. Nurses should remove gripper socks that were used for walking before patients climb into bed. They should also throw the socks away when the patient is discharged instead of sending them home.[27]

Cellular Phones and Mobile Devices

Research has shown that cell phones and mobile devices carry many pathogens and are dirtier than a toilet seat or the bottom of a shoe. Patients, staff, and visitors routinely bring these mobile devices into health care facilities, which can cause the spread of disease. Nurses should frequently wipe mobile devices with disinfectant. They should encourage patients and visitors to disinfect phones frequently and avoid touching the face after having touched a mobile device.[28]

Gloves

Although gloves are used to prevent the spread of infection, they can also contribute to the spread of infection if used improperly. For example, research has shown that hand hygiene opportunities are being missed because of the overuse of gloves. For example, a nurse may don gloves to suction a patient but neglect to remove them and perform hand hygiene before performing the next procedure on the same patient. This can potentially cause the spread of secondary infection. The World Health Organization (WHO) states that gloves should be worn when there is an expected risk of exposure to blood or body fluids or to protect the hands from chemicals and hazardous drugs, but hand hygiene is the best method of disease prevention and is preferred over wearing gloves when the exposure risk is minimal. Nurses have the perception that wearing gloves provides extra protection and cleanliness. However, the opposite is true. Nonsterile gloves have a high incidence of contamination with a range of bacteria, which means that a gloved hand is dirtier than a washed hand. Research has shown that nearly 40% of the times that gloves are used in patient care, there is cross contamination. The most striking example of cross contamination includes situations when gloves are used for toileting a patient and not being removed before touching other surfaces or the patient.[29],[30],[31]

Glove-related contact dermatitis has also become an important issue in recent years as more and more nurses are experiencing damage to the hands. Contact dermatitis can develop from repeated use of gloves and develops as dry, itchy, irritated areas on the skin of the hands. See Figure 9.21[32] for an image of contact dermatitis from gloves. Because the skin is the first line of defense in preventing pathogens from entering the body, maintaining intact skin is very important to prevent nurses from exposure to pathogens.

Figure 9.21 Contact Dermatitis

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8.8: Applying the Nursing Process

Now that we have discussed the pathophysiology of our immune system and interventions to treat and prevent infection, let's apply this information to using the nursing process when providing patient care.

Assessment

When assessing an individual who is feeling ill but has not yet been diagnosed with an infection, general symptoms associated with the prodromal period of disease may be present due to the activation of the immune system. These symptoms include a feeling of **malaise** (not feeling well), headache, fever, and lack of appetite. As an infection moves into the acute phase of disease, more specific symptoms and signs related to the specific type of infection will occur.

A fever is a common sign of inflammation and infection. A temperature of 38 degrees Celsius (100.4 degrees F) is generally considered a low-grade fever, and a temperature of 38.3 degrees Celsius (101 degrees F) is considered a fever.[1] As discussed earlier in this chapter, fever is part of the nonspecific innate immune response and can be beneficial in destroying pathogens. However, extremely elevated temperatures can cause cell and organ damage, and prolonged fever can cause dehydration.

Infection raises the metabolic rate, causing an increased heart rate. The respiratory rate may also increase as the body rids itself of carbon dioxide created during increased metabolism. However, be aware that an elevated heart rate above 90 and a respiratory rate above 20 are also criteria for systemic inflammatory response syndrome (SIRS) in patients with an existing infection.

As an infection develops, the lymph nodes that drain that area often become enlarged and tender. The swelling indicates that the lymphocytes and macrophages in the lymph node are fighting the infection. If a skin infection is developing, general signs of inflammation, such as redness, warmth, swelling, and tenderness, will occur at the site. As white blood cells migrate to the site, purulent drainage may occur.

Some viruses, bacteria, and toxins cause gastrointestinal inflammation, resulting in loss of appetite, nausea, vomiting, and diarrhea.

See Table 9.7a for a comparison of expected findings on physical assessment versus unexpected findings indicating a new infectious process that requires notification of the health care provider.

Table 9.7a Expected Versus Unexpected Findings on Assessment Related to Infection

Assessment	Expected Findings	Unexpected Findings to Report to Health Care Provider
Vital Signs	Within normal range	New temperature over 100.4 F or 38 C.
Neurological	Within baseline level of consciousness	New confusion and/or worsening level of consciousness.
Wound or Incision	Progressive healing of a wound with no signs of infection	New redness, warmth, tenderness, or purulent drainage from a wound.
Respiratory	No cough or production of sputum	New cough and/or productive cough of purulent sputum. Adventitious breath sounds (crackles, rhonchi, wheezing). New dyspnea.
Genitourinary	Urine clear, light yellow without odor	Malodorous, cloudy, bloody urine, with increased frequency, urgency, or pain with urination.
Gastrointestinal	Good appetite and food intake; feces formed and brown	Loss of appetite. Nausea and vomiting. Diarrhea; discolored or unusually malodorous feces.
		***CRITICAL CONDITIONS** requiring immediate notification of the provider and/or implementation of a sepsis protocol: Two or more of the following criteria in a patient with an existing infection indicate SIRS: • Body temperature over 38 or under 36 degrees Celsius • Heart rate greater than 90 beats/minute • Respiratory rate greater than 20

Life Span Considerations

Infants do not have well-developed immune systems, placing this group at higher risk of infection. Breastfeeding helps protect infants from some infectious diseases by providing passive immunity until their immune system matures. New mothers should be encouraged to breastfeed their newborns.[2]

On the other end of the continuum, the immune system gradually decreases in effectiveness with age, making older adults also more vulnerable to infection. Early detection of infection can be challenging in older adults because they may not have a fever or increased white blood cell count (WBC), but instead develop subtle changes like new mental status changes.[3] The most common infections in older adults are urinary tract infections (UTI), bacterial pneumonia, influenza, and skin infections.

Diagnostic Tests

Several types of diagnostic tests may be ordered by a health care provider when a patient is suspected of having an infection, such as complete blood count with differential, Erythrocyte Sedimentation Rate (ESR), C-Reactive Protein (CRP), serum lactate levels, and blood cultures (if sepsis is suspected). Other cultures may be obtained based on the site of the suspected infection.

CBC With Differential

When an infection is suspected, a complete blood count with differential is usually obtained.

A complete blood count (CBC) includes the red blood cell count (RBC), white blood cell count (WBC), platelets, hemoglobin, and hematocrit values. A differential provides additional information, including the relative percentages of each type of white blood cell. See Figure 9.22[4] for an illustration of a complete blood count with differential.

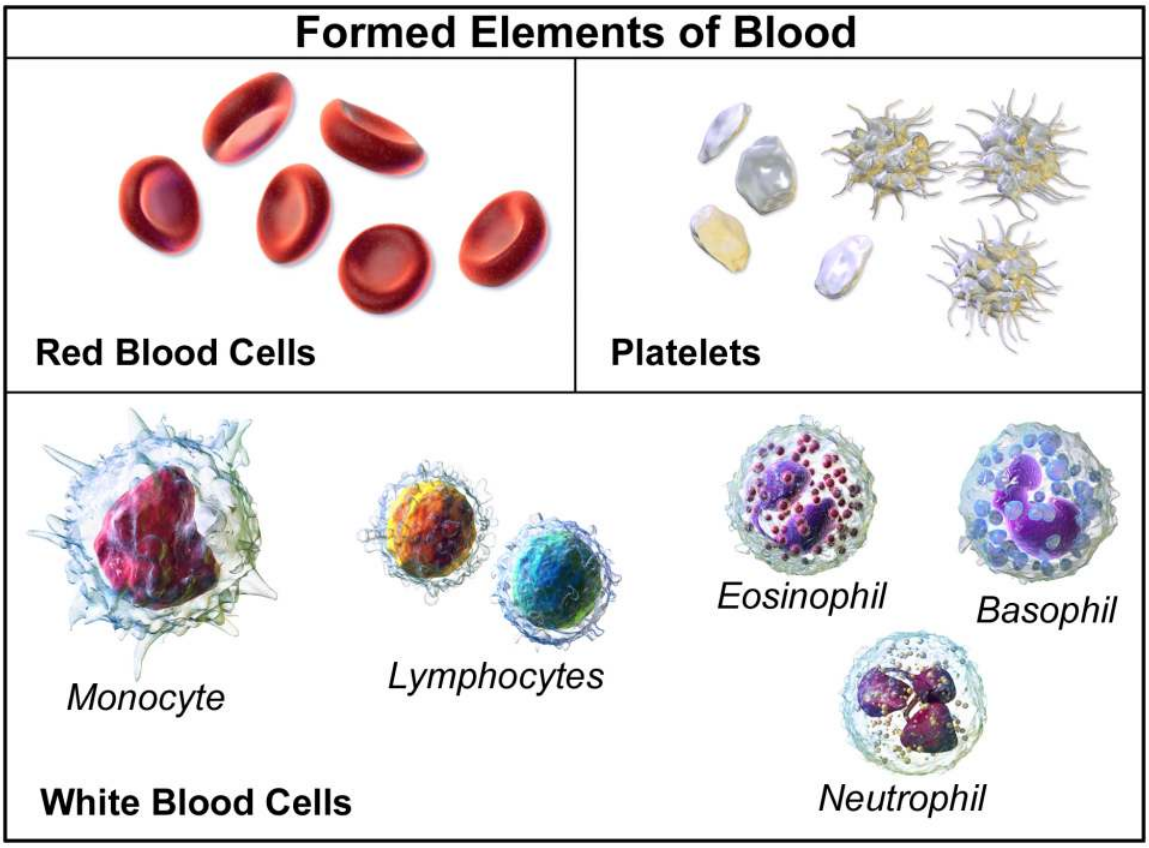

Figure 9.22 Components of a Complete Blood Count with Differential

When there is an infection or an inflammatory process somewhere in the body, the bone marrow produces more WBCs (also called leukocytes), releasing them into the blood where they move to the site of infection or inflammation. An increase in white blood cells is known as leukocytosis and is a sign of the inflammatory response. The normal range of WBC varies slightly from lab to lab but is generally 4,500-11,000 for adults, reported as 4.5-11.0 x 10^9 per liter (L).[5]

There are five types of white blood cells, each with different functions. The differential blood count gives the relative percentage of each type of white blood cell and also reveals abnormal white blood cells. The five types of white blood cells are as follows:

- Neutrophils
- Eosinophils
- Basophils
- Lymphocytes
- Monocytes

Neutrophils make up the largest number of circulating WBCs. They move into an area of damaged or infected tissue where they engulf and destroy bacteria or sometimes fungi.[6] An elevated neutrophil count is called neutrophilia, and decreased neutrophil count is called neutropenia.[7]

Eosinophils respond to infections caused by parasites, play a role in allergic reactions (hypersensitivities), and control the extent of immune responses and inflammation. Elevated levels of eosinophils are referred to as eosinophilia.[8]

Basophils make up the fewest number of circulating WBCs and are thought to be involved in allergic reactions.[9]

Lymphocytes include three types of cells, although the differential count does not distinguish among them:

- B lymphocytes (B cells) produce antibodies that target and destroy bacteria, viruses, and other “non-self” foreign antigens.

- T lymphocytes (T cells) mature in the thymus and consist of a few different types. Some T cells help the body distinguish between “self” and “non-self” antigens; some initiate and control the extent of an immune response, boosting it as needed and then slowing it as the condition resolves; and other types of T cells directly attack and neutralize virus-infected or cancerous cells.
- Natural killer cells (NK cells) directly attack and kill abnormal cells such as cancer cells or those infected with a virus.[10]

Monocytes, similar to neutrophils, move to an area of infection and engulf and destroy bacteria. They are associated with chronic rather than acute infections. They are also involved in tissue repair and other functions involving the immune system.[11]

Care must be taken when interpreting the results of a differential. A health care provider will consider an individual’s signs and symptoms and medical history, as well as the degree to which each type of cell is increased or decreased. A number of factors can cause a transient rise or drop in the number of any type of cell. For example, bacterial infections usually produce an increase in neutrophils, but a severe infection, like sepsis, can use up the available neutrophils, causing a low number to be found in the blood. Eosinophils are often elevated in parasitic and allergic responses. Acute viral infections often cause an increased level of lymphocytes (referred to as lymphocytosis).[12]

Erythrocyte Sedimentation Rate (ESR)

An erythrocyte sedimentation rate (ESR) is a test that indirectly measures inflammation. This test measures how quickly erythrocytes or red blood cells (RBCs) settle at the bottom of a test tube that contains a blood sample. When a sample of blood is placed in a tube, the red blood cells normally settle out relatively slowly, leaving a small amount of clear plasma. The red cells settle at a faster rate when there is an increased level of proteins, such as C-reactive protein (CRP), that increases in the blood in response to inflammation. The ESR test is not diagnostic; it is a nonspecific test indicating the presence or absence of an inflammatory condition.[13]

C-Reactive Protein (CRP)

C-Reactive Protein (CRP) levels in the blood increase when there is a condition causing inflammation somewhere in the body. CRP is a nonspecific indicator of inflammation and one of the most sensitive acute phase reactants, meaning it is released into the blood within a few hours after the start of an infection or other cause of inflammation. The level of CRP can jump as much as a thousand-fold in response to a severe bacterial infection, and its rise in the blood can precede symptoms of fever or pain.[14]

Lactate

Serum lactate levels are measured when sepsis is suspected in a patient with an existing infection. Sepsis can quickly lead to septic shock and death due to multi-organ failure so early recognition is crucial.

Lactate is one of the substances produced by cells as the body turns food into energy (i.e., cellular metabolism), with the highest level of production occurring in the muscles. Normally, the level of lactate in blood is low. Lactate is produced in excess by muscle cells and other tissues when there is insufficient oxygen at the cellular level.

Lactic acid can accumulate in the body and blood when it is produced faster than the liver can break it down, which can lead to lactic acidosis. Excess lactate may be produced due to several medical conditions that cause decreased transport of oxygen to the tissues, such as sepsis, hypovolemic shock, heart attack, heart failure, or respiratory distress.[15]

Blood Culture

Blood cultures are ordered when sepsis is suspected. In many facilities, lab personnel draw the blood samples for blood cultures to avoid contamination of the sample. With some infections, pathogens are only found in the blood intermittently, so a series of three or more blood cultures, as well as blood draws from different veins, may be performed to increase the chance of finding the infection.

Blood cultures are incubated for several days before being reported as negative. Some types of bacteria and fungi grow more slowly than others and/or may take longer to detect if initially present in low numbers.

A positive result indicates bacteria have been found in the blood (bacteremia). Other types of pathogens, such as a fungus or a virus, may also be found in a blood culture. When a blood culture is positive, the specific microbe causing the infection is

identified and susceptibility testing is performed to inform the health care provider which antibiotics or other medications are most likely to be effective for treatment.

It is important for nurses to remember that when new orders for both antibiotics and a blood culture are received, antibiotics should not be administered until after the blood culture is drawn. Administering antibiotics before the blood culture is drawn will impact the results and adversely affect the treatment plan.

Cultures and Other Diagnostic Tests

Several types of swabs and cultures may be ordered based on the site of a suspected infection, such as a nasal swab, nasopharyngeal swab, sputum culture, urine culture, and wound culture. If a lower respiratory tract infection is suspected, a chest X-ray may be ordered.

> **Note**
>
> Read additional information about the following topics in Open RN *Nursing Skills*:
>
> - Specimen Collection
> - Collecting urine cultures in "Facilitation of Elimination"
> - Collecting wound cultures in "Wound Care"

Therapeutic Drug Monitoring

When antibiotics are prescribed to treat an infection, some types of antibiotics require blood tests to ensure the dosage of the medication reaches and stays within therapeutic ranges in the blood. These tests are often referred to as peak and/or trough levels. The nurse must be aware of these orders because they impact the timing of administration of antibiotics.

> **Note**
>
> Read about therapeutic drug monitoring in the "Medication Safety" section of the "Kinetics and Dynamics" chapter in Open RN *Nursing Pharmacology*.

Diagnoses

There are many NANDA-I nursing diagnoses applicable to infection. Nursing diagnoses associated with actual infections are customized based on the signs and symptoms of the specific infection (e.g., a patient with pneumonia may have an actual nursing diagnosis of *Ineffective Airway Clearance*). Review a nursing care planning source for a list of current NANDA-I approved nursing diagnoses based on the type of infection occurring.[16]

Two common risk diagnoses are *Risk for Infection* for patients at risk for developing an infection and *Risk for Shock* for patients with an existing infection who are at risk for developing sepsis and septic shock. See Table 9.7b for the risk diagnoses of *Risk for Infection* and *Risk for Shock*.

Table 9.7b NANDA-I Diagnoses Associated with Infection

NANDA-I Diagnosis	Definition	Other
Risk for Infection	Susceptible to invasion and multiplication of pathogenic organisms, which may compromise health	Risk Factors • Alteration in skin integrity • Inadequate vaccination • Malnutrition • Obesity • Alteration in peristalsis • Smoking • Stasis of body fluid
Risk of Shock	Susceptible to inadequate blood flow to the body's tissues that may lead to life-threatening cellular dysfunction, which may compromise health	Associated Conditions • Infection • Systemic inflammatory response syndrome (SIRS) • Sepsis

Examples

For example, a nurse caring for a patient with an open wound assesses the wound regularly because patients with nonintact skin are always at increased risk for developing infection. A sample PES statement would be the following: "*Risk for Infection as evidenced by alteration in skin integrity and insufficient knowledge to avoid exposure to pathogens.*" The nurse plans to provide patient education regarding care of the wound to prevent bacterial contamination during dressing changes.

Whenever caring for a patient with an existing infection, nurses know it is important to closely monitor for signs of developing SIRS and sepsis. A sample PES statement for a patient with an existing infection is as follows: "*Risk for Shock as evidenced by the associated condition of infection.*"

Note: Recall that in NANDA-I risk diagnoses, there are no etiological factors because a vulnerability reflects the potential for developing a problem. Read more about creating PES statements for risk diagnoses in the "Nursing Process" chapter.

Outcomes

An example of a broad goal for all patients is the following: "*The patient will remain free from infection during their health care stay.*"[17]

An example of a SMART expected outcome to prevent infection is: "*The patient will demonstrate how to perform dressing changes using aseptic technique prior to discharge from the hospital.*"[18]

Read more about creating SMART outcomes in the "Nursing Process" chapter.

Planning Interventions

When planning interventions for a patient who is at risk for developing an infection, the nurse selects interventions such as those listed in the following box for "Infection Protection."

Interventions for Infection Prevention[19],[20]

- Monitor vital signs for signs of infection
- Monitor for early signs of localized and systemic infection for patients at risk
- Screen all visitors for communicable disease

- Encourage respiratory hygiene for patients, visitors, and staff members
- Maintain aseptic technique during nursing procedures
- Use sterile technique for invasive procedures or care of open wounds
- Use standard precautions with all patients to prevent the spread of infection
- Initiate transmission-based precautions for patients suspected of communicable infection, as appropriate
- Promote sufficient nutritional intake
- Encourage fluid intake, as appropriate
- Encourage rest
- Encourage frequent ambulation or turn immobilized patients frequently
- Ensure appropriate hygienic care, including proper hand hygiene, daily bathing, oral care, and perineal care performed by either the nurse or the patient, as appropriate
- Moisturize dry skin to keep it intact
- Use strategies to prevent healthcare-acquired respiratory infection, such as incentive spirometry, coughing and deep breathing, positional changes, and early ambulation as appropriate
- Use strategies to prevent wound infection such as changing saturated dressings to reduce the potential reservoir of bacteria
- Teach the patient and family members the importance of a nutritious diet, exercise, and adequate rest to promote healing and health at home
- Teach the patient and family about signs and symptoms of infection and when to report them to the health care provider
- Encourage the annual influenza vaccine and keeping other recommended vaccinations up-to-date
- If a patient smokes, encourage smoking cessation because smoking damages the mucociliary escalator and places the patient at increased risk for infection
- Report signs and symptoms of suspected infection or sepsis to the health care provider
- Suspect an infection if an older adult patient has new signs of lethargy or confusion

If a patient has an infection with a fever, the nursing diagnosis *Hyperthermia* may be applicable. See the following box for interventions for patients with fever/hyperthermia.

Interventions for Hyperthermia

- Assess for associated symptoms such as diaphoresis, shaking chills (rigors)
- Monitor level of consciousness
- Adjust room temperature to the patient's comfort without inducing chilling
- Administer antipyretics, as appropriate (e.g., acetaminophen, ibuprofen)
- Apply external cooling methods as needed (cold packs or cool sponge bath)
- Encourage fluid intake
- Monitor for signs of dehydration

Implementing Interventions

When caring for a patient with an active infection, transmission-based precautions may be required based on the specific type of pathogen. Antibiotics and/or other antimicrobials are administered as prescribed, and the patient and family are instructed how to take prescribed antibiotics with measures to prevent antibiotic resistance (i.e., complete prescribed length of therapy even if they feel better in a few days).

If cultures have been obtained, it is important to monitor and report new results to the provider to ensure the prescribed antibiotic therapy is appropriate based on susceptibility results.

It is important to continually monitor patients with an existing infection for signs of SIRS/sepsis:

- Carefully monitor vital signs. Immediately notify the provider for two or more of the following indicators that suggest SIRS: heart rate greater than 90 beats per minute, temperature greater than 38 degrees C or less than 36 degrees C, systolic blood pressure less than 90 mm Hg, respiratory rate greater than 20, or a white blood cell count greater than 12,000 or less than 4,000.[21] Anticipate new orders for a lactate level and blood cultures for early diagnosis of sepsis.

- Monitor for signs of new decreased mental status, especially in older adults, that can indicate decreased oxygenation or tissue perfusion associated with sepsis and septic shock.
- For patients presenting with early signs of shock, administer oxygen immediately to maintain oxygen saturation greater than 90%. Administer prescribed antibiotics within an hour after diagnosis for improved survival. Be aware that IV fluids and vasopressor medications may be required to treat shock.[22]

> **Note**
>
> Read about different classes of antimicrobial agents in the "Antimicrobials" chapter in Open RN *Nursing Pharmacology.*

Evaluation

It is always important to evaluate the effectiveness of interventions used to prevent and treat infection. Evaluation helps the nurse determine whether the established outcomes have been met and if the planned interventions are still appropriate for the patient at the time of implementation. If outcomes are not met, interventions may need to be added or revised to help the patient meet their goals.

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8.9: Putting It All Together

Patient Scenario

Mrs. Charles is a 74-year-old woman admitted to the medical surgical floor with pneumonia. She has a history of right sided hemiplegia (paralysis on one side of the body) and dysphagia (difficulty swallowing) as a result of a cerebral vascular accident three years ago. Upon assessment, the patient has a RR of 22, and rhonchi in her upper lobes. Her oxygenation saturation is 89% on room air, and she is utilizing accessory muscles during respiration.

Applying the Nursing Process

Assessment: The nurse notes that the patient demonstrates tachypnea, hypoxemia, and abnormal breath sounds. She has a history of hemiplegia and dysphagia.

Based on the assessment information that has been gathered, the following nursing care plan is created for Mrs. Charles.

Nursing Diagnosis: *Ineffective Airway Clearance related to excessive mucus as evidenced by adventitious breath sounds and alteration in respiratory rate.*

Overall Goal: *The patient will maintain patent airway at all times.*

SMART Expected Outcome: *Mrs. Charles will effectively clear secretions throughout the hospitalization.*

Planning and Implementing Nursing Interventions:

The nurse will assess the patient's respiratory rate, rhythm, and depth of respiration. The nurse will assess and instruct the patient on the methods of appropriate cough and deep breathing. The nurse will auscultate lung fields to identify areas of worsening airflow. The nurse will elevate the patient's head of bed and encourage hydration to thin secretions. The nurse will instruct the patient regarding proper deep breathing exercises and encourage assisted ambulation to mobilize secretions.

Sample Documentation:

Mrs. Charles has ineffective airway clearance as a result of aspiration pneumonia secondary to dysphagia. The patient has rhonchi in bilateral upper lobes, decreased oxygenation, and tachypnea. In order to enhance airway clearance and mobilize secretions, the patient has received instruction to maintain fluid intake, increase ambulation, and cough and deep breathe. The patient will maintain an elevated head of bed to encourage ease of respiration and will be assessed frequently for worsening respiratory status.

Evaluation:

During the patient's hospitalization, she maintains a patent airway and effectively clears secretions resulting in improved respiratory effort and overall function. The SMART outcome was "met."

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8.10: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Ms. Jamison is a 37-year-old patient presenting to the emergency department with an ongoing fever and chills for the last three days. She recently received treatment for a urinary tract infection but confesses that she stopped her antibiotic regimen when her symptoms resolved. Upon assessment, her vital signs are T – 101.6 F, HR 115, RR 20, BP 96/54. The admitting physician has ordered a Basic Metabolic Profile, Complete Blood Cell Count, and Urinalysis. The results are still pending. Based upon what is known about Ms. Jamison at this time, how would you characterize her condition? What characteristics lead you to suspect your diagnosis?

Infection control practices are integral to health care workers and the patients and families that they serve. Proper infection control techniques enhance patient safety and are foundational to quality patient care. Partnering to Heal is a computer-based, video-simulation training program on infection control practices for clinicians, health professional students, and patient advocates. Visit these web simulations to review infection control scenarios and the implications of various care decisions.

Interested in testing your knowledge regarding the chain of infection? Visit WISC-Online “Chain of Infection” for a fun interactive quiz.

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CHAPTER OVERVIEW

9: Integumentary

9.1: Integumentary Introduction
9.2: Integumentary Basic Concepts
9.3: Wounds
9.4: Pressure Injuries
9.5: Braden Scale
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9.1: Integumentary Introduction

Learning Objectives

- Identify the patients at risk for impaired skin integrity
- Identify factors related to alterations in the integumentary system across the life span
- Assess a patient's skin integrity
- Note normal from abnormal findings
- Assess the characteristics of the wound
- Apply correct terminology in the description of wounds
- Adapt care based on integumentary assessment data gathered
- Identify evidence-based practices

The integumentary system includes skin, hair, and nails. The skin is the largest organ of the body and has many purposes. Our skin keeps us warm and contains nerve endings that control the ability to feel the sensations of hot, cold, pain, and pressure. Our skin also keeps harmful things out of the body, such as dirt, bacteria, and viruses, and keeps helpful things in like moisture. Maintaining intact skin is important to prevent infection and maintain health. This chapter will review the anatomy and physiology of the integumentary system, factors that affect healthy skin and healing, and interventions that nurses perform to repair and protect this vital organ.

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9.2: Integumentary Basic Concepts

Skin

Skin is made up of three layers: epidermis, dermis, and hypodermis. See Figure 10.1[1] for an illustration of skin layers. The **epidermis** is the thin, topmost layer of the skin. It contains sweat gland duct openings and the visible part of hair known as the hair shaft. Underneath the epidermis lies the **dermis** where many essential components of skin function are located. The dermis contains hair follicles (the roots of hair shafts), sebaceous oil glands, blood vessels, endocrine sweat glands, and nerve endings. The bottommost layer of skin is the **hypodermis** (also referred to as the subcutaneous layer). It mostly consists of adipose tissue (fat), along with some blood vessels and nerve endings. Beneath the hypodermis layer lies bone, muscle, ligaments, and tendons.

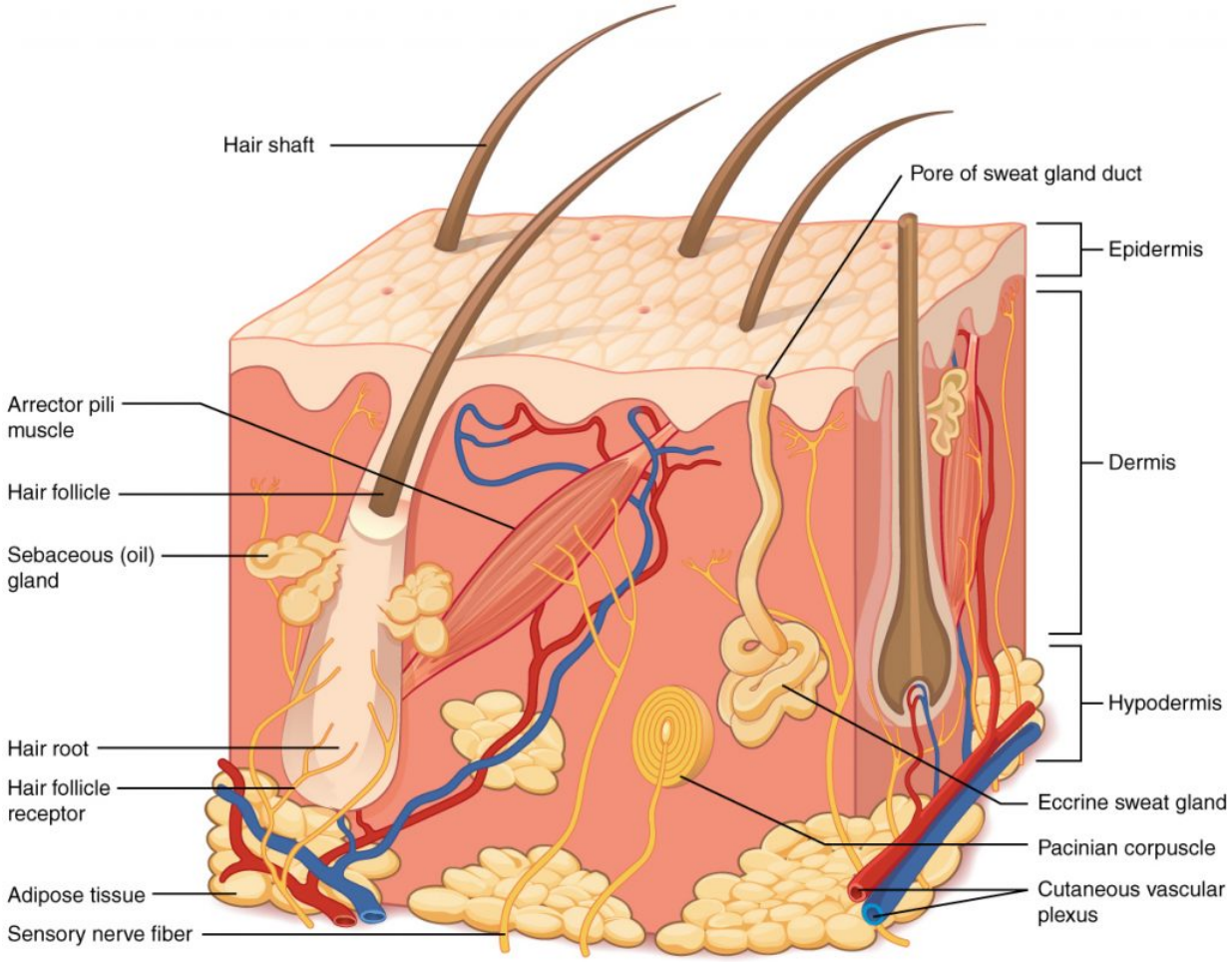

Figure 10.1 Layers of the Skin

There are several common skin disorders that a nurse may find when assessing a patient's skin.

> **Note**
>
> Read more about common skin disorders in the "Common Integumentary Conditions" section of the "Integumentary Assessment" chapter of the Open RN *Nursing Skills* textbook.

Hair

Hair is a filament that grows from a hair follicle in the dermis of the skin. See Figure 10.2[2] for an illustration of a hair follicle. It consists mainly of tightly packed, keratin-filled cells called keratinocytes. The human body is covered with hair follicles except for the mucous membranes, lips, palms of the hands, and soles of the feet. The part of the hair that is located within the follicle is

called the hair root, the only living part of the hair. The part of the hair that is visible above the surface of the skin is the hair shaft. The shaft of the hair has no biochemical activity and is considered dead.

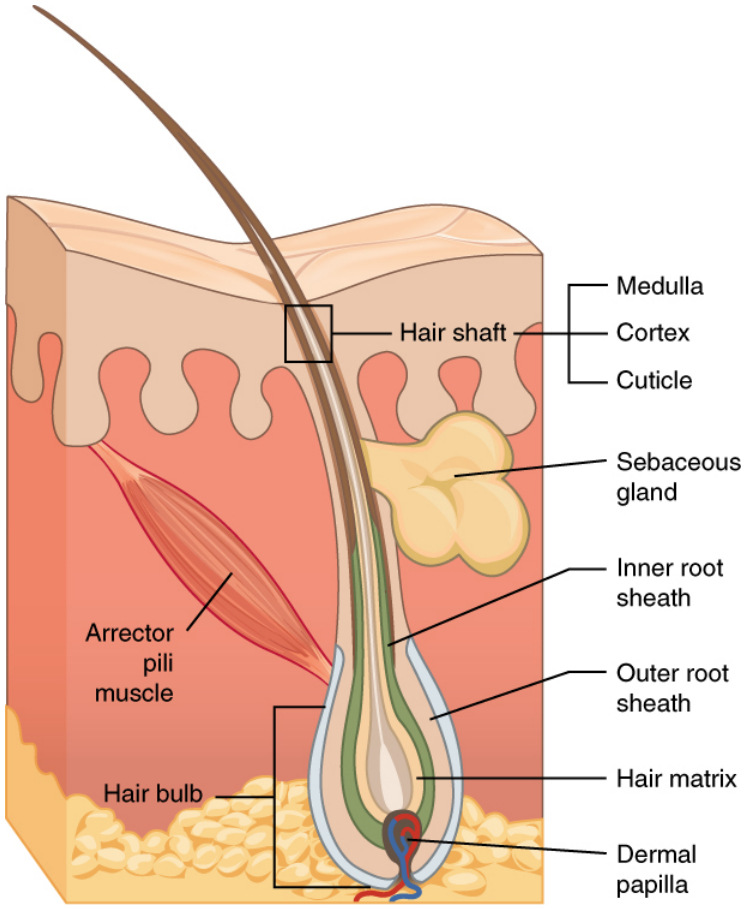

Figure 10.2 Hair Follicle

Functions of Hair

The functions of head hair are to provide insulation to retain heat and to protect the skin from damage by UV light. The function of hair in other locations on the body is debated. One idea is that body hair helps to keep us warm in cold weather. When the body is cold, the arrector pili muscles contract, causing hairs to stand up and trapping a layer of warm air above the epidermis. However, this action is more effective in mammals that have thick hair than it is in relatively hairless human beings.

Human hair has an important sensory function as well. Sensory receptors in the hair follicles can sense when the hair moves, whether it is because of a breeze or the touch of a physical object. Some hairs, such as the eyelashes, are especially sensitive to the presence of potentially harmful matter. The eyebrows protect the eyes from dirt, sweat, and rain. In addition, the eyebrows play a key role in nonverbal communication by expressing emotions such as sadness, anger, surprise, and excitement.[3]

Nails

Nails are accessory organs of the skin. They are made of sheets of dead keratinocytes and are found on the distal ends of the fingers and toes. The keratin in nails makes them hard but flexible. Nails serve a number of purposes, including protecting the fingers, enhancing sensations, and acting like tools. A nail has three main parts: root, plate, and free margin. Other structures around or under the nail include the nail bed, cuticle, and nail fold. See Figure 10.3 for an illustration of the structure of a nail.[4],[5] The top diagram in this figure shows the external, visible part of the nail and the cuticle. The bottom diagram shows internal structures in a cross-section of the nail and nail bed.

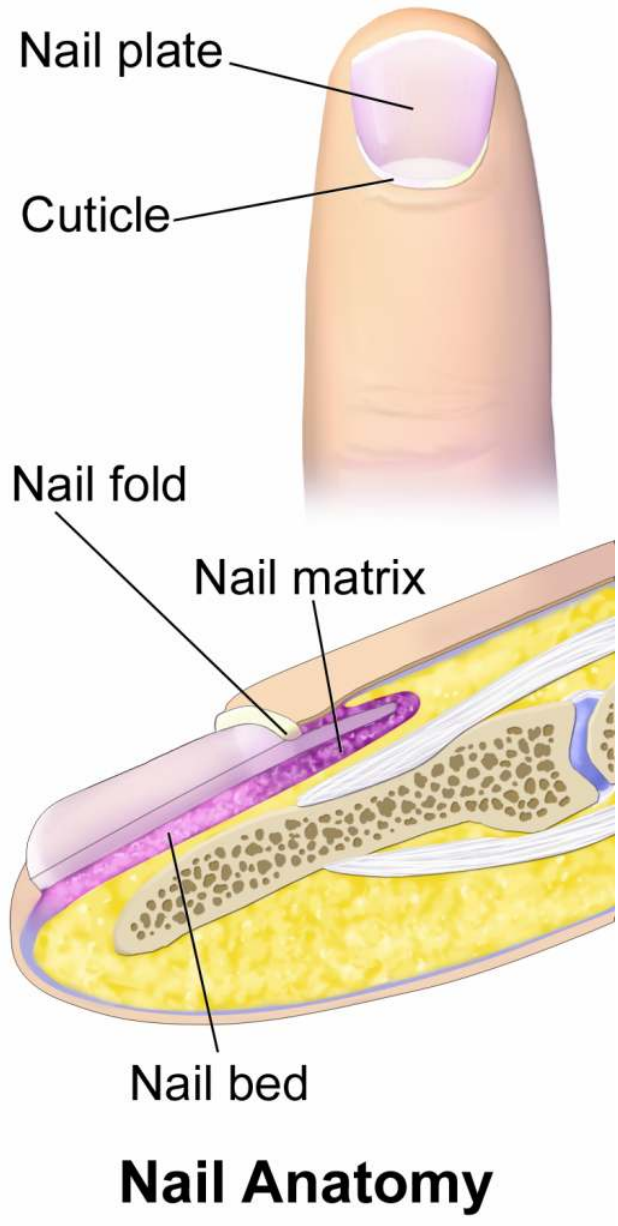

Figure 10.3 Nail Bed

Impaired Skin and Tissue Integrity

Skin integrity is a medical term that refers to skin health. **Impaired skin integrity** is a NANDA-I nursing diagnosis defined as, "Altered epidermis/or dermis."[6] However, when deeper layers of the skin or integumentary structures are damaged, it is referred to as **impaired tissue integrity**. The NANDA-I definition of impaired tissue integrity is, "Damage to the mucous membrane, cornea, integumentary system, muscular fascia, muscle, tendon, bone, cartilage, joint capsule, and/or ligament."[7]

Risk Factors Affecting Skin Health and Wound Healing

There are several risk factors that place a patient at increased risk for altered skin health and delayed wound healing. Risk factors include impaired circulation and oxygenation, impaired immune function, diabetes, inadequate nutrition, obesity, exposure to moisture, smoking, and age. Each of these risk factors is discussed in more detail in the following subsections.

Impaired Circulation and Oxygenation

Skin, like every other organ in the body, depends on good blood perfusion to keep it healthy and functioning correctly. Cardiovascular circulation delivers important oxygen, nutrients, infection-fighting cells, and clotting factors to tissues. These

elements are needed by skin, tissues, and nerves to properly grow, function, and repair damage. Without good cardiovascular circulation, skin becomes damaged. Damage can occur from poor blood perfusion from the arteries, as well as from poor return of blood through the veins to the heart. Common medical conditions that decrease cardiovascular circulation include cardiac disease, diabetes, and peripheral vascular disease (PVD). PVD includes two medical conditions called arterial insufficiency and venous insufficiency.

Arterial Insufficiency

Arterial insufficiency refers to a lack of adequately oxygenated blood movement in arteries to specific tissues. Arterial insufficiency can be a sudden, acute lack of oxygenated blood, such as when a blood clot in an artery blocks blood flow to a specific area. Arterial insufficiency can also be a chronic condition caused by peripheral vascular disease (PVD). As a person's arteries become blocked with plaque due to atherosclerosis, there is decreased blood flow to the tissues. Signs of arterial insufficiency are cool skin temperature, pale skin color, pain that increases with exercise, and possible arterial ulcers.

When oxygenated blood flow to tissues becomes inadequate, the tissue dies. This is called **necrosis**. Tissue death causes the skin and tissue to become **necrotic** (black). Necrotic tissue does not heal, so surgical debridement or amputation of the extremity becomes necessary for healing. See Figure 10.4[8] for images of an arterial insufficiency ulcer and necrotic toes.

Figure 10.4 Arterial Insufficiency Ulcer and Necrotic Toes

Venous Insufficiency

Venous insufficiency occurs when the cardiovascular system cannot adequately return blood and fluid from the extremities to the heart. Venous insufficiency can cause stasis dermatitis when blood pools in the lower legs and leaks out into the skin and other tissues. Signs of venous insufficiency are edema, a brownish-leathery appearance to skin in the lower extremities, and venous ulcers that weep fluid.[9] See Figure 10.5[10] for an image of stasis dermatitis.

Figure 10.5 Stasis Dermatitis Due to Venous Insufficiency

Impaired Immune Function

Skin contributes to the body's immune function and is also affected by the immune system. Intact skin provides an excellent first line of defense against foreign objects entering the body. This is why it is essential to keep skin intact. If skin does break down, the next line of defense is a strong immune system that attacks harmful invading organisms. However, if the immune system is not working well, the body is much more susceptible to infections. This is why maintaining intact skin, especially in the presence of an impaired immune system, is imperative to decrease the risk of infections.

Stress can cause an impaired immune response that results in delayed wound healing.[11] Being hospitalized or undergoing surgery triggers the stress response in many patients. Medications, such as corticosteroids, also affect a patient's immune function and can impair wound healing.[12] When assessing a chronic wound that is not healing as expected, it is important to consider the potential effects of stress and medications.

Diabetes

Diabetes can cause wounds to develop, as well as cause delayed wound healing. Nurses provide vital patient education to patients with diabetes to help them effectively manage the disease and prevent complications.

> **Note**
>
> Read more about diabetes in the "Antidiabetics" section of the "Endocrine" chapter in Open RN *Nursing Pharmacology*.

Inadequate Nutrition

A healthy diet is essential for maintaining healthy skin, as well as maintaining an appropriate weight. Nutrients that are particularly important for skin health include protein; vitamins A, C, D, and E; and minerals such as selenium, copper, and zinc.[13]

Nutritional deficiencies can have a profound impact on wound healing and must be addressed for chronic wounds to heal. Protein is one of the most important nutritional factors affecting wound healing. For example, in patients with pressure injuries, 30 to 35 kcal/kg of calorie intake with 1.25 to 1.5g/kg of protein and micronutrients supplementation are recommended daily.[14] In addition, vitamin C and zinc have many roles in wound healing. It is important to collaborate with a dietician to identify and manage nutritional deficiencies when a patient is experiencing poor wound healing.[15]

> **Note**
>
> To read more about nutritional deficiencies and related nursing interventions, go to the "Nutrition" chapter.

Obesity

In the same way a balanced diet is vital for healthy skin, a healthy weight is also imperative. Obese individuals are at increased risk for fungal and yeast infections in skin folds caused by increased moisture and friction. See Figure 10.6[16] for an image of a fungal infection in the groin.[17] Symptoms of yeast and fungal infection include redness and scaliness of the skin associated with itching.

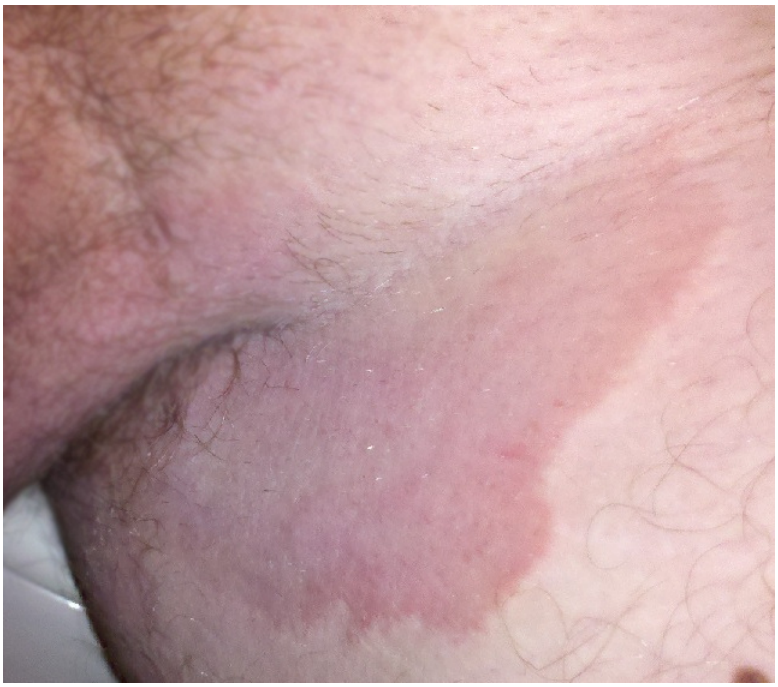

Figure 10.6 Fungal Infection in the Groin

Obese patients also are at higher risk for wound complications due to a decreased supply of oxygenated blood flow to adipose tissue. Potential complications include infection, **dehiscence** (separation of the edges of a surgical wound), hematoma formation, pressure injuries, and venous ulcers.[18] Evisceration is a rare but severe complication when an abdominal surgical incision separates and the abdominal organs protrude or come out of the incision. Nurses can educate patients about making healthy lifestyle choices to reduce obesity and the risk of dehiscence. See Figure 10.7[19] for an image of a dehiscence in an abdominal surgical wound of an obese patient.

Figure 10.7 Dehiscence

Exposure to Moisture

Healthy skin needs good moisture balance. If too much moisture (i.e., sweat, urine, or water) is left on the skin for extended periods of time, the skin will become soggy, wrinkly, and turn whiter than usual and is called **maceration**. A simple example of maceration is when you spend too much time in a bathtub and your fingers and toes turn white and get "pruny." See Figure 10.8[20] for an image of maceration. If healthy skin is exposed to moisture for an extended period of time, such as when a moist wound dressing is incorrectly applied on healthy skin, the skin will break down. This type of skin breakdown is called excoriation. **Excoriation** refers to redness and removal of the topmost surface of the skin. See Figure 10.9[21] for an image of excoriation.

Figure 10.8 Maceration

Figure 10.9 Excoriation

The opposite occurs when skin lacks proper moisture. Skin becomes flaky, itchy, and cracked when it becomes too dry. Conditions such as decreased moisture in the air during cold winter months or bathing in hot water can worsen skin dryness. Dry skin, especially when accompanied with cracking, breaks the protective barrier and increases the risk of infection. It is important for nurses to apply emollient cream to patients' areas of dry skin to maintain the protective skin barrier.

Smoking

Smoking impacts the inflammatory phase of the wound healing process, which can result in poor wound healing and an increased risk of infection.[22] Patients who smoke should be encouraged to stop smoking.

Age

Older adults have thin, less elastic skin that is at increased risk for injury. They also have an altered inflammatory response that can impair wound healing. Nurses can educate older patients about the importance of exercise for skin health and improved wound healing as appropriate.[23]

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9.3: Wounds

Phases of Wound Healing

When skin is injured, there are four phases of wound healing that take place: hemostasis, inflammatory, proliferative, and maturation. See Figure 10.10[1] for an illustration of wound healing demonstrating hemostasis/inflammation, proliferation, and maturation.

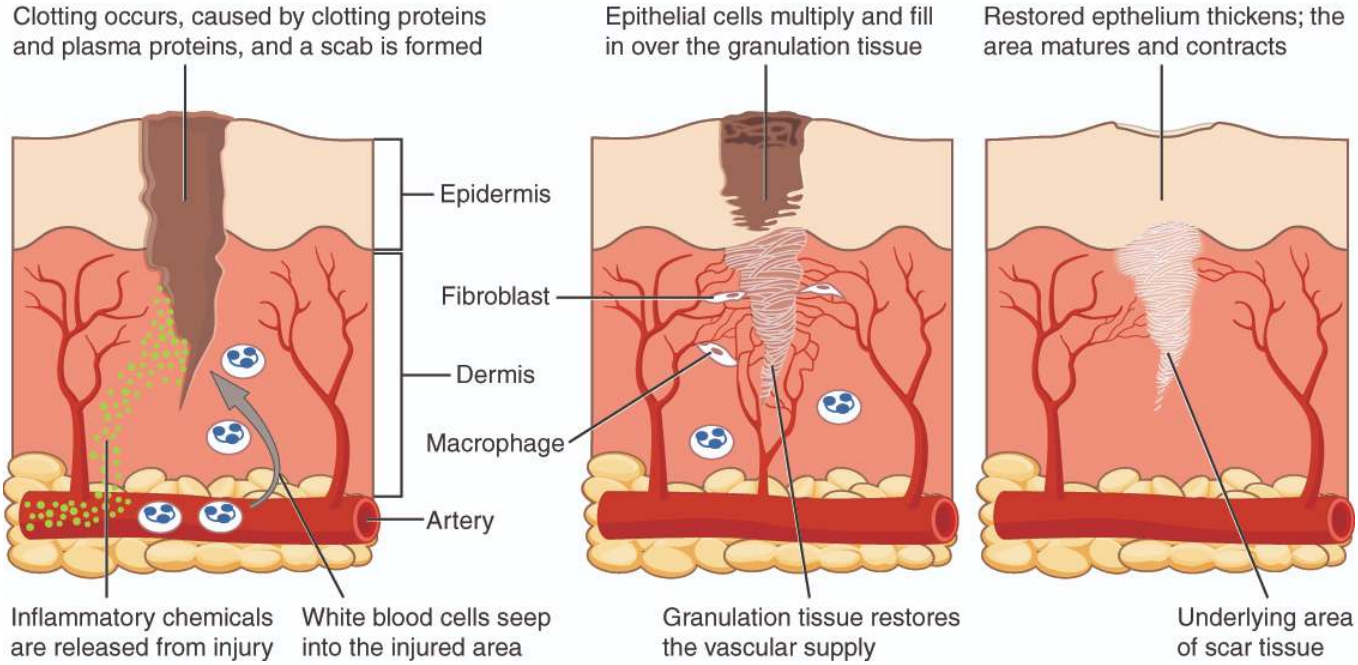

Figure 10.10 Phases of Wound Healing

To illustrate the phases of wound healing, imagine that you accidentally cut your finger with a knife as you were slicing an apple for a snack. Immediately after the injury occurs, blood vessels constrict and clotting factors are activated. This is referred to as the **hemostasis phase**. Clotting factors are released to form clots and to stop the bleeding. Platelets release growth factors that alert various cells to start the repair process at the wound location. The hemostasis phase lasts up to 60 minutes, depending on the severity of the injury.[2],[3]

After the hemostasis phase, the **inflammatory phase** begins. Vasodilation occurs so that white blood cells in the bloodstream can move to the location of the wound and start cleaning the wound bed. The inflammatory process appears as **edema** (swelling), **erythema** (redness), and exudate. **Exudate** is fluid that oozes out of a wound and is commonly called pus or drainage.[4],[5]

The **proliferative phase** of wound healing begins within a few days after the injury and includes four important processes: epithelialization, angiogenesis, collagen formation, and contraction. **Epithelialization** refers to the development of new epidermis and granulation tissue. **Granulation tissue** is new connective tissue with new, fragile, thin-walled capillaries. Collagen is also formed to provide strength and integrity to the wound. At the end of the proliferation phase, the wound begins to contract in size.[6],[7]

Capillaries begin to develop within the wound 24 hours after injury during a process called **angiogenesis**. These capillaries bring more oxygen and nutrients to the wound for healing. When performing dressing changes, it is essential for the nurse to protect this granulation tissue and the associated new capillaries. Healthy granulation tissue appears pink due to the new capillary formation. It is moist, painless to the touch, and may appear “bumpy.” Conversely, unhealthy granulation tissue is dark red and painful. It bleeds easily with minimal contact and may be covered by shiny white or yellow fibrous tissue, referred to as biofilm, that must be removed because it impedes healing. Unhealthy granulation tissue is often caused by an infection, so wound cultures should be obtained when infection is suspected.[8]

During the **maturation phase**, collagen continues to be created to strengthen the wound. Collagen contributes strength to the wound to prevent it from reopening. A wound typically heals within 4-5 weeks and often leaves behind a scar. The scar tissue is initially firm, red, and slightly raised from the excess collagen deposition. Over time, the scar begins to soften, flatten, and become pale in about nine months.[9] [10]

Types of Wound Healing

There are three types of wound healing: primary intention, secondary intention, and tertiary intention. Healing by **primary intention** means that the wound is sutured, stapled, glued, or otherwise closed so the wound heals beneath the closure. This type of healing occurs with clean-edged lacerations or surgical incisions, and the closed edges are referred to as approximated. See Figure 10.11[11] for an image of a surgical wound healing by primary intention with **approximated edges**.

Figure 10.11 Primary Intention Wound Healing

Secondary intention occurs when the edges of a wound cannot be approximated (brought together), so the wound heals by filling in from the bottom up with the production of granulation tissue. Examples of common wounds that heal by secondary intention are pressure injuries and skin tears. Wounds that heal by secondary infection are at higher risk for infection and must be protected from contamination. See Figure 10.12[12] for an image of a wound healing by secondary intention.

Tertiary intention refers to the healing of a wound that has had to remain open or has been reopened, often due to severe infection. The wound is typically closed at a later date when infection has resolved. Wounds that heal by secondary and tertiary intention have delayed healing times and increased scar tissue.

Figure 10.12 Secondary Intention Wound Healing

Types of Wounds

There are many common types of wounds that nurses care for, such as skin tears, venous ulcers, arterial ulcers, diabetic ulcers, and pressure injuries.

> **Note**
>
> Read more about different types of wounds and in the "Wound Care" chapter in Open RN *Nursing Skills*.

Wound Care

Wound care includes assessing and cleansing wounds, performing dressing changes, and implementing interventions to promote wound healing. Assessing wounds and implementing interventions to promote wound healing are further discussed in the "Applying the Nursing Process" section later in this chapter.

> **Note**
>
> See the "Wound Care" chapter in Open RN *Nursing Skills* for additional information about cleansing wounds and performing dressing changes.

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9.4: Pressure Injuries

The remainder of this chapter will focus on applying the nursing process to a specific type of wound called a pressure injury. **Pressure injuries** are defined as, “Localized damage to the skin or underlying soft tissue, usually over a bony prominence, as a result of intense and prolonged pressure in combination with shear.” (Note that the 2016 NPUAP Pressure Injury Staging System now uses the term “pressure injury” instead of the historic term “pressure ulcer” because a pressure injury can occur without an ulcer present.) Pressure injuries commonly occur on the sacrum, heels, ischia, and coccyx and form when the skin layer of tissue gets caught between an external hard surface, such as a bed or chair, and the internal hard surface of a bone.

Shear occurs when tissue layers move over the top of each other, causing blood vessels to stretch and break as they pass through the subcutaneous tissue. For example, when a patient slides down in bed, the outer layer of skin remains immobile because it remains attached to the sheets due to friction. However, the deeper layer of tissue (attached to bone) moves as the patient slides down. This opposing movement of the outer layer of skin and the underlying tissues causes the capillaries to stretch and tear, which then causes decreased blood flow and oxygenation of the surrounding tissues resulting in a pressure injury.[1]

Friction refers to rubbing the skin against a hard object, such as the bed or the arm of a wheelchair. This rubbing causes heat, which can remove the top layer of skin and often results in skin damage. See Figure 10.13[2] for an illustration of shear and friction forces in the development of pressure injuries.

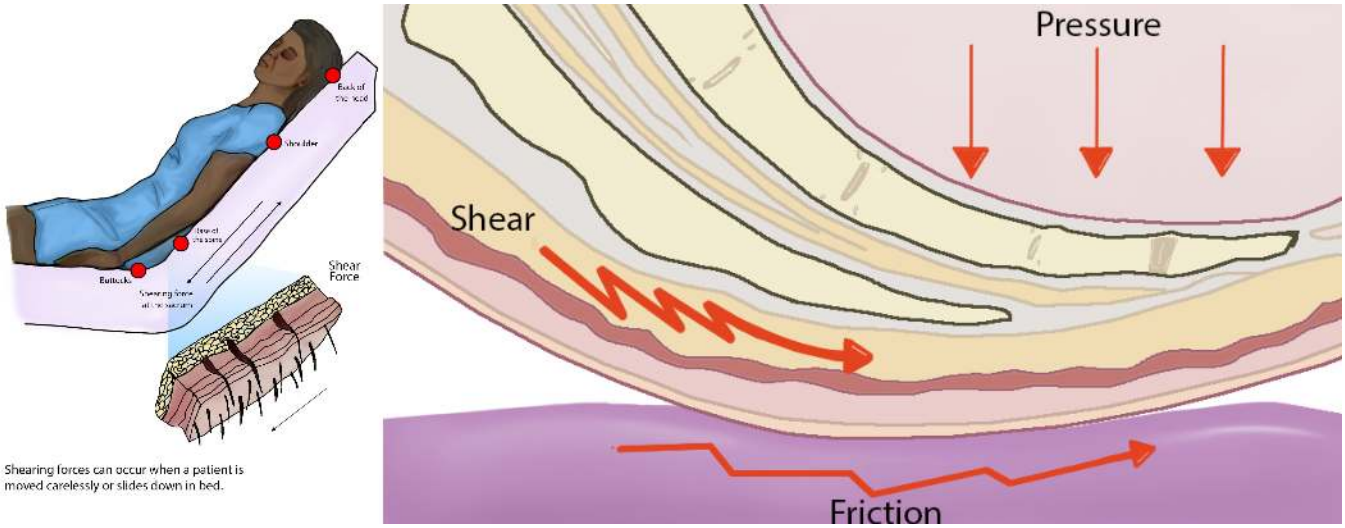

Figure 10.13 Development of Pressure Injuries

Hospital-acquired or worsening pressure injuries during hospitalization are considered “never events” meaning they are a serious, preventable medical errors that should never occur and require reporting to The Joint Commission. Additionally, the Centers for Medicare and Medicaid Services (CMS) and many private insurers will no longer pay for additional costs associated with “never events.”[3],[4] Pressure injuries can be prevented with diligent assessment and nursing interventions.

Staging

When assessed, pressure injuries are staged from 1 through 4 based on the extent of tissue damage. For example, Stage 1 pressure injuries have the least amount of tissue damage as evidenced by reddened, intact skin, whereas Stage 4 pressure injuries have the greatest amount of damage with deep, open ulcers affecting underlying tissue, muscle, ligaments, or tendons. See Figure 10.14[5] for images of four stages of pressure injuries.[6] Each stage is further described in the following subsections.

Figure 10.14 Four Stages of Pressure Injuries

Stage 1 Pressure Injuries

Stage 1 pressure injuries are intact skin with a localized area of **nonblanchable erythema** where prolonged pressure has occurred. Nonblanchable erythema is a medical term used to describe an area of reddened skin that does not turn white when pressed. See Figure 10.15[7] for an illustration of a Stage 1 pressure injury.

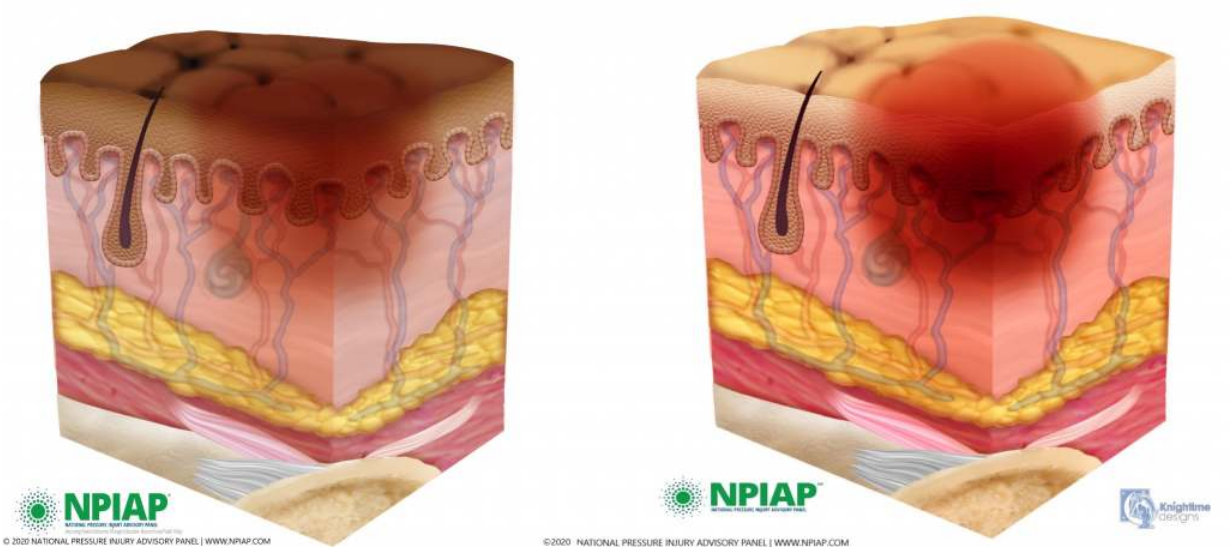

Figure 10.15 Stage 1 Pressure Injury. Used with permission.

Stage 2 Pressure Injuries

Stage 2 pressure injuries are partial-thickness loss of skin with exposed dermis. The wound bed is viable and may appear like an intact or ruptured blister.[8] See Figure 10.16[9] for an illustration of a Stage 2 pressure injury.

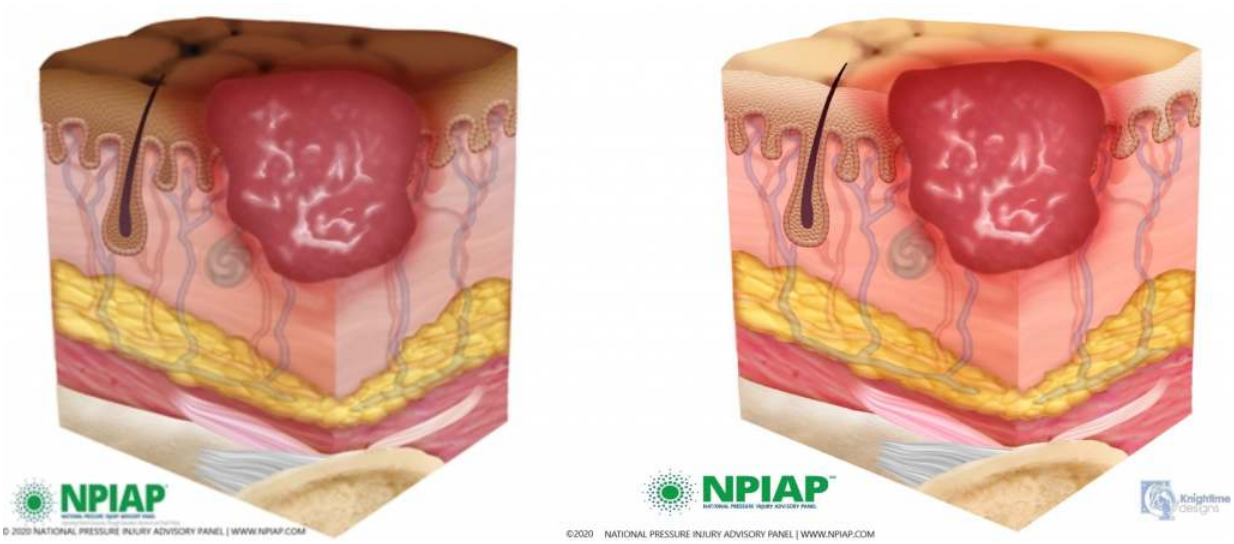

Figure 10.16 Stage 2 Pressure Injury. Used with permission.

Stage 3 Pressure Injuries

Stage 3 pressure injuries are full-thickness tissue loss in which fat is visible, but cartilage, tendon, ligament, muscle, and bone are not exposed. The depth of tissue damage varies by anatomical location. See Figure 10.17[10] for an illustration of a Stage 3 pressure injury.

Undermining and tunneling may occur in Stage 3 and 4 pressure injuries. **Undermining** occurs when the tissue under the wound edge becomes eroded, resulting in a pocket beneath the skin. **Tunneling** refers to passageways underneath the skin surface that extend from a wound and can take twists and turns.

Slough and eschar may also be present in Stage 3 and 4 pressure injuries. Slough is inflammatory exudate that is usually light yellow, soft, and moist. **Eschar** is dark brown/black, dry, thick, and leathery dead tissue. If slough or eschar obscures the wound so that tissue loss cannot be assessed, the pressure injury is referred to as unstageable.[11] In most wounds, slough and eschar must be removed by debridement for healing to occur.

Figure 10.17 Stage 3 Pressure Injury. Used with permission.

Stage 4 Pressure Injuries

Stage 4 pressure injuries are full-thickness tissue loss, like in Stage 3 pressure injuries, but also have exposed cartilage, tendon, ligament, muscle, or bone. Osteomyelitis (bone infection) may also be present.[12] See Figure 10.18[13] for an illustration of a Stage 4

pressure injury.

Figure 10.18 Stage 4 Pressure Injury. Used with permission.

Unstageable Pressure Injuries

Unstageable pressure injuries are full-thickness skin and tissue loss in which the extent of tissue damage within the ulcer cannot be confirmed because it is obscured by slough or eschar. If slough or eschar were to be removed, a Stage 3 or Stage 4 pressure injury would likely be revealed. However, dry and adherent eschar on the heel or ischemic limb is not typically removed.[14] See Figure 10.19[15] for an illustration of an unstageable pressure ulcer due to the presence of eschar (on the left side of the wound) and slough (on the right side of the wound).

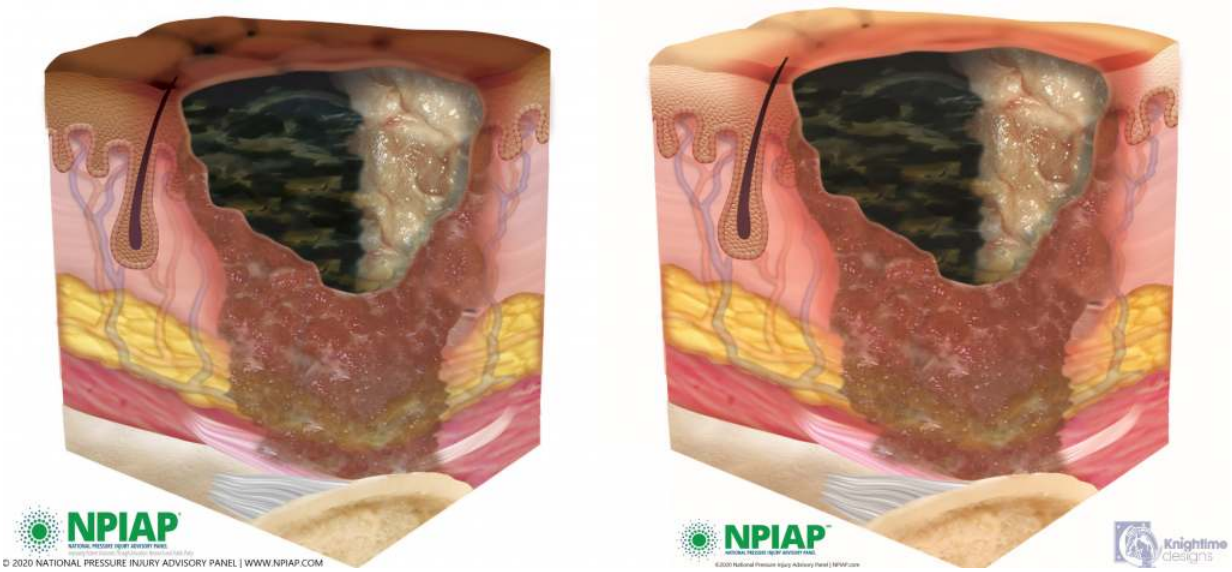

Figure 10.19 Unstageable Pressure Injury. Used with permission.

Deep Tissue Pressure Injuries

Deep tissue pressure injuries consist of persistent nonblanchable and deep red, maroon, or purple discoloration of an area. These discolorations typically reveal a dark wound bed or blood-filled blister. Be aware that the discoloration may appear differently in darkly pigmented skin. Deep tissue injury results from intense and/or prolonged pressure, as well as shear forces at the bone-muscle interface. The wound may evolve rapidly to reveal the actual extent of tissue injury, or it may resolve without tissue loss.[16], [17] See Figure 10.20 for an illustration of a deep tissue injury.

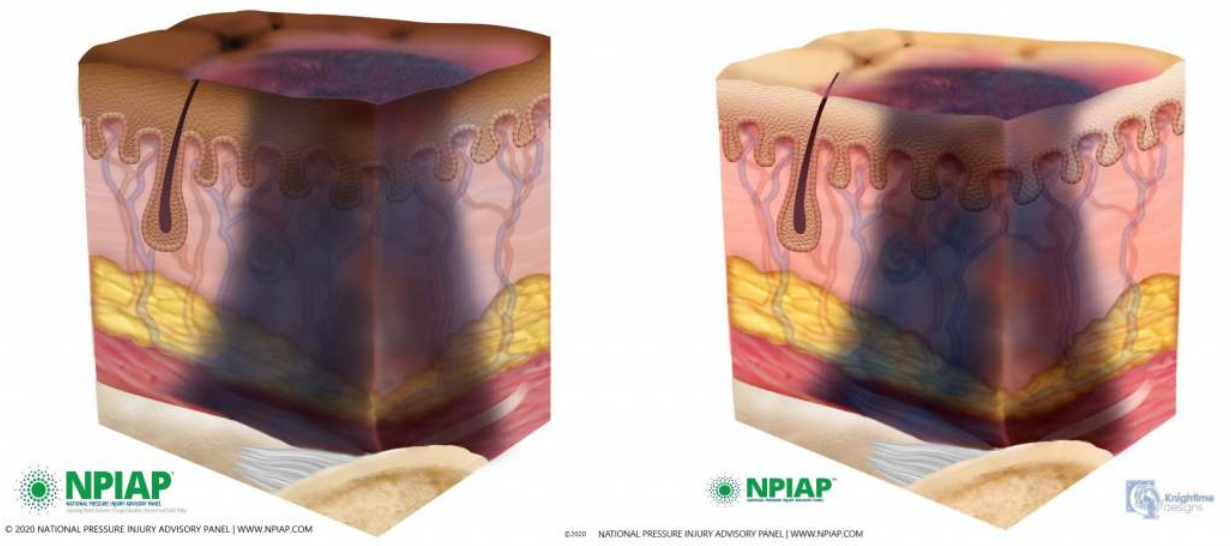

Figure 10.20 Deep Tissue Pressure Injury

Video Review of Assessing Pressure Injuries[18]

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9.5: Braden Scale

Several factors place a patient at risk for developing a pressure injury, in addition to shear and friction. These factors include decreased sensory perception, increased moisture, decreased activity, impaired mobility, and inadequate nutrition. The **Braden Scale** is a standardized, evidence-based assessment tool commonly used in health care to assess and document a patient's risk for developing pressure injuries. See Figure 10.21[1] for an image of a Braden Scale. Risk factors are rated on a scale from 1 to 4, with 1 being "completely limited" and 4 being "no impairment." The scores from the six categories are added, and the total score indicates a patient's risk for developing a pressure injury based on these ranges:

- Mild risk: 15-18
- Moderate risk: 13-14
- High risk: 10-12
- Severe risk: less than 9

BRADEN SCALE FOR PREDICTING PRESSURE SORE RISK

Patient's Name _____ Evaluator's Name_____ Date of Assessment

SENSORY PERCEPTION ability to respond meaningfully to pressure-related discomfort	**1. Completely Limited** Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of consciousness or sedation. OR limited ability to feel pain over most of body	**2. Very Limited** Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness OR has a sensory impairment which limits the ability to feel pain or discomfort over ½ of body.	**3. Slightly Limited** Responds to verbal commands, but cannot always communicate discomfort or the need to be turned. OR has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.	**4. No Impairment** Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort..				
MOISTURE degree to which skin is exposed to moisture	**1. Constantly Moist** Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	**2. Very Moist** Skin is often, but not always moist. Linen must be changed at least once a shift.	**3. Occasionally Moist:** Skin is occasionally moist, requiring an extra linen change approximately once a day.	**4. Rarely Moist** Skin is usually dry, linen only requires changing at routine intervals.				
ACTIVITY degree of physical activity	**1. Bedfast** Confined to bed.	**2. Chairfast** Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair.	**3. Walks Occasionally** Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair	**4. Walks Frequently** Walks outside room at least twice a day and inside room at least once every two hours during waking hours				
MOBILITY ability to change and control body position	**1. Completely Immobile** Does not make even slight changes in body or extremity position without assistance	**2. Very Limited** Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.	**3. Slightly Limited** Makes frequent though slight changes in body or extremity position independently.	**4. No Limitation** Makes major and frequent changes in position without assistance.				
NUTRITION usual food intake pattern	**1. Very Poor** Never eats a complete meal. Rarely eats more than ⅓ of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement OR is NPO and/or maintained on clear liquids or IV's for more than 5 days.	**2. Probably Inadequate** Rarely eats a complete meal and generally eats only about ½ of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement. OR receives less than optimum amount of liquid diet or tube feeding	**3. Adequate** Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products per day. Occasionally will refuse a meal, but will usually take a supplement when offered OR is on a tube feeding or TPN regimen which probably meets most of nutritional needs	**4. Excellent** Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.				
FRICTION & SHEAR	**1. Problem** Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures or agitation leads to almost constant friction	**2. Potential Problem** Moves feebly or requires minimum assistance. During a move skin probably slides to some extent against sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.	**3. No Apparent Problem** Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair.					
				Total Score				

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Figure 10.21 Braden Scale

How to Score the Braden Scale

Each risk factor on the Braden Scale is rated from 1 to 4 based on the patient's assessment findings. When using the Braden Scale, start with the first category and review each description listed across the row for each of the ratings from 1 to 4, and choose the one that best describes the patient's current status. Continue this process for all rows. Add all six numbers to determine a total score, and then use the total score to determine if the patient is at mild, moderate, high, or severe risk for developing a pressure injury. The lower the score, the higher the risk of developing a pressure injury. Additionally, customized nursing interventions are implemented based on the rating in each category. The higher the score, the more aggressive actions are taken to prevent or heal a

pressure injury. Descriptions of the ratings from 1-4 for each risk factor, along with targeted interventions for each rating, are further described in the following subsections.

Sensory Perception

The sensory perception risk factor is defined as the ability to respond meaningfully to pressure-related discomfort. If a patient is unable to feel pressure-related discomfort and respond to it appropriately by moving or reporting pain, they are at high risk of developing a pressure injury. This risk category describes two different issues that affect sensory perception. The first description refers to the patient's level of consciousness, and the second description refers to the patient's ability to feel cutaneous sensation. See Table 10.5a for a description of each level of risk from 1-4 with associated interventions for each level.[2]

Table 10.5a Descriptions and Interventions by Level of Risk for Sensory Perception

Assessment Category	Rating Description	Interventions
Sensory Perception	**4–No Impairment** Responds to verbal commands. Has no sensory deficit that would limit ability to feel or voice pain or discomfort.	• Encourage the patient to report pain over bony prominences. • Check heels daily.
Sensory Perception	**3–Slightly Limited** Responds to verbal commands, but cannot always communicate discomfort or the need to be turned. OR Has some sensory impairment that limits ability to feel pain or discomfort in 1 or 2 extremities.	• Assess and inspect skin every shift. Pay attention to heels. • Elevate heels and use protectors.
Sensory Perception	**2–Very Limited** Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness. OR Has a sensory impairment that limits the ability to feel pain or discomfort over half of the body.	All interventions mentioned in 3–Slightly Limited plus: • Consider specialty mattress or bed.
Sensory Perception	**1–Completely Limited** Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of consciousness or sedation. OR Limited ability to feel pain over most of the body.	All interventions mentioned in 2–Very Limited plus: • Use pillows between knees and bony prominences to avoid direct contact.

Moisture

The moisture risk factor is defined as the degree to which skin is exposed to moisture. Prolonged exposure to moisture increases the probability of skin breakdown. Moisture can come from several sources, such as perspiration, urine incontinence, stool incontinence, or wound drainage. Frequent surveillance, removal of wet or soiled linens, and use of protective skin barriers greatly reduce this risk factor. See Table 10.5b for specific interventions for each level of risk.[3]

Table 10.5b Interventions by Level of Risk for Moisture

	Rating Description	Interventions
Moisture	**4–Rarely Moist** Skin is usually dry; linen only requires changing at routine intervals.	• Encourage the patient to use lotion to prevent skin cracks. • Encourage the patient to report any moisture problem (such as under breasts).
Moisture	**3–Occasionally Moist** Skin is occasionally moist, requiring an extra linen change approximately once per day.	All interventions mentioned in 4–Rarely Moist plus: • Use moisture barrier ointments (protective skin barriers). • Moisturize dry unbroken skin. • Avoid hot water. Use mild soap and soft cloths or packaged cleanser wipes. • Routinely check incontinence pads. • Avoid use of diapers but if necessary, check frequently (every 2-3 hours) and change as needed. • If stool incontinence, consider bowel training and toileting after meals.
Moisture	**2–Often Moist** Skin is often but not always moist. Linen must be changed at least once per shift.	All interventions mentioned in 3–Occasionally Moist plus: • Check incontinence pads frequently (every 2-3 hours). • Consider a low air loss bed.
Moisture	**1–Constantly Moist** Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time the patient is moved or turned.	All interventions mentioned in 2–Often Moist plus: • Assess and inspect skin every shift. • Check incontinence pads frequently (every 2-3 hours) and change as needed. • Apply condom catheter if appropriate. • If stool incontinence, consider bowel training and toileting after meals or rectal tubes if appropriate.

Activity

The activity risk factor is defined as the degree of physical activity. For example, walking or moving from a bed to a chair reduces a patient's risk of developing a pressure injury by redistributing pressure points and increasing blood and oxygen flow to areas at risk.

Level of activity is defined by how frequently the patient is able to get out of bed, move into a chair, or ambulate with or without help. See Table 10.5c for a description of each level of risk from 1-4 with associated interventions for each.[4]

Table 10.5c Descriptions and Interventions by Level of Risk for Activity[5]

Assessment Category	Rating Description	Interventions
Activity	**4–Walks Frequently** Walks outside the room at least twice a day and inside the room at least once every two hours during waking hours.	• Encourage ambulation outside the room. • Check skin daily. • Monitor balance and endurance.
Activity	**3–Walks Occasionally** Walks occasionally during the day, but for very short distances, with or without assistance. Spends the majority of each shift in bed or chair.	• Provide a structured mobility plan. • Consider a chair cushion. • Consider physical therapy consult.
Activity	**2–Chair fast** Ability to walk is severely limited or nonexistent. Cannot bear their own weight and/or must be assisted into chair or wheelchair.	• Consider a specialty chair pad. • Consider postural alignment, weight distribution, balance, stability, and pressure relief when positioning individuals in chairs or wheelchairs. • Instruct the patient to reposition every 15 minutes when in the chair. • Stand every hour. • Pad bony prominences with foam wedges, rolled blankets, or towels. • Consider physical therapy consult for conditioning and wheelchair assessment.
Activity	**1–Bedfast** Confined to bed.	• Perform skin assessment and inspection every shift. • Position prone if appropriate or elevate head of bed no more than 30 degrees. • Position with pillows to elevate pressure points off the bed. • Consider specialty beds. • Elevate heels off bed and/or use heel protectors. • Consider physical therapy consult for conditioning and wheelchair assessment. • Turn/reposition every 1-2 hours. • Post turning schedule. • Teach or do frequent small shifts of body weight.

Mobility

The mobility risk factor is defined as the patient's ability to change or control their body position. For example, healthy people frequently change body position by rolling over in bed, shifting weight in a chair after sitting too long, or by moving their extremities. However, tissue damage will occur if a patient is unable to reposition on their own power unless caregivers frequently change their position. See Table 10.5d for interventions for each level of risk from 1-4.[6]

Table 10.5d Interventions by Level of Risk for Mobility[7]

Assessment Category	Rating Description	Interventions
Mobility	**4–No Limitations** Makes major and frequent changes in position without assistance.	• Check skin daily. • Encourage ambulation outside the room at least twice daily. • No interventions required.
Mobility	**3–Slightly Limited** Makes frequent though slight changes in body or extremity position independently.	• Check skin daily. • Turn/reposition frequently. • Teach frequent small shifts of body weight. • Consult physical therapy for strengthening/conditioning. • Use a gait belt for assistance.
Mobility	**2–Very Limited** Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.	• Perform skin assessment and inspection every shift. • Turn/reposition 1-2 hours. • Post turning schedule. • Teach or do frequent small shifts of body weight. • Elevate heels. • Consider a specialty bed.
Mobility	**1-Completely Immobile** Does not make even slight changes in body or extremity position without assistance.	Same interventions as for 2–Very Limited

Nutrition

Adequate nutrition and fluid intake are vital for maintaining healthy skin. Protein intake, in particular, is very important for healthy skin and wound healing. The nutrition risk factor is defined by two categories of descriptions. The first category measures the amount and type of oral intake. The second category is used for patients receiving tube feeding, total parenteral nutrition (TPN), or are prescribed clear liquid diets or nothing by mouth (NPO). See Table 10.5e for interventions for each level of risk from 1-4.[8]

Table 10.5e Interventions by Level of Risk for Nutrition[9]

Assessment Category	Rating Description	Interventions
Nutrition	**4–Excellent** Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.	• Move the patient out of bed for all meals. • Provide food choices. • Offer nutrition supplements. • Discuss a plan with the provider if the patient is NPO for greater than 24 hours. • Record dietary intake.
Nutrition	**3–Adequate** Eats over half of most meals. Eats a total of 4 servings of protein (meat and dairy products) each day. Occasionally refuses a meal, but will take a supplement if offered OR Is on a tube feeding or TPN regimen that most likely meets most of nutritional needs	• Observe and monitor nutritional intake. • Discuss a plan with the provider if the patient is NPO for greater than 24 hours. • Record dietary intake and I&O if appropriate.
Nutrition	**2–Probably Inadequate** Rarely eats a complete meal and generally eats only about half of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dairy supplement OR Receives less than optimum amount of liquid diet or tube feeding.	All interventions mentioned in 3–Adequate plus: • Encourage fluid intake as appropriate. • Obtain nutritional/dietary consult. • Offer nutrition supplements and water. • Encourage family to bring favorite foods. • Provide small, frequent meals.
Nutrition	**1–Very Poor** Never eats a complete meal. Rarely eats more than one third of any food offered. Eats two servings of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement OR Is NPO and/or maintained on clear liquids or IV for more than 5 days.	All interventions mentioned in 2–Probably Inadequate plus: • Perform skin assessment and inspection every shift.

Friction/Shear

Friction and shear are significant risk factors for producing pressure injuries. This category only has three ratings, unlike the other categories that have four ratings, and is rated by whether the patient has a problem, potential problem, or no apparent problem in this area. See Table 10.5f for interventions for each level of risk.[10]

Table 10.5f Descriptions and Interventions by Level of Risk for Friction/Shear[11]

Assessment Category	Rating Description	Interventions
Friction/Shear	**3–No Apparent Problem** Moves in bed and chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair at all times.	Keep bed linens clean, dry, and wrinkle free.
Friction/Shear	**2–Potential Problem** Moves feebly or requires minimal assistance. During a move, skin probably slides to some extent against sheets, chair, restraints, or other devices. Maintains a relatively good position in a chair or bed most of the time but occasionally slides down.	All interventions mentioned in 3–No Apparent Problem plus: • Avoid massaging pressure points. • Apply transparent dressing or elbow/heel protectors to intact skin over elbows and heels.
Friction/Shear	**1–Problem** Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures, or agitation leads to almost constant friction.	All interventions mentioned in 2–Potential Problem plus: • Perform skin assessment and inspection every shift. • Use a minimum of two people assisting plus a draw sheet in pulling the patient up in bed. • Keep bed linens clean, dry, and wrinkle free. • Apply elbow/heel protectors to intact skin over elbows and heels. • Elevate head of bed 30 degrees or less to reduce shear when feasible.

Team Member Roles to Prevent Pressure Injuries

Each member of the health care team has an important role in preventing the development of pressure injuries in at-risk patients. A registered nurse can delegate many interventions for preventing and treating a pressure injury to a licensed practical nurse (LPN) or to unlicensed assistive personnel such as a certified nursing assistant (CNA). See Table 10.5g for an explanation of the role of the RN in preventing pressure injuries, as well as tasks that can be delegated to LPNs and CNAs.

Table 10.5g Team Member Roles in Preventing Pressure Injuries[12]

Role	Tasks

RN	• Conducts or supervises accurate assessment and documentation of head-to-toe skin assessment and pressure injury risk (Braden Scale or Braden Risk Assessment) on admission, daily, and if condition deteriorates (or according to facility policy)
	• Documents care plan tied to identified risk:
	  ◦ Sensory perception
	  ◦ Moisture
	  ◦ Activity
	  ◦ Mobility
	  ◦ Nutrition
	  ◦ Friction/Shear
	• Performs or supervises performance of care plan procedures or treatments
	• Collaborates with other staff to ensure timely and accurate reporting of any skin issues
	• Notifies wound nurse of any skin conditions or high-risk patients
	• Notifies physician of any skin problems
	• Educates patient/family about risk factors

LPN	• Conducts accurate assessment and documentation of head-to-toe skin assessment and pressure injury risk (Braden Scale) on admission, daily, and if condition deteriorates (or according to facility policy)
	• Documents care plan tied to identified risk:
	  ◦ Sensory perception
	  ◦ Moisture
	  ◦ Activity
	  ◦ Mobility
	  ◦ Nutrition
	  ◦ Friction/Shear
	• Performs care for risk as needed
	• Informs RN of any skin issues

CNA	• Checks skin each time person is turned or cleaned or bed is changed • Reports any skin issues to nurse • Turns/repositions patient as ordered • Offers liquids each time in room • Keeps skin clean and reapplies protective skin barrier • Applies products (lotion, cream, skin sealant, etc.) as needed

1. This work is derivative of the "Braden Scale" by Prevention Plus. Used under Fair Use. Access for free at https://www.in.gov/core/results.html?collection=global-collection&profile=_default&query=braden+scale↵
2. Agency for Healthcare Research and Quality. (2014). *Preventing pressure ulcers in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7b.htm↵
3. Agency for Healthcare Research and Quality. (2014). *Preventing pressure ulcers in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7b.htm↵
4. Agency for Healthcare Research and Quality. (2014). *Preventing pressure ulcers in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7b.htm↵

5. Agency for Healthcare Research and Quality. (2014). *Preventing pressure ulcers in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7b.htm↵
6. Agency for Healthcare Research and Quality. (2014). *Preventing pressure ulcers in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7b.htm↵
7. Agency for Healthcare Research and Quality. (2014). *Preventing pressure ulcers in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7b.htm↵
8. Agency for Healthcare Research and Quality. (2014). *Preventing pressure ulcers in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7b.htm↵
9. Agency for Healthcare Research and Quality. (2014). *Preventing pressure ulcers in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7b.htm↵
10. Agency for Healthcare Research and Quality. (2014). *Preventing pressure ulcers in hospitals*. https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7b.htm↵
11. Agency for Healthcare Research and Quality. (2014). Preventing pressure ulcers in hospitals. https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7b.htm↵
12. Agency for Healthcare Research and Quality. (2014). *Preventing pressure ulcers in hospitals* . https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7b.htm ↵

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9.6: Applying the Nursing Process

Assessment

Subjective Assessment

During a subjective assessment of a patient's integumentary system, begin by asking about current symptoms such as itching, rashes, or wounds. If a patient has a wound, it is important to determine if a patient has pain associated with the wound so that pain management can be implemented. For patients with chronic wounds, it is also important to identify factors that delay wound healing, such as nutrition, decreased oxygenation, infection, stress, diabetes, obesity, medications, alcohol use, and smoking.[1] See Table 10.6a for a list of suggested interview questions to use when assessing a patient with a wound.

If a patient has a chronic wound or is experiencing delayed wound healing, it is important for the nurse to assess the impact of the wound on their quality of life. Several studies have shown that patients with nonhealing wounds have a decreased quality of life. Reasons for this include the frequency and regularity of dressing changes, which affect daily routine; a feeling of continued fatigue due to lack of sleep; restricted mobility; pain; odor; and the side effects of multiple medications. The loss of independence associated with functional decline can also lead to changes in overall health and well-being. These changes include altered eating habits, depression, social isolation, and a gradual reduction in activity levels.[2]

Table 10.6a Interview Questions Related to Integumentary Disorders

Symptoms	Questions	Follow-up Questions
Current Symptoms	Are you currently experiencing any skin symptoms such as itching, rashes, or an unusual mole?	Please describe.
Wounds	Do you have any current wounds such as a surgical incision, skin tear, arterial ulcer, venous ulcer, diabetic or neuropathic ulcer, or a pressure injury? If a wound is present: • Is the wound painful? • Do you have any symptoms of infection in the wound, such as increased redness, drainage, warmth, or tenderness around the wound?	Please describe. Use the PQRSTU method to comprehensively assess pain. Read more about the PQRSTU method in the "Pain Assessment Methods" section of the "Comfort" chapter.
Medical History	Have you ever been diagnosed with a wound related to diabetes, heart disease, or peripheral vascular disease?	Please describe.
If chronic wounds or wounds with delayed healing are present:		
Medications	Are you taking any medications that can affect wound healing, such as oral steroids to treat inflammation or help you breathe?	Please describe.
Treatments	What have you used to try to treat this wound?	What was successful? Unsuccessful?
Symptoms of Infection (pain, purulent drainage, etc.)	Are you experiencing any symptoms of infection related to this wound such as increased pain or yellow/green drainage?	Please describe.
Stress	Have you experienced any recent stressors such as surgery, hospitalization, or a change in life circumstances?	How do you cope with stress in your life?
Smoking	Do you smoke?	How many cigarettes do you smoke a day? How long have you smoked? Have you considered quitting smoking?
Quality of Life	Has this wound impacted your quality of life?	Have you had any changes in eating habits, feelings of depression or social isolation, or a reduction in your usual activity levels?

Objective Assessment

When performing an objective integumentary assessment on a patient receiving inpatient care, it is important to perform a thorough exam on admission to check for existing wounds, as well as to evaluate their risk of skin breakdown using the Braden Scale. Agencies are not reimbursed for care of pressure injuries received during a patient's stay, so existing wounds on admission must be well-documented. Routine skin assessment should continue throughout a patient's stay, usually on a daily or shift-by-shift basis based on the patient's condition. If a wound is present, it is assessed during every dressing change for signs of healing. See Table 10.6b for components to include in a wound assessment. See Figure 10.22[3] for an image of a common tool used to document the location of a skin concern found during assessment.

Note

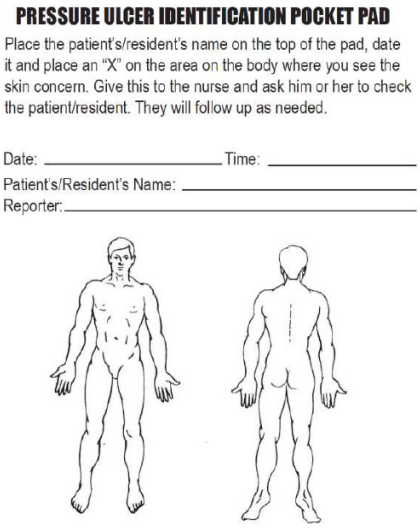
Read more information about performing an overall integumentary assessment in the "Integumentary Assessment" chapter in Open RN *Nursing Skills*.

For additional discussion regarding assessing wounds, go to the "Assessing Wounds" section of the "Wound Care" chapter in Open RN *Nursing Skills*.

Table 10.6b Wound Assessment

	Wound Assessment
Type	Types of wounds may include abrasions, lacerations, burns, surgical incisions, pressure injuries, skin tears, arterial ulcers, or venous ulcers. It is important to understand the type of wound present to select appropriate interventions.
Location	The location of the wound should be documented precisely. A body diagram template is helpful to demonstrate exactly where the wound is located.
Size	Wound size should be measured regularly to determine if the wound is increasing or decreasing in size. Length is measured using the head-to-toe axis, and width is measured laterally. If tunneling or undermining is present, their depth should be assessed using a sterile, cotton-tipped applicator and documented using the clock method.
Degree of Tissue Injury	Wounds are classified as partial-thickness (meaning the epidermis and dermis are affected) or full-thickness (meaning the subcutaneous and deeper layers are affected). See Figure 10.1 in the "Basic Concepts" section for an image of the layers of skin. For pressure injuries, it is important to assess the stage of the injury (see information on staging under the "Pressure Injuries" subsection).
Color of Wound Base	Assess the base of the wound for the presence of healthy, pink/red granulation tissue. Note the unhealthy appearance of dark red granulation tissue, white or yellow slough, or brown or black necrotic tissue.
Drainage	The color, consistency, and amount of exudate (drainage) should be assessed and documented at every dressing change. Drainage from wounds is often described as scant, small/minimal, moderate, and large/copious amounts. Use the following descriptions to select the appropriate terms:[4] • The type of wound drainage should be described using medical terms such as serosanguinous, sanguineous, serous, or purulent: ◦ **Sanguineous:** Sanguineous exudate is fresh bleeding.[5] ◦ **Serous:** Serous drainage is clear, thin, watery plasma. It's normal during the inflammatory stage of wound healing, and small amounts are considered normal wound drainage.[6] ◦ **Serosanguinous:** Serosanguineous exudate contains serous drainage with small amounts of blood present.[7] ◦ **Purulent:** Purulent exudate is thick and opaque. It can be tan, yellow, green, or brown in color. It is never considered normal in a wound bed, and new purulent drainage should always be reported to the health care provider.[8] See Figure 10.23[9] for an image of purulent drainage.
Tubes or Drains	Check for patency and if they are attached correctly.
Signs and Symptoms of Infection	Assess for signs and symptoms of infection, which include the following:

	• Redness • Warmth of surrounding tissue • Swelling • Tenderness or pain • Purulent drainage • Fever • Increased white blood cell count
Wound Edges and Periwound	Assess the surrounding skin for maceration or signs of infection.
Pain	Assess for pain in the wound or during dressing changes. If pain is present, use the PQRSTU or OLDCARTES method to obtain a comprehensive pain assessment.



PRESSURE ULCER IDENTIFICATION POCKET PAD

Place the patient's/resident's name on the top of the pad, date it and place an "X" on the area on the body where you see the skin concern. Give this to the nurse and ask him or her to check the patient/resident. They will follow up as needed.

Date: _____ Time: _____

Patient's/Resident's Name: _____

Reporter: _____

Figure 10.22 Skin Concern Documentation

Figure 10.23 Purulent Drainage

See Table 10.6c for a comparison of expected versus unexpected findings on integumentary assessment.

Table 10.6c Expected Versus Unexpected Findings

Assessment	Expected Findings	Unexpected Findings
Skin	Color: appropriate for ethnicity Temperature: warm to touch Texture: smooth, soft, and supple Turgor: resilient Integrity: no wounds or lesions noted Sensory: no pain or itching noted	Color: pale, white, red, yellow, purple, black and blue Temperature: cool or hot to touch Texture: rough, scaly or thick; thin and easily torn; dry and cracked Turgor: tenting noted Integrity: rashes, lesions, abrasions, burns, lacerations, surgical wounds, pressure injuries noted Pain or pruritus (itching) present
Hair	Full distribution of hair on the head, axilla, and genitalia	Alopecia (hair loss), hirsutism (excessive hair growth over body), lice and/or nits, or lesions under hair
Nails	Smooth, well-shaped, and firm but flexible	Cracked, chipped, or splitting nail; excessively thick; presence of clubbing; ingrown nails
Skin Integrity	Skin intact with no wounds or pressure injuries. Braden Scale is 23	A wound or pressure injury is present, or there is risk of developing a pressure injury with a Braden scale score of less than 23

Diagnostic and Lab Work

When a chronic wound is not healing as expected, laboratory test results can provide additional clues for the delayed healing. See Table 10.6d for a summary of lab results that offer clues to systemic issues causing delayed wound healing.[10]

Table 10.6d Lab Values Associated with Delayed Wound Healing[11]

Abnormal Lab Value	Rationale
Low hemoglobin	Low hemoglobin indicates less oxygen is transported to the wound site.
Elevated white blood cells (WBC)	Increased WBC indicates infection is occurring.
Low platelets	Platelets have an important role in the creation of granulation tissue.
Low albumin	Low albumin indicates decreased protein levels. Protein is required for effective wound healing.
Elevated blood glucose or hemoglobin A1C	Elevated blood glucose and hemoglobin A1C levels indicate poor management of diabetes mellitus, a disease that negatively impacts wound healing.
Elevated serum BUN and creatinine	BUN and creatinine levels are indicators of kidney function, with elevated levels indicating worsening kidney function. Elevated BUN (blood urea nitrogen) levels impact wound healing.
Positive wound culture	Positive wound cultures indicate an infection is present and provide additional information including the type and number of bacteria present, as well as identifying antibiotics the bacteria is susceptible to. The nurse reviews this information when administering antibiotics to ensure the prescribed therapy is effective for the type of bacteria present.

Life Span and Cultural Considerations

Newborns and Infants

Newborn skin is thin and sensitive. It tends to be easy to scratch and bruise and is susceptible to rashes and irritation. Common rashes seen in newborns and infants include diaper rash (contact dermatitis), cradle cap (seborrheic dermatitis), newborn acne, and prickly heat.

Toddlers and Preschoolers

Because of high levels of activity and increasing mobility, this age group is more prone to accidents. Issues like lacerations, abrasions, burns, and sunburns can occur frequently. It is important to be highly aware of the potential for accidents and implement safety precautions as needed.

School-Aged Children and Adolescents

Skin rashes tend to affect skin within this age group. Impetigo, scabies, and head lice are commonly seen and may keep children home from school. Acne vulgaris typically begins during adolescence and can alter physical appearance, which can be very upsetting to this age group. Another change during adolescence is the appearance of axillary, pubic, and other body hair. Also, as these children spend more time out of doors, sunburns are more common, and care should be given to encourage sunscreen and discourage the use of tanning beds.

Adults and Older Adults

As skin ages, many changes take place. Because aging increases the loss of subcutaneous fat and collagen breakdown, skin becomes thinner and wrinkles deepen. Decreased sweat gland activity leads to drier skin and pruritus (itching). Healing is slowed because of reduced circulation and the inability of proteins and proper nutrients to arrive at injury sites. Hair loses pigmentation

and turns gray or white. Nails become thicker and are more difficult to cut. Age or liver spots become darker and more noticeable. The number of skin growths increases and includes skin tags and keratoses. There is often delayed wound healing in older adults.

Diagnoses

There are several NANDA-I nursing diagnoses related to patients experiencing skin alterations or those at risk of developing a skin injury. See Table 10.6e for common NANDA-I nursing diagnoses and their definitions.[12]

Table 10.6e Common NANDA-I Nursing Diagnoses Related to Integumentary Disorders[13]

Risk for Pressure Injury: "Susceptible to localized injury to the skin and/or underlying tissue usually over a bony prominence as a result of pressure, or pressure in combination with shear."
Impaired Skin Integrity: "Altered epidermis and/or dermis."
Risk for Impaired Skin Integrity: "Susceptible to alteration in epidermis and/or dermis, which may compromise health."
Impaired Tissue Integrity: "Damage to the mucous membrane, cornea, integumentary system, muscular fascia, muscle, tendon, bone, cartilage, joint capsule, and/or ligament."
Risk for Impaired Tissue Integrity: "Susceptible to damage to the mucous membrane, cornea, integumentary system, muscular fascia, muscle, tendon, bone, cartilage, joint capsule, and/or ligament, which may compromise health."

A commonly used NANDA-I nursing diagnosis for patients experiencing alterations in the integumentary system is *Impaired Tissue Integrity*, defined as, "Damage to the mucous membrane, cornea, integumentary system, muscular fascia, muscle, tendon, bone, cartilage, joint capsule, and/or ligament."

To verify accuracy of this diagnosis for a patient, the nurse compares assessment findings with defining characteristics of that diagnosis. Defining characteristics for *Impaired Tissue Integrity* include the following:

- Acute pain
- Bleeding
- Destroyed tissue
- Hematoma
- Localized area hot to touch
- Redness
- Tissue damage

A sample NANDA-I diagnosis in current PES format would be: "*Impaired Tissue Integrity related to insufficient knowledge about protecting tissue integrity as evidenced by redness and tissue damage*."

Outcome Identification

An example of a broad goal for a patient experiencing alterations in tissue integrity is:

- *The patient will experience tissue healing.*

A sample SMART expected outcome for a patient with a wound is:

- *The patient's wound will decrease in size and have increased granulation tissue within two weeks.*

Planning Interventions

In addition to the interventions outlined under the "Braden Scale" section to prevent and treat pressure injury, see the following box for a list interventions to prevent and treat impaired skin integrity. As always, consult a current, evidence-based nurse care planning resource for additional interventions when planning patient care.

Selected Interventions to Prevent and Treat Impaired Skin Integrity [14], [15], [16]

- Assess and document the patient's skin status routinely. (Frequency is determined based on the patient's status.)
- Use the Braden Scale to identify patients at risk for skin breakdown. Customize interventions to prevent and treat skin breakdown according to patient needs.
- If a wound is present, evaluate the healing process at every dressing change. Note and document characteristics of the wound, including size, appearance, staging (if applicable), and drainage. Notify the provider of new signs of infection or lack of progress in healing.
- Provide wound care treatments, as prescribed by the provider or wound care specialist, and monitor the patient's response toward expected outcomes.
- Cleanse the wound per facility protocol or as ordered.
- Maintain non-touch or aseptic technique when performing wound dressing changes, as indicated. (Read more details about using aseptic technique and the non-touch method in the "Aseptic Technique" chapter of the Open RN *Nursing Skills* textbook.)
- Change wound dressings as needed to keep them clean and dry and prevent bacterial reservoir.
- Monitor for signs of infection in an existing wound (as indicated by redness, warmth, edema, increased pain, reddened appearance of surrounding skin, fever, increased white blood cell count, changes in wound drainage, or sudden change in patient's level of consciousness).
- Apply lotion to dry areas to prevent cracking.
- Apply lubricant to moisten lips and oral mucosa, as needed.
- Keep skin free of excess moisture. Use moisture barrier ointments (protective skin barriers) or incontinence products in skin areas subject to increased moisture and risk of skin breakdown.
- Educate the patient and/or family caregivers on caring for the wound and request return demonstrations, as appropriate.
- Administer medications, as prescribed, and monitor for expected effects.
- Consult with a wound specialist, as needed.
- Obtain specimens of wound drainage for wound culture, as indicated, and monitor results.
- Advocate for pressure-relieving devices in patients at risk for pressure injuries, such as elbow protectors, heel protectors, chair cushions, and specialized mattresses and monitor the patient's response.
- Promote adequate nutrition and hydration intake, unless contraindicated.
- Use a minimum of two-person assistance and a draw sheet to pull a patient up in bed to minimize shear and friction.
- Reposition the patient frequently to prevent skin breakdown and to promote healing. Turn the immobilized patient at least every two hours, according to a specific schedule.
- Maintain a patient's position at 30 degrees or less, as appropriate, to prevent shear.
- Keep bed linens clean, dry, and wrinkle free.

Implementation

Before implementing interventions, it is important to assess the current status of the skin and risk factors present for skin breakdown and modify interventions based on the patient's current status. For example, if a patient's rash has resolved, some interventions may no longer be appropriate (such as applying topical creams). However, if a wound is showing signs of worsening or delayed healing, additional interventions may be required. As always, if the patient demonstrates new signs of localized or systemic infection, the provider should be notified.

Evaluation

It is important to evaluate for healing when performing wound care. Use the following expected outcomes when evaluating wound healing:

- Resolution of periwound redness in 1 week
- 50% reduction in wound dimensions in 2 weeks
- Reduction in volume of exudate
- 25% reduction in amount of necrotic tissue/eschar in 1 week
- Decreased pain intensity during dressing changes [17]

If a patient is experiencing delayed wound healing or has a chronic wound, it is helpful to advocate for a referral to a wound care nurse specialist.

> **Note**
>
> Read a sample nursing care plan for a patient with impaired skin integrity.

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9.7: Putting It All Together

Review the following example of applying the nursing process to a patient with a pressure injury.

Patient Scenario

Figure 10.24 Simulated Patient Image

Betty Pruitt is a 92-year-old female admitted to a skilled nursing facility after a fall at her daughter's home while transferring the patient from her bed to a wheelchair. See Figure 10.24 for an image of Betty Pruitt.[1] Although no injury was sustained, it became clear to the family that they could no longer provide adequate care at home.

Ms. Pruitt's past medical history includes congestive heart failure, hypertension, hypercholesterolemia, and moderate stage Alzheimer's disease. Her cognitive ability has significantly declined over the last six months. Patient's speech continues to be mostly clear and at times coherent but she tends to be quiet and does not express her needs adequately, even with prompting. She no longer has the ability to ambulate but can stand for short periods of time, requiring two people to transfer. She rarely changes body position without encouragement and assistance, spending most of her days in a recliner or bed. Betty is 69 inches tall and currently weighs 122 pounds, having lost 22 pounds over the last 3 months. BMI is 18. Family reports her appetite is poor, and she eats only in small amounts at meal times with feeding assistance. She does take liquids well and shows no swallowing difficulties at this time. Betty is incontinent of urine and stool most of the time but will use the toilet if offered and given transfer help. Unknown to the family, a skin assessment revealed a Stage III pressure injury on coccyx area. Wound measures 4 cm long, 4 cm wide, 3 cm deep, with adipose tissue visible. No undermining, tunneling, bone, muscle, or tendons visible. Scant amount of yellowish purulent drainage noted. Slight foul odor, with redness, and increased heat around the wound present.

A Braden Scale Risk Assessment was completed and revealed a total score of 12 (High Risk) with the following category scores: Sensory Perception-3, Moisture-2, Activity-2, Mobility-2, Nutrition-2, Friction & Shear-1.

Applying the Nursing Process

Based on this information, the following nursing care plan was implemented for Ms. Pruitt.

Nursing Diagnosis: *Impaired Tissue Integrity related to imbalanced nutritional state and associated with impaired mobility as evidenced by damaged tissue, redness, area hot to touch.*

Overall Goal: *The patient will experience wound healing demonstrated by decreased wound size and increased granulation tissue.*

SMART Expected Outcome: *Ms. Pruitt will have a 50% reduction in wound dimensions (from 4 cm in diameter to 2 cm) within two weeks.*

Planned Nursing Interventions with Rationale: See Table 10.7 for a list of planned nursing interventions with rationale.

Table 10.7 Selected Interventions and Rationale for Ms. Pruitt

Interventions	Rationale
1. Assess and document wound characteristics every shift, including size (length x width x depth), stage (I-IV), location, exudate, presence of granulation tissue, and epithelization.	Consistent and accurate documentation of wounds is important in determining the progression of wound healing and effectiveness of treatments.
2. Monitor for signs of infection (color, temperature, edema, moisture, pain, and appearance of surrounding skin).	Frequent monitoring for possible wound infection provides the ability to intervene quickly if changes in the wound are noted. Additionally, pain medications should be offered prior to dressing changes if pain is present.
3. Cleanse wound per facility protocol or as ordered.	Removal of exudate, dirt, and slough promotes wound healing.
4. Cleanse the periwound area (skin around the wound) with mild soap and water.	Decreasing the number of microorganisms around the wound may decrease the chance of wound infection.
5. Apply and change wound dressings, per facility protocol or wound orders.	Dressings that maintain moisture in the wound keep periwound skin dry, absorb drainage, and pad the wound to protect from further injury assist in healing.
6. Turn/reposition the patient every 2 hours and position with pillows as needed.	Frequent repositioning relieves pressure point areas from damage. Avoid positioning the patient directly on an injured area if possible.
7. Consider the use of a specialty mattress, bed, or chair pad.	Specialty mattresses, beds, or pads offer added padding and support, while decreasing pressure areas.
8. Use moisture barrier ointments (protective skin barriers).	Moisture barrier ointments can significantly decrease skin breakdown and pressure injury formation.
9. Check incontinence pads frequently (every 2-3 hours) and change as needed to keep dry.	Frequent changing of soiled pads will prevent exposure to chemicals in urine and stool that erode the skin.
10. Monitor nutritional status and obtain order for dietary consult if needed.	Optimizing nutritional intake, including calories, protein, and vitamins, is essential to promote wound healing.
11. Offer nutritional supplements and water.	Nutritional supplements, such as protein shakes, can provide additional calories and protein without a large volume of intake needed. Water intake is essential for proper tissue hydration.
12. Keep bed linens clean, dry, and wrinkle free.	Soiled, wet, or wrinkled sheets may contribute to skin breakdown.
13. Use a minimum of two-person assistance and a draw sheet to pull the patient up in bed.	Carefully transferring patients avoids adverse effects of external mechanical forces (pressure, friction, and shear) from causing skin or tissue damage.

Interventions Implemented:

After the admission assessment was completed, Ms. Pruitt became settled in her new room. The wound was assessed, documented, and cleaned. A specimen for wound culture was obtained and a wound dressing applied per protocol. The health care provider was notified of the wound. Requests were made for a wound culture, referrals to a wound care nurse specialist and a dietician, and a pressure-relieving mattress for the bed. A two-hour turning schedule was implemented, and the CNA was reminded to use two-person assistance with a lift sheet when repositioning the patient. A barrier cream was applied to protect the peri-area whenever a new incontinence pad was placed. The following documentation note was entered in the patient chart.

Documentation:

On admission, a Stage III pressure injury was discovered on the patient's coccyx area. The wound measured 4 cm long, 4 cm wide, 3 cm deep, with adipose tissue visible. No undermining, tunneling, bone, muscle, or tendons visible. A small amount of yellow purulent drainage noted. Slight foul odor, with redness, and increased heat around the wound present. Wound was cleaned with normal saline and packed with moist gauze and covered with hydrogel dressing. Patient tolerated the procedure well and gave no evidence of pain. A pressure-relieving mattress was placed on the patient's bed and a two-hour turning schedule was implemented. Patient voided x 1 and the pad was changed. Barrier cream was applied to the perineal area. Patient encouraged to rest until lunchtime and is resting.

Evaluation: After two weeks, the measurements of the wound were compared to those on admission and the wound decreased in size to less than 2 cm. The expected outcome was "met." A new expected outcome was established, *"Mrs. Pruitt's wound will resolve within the next 2 weeks."* The same planned interventions were continued to be implemented.

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9.8: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

You are a nurse working in a long-term care facility. You have been assigned to care for Mr. Johns, a 74-year-old client recently diagnosed with a urinary tract infection, resulting in frequent incontinence. Mr. Johns suffered a CVA (stroke) six months ago and has difficulties ambulating and attending to his own needs because of weakness on his right side. Mr. Johns is alert and oriented to person, place, and time, but has decreased sensation on his entire right side. He spends most of his time in bed or sitting at his bedside in a wheelchair due to his difficulty with ambulation. He eats about 50% of his meals. While assessing Mr. Johns, you note that he is thin for his height, incontinent of foul-smelling urine, and has a deepened reddened area on his sacrum.

1. What additional information, including lab work, would you like to gather to further assess Mr. Johns’ potential for pressure injury development?
2. What factors make him particularly vulnerable to the development of pressure injuries?

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9.9: X Glossary

Angiogenesis: The process of wound healing when new capillaries begin to develop within the wound 24 hours after injury to bring in more oxygen and nutrients for healing.

Approximated edges: The well-closed edges of a wound healing by primary intention.

Arterial insufficiency: A condition caused by lack of adequately oxygenated blood supply to specific tissues.

Braden Scale: A standardized assessment tool used to assess and document a patient's risk factors for developing pressure injuries.

Deep tissue pressure injuries: Persistent; non-blanchable; deep red, maroon, or purple discoloration of intact or nonintact skin revealing a dark wound bed or blood-filled blister. Pain and temperature change often precede skin color changes. Discoloration may appear differently in darkly pigmented skin.

Dehiscence: The separation of a surgical incision.

Dermis: The layer of skin underneath under the epidermis, containing hair follicles, sebaceous glands, blood vessels, endocrine sweat glands, and nerve endings.

Epidermis: The very thin, top layer of the skin that contains openings of the sweat gland ducts and the visible part of hair known as the hair shaft.

Epithelialization: The development of new epidermis and granulation tissue in a healing wound.

Eschar: Dark brown/black, dry, thick, and leathery dead tissue in wounds.

Excoriation: Redness and removal of the surface of the topmost layer of skin, often due to maceration or itching.

Friction: The rubbing of skin against a hard object, such as the bed or the arm of a wheelchair. This rubbing causes heat that can remove the top layer of skin and often results in skin damage.

Granulation tissue: New connective tissue in a healing wound with new, fragile, thin-walled capillaries.

Hemostasis phase of wound healing: The first stage of wound healing when clotting factors are released to form clots to stop the bleeding.

Hypodermis: The bottom layer of skin, also referred to as the subcutaneous layer, consisting mainly of adipose tissue or fat, along with some blood vessels and nerve endings. Beneath this layer lies muscles, tendons, ligaments, and bones.

Impaired skin integrity: Altered epidermis and/or dermis.

Impaired tissue integrity: Damage to deeper layers of the skin or other integumentary structures. The NANDA-I definition of impaired tissue integrity is, "Damage to the mucous membrane, cornea, integumentary system, muscular fascia, muscle, tendon, bone, cartilage, joint capsule, and/or ligament."

Inflammatory phase of wound healing: The second stage of healing when vasodilation occurs to move white blood cells into the wound to start cleaning the wound bed.

Maceration: A condition that occurs when skin has been exposed to moisture for too long causing it to appear soggy, wrinkled, or whiter than usual.

Maturation phase: The final stage of wound healing when collagen continues to be created to strengthen the wound and prevent it from reopening.

Necrosis: Tissue death.

Necrotic: Dead tissue that is black.

Nonblanchable erythema: Skin redness that does not turn white when pressed.

Osteomyelitis: Bone infection.

Pressure injuries: Localized damage to the skin or underlying soft tissue, usually over a bony prominence, as a result of intense and prolonged pressure in combination with shear.

Primary intention: A type of wound that is sutured, stapled, glued, or otherwise closed so the wound heals beneath the closure.

Proliferative phase of wound healing: The third stage of wound healing that begins a few days after injury and includes four processes: epithelialization, angiogenesis, collagen formation, and contraction.

Purulent: Drainage that is thick; opaque; tan, yellow, green, or brown in color. New purulent drainage should always be reported to the health care provider.

Sanguineous: Drainage from a wound that is fresh bleeding.

Secondary intention: A type of healing that occurs when the edges of a wound cannot be brought together, so the wound fills in from the bottom up by the production of granulation tissue. An example of a wound healing by secondary intention is a pressure ulcer.

Serosanguinous: Serous drainage with small amounts of blood present.

Serous: Drainage from a wound that is clear, thin, watery plasma. It's normal during the inflammatory stage of wound healing, and small amounts are considered normal wound drainage.

Shear: Damage that occurs when tissue layers move over the top of each other, causing blood vessels to stretch and break as they pass through the subcutaneous tissue.

Slough: Inflammatory exudate in wounds that is usually light yellow, soft, and moist.

Stage 1 pressure injuries: Intact skin with a localized area of nonblanchable erythema where prolonged pressure has occurred.

Stage 2 pressure injuries: Partial-thickness loss of skin with exposed dermis. The wound bed is viable and may appear like an intact or ruptured blister.

Stage 3 pressure injuries: Full-thickness tissue loss in which fat is visible, but cartilage, tendon, ligament, muscle, and bone are not exposed. The depth of tissue damage varies by anatomical location. Undermining and tunneling may be present. If slough or eschar obscures the wound so that tissue loss cannot be assessed, the pressure injury is referred to as unstageable.

Stage 4 pressure injuries: Full-thickness tissue loss like Stage 3 pressure injuries but also have exposed cartilage, tendon, ligament, muscle, or bone.

Tertiary intention: The healing of a wound that has had to remain open or has been reopened, often due to severe infection.

Tunneling: Passageways underneath the surface of the skin that extend from a wound and can take twists and turns.

Undermining: A condition that occurs in wounds when the tissue under the wound edges becomes eroded, resulting in a pocket beneath the skin at the wound's edge.

Unstageable pressure injuries: Full-thickness skin and tissue loss in which the extent of tissue damage within the ulcer cannot be confirmed because it is obscured by slough or eschar.

Venous insufficiency: A condition that occurs when the cardiovascular system cannot adequately return blood and fluid from the extremities to the heart.

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CHAPTER OVERVIEW

10: Comfort

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10.2: Comfort Basic Concepts
10.3: Pain Assessment Methods
10.4: Pain Management
10.5: Applying the Nursing Process
10.6: Putting It All Together
10.7: Learning Activities
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10.1: Comfort Introduction

Learning Objectives

- Assess patients for subjective and objective manifestations of alterations in comfort
- Identify factors related to comfort across the life span
- Adhere to standards of care for the patient experiencing pain
- Identify nonpharmacologic measures to minimize pain and discomfort
- Outline the plan for monitoring the patient response to the interventions for pain and discomfort
- Identify evidence-based practices related to assessing pain and providing comfort

Pain is a universal sensation that everyone experiences, and acute pain is a common reason why patients seek medical care. Nurses work with the interdisciplinary team to assess and manage pain in a multidimensional approach to provide comfort and prevent suffering. This chapter will review best practices and standards of care for the assessment and management of pain.

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10.2: Comfort Basic Concepts

Definitions of Pain

Pain has been defined as, “Whatever the patient says it is, experienced whenever they say they are experiencing it.”[1] In 2020 the International Association for the Study of Pain (IASP) released a revised definition of pain as, “An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage,” along with these additional notes:

- Pain is always a personal experience that is influenced to varying degrees by biological, psychological, and social factors.
- Individuals learn the concept of pain throughout all stages of their life.
- A person’s report of an experience as pain should be respected.
- Although pain usually serves an adaptive role, it can have adverse effects on function, socialization, and psychological well-being.
- Verbal description is only one of several behaviors that express pain. The inability to communicate does not negate the possibility that a person is experiencing pain.[2]

Pain motivates the individual to withdraw from dangerous stimuli, to protect a damaged body part while it heals, and to avoid similar experiences in the future. Most pain resolves after the painful stimulus is removed and the body has healed, but sometimes pain persists despite removal of the stimulus and apparent healing of the body. Additionally, pain can occur in the absence of any detectable stimulus, damage, or disease.[3]

Physiology of Pain

Let’s begin by reviewing the physiological processes of pain. A **nociceptor** is a type of sensory receptor that responds to potentially damaging stimuli by sending nerve signals to the spinal cord and brain in a process called nociception. There are several types and functions of nociceptors:

- Thermal nociceptors are activated by noxious heat or cold, such as a hot pan.
- Mechanical nociceptors are activated by excess pressure or mechanical deformation, such as a finger getting caught in a car door. They also respond to incisions that break the skin surface.
- Chemical nociceptors are activated by a wide variety of spices commonly used in cooking. For example, capsaicin is a compound in chili peppers that causes a burning sensation of the mucus membranes. It is also used in common over-the-counter creams for pain relief because when it is applied to the skin, it blocks the transmission of pain impulses.[4]

Noxious stimuli are detected by nociceptors and transduced into electrical energy. An action potential is created and transmitted along nociceptor fibers. There are two types of nociceptor fibers, A-Delta and C. A-Delta fibers are fast-conducting fibers and associated with the initial sharp, stinging, or pricking pain sensation. C fibers are slower-conducting fibers and are associated with the secondary sensation of diffuse, dull, burning, and aching pain. The pain impulse is transmitted along these nociceptor fibers to the dorsal horn in the spinal cord and then from the spinal cord to the thalamus, where pain messages are relayed to the cerebral cortex. In the cerebral cortex, pain impulses are perceived and the conscious awareness of pain occurs.[5] [6] See Figure 11.1[7] for an illustration of how the pain signal is transmitted from the nociceptors to the spinal cord and then to the brain.

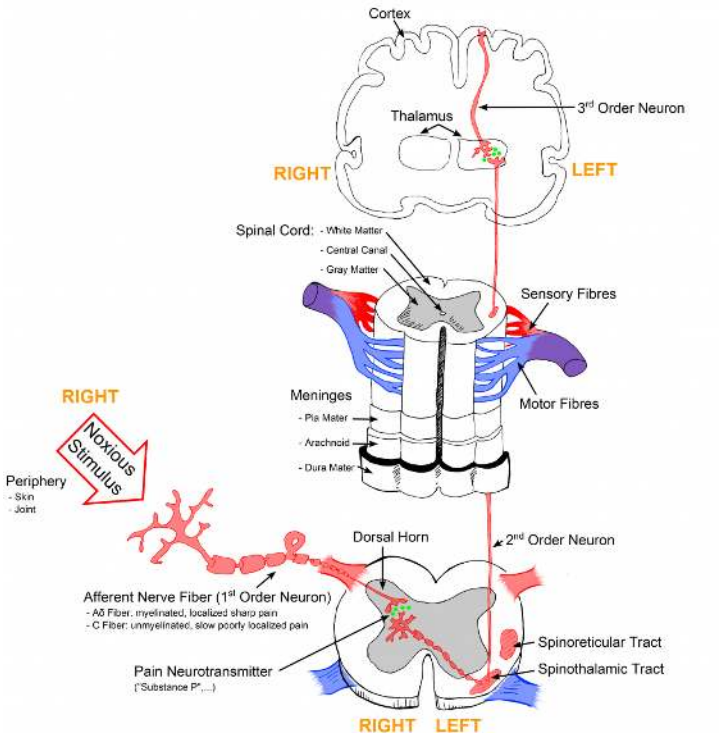

Figure 11.1 Pain Transmission

Note

View supplementary videos on pain:

- Karen D. Davis: How does your brain respond to pain? | TED Talk
- A one-minute review of how pain receptors work: Feeling Pain

Types of Pain

Pain can be divided into visceral, deep somatic, superficial, and neuropathic pain.

- **Visceral** structures are highly sensitive to stretch, ischemia, and inflammation. Visceral pain is diffuse, difficult to locate, and often referred to a distant, usually superficial, structure. It may be accompanied by nausea and vomiting and may be described as sickening, deep, squeezing, and dull.[8]
- **Deep somatic pain** is initiated by stimulation of nociceptors in ligaments, tendons, bones, blood vessels, fascia, and muscles and is a dull, aching, poorly localized pain. Examples include sprains and broken bones.[9]
- **Superficial pain** is initiated by the activation of nociceptors in the skin or other superficial tissue and is sharp, well-defined, and clearly located. Examples of injuries that produce superficial somatic pain include minor wounds and minor (first-degree) burns.[10]
- **Neuropathic pain** is defined by the International Association for the Study of Pain (IASP) as pain caused by a lesion or disease of the somatosensory nervous system. It is typically described by patients as “burning” or “like pins and needles.” Neuropathic pain can be caused by several disease processes, such as diabetes mellitus, strokes, and HIV, and is generally undertreated because it typically does not respond to analgesics. Medications such as tricyclic antidepressants and gabapentin are typically used to manage this type of pain.[11]

Pain can radiate from one area to another. For example, back pain caused by a herniated disk can cause pain to radiate down an individual’s leg. **Referred pain** is different from radiating pain because it is perceived at a location other than the site of the painful stimulus. For example, pain from retained gas in the colon can cause pain to be perceived in the shoulder. See Figure 11.2[12] for an illustration of common sites of referred pain.

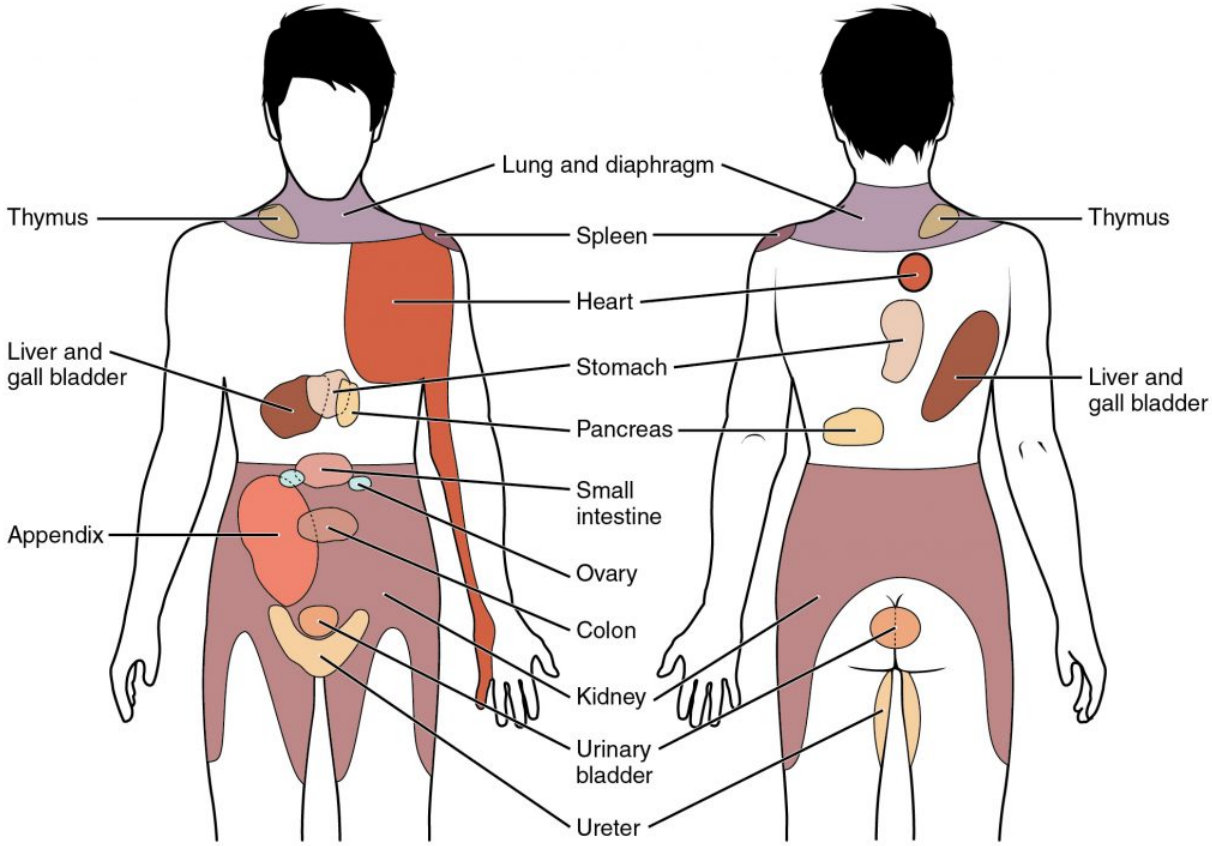

Figure 11.2 Referred Pain

Factors Affecting the Pain Experience

There are many biological, psychological, and social factors that affect the perception of pain, making it a unique, individual experience. See Table 11.2a for a list of these factors.[13] Nurses must consider these factors while assessing and providing holistic nursing care for patients experiencing pain.

Table 11.2a Biological, Psychological, and Social Factors Affecting Pain

Biological Factors	Psychological Factors	Social Factors
• Nociception • Brain function • Source of pain • Illness • Medical diagnosis • Age • Injury, past or present • Genetic sensitivity • Hormones • Inflammation • Obesity • Cognitive function	• Mood/affect • Fatigue • Stress • Coping • Trauma • Sleep • Fear • Anxiety • Developmental stage • Meaning of pain • Memory • Attitude • Beliefs • Emotional status • Expectations	• Culture • Values • Economic • Environment • Social support • Coping mechanisms • Spirituality • Ethnicity • Education

Acute vs. Chronic Pain

Pain is differentiated between acute pain and chronic pain. **Acute pain** has limited duration and is associated with a specific cause. It usually causes a physiological response resulting in increased pulse, respirations, and blood pressure. Diaphoresis (sweating, especially to an unusual degree) may also occur. Examples of acute pain include postoperative pain; burns; acute musculoskeletal conditions like strains, sprains, and fractures; labor and delivery; and traumatic injury.

Chronic pain is ongoing and persistent for longer than six months. It typically does not cause a change in vital signs or diaphoresis. It may be diffuse and not confined to a specific area of the body. Chronic pain often affects an individual's psychological, social, and behavioral responses that can influence daily functioning. Chronic medical problems, such as osteoarthritis, spinal conditions, fibromyalgia, and peripheral neuropathy, are common causes of chronic pain. Chronic pain can continue even after the original injury or illness that caused it has healed or resolved. Some people suffer chronic pain even when there is no past injury or apparent body damage.

People who have chronic pain often have physical effects that are stressful on the body. These effects include tense muscles, limited ability to move around, lack of energy, and appetite changes. Emotional effects of chronic pain include depression, anger, anxiety, and fear of reinjury. These effects can limit a person's ability to return to their regular work or leisure activities.[14] It is estimated that chronic pain affects 50 million U.S. adults, and 19.6 million of those adults experience high-impact chronic pain that interferes with daily life or work activities.[15] See Figure 11.3[16] for an illustration of low back pain, an example of both acute and chronic pain that often affects daily functioning.

Figure 11.3 Back Pain

Note

Read additional information about pain using the following hyperlinks:

- Overview of Pain – Brain, Spinal Cord, and Nerve Disorders
- Pain
- Assessing and Managing Acute Pain: A Call to Action

- Quick Facts: Chronic Pain

Life Span and Cultural Considerations

The pain experience varies across the life span. Newborns and infants can feel pain but are unable to verbalize it. Repetitive and prolonged pain may be associated with altered pain sensitivity and pain processing later in life. Toddlers and preschoolers often have difficulty describing, identifying, and locating pain. Instead, pain may be demonstrated behaviorally with crying, anger, physical resistance, or withdrawal. School-age children and adolescents may try to be "brave" and rationalize the pain; they are more responsive to explanations about pain.

Older adults are at increased risk for undertreatment of pain. It is estimated that up to 70% of older adults in the community and up to 85% living in long-term care centers have significant pain due to chronic conditions such as osteoarthritis and peripheral neuropathy. Pain is often underassessed in older adults because they are less likely to report it and also because it can present atypically with confusion and agitation.[17]

Other special populations who are at increased risk for the undertreatment of pain include the following:

- Patients with a history of addictive disease
- Nonverbal, cognitively impaired, or unconscious patients
- Patients who endure pain without complaining due to cultural or religious beliefs
- Non-English speaking patients where communicating is a barrier
- Uninsured or underinsured patients where cost of medications is a barrier[18]

Nurses must be especially vigilant of nonverbal signs of pain in these at-risk groups and implement appropriate assessment tools and interventions. Read an example of a patient with untreated pain in the following box.

A True Story of Undertreated Pain

A teenage boy from the Amish community was admitted to the hospital after he sustained several fractures when his buggy was hit by a motor vehicle. His parents stayed at his bedside throughout his hospital stay. The nurses noticed that although he denied pain, he grimaced and guarded the body parts that were injured. He moaned when repositioned and declined to get out of bed to begin physical therapy when it was prescribed for rehabilitation. However, despite these nonverbal indicators of pain, he continued to deny the existence of pain and refused all pain medication. One day, when his parents left the room briefly to get coffee, the nurse said to the patient, "Most people in your situation experience severe pain. I can see that you are hurting by your expressions when you move. Can you help me to understand why you don't want any pain medication?" A tear began to fall down the boy's cheek. He explained that his community does not believe in complaining about pain and to be a man, he must learn how to tolerate suffering. The nurse explained, "It is important for you to attend physical therapy so that you can heal and go home. Can we bring you pain pills every day before physical therapy so that you can participate in the exercises, recover quickly, and go home?" The boy agreed to this plan. The nurse documented her findings and made notes in the care plan to administer the prescribed PRN pain medications one hour before physical therapy was scheduled. She also communicated her findings during the nurse handoff report. The boy was able to satisfactorily complete the prescribed physical therapy and was discharged home the following week.

Note

Use the following hyperlinks to read more information about treating pain:

- Treating pain in Special Populations
- The National Institute on Aging provides a wide range of information for older adults: Pain: You Can Get Help.
- Health in Aging offers additional information on pain management at Pain Management | Aging & Health AZ | American Geriatrics Society.

Trends in Pain Management, Substance Abuse, and Addiction

Several well-known agencies have recently published materials focused on the importance of optimal pain management. For example, in 2017 The Joint Commission published new and revised standards of pain assessment and pain management that apply to all Joint Commission-accredited hospitals.[19] The American Nurses Association published a position statement in 2018 on the ethical responsibility of nurses to properly manage pain.[20] In 2019 the U.S. Department of Health and Human Services published *Pain Management Best Practices*.[21] Why is there continued emphasis on optimal pain management? Let's review some trends related to pain management over the past few decades.

Pain assessment and pain management began to undergo significant changes in the 1990s when pain experts recognized that inadequate assessment and treatment of pain had become a public health issue. Recommendations for improving the quality of pain care were followed by initiatives that recognized patients' reported pain as "the 5th vital sign." Hospital administrators and regulators began to focus on pain scores, encouraging and incentivizing providers to aggressively treat pain to lower pain scores. These trends led to liberal prescribing of opioid pain medications for both acute and chronic pain.

Unfortunately, this increase in prescription of opioid pain medication led to an associated rise in the number of deaths from overdose. Organizations began to urge caution about the use of opioids for pain, including guidelines published in 2016 by the Centers for Disease Control (CDC) on prescribing opioids for pain.[22] The 2016 CDC guideline led to limited prescriptions of opioids and unintended consequences, such as forced tapering of medications for established patients requiring chronic pain control and the transition of some patients desperate for pain control to using illicit drugs, such as heroin.

In this manner, pain management and the opioid crisis have influenced one another as each continues to evolve. It is imperative for nurses to ensure that patients with painful conditions can work with their health care providers to develop pain treatment plans that balance pain control, optimize function, and enhance quality of life while also minimizing risks for opioid misuse and harm.[23]

Associated Definitions

When discussing the use and abuse of drugs used to treat pain, it is important to distinguish between tolerance, physical dependence, misuse, substance abuse disorder, and addiction.

- **Tolerance** is a reduced response to pain medication when the same dose of a drug has been given repeatedly, requiring a higher dose of the drug to achieve the same level of response.[24] For example, when a patient receives morphine for palliative care, the dosage often needs to be increased over time because the patient develops a tolerance to the effects of the medication.
- **Physical dependence** refers to withdrawal symptoms that occur when a chronic pain medication is suddenly reduced or stopped because of physiological adaptations that occur to chronic exposure to the medication.[25] For example, if a patient who receives hydromorphone daily suddenly has their prescription stopped, they will likely experience symptoms of withdrawal, such as sweating, goose bumps, vomiting, anxiety, insomnia, and muscle pain.
- **Misuse** refers to a person taking prescription pain medications in a manner or dose other than prescribed; taking someone else's prescription, even if for a medical complaint such as pain; or taking a medication to feel euphoria (i.e., to get high).[26]
- **Substance abuse disorder** is a significant impairment or distress from a pattern of substance use (i.e., alcohol, drugs, or prescription medication) with at least two of the symptoms listed below in a given year:
  - The use of more of a substance than planned or using a substance for a longer interval than desired
  - The inability to cut down despite desire to do so
  - Spending a substantial amount of the day obtaining, using, or recovering from substance use
  - Cravings or intense urge to use a substance
  - Repeated usage causing an inability to meet important social or professional obligations
  - Persistent usage despite user's knowledge that it is causing frequent problems at work, school, or home
  - Giving up or cutting back on important social, professional, or leisure activities because of use
  - Usage in physically hazardous situations, such as driving, or usage despite it causing physical or mental harm
  - Persistent use despite the user's awareness that the substance is causing, or at least worsening, a physical or mental problem[27]
- **Addiction** is a chronic disease of the brain's reward, motivation, memory, and related circuitry reflected in an individual pathologically pursuing reward and/or relief by substance use. Addiction is characterized by several symptoms, such as the

inability to consistently abstain from a substance, impaired behavioral control, craving, diminished recognition of significant problems with one's behaviors and interpersonal relationships, and a dysfunctional emotional response. Like other chronic diseases, addiction often involves cycles of relapse and remission. Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death.[28]

Substance Abuse Among Nurses and Nursing Students

Substance abuse and addiction can occur in anyone, including nurses and nursing students. The American Nursing Association released the following statements in 2016:

- Health care facilities should provide education to nurses and other employees regarding alcohol and other drug use and establish policies, procedures, and practices to promote safe, supportive, drug-free workplaces.
- Health care facilities and schools of nursing should adopt alternative-to-discipline approaches to treating nurses and nursing students with substance use disorders, with stated goals of retention, rehabilitation, and reentry into safe, professional practice.
- Drug diversion, in the context of personal use, is viewed primarily as a symptom of a serious and treatable disease, and not exclusively as a crime.
- Nurses and nursing students are aware of the risks associated with substance use, impaired practice, and drug diversion and have the responsibility and means to report suspected or actual concerns.[29]

Note

Read the American Nurses Association (ANA) statement on Substance Use Among Nurses and Nursing Students.

Read the NCSBN brochure on Substance Use Disorder in Nursing. Many states offer assistance to nurses with substance use disorders to maintain their nursing license and employment status. See Wisconsin's Professional Assistance Procedure (PAP) or New York's Statewide Peer Assistance for Nurses program.

Read more details about substance abuse disorder in the "Legal/Ethical" chapter in Open RN *Nursing Pharmacology*.

Standards of Care

Pain assessment and management standards were recently revised and published in 2018 by The Joint Commission. The revised standards require hospitals to identify pain assessment and pain management, including safe opioid prescribing, as an organizational priority. Nurses are expected to implement these best practices. See Table 11.2b for a summary of associated requirements that must be incorporated into nursing care.[30] If these components are not included when providing nursing care, the hospital may be cited by The Joint Commission and potentially lose Medicare funding.

Table 11.2b. The Joint Commission's Pain Assessment and Management Requirements[31]

Requirement	Rationale
Patients are screened for pain during emergency department visits and at the time of admission.	The misidentification and undertreatment of pain continues to occur in hospitals. When a patient presents to the hospital for other medical issues, pain may be overlooked or missed. Screening patients for pain or the risk of pain at the time of admission and while taking vital signs helps to improve pain identification and treatment.
Criteria to screen, assess, and reassess pain are used that are consistent with the patient's age, condition, and ability to understand.	An accurate screening and assessment are required for satisfactory pain management, and the hospital is responsible for ensuring that appropriate screening and assessment tools are readily available and used appropriately.
Patients are involved in the pain management treatment planning process by: – Collaboratively developing realistic expectations and measurable goals for the degree, duration, and reduction of pain – Discussing the criteria used to evaluate treatment progress (for example, relief of pain and improved physical and psychosocial function) – Receiving education on pain management, treatment options, and safe use of opioid and nonopioid medications when they are prescribed	Patient involvement in planning pain management involves information sharing and collaboration between the patient and provider to arrive at realistic expectations and clear goals. Numerous patient factors may cause undertreatment or overtreatment of pain, such as pain expectations, knowledge of pain and its treatment, and underreporting of pain. Patient involvement in the pain management planning process allows the provider to clarify the objectives of the process and guides patients in a manner that increases the likelihood of treatment adherence.
Patient's pain is treated or they are referred for treatment. Treatment strategies for pain may include nonpharmacologic, pharmacologic, or a combination of approaches.	Referrals may be required for patients who present with complex pain management needs, such as the opioid-addicted patient, the patient who is at high risk for adverse events but requires treatment with opioids, or a patient whose pain management needs exceed the expertise of the patient's provider.
Nonpharmacologic pain treatment modalities are promoted.	Nonpharmacologic modalities should be promoted by ensuring that patient preferences are discussed and some nonpharmacologic treatment options provided. Nonpharmacologic strategies include, but are not limited to, physical modalities (e.g., acupuncture therapy, chiropractic therapy, osteopathic manipulative treatment, massage therapy, and physical therapy), relaxation therapy, and cognitive behavioral therapy.
Patients identified as being high risk for adverse outcomes related to opioid treatment are monitored.	The most dangerous adverse effect of opioid analgesics is respiratory depression. Equipment must be available to monitor patients deemed highest risk (e.g., patients with sleep apnea, those receiving continuous intravenous opioids, or those on supplemental oxygen).
Patients experiencing opioid substance abuse are referred to opioid treatment programs.	When clinicians encounter patients who are addicted to opioids, the patients should be referred for treatment. The U.S. Substance Abuse and Mental Health Services Administration provides a directory of opioid treatment programs.
The hospital facilitates access to the Prescription Drug Monitoring Program databases.	Prescription Drug Monitoring Programs (PDMP) aggregate prescribing and dispensing data submitted by pharmacies and health care providers. They are an effective tool for reducing prescription drug abuse and diversion. Read more about PDMP in the "Legal/Ethical" chapter of the Open RN *Nursing Pharmacology* textbook.

Patient's pain is reassessed and responded to through the following: Evaluation and documentation of: – Response to pain intervention(s) – Progress toward pain management goals including functional ability (for example, the ability to take a deep breath, turn in bed, walk with improved pain control) – Side effects of treatment	Reassessment should be completed in a timely manner to determine if the intervention is working or if the patient is experiencing adverse effects. Only using numerical pain scales to monitor patients' pain is inadequate. The Joint Commission's technical advisory panel stressed the importance of assessing how pain affects function and the ability to make progress towards treatment goals. For example, immediately after major abdominal surgery, the goal of pain control may be the patient's ability to take a breath without excessive pain. Over the next few days, the goal of pain control may be the ability to sit up in bed or walk to the bathroom without limitation due to pain.
Patients and their family members are educated on discharge plans related to pain management including the following: – Pain management plan of care – Side effects of pain management treatment – Activities of daily living, including the home environment that might exacerbate pain or reduce effectiveness of the pain management plan of care, as well as strategies to address these issues – Safe use, storage, and disposal of opioids when prescribed	During the discharge process, patients and families need education on the importance of how to manage the patient's pain at home. Unmanaged pain may cause a patient to regress in their recovery process or have uncontrolled pain at home leading to a readmission to the hospital. It is necessary to have a discussion with patients and their families regarding their home environment and activities of daily living that may increase the need for pain management. When a patient is being discharged with an opioid medication, education on safe use, including when and how much medication to take, should be included in the discharge plan. Opioid disposal education is also critical to both reduce diversion and decrease the risk of accidental exposure to someone other than the person for whom the opioid was prescribed.

Note

Read The Joint Commission's Pain Assessment and Management Standards for Hospitals.

Read Pain Management Best Practices from the United States Department of Health & Human Services.

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10.3: Pain Assessment Methods

Asking a patient to rate the severity of their pain on a scale from 0 to 10, with “0” being no pain and “10” being the worst pain imaginable is a common question used to screen patients for pain. However, according to The Joint Commission requirements described earlier, this question can be used to initially screen a patient for pain, but a thorough pain assessment is required. Additionally, the patient’s comfort-function goal must be assessed. The comfort-function goal provides the basis for the patient’s individualized pain treatment plan and is used to evaluate the effectiveness of interventions.

PQRSTU, OLDCARTES, and COLDSPA

The “PQRSTU,” “OLDCARTES,” or “COLDSPA” mnemonics are helpful in remembering a standardized set of questions used to gather additional data about a patient’s pain. See Figure 11.4[1] for the questions associated with a “PQRSTU” assessment framework. While interviewing a patient about pain, use open-ended questions to allow the patient to elaborate on information that further improves your understanding of their concerns. If their answers do not seem to align, continue to ask focused questions to clarify information. For example, if a patient states that “the pain is tolerable” but also rates the pain as a “7” on a 0-10 pain scale, these answers do not align, and the nurse should continue to use follow-up questions using the PQRSTU framework. Upon further questioning the patient explains they rate the pain as a “7” in their knee when participating in physical therapy exercises, but currently feels the pain is tolerable while resting in bed. This additional information assists the nurse to customize interventions for effective treatment with reduced potential for overmedication with associated side effects.

Figure 11.4 PQRSTU Assessment

Sample questions when using the PQRSTU assessment are included in Table 11.3a.

Table 11.3a. Sample PQRSTU Focused Questions for Pain

PQRSTU	Questions Related to Pain
Provocation/Palliation	What makes your pain worse? What makes your pain feel better?
Quality	What does the pain feel like? Note: You can provide suggestions for pain characteristics such as “aching,” “stabbing,” or “burning.”
Region	Where exactly do you feel the pain? Does it move around or radiate elsewhere? Note: Instruct the patient to point to the pain location.
Severity	How would you rate your pain on a scale of 0 to 10, with “0” being no pain and “10” being the worst pain you’ve ever experienced?
Timing/Treatment	When did the pain start? What were you doing when the pain started? Is the pain constant or does it come and go? If the pain is intermittent, when does it occur? How long does the pain last? Have you taken anything to help relieve the pain?
Understanding	What do you think is causing the pain?

An alternative mnemonic to use when assessing pain is “OLDCARTES.”

- **O**nset: When did the pain start? How long does it last?
- **L**ocation: Where is the pain?
- **D**uration: How long has the pain been going on? How long does an episode last?
- **C**haracteristics: What does the pain feel like? Can the pain be described in terms such as stabbing, gnawing, sharp, dull, aching, piercing, or crushing?
- **A**ggravating factors: What brings on the pain? What makes the pain worse? Are there triggers such as movement, body position, activity, eating, or the environment?
- **R**adiating: Does the pain travel to another area or the body, or does it stay in one place?
- **T**reatment: What has been done to make the pain better and has it been helpful? Examples include medication, position change, rest, and application of hot or cold.
- **E**ffect: What is the effect of the pain on participating in your daily life activities?
- **S**everity: Rate your pain from 0 to 10.

A third mnemonic used is “COLDSPA.”

- **C:** Character
- **O:** Onset
- **L:** Location
- **D:** Duration
- **S:** Severity
- **P:** Pattern
- **A:** Associated Factors

No matter which mnemonic is used to guide the assessment questions, the goal is to obtain comprehensive assessment data that allows the nurse to create a customized nursing care plan that effectively addresses the patient’s need for comfort.

Pain Scales

In addition to using the PQRSTU or OLDCARTES methods of investigating a patient's chief complaint, there are several standardized pain rating scales used in nursing practice.

FACES Scale

The FACES scale is a visual tool for assessing pain with children and others who cannot quantify the severity of their pain on a scale of 0 to 10. See Figure 11.5[2] for the FACES Pain Rating Scale. To use this scale, use the following evidence-based instructions. Explain to the patient that each face represents a person who has no pain (hurt), some pain, or a lot of pain. "Face 0 doesn't hurt at all. Face 2 hurts just a little. Face 4 hurts a little more. Face 6 hurts even more. Face 8 hurts a whole lot. Face 10 hurts as much as you can imagine, although you don't have to be crying to have this worst pain." Ask the person to choose the face that best represents the pain they are feeling.[3]

Figure 11.5 The Wong-Baker FACES Pain Rating Scale. Used with permission from http://www.WongBakerFACES.org.

FLACC Scale

The FLACC scale (i.e., the Face, Legs, Activity, Cry, Consolability scale) is a measurement used to assess pain for children between the ages of 2 months and 7 years or individuals who are unable to verbally communicate their pain. The scale has five criteria, which are each assigned a score of 0, 1, or 2. The scale is scored in a range of 0–10 with "0" representing no pain.[4] See Table 11.3b for the FLACC scale.

Table 11.3b The FLACC Scale[5]

Criteria	Score 0	Score 1	Score 2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, or uninterested	Frequent to constant quivering chin; clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, or tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, and moves easily	Squirming, shifting, back and forth, or tense	Arched, rigid, or jerking
Cry	No cry (awake or asleep)	Moans or whimpers or occasional complaint	Crying steadily, screams or sobs, or frequent complaints
Consolability	Content and relaxed	Reassured by occasional touching, hugging, or being talked to; distractible	Difficult to console or comfort

COMFORT Behavioral Scale

The COMFORT Behavioral Scale is a behavioral-observation tool validated for use in children of all ages who are receiving mechanical ventilation. Eight physiological and behavioral indicators are scored on a scale of 1 to 5 to assess pain and sedation.[6]

Pain Assessment in Advanced Dementia (PAINAD) Scale

The Pain Assessment in Advanced Dementia (PAINAD) Scale is a simple, valid, and reliable instrument for assessing pain in noncommunicative patients with advanced dementia. See Table 11.3c for the items included on the scale. Each item is scored from 0-2, When totaled, the score can range from 0 (no pain) to 10 (severe pain).

Table 11.3c The PAINAD Scale[7]

Item	0	1	2
Breathing independent of vocalization	Normal	Occasional labored breathing. Short period of hyperventilation.	Noisy labored breathing. Long period of hyperventilation. Cheyne-Stokes respirations.
Negative vocalization	None	Occasional moan or groan. Low-level speech with a negative or disapproving quality.	Repeated troubled calling out. Loud moaning or groaning. Crying.
Facial Expression	Smiling or inexpressive	Sad. Frightened. Frown.	Facial grimacing.
Body language	Relaxed	Tense. Distressed pacing. Fidgeting.	Rigid. Fists clenched. Knees pulled up. Pulling or pushing away. Striking out.
Consolability	No need to console	Distracted or reassured by voice or touch.	Unable to console, distract, or reassure.

Note

Download the full PAINAD scale from the The Hartford Institute for Geriatric Nursing.[8]

Comfort-Function Goals

Comfort-function goals encourage the patient to establish their level of comfort needed to achieve functional goals based on their current health status. For example, one patient may be comfortable ambulating after surgery and their pain level is 3 on a 0-to-10 pain intensity rating scale, whereas another patient desires a pain level of 0 on a 0-to-10 scale in order to feel comfortable ambulating. To properly establish a patient's comfort-function goal, nurses must first describe the essential activities of recovery and explain the link between pain control and positive outcomes.[9]

If a patient's pain score exceeds their comfort-function goal, nurses must implement an intervention and follow up within 1 hour to ensure that the intervention was successful. Using the previous example, if a patient had established a comfort-function goal of 3 to ambulate and the current pain rating was 6, the nurse would provide appropriate interventions, such as medication, application of cold packs, or relaxation measures. Documentation of the comfort-function goal, pain level, interventions, and follow-up are key to effective, individualized pain management.[10]

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10.4: Pain Management

Pain management requires collaboration with the interdisciplinary team, including nurses, health care providers, pharmacists, and sometimes pain specialists. There are many different types of pain medications (called analgesics) that can be administered by various routes. Analgesics are classified as nonopioids, opioids, or adjuvants. An **adjuvant** is a medication that has been found in clinical practice to have either an independent analgesic effect or additive analgesic properties when administered with opioids. Examples of adjuvant medications include antidepressants (e.g., amitriptyline) and anti-seizure medications (e.g., gabapentin).

A general rule of thumb when administering analgesics is to use the lowest dose of medication, with fewest potential side effects and the least invasive route of administration, to effectively treat the level of pain as reported by the patient. The WHO ladder was originally developed by the World Health Organization for selecting analgesics for patients with cancer pain, but it can be broadened to illustrate this rule of thumb for managing pain appropriately for all patients. See Figure 11.6[1] for an image of the WHO ladder.

For example, if a patient reports a pain level of "2," then a nurse typically starts at the lowest rung of the WHO ladder and administers a prescribed nonopioid via the oral route. If the nonopioid is not effective, then a prescribed adjuvant medication may be administered, or the nurse may decide to step up a rung on the ladder and administer a prescribed oral opioid for mild to moderate pain. On the other hand, if a patient reports severe pain, the nurse may start at the top rung of the ladder and administer a prescribed opioid for moderate to severe pain via the intravenous route for rapid relief.

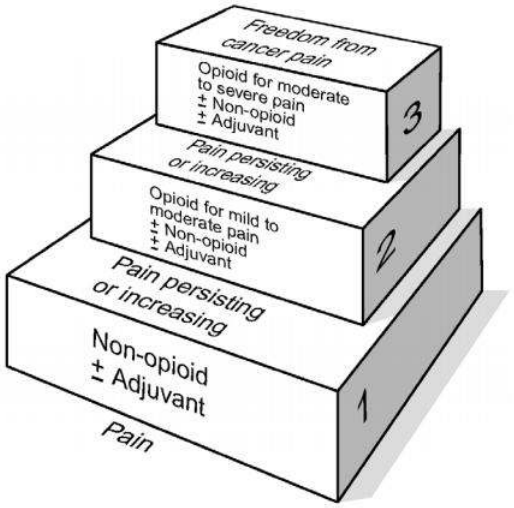

Figure 11.6 The WHO Pain Ladder

Nonopioid Analgesics

Nonopioid analgesics include acetaminophen and NSAIDs.

Acetaminophen

Acetaminophen (Tylenol) is used to treat mild pain and fever but does not have anti-inflammatory properties. Acetaminophen is safe for all ages and can be administered using various routes, such as orally, rectally, and intravenously. Many over-the-counter (OTC) medications contain acetaminophen, along with other medications. See Figure 11.7[2] for an image of acetaminophen (Tylenol) and acetaminophen and diphenhydramine (Tylenol PM).

A potential severe side effect of acetaminophen is hepatotoxicity (severe liver damage). Severe liver damage may occur if an adult patient takes more than 4,000 mg of acetaminophen in 24 hours (or 3,200 mg for older adults or 2,000 mg for chronic alcoholics) or consumes three or more alcoholic drinks every day while using acetaminophen.

Because some medications are combined with acetaminophen or are prescribed "as needed," the nurse must calculate the cumulative dose of acetaminophen over the previous 24-hour period before administering an additional dose. For example, Percocet 5/325 contains a combination of oxycodone 5 mg and acetaminophen 325 mg and may be prescribed as "1-2 tablets every

4-6 hours as needed for pain." If two tablets are truly administered every four hours over a 24-hour period, this would add up to 3,900 mg of acetaminophen, exceeding the recommended guidelines for a geriatric patient, with the potential for causing liver damage.

Figure 11.7 Acetaminophen (Tylenol) and Acetaminophen with Benadryl (Tylenol PM)

NSAIDs

Nonsteroidal anti-inflammatories (NSAIDs) provide mild to moderate pain relief and also reduce fever and inflammation by inhibiting the production of prostaglandins. They can also be used as an adjuvant with opioids for severe pain. Examples of NSAIDs include ibuprofen, naproxen, and ketorolac. All NSAIDs, except aspirin, increase the risk of heart attack, heart failure, and stroke, with the risk being higher if the patient takes more than is directed or takes it for longer than directed. Common side effects include dyspepsia, nausea, and vomiting, so it is helpful to administer this medication with food. Older adults and those taking NSAIDs concurrently with other drugs, such as warfarin or corticosteroids, are at elevated risk for gastrointestinal bleeding. Renal failure can also occur with NSAIDs.

- Ibuprofen (Motrin) is safe for infants 6 months or older. It is typically prescribed every 6 to 8 hours.
- Naproxen (Naprosyn) is longer-acting than ibuprofen and is typically prescribed 2 or 3 times a day with a full glass of water.
- Ketorolac (Toradol) is commonly used to treat "breakthrough" pain that occurs during the treatment of severe acute pain already being treated with opioids. It is indicated for the short-term management (up to 5 days in adults) of moderate to severe acute pain that requires analgesia at the opioid level. Ketorolac is safe for adults, but the dosage should be reduced for patients ages 65 and over.

Note

Read about nonopioid medications in the "Analgesic and Musculoskeletal" chapter in Open RN *Nursing Pharmacology*.

View a supplementary video on "How Do Pain Relievers Work?"

Opioid Analgesics

Opioids are used to treat moderate to severe pain and work by blocking the release of neurotransmitters involved in the processing of pain. Different opioids have different amounts of analgesia, ranging from codeine used to treat mild to moderate pain, up to

morphine, used to treat severe pain and considered to be at the top of the WHO ladder. See Table 11.4a for a summary of common opioids. As always, check a drug reference for current dosage ranges before administering medications.

Table 11.4a Common Opioid Analgesics

Generic Name	Trade Name(s)	Route	Adult Dosages
Codeine with acetaminophen	Tylenol #3	PO	30 mg/300 mg
Hydrocodone with acetaminophen	Lortab, Norco, Vicodin	PO	5 mg/300 mg or 325 mg 10 mg/320 mg or 325 mg 5mg/500 mg
Oxycodone (immediate release and extended release) **OR** **Oxycodone with acetaminophen**	Oxycodone IR & OxyContin (ER) Percocet & Roxicet	PO PO	5 mg – 10 mg 5 mg/325 mg
Fentanyl	Duragesic, Sublimaze	Transdermal IM IV	12 mcg – 100 mcg/hr 0.5 – 1 mcg/kg 0.5 – 1 mcg/kg
Hydromorphone	Dilaudid	PO Rectal SubQ, IM, & IV	4 – 8 mg 3 mg 1.5 mg (may be increased)
Morphine	Duramorph, MS Contin, Oramorph SR, & Roxanol	PO & Rectal SubQ, IM, & IV	30 mg (may be increased) 4 – 10 mg (may be increased)

Morphine is also commonly used to treat cancer pain and end-of-life pain because there is no “ceiling effect,” meaning the higher the dose, the higher the level of analgesia. Morphine is administered via various routes of administration, including orally, rectally, subcutaneously, intramuscularly, and intravenously. See Figure 11.8[3] for an image of a vial of morphine for injection or intravenous use.

Figure 11.8 Morphine

Other types of opioids can be administered through the skin, such as the fentanyl transdermal patch. See Figure 11.9[4] for an image of a fentanyl transdermal patch.

Figure 11.9 Fentanyl Patch

> **Note**
>
> Read more about analgesics and opioid medications in the "Analgesic and Musculoskeletal" chapter in the Open RN *Nursing Pharmacology* textbook.

Alternative Routes of Administration of Opioids

Analgesic medications can be administered via several routes, including orally, rectally, subcutaneously, and intravenously. Intramuscular routes are typically avoided. Other routes of administration include patient-controlled analgesia (PCA), intrathecally, and by epidural.

Patient Controlled Analgesia

Patient-controlled analgesia (PCA) is a method of pain management that allows hospitalized patients with severe pain to safely self-administer opioid medications using a programmed pump according to their level of discomfort. See Figure 11.10[5] for an image of a PCA pump. A computerized pump contains a syringe of pain medication and is connected directly to a patient's intravenous (IV) line. Pain medication includes morphine, hydromorphone, and fentanyl. Doses of medication can be self-administered as needed by the patient by pressing a button. However, the pump is programmed to only allow administration of medication every set number of minutes with a maximum dose of medication every hour. These pump settings, and the design of the system requiring the patient to be alert enough to press the button, are safety measures to prevent overmedication that can cause sedation and respiratory depression. For this reason, no one but the patient should press the button for administration of medication (not even the nurse.)

In other cases, the PCA pump delivers a small, continuous flow of pain medication intravenously with the option of the patient self-delivering additional medication as needed, according to the limits set on the pump.

To document the amount and frequency of pain medication the patient is receiving, as well as to prevent drug diversion, the settings on the pump are checked at the end of every shift as part of the bedside report. The incoming and outgoing nurses double-check

and document the pump settings, the amount of medication administered during the previous shift, and the amount of medication left in the syringe.

Figure 11.10 Patient Controlled Analgesia (PCA) Pump

Intrathecal Pump

Another type of pump used to deliver pain medication is the intrathecal pump. This pump is surgically implanted under the skin and delivers small quantities of pain medication, such as morphine, directly into the spinal fluid. It is used to treat pain and muscle spasticity when other methods have not effectively treated the pain. It is typically used for patients with severe chronic pain, such as cancer pain, back pain, or nerve pain. However, the FDA urges cautious use because it has received numerous Medical Device Reports (MDRs) describing adverse events with implanted pumps. These reports describe pump failures, dosing errors, and other potential safety issues. Patient symptoms described in these reports include pain, opioid withdrawal, fever, vomiting, muscle spasm, cognitive changes, weakness, and cardiac and respiratory distress.[6]

Epidural

A third route of alternative administration of pain medication is epidural anesthesia. See Figure 11.11[7] for an image of an epidural anesthesia. Morphine is administered into the spinal fluid via an epidural catheter for severe pain management associated with surgical procedures or during labor and delivery. It is also used to treat chronic pain that has not responded to other treatments. Epidural administration of 5 mg of morphine provides adequate postoperative analgesia for up to 24 hours.[8]

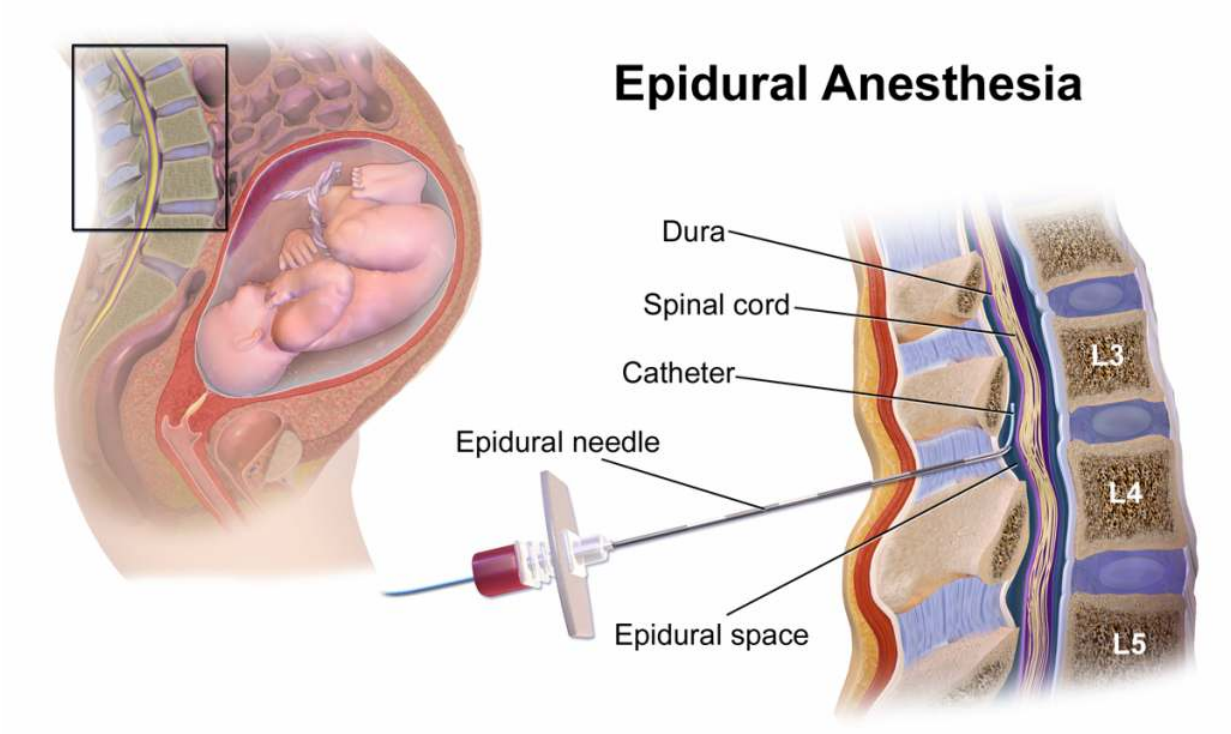

Figure 11.11 Epidural

Adverse Effects of Opioids

Respiratory Depression

The most serious potential adverse effect of opioids is respiratory depression. Respiratory depression is usually preceded by sedation. The nurse must carefully monitor patients receiving opioids for oversedation, which results in decreased respiratory rate. Patients at greatest risk are those who have never received an opioid and are receiving their first dose, those receiving an increased dose of opioids, or those taking benzodiazepines or other sedatives concurrently with opioids. If a patient develops opioid-induced respiratory depression, the opioid is reversed with naloxone (Narcan) that immediately reverses all analgesic effect.[9] See Figure 11.12[10] for an image of a naloxone rescue kit to treat respiratory depression caused by opioids.

Figure 11.12 Naloxone Rescue Kit

Opioids can cause several other common adverse effects, such as constipation, nausea and vomiting, urinary retention, and pruritus (itching).

Constipation

Opioids slow peristalsis and cause increased reabsorption of fluid into the large intestine, resulting in slow-moving, hard stools. Nurses play an important role in preventing constipation for all patients taking opioids. A bowel management program should be initiated with the first dose and continued until the opioid is discontinued. A stool softener (such as docusate) is typically prescribed initially as part of the bowel management program. If needed, a stimulant laxative, such as sennoside (Senna), bisacodyl, or Milk of Magnesia may be added to maintain a normal bowel pattern. However, stimulants should not be taken long-term because they can be addictive. Patients taking opioids should be encouraged to increase fluid and fiber intake and ambulate, as appropriate.[11]

Nausea and Vomiting

Nausea and vomiting can occur with opioid administration due to several factors, such as the slowing of gastrointestinal mobility, constipation, or stimulation of the vestibular system. Tolerance will develop to these adverse effects within a few days. Treatment includes antiemetics, such as compazine or ondansetron.[12]

Urinary Retention

Urinary retention is common in opioid-naive patients or when opioids are delivered via the spinal route. Urinary catheterization may be required if the patient is unable to void. Tolerance to this effect occurs within a few days.[13]

Pruritus

Pruritus (itching) may occur, especially when opioids are administered via the spinal route. Antihistamines, such as diphenhydramine (Benadryl), may be used to treat pruritus, but the patient should be monitored for potential sedative effects of this medication.[14]

Adjuvant Medications

Adjuvants are medications that are not classified as analgesics but have been found to contribute to analgesic effects, especially when used in addition to opioids. Two common examples of adjuvant medications are amitriptyline and gabapentin.

Amitriptyline

Amitriptyline is a tricyclic antidepressant that is also believed to be effective in treating neuropathic pain, such as diabetic neuropathy, postherpetic neuralgia, or post-stroke pain. The mechanism of action of amitriptyline in the treatment of neuropathic pain remains uncertain, although it is known to inhibit both serotonin and noradrenaline reuptake. It is usually administered at bedtime in an attempt to reduce any sedative effects during the day.[15]

Gabapentin

Gabapentin is an anticonvulsant that is also effective in treating neuropathic pain and restless leg syndrome. Patients taking gabapentin should be warned that their mental health may change in unexpected ways or they may become suicidal. Nurses should implement fall precautions for patients taking gabapentin because it can cause sleepiness, weakness, and unsteadiness.[16]

Nonpharmacological Interventions

Nonpharmacological interventions can be used with or without pharmacologic interventions and often provide tremendous benefits to the patient. A variety of techniques can be selected by the patient that best fit their needs and goals. Nonpharmacological interventions should be documented in the plan of care and their effectiveness evaluated in terms of their ability to meet the patient's goals for pain relief. Table 11.4b provides examples of several types of nonpharmacological interventions.

Table 11.4b Nonpharmacological Interventions

Intervention	Examples
Distraction	Describing photos, telling jokes, and playing games
Relaxation	Rhythmic breathing, meditation, prayer, imagery, and music therapy
Basic comfort measures	Proper positioning and therapeutic environment Avoiding sudden movement Reducing pain stimuli within the environment
Cutaneous stimulation	Acupuncture and acupressure Massage: 3-5 minutes offers benefits Transcutaneous Electrical Nerve Stimulation (TENS) unit: a specialized stimulator placed over the area of pain
Application of heat or cold	Heat: vasodilation increases blood flow; duration should be 5-20 minutes based on patient tolerance Cold: vasoconstriction reduces blood flow; cold numbs nerve sensations; duration should be no longer than 20 minutes Cool baths and moist, cool compresses
Mind-body therapies	Biofeedback Meditation and mindfulness
Aromatherapy	Lotions and moisturizing cream Avoiding strong smells
Exercise	Physical activity Tai chi Yoga
Therapy	Physical therapy Occupational therapy

See Figure 11.13[17] for images of various nonpharmacological interventions.

Figure 11.13 Nonpharmacological Interventions

Patients may also consider using complementary health approaches to manage chronic pain. Complementary approaches include acupuncture, massage therapy, meditation, relaxation techniques, spinal manipulation, Tai Chi, yoga, and dietary supplements. Read more about complementary approaches using the hyperlink provided in the following box.

Note

Read The Joint Commission document on "Non-pharmacologic and non-opioid solutions for pain management."

Read more about complementary approaches to treat pain from the National Center for Complementary and Integrative Health.

Read about pain management for older adults from the University of Iowa.

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10.5: Applying the Nursing Process

Assessment

Nurses play an essential role in performing comprehensive pain assessment. Assessments include asking questions about the presence of pain, as well as observing for nonverbal indicators of pain, such as grimacing, moaning, and touching the painful area. It is especially important to observe for nonverbal indicators of pain in patients unable to self-report their pain, such as infants, children, patients who have a cognitive disorder, patients at end of life, non-English speaking patients, or patients who tend to be stoic due to cultural beliefs. See Figure 11.14[1] for an image of a patient who is expressing pain nonverbally.

Figure 11.14 Nonverbal Expression of Pain

Recall that pain is defined as whatever the person experiencing it says it is. Subjective assessment includes asking questions regarding the severity rating, as well as obtaining comprehensive information by using the “PQRSTU” or “OLDCARTES” methods for assessing a chief complaint. For some patients who are unable to quantify the severity of their pain, a visual scale like the FACES scale is the best way to perform subjective assessment regarding the severity of pain.

Objective data includes observations of nonverbal indications of pain, such as restlessness, facial grimacing and wincing, moaning, and rubbing or guarding painful areas. For patients who cannot verbalize their pain, using a scale like the FLACC, COMFORT, or PAINAD is helpful to standardize observations across different staff members. Keep in mind that patients experiencing acute pain will also likely have vital signs changes, such as increased blood pressure, increased heart rate, and increased respiratory rate.

It is important to assess the impact of pain on a patient’s daily functioning. This can be accomplished by asking what effect the pain has on their ability to bathe, dress, prepare food, eat, walk, and complete other daily activities. Assessing the impact of pain on daily functioning is a new standard of care that assists the interdisciplinary team in tailoring treatment goals and interventions that are customized to the patient’s situation. For example, for some patients, chronic pain affects their ability to be employed, so effective pain management is vital so they can return to work. For other patients receiving palliative care, the ability to sit up and eat a meal with loved ones without pain is an important goal.[2]

When performing a patient assessment, any new complaints of pain or pain that is unresponsive to the current treatment plan should be reported to the health care provider. Instances of sudden, severe pain or chest pain require immediate notification or contact of emergency services.

Diagnoses

Commonly used NANDA-I nursing diagnoses for pain include *Acute Pain* (duration less than 3 months) and *Chronic Pain*. See Table 11.5 for more information regarding these diagnoses.[3] For more information about defining characteristics and related factors for other NANDA-I nursing diagnoses, refer to a current nursing diagnosis resource.

Table 11.5 Pain NANDA-I Nursing Diagnoses[4]

NANDA-I Diagnosis	Definition	Defining Characteristics
Acute Pain	Unpleasant sensory and emotional experience associated with acute or potential tissue damage, or described in terms of such damage; sudden or slow onset of any intensity from mild to severe with an anticipated or predictable end, and with a duration of less than 3 months.	• Alteration in sleep pattern • Appetite change • Change in physiological parameters (i.e., blood pressure, heart rate, respiratory rate) • Diaphoresis • Distraction behavior • Evidence of pain using standardized pain behavior checklist for those unable to communicate verbally • Expressive behavior • Facial expression of pain • Guarding behavior • Hopelessness • Narrowed focus • Protective behavior • Proxy report of pain behavior/activity changes • Pupil dilation • Restlessness • Self-focused • Self-report of intensity using standardized pain scale • Self-report of pain characteristics using standardized pain instrument
Chronic Pain	Unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage (International Association for the Study of Pain); sudden or slow onset of any intensity from mild to severe, constant or recurring without anticipated or predictable end, and with a duration of greater than 3 months.	• Alteration in ability to continue previous activities • Alteration in sleep pattern • Anorexia • Evidence of pain using standardized pain behavior checklist for those unable to communicate verbally • Facial expression of pain • Proxy report of pain behavior/activity changes • Self-focused • Self-report of intensity using standardized pain scale • Self-report of pain characteristics using standardized pain instrument

Outcome Identification

An overall goal when providing pain management is, "*The patient will report that the pain management treatment plan achieves their comfort-function goals.*"[5]

SMART outcomes are customized to the patient's unique situation. An example of a SMART goal is, "*The patient will notify the nurse promptly for pain intensity level that is greater than their comfort-function goal throughout shift.*"[6]

Planning Interventions

Several pharmacological and nonpharmacological interventions have been described throughout this chapter. See the following box for a summarized list of interventions for acute pain management.

Acute Pain Management [7]

- Identify pain intensity during required recovery activities (e.g., coughing and deep breathing, ambulation, transfers to chair, etc.)
- Explore patient's knowledge and beliefs about pain, including cultural influences
- Question patient regarding the level of pain that allows a state of comfort and desired function and attempt to keep pain at or lower than identified level
- Ensure that the patient receives prompt analgesic care before the pain becomes severe or before pain-inducing activities
- Administer analgesics around-the-clock as needed the first 24 to 48 hours after surgery, trauma, or injury except if sedation or respiratory status indicates otherwise
- Monitor sedation and respiratory status before administering opioids and at regular intervals when opioids are administered
- Follow agency protocols in selecting analgesia and dosage
- Use a combination of prescribed medications (e.g., opioids, nonopioids, and adjuvants), if pain level is severe
- Select and implement interventions tailored to the patient's risks, benefits, and preferences (e.g., pharmacological and nonpharmacological) to facilitate pain relief
- Cautiously use analgesics that may have adverse effects in older adults
- Administer analgesics using the least invasive route available, avoiding the intramuscular route
- Advocate PCA, intrathecal, and epidural routes of administration when appropriate
- Modify pain control measures on the basis of the patient's response to treatment
- Prevent and/or manage medication side effects
- Notify prescribing provider if pain control measures are unsuccessful
- Provide accurate information to family members or caregivers about the patient's pain experience with the patient's permission

See the following box for a summarized list of interventions for chronic pain management.

Chronic Pain Management [8]

- Explore the patient's knowledge and beliefs about pain, including cultural influences
- Determine the pain experience on quality of life (e.g., sleep, appetite, activity, cognition, mood, relationships, job performance, and role responsibilities)
- Evaluate the effectiveness of past pain control measures with the patient
- Question the patient regarding the level of pain that allows a state of comfort and appropriate functioning and attempt to keep pain at or lower than identified level
- Control environmental factors that may influence the patient's pain experience
- Ensure that the patient receives prompt analgesic care before the pain becomes severe or before activities that are anticipated to be pain-inducing
- Select and implement intervention options tailored to the patient's risks, benefits, and preferences (e.g., pharmacological, nonpharmacological, interpersonal) to facilitate pain relief, as appropriate
- Instruct the patient and family about principles of pain management

- Encourage the patient to monitor own pain and to use self-management approaches
- Encourage appropriate use of nonpharmacological techniques (e.g., biofeedback, TENS, hypnosis, relaxation, guided imagery, music therapy, distraction, play therapy, activity therapy, acupressure, heat and cold application, and massage) and pharmacological options as pain control measures
- Avoid use of analgesics that may have adverse effects on older adults
- Collaborate with the patient, family, and other health professionals to select and implement pain control measures
- Prevent or manage side effects
- Evaluate the effectiveness of pain control measures through ongoing monitoring of the pain experience
- Watch for signs of depression (e.g., sleeplessness, not eating, flat affect, statements of depression, or suicidal ideation)
- Watch for signs of anxiety or fear (e.g., irritability, tension, worry, or fear of movement)
- Modify pain control measures on the basis of the patient's response to treatment
- Incorporate the family in the pain relief modality, when possible
- Utilize a multidisciplinary approach to pain management, when appropriate
- Consider referrals for the patient and family to support groups and other resources, as appropriate
- Evaluate patient satisfaction with pain management at specified intervals
- Evaluate barriers to adherence with past pain management care plans

Implementing Pharmacological Interventions

Patients should be involved and engaged in their plan of care to treat pain. By demonstrating empathy and collaborating with patients and the interdisciplinary team, it is more likely the treatment plan will be effective based on the patient's goals.

When administering analgesic medication, holistic nursing care is important. Begin by considering the patient's goals for pain relief and ask if they have been met effectively by previously administered medications. If they have not been met, it may be necessary to advocate for additional or alternative medication with the health care provider. It is also important to consider if the patient is experiencing any side effects that may impact the patient's desire to take additional pain medication.

When administering medications that have been ordered on an "as-needed" basis, it is vital for the nurse to verify the amount of medication the patient received in the past 24 hours and if any dosage limits have been met to ensure patient safety.

Prior to administration, consider the best route of administration for this patient at this particular time. For example, if the patient is nauseated and vomiting, then an oral route may not be effective. On the other hand, if a patient's pain has improved when receiving intravenous medications during the recovery process, it may be possible for the patient to begin taking oral pain medications in preparation for discharge home. Keep the WHO ladder in mind when selecting medications to reach patient goals while also avoiding potential adverse effects when possible.

When preparing opioid medications, it is important to remember that these medications are controlled substances with special regulations regarding storage, count auditing, and disposal/wasting of medication. Follow agency policy regarding these issues. It is also important to assess the patient's level of sedation and respiratory status before administering additional doses of opioids and withhold the medication if the patient is oversedated or their respiratory rate is less than 12/minute. However, when providing pain management during end-of-life care, these parameters no longer apply because the emphasis is on providing comfort according to the patient's preferences. Read more about end-of-life care in the "Grief and Loss" chapter.

Evaluation

It is vital for the nurse to regularly evaluate if the established interventions are effectively meeting the pain management and function goals established collaboratively with the patient. Additionally, when administering analgesics, the patient should be reassessed in an hour (or other time frame based on the onset and peak of the medication) to determine if the medication was effective. If interventions are not effective, then follow-up interventions are required, which may include contacting the health care provider.

For patients living with chronic pain, it can be helpful for them or their caregiver to maintain a pain journal. In the journal they can document activities that precipitated pain, medications taken to manage the pain, and whether these medications were effective in helping them to meet their functional goals. This journal is shared with the health care provider during follow-up visits to enhance the treatment plan.[9]

The nurse must continually monitor for potential adverse effects of pain medications. For example, if a patient is receiving acetaminophen daily for chronic osteoarthritis pain, signs of liver dysfunction, such as jaundice and elevated liver function bloodwork, should be monitored. For older adults receiving NSAIDs, it is important to watch for early signs of gastrointestinal bleeding, such as melena. Patients receiving opioids should be continually monitored for oversedation, respiratory depression, constipation, nausea and vomiting, urinary retention, and pruritus. Side effects should be reported to the health care provider and orders received for treatment.

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1. "238074231_2485ed053b_o" by Erik Ogan is licensed under CC BY-SA 2.0↵
2. American Association of Colleges of Nursing. (n.d.). *End-of-Life-Care (ELNEC)*. https://www.aacnnursing.org/ELNEC↵
3. Herdman, T. H., & Kamitsuru, S. (Eds.). (2018). *Nursing diagnoses: Definitions and classification, 2018-202*0. Thieme Publishers, New York, pp. 445-446. ↵
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10.6: Putting It All Together

Patient Scenario

Mrs. Jamison is a 34-year-old woman admitted through the emergency department with kidney stones. As you reposition her in bed, she is visibly grimacing and audibly moaning. She rates her pain at an "8 out of 10" although she reports her pain has "improved" since admission with the IV morphine delivered via PCA pump. You recheck her vital signs and her blood pressure is elevated at 150/90 and her heart rate is 120.

Applying the Nursing Process

Assessment: The nurse notes that Mrs. Jamison demonstrates signs of discomfort with visible grimacing, audible moaning, and elevated blood pressure and heart rate. She rates her pain at "8 out of 10."

Based on the assessment information that has been gathered, the following nursing care plan is created for Mrs. Jamison.

Nursing Diagnosis: *Acute Pain related to physical injury agent as evidenced by change in physiological parameters and self-report of pain rated as "8 out of 10."*

Overall Goal: *The patient will report that the pain management treatment plan achieves her comfort-function goal.*

SMART Expected Outcomes:

- *Mrs. Jamison will verbalize pain reduction to a self-reported tolerable level of "4" or less on a 0-10 scale by the end of the shift.*
- *Mrs. Jamison's blood pressure and heart rate will return to baseline levels by the end of the shift.*

Planning and Implementing Nursing Interventions:

The nurse will perform a comprehensive pain assessment and identify the patient's expectation regarding pain management. The nurse will encourage the patient to use breathing techniques and relaxation methods to facilitate pain management. The nurse will notify the provider of unrelieved pain and request additional prescriptions for medication as needed.

Sample Documentation:

Mrs. Jamison was admitted with acute pain related to kidney stones and is receiving Morphine via PCA pump. At 1400, her blood pressure was elevated at 150/90 and her heart rate elevated at 120. She reported pain as an "8 out of 10." She was visibly grimacing and audibly moaning when repositioned in bed. Dr. Smith was notified at 1400 and a new prescription received. Ketorolac 30 mg IV was administered at 1415. At 1515, the patient stated her pain had decreased to a "3 out of 10" level and this level was "satisfactory." Her blood pressure also decreased to 135/76 and her heart rate decreased to 88.

Evaluation:

Within one hour of administration of Ketorolac, Mrs. Jamison verbalized pain reduction to her reported satisfactory level of "3," and her blood pressure and heart rate decreased to her baseline levels. SMART outcomes were "met."

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10.7: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Apply the concepts you learned from this chapter to the following patient scenario[1].

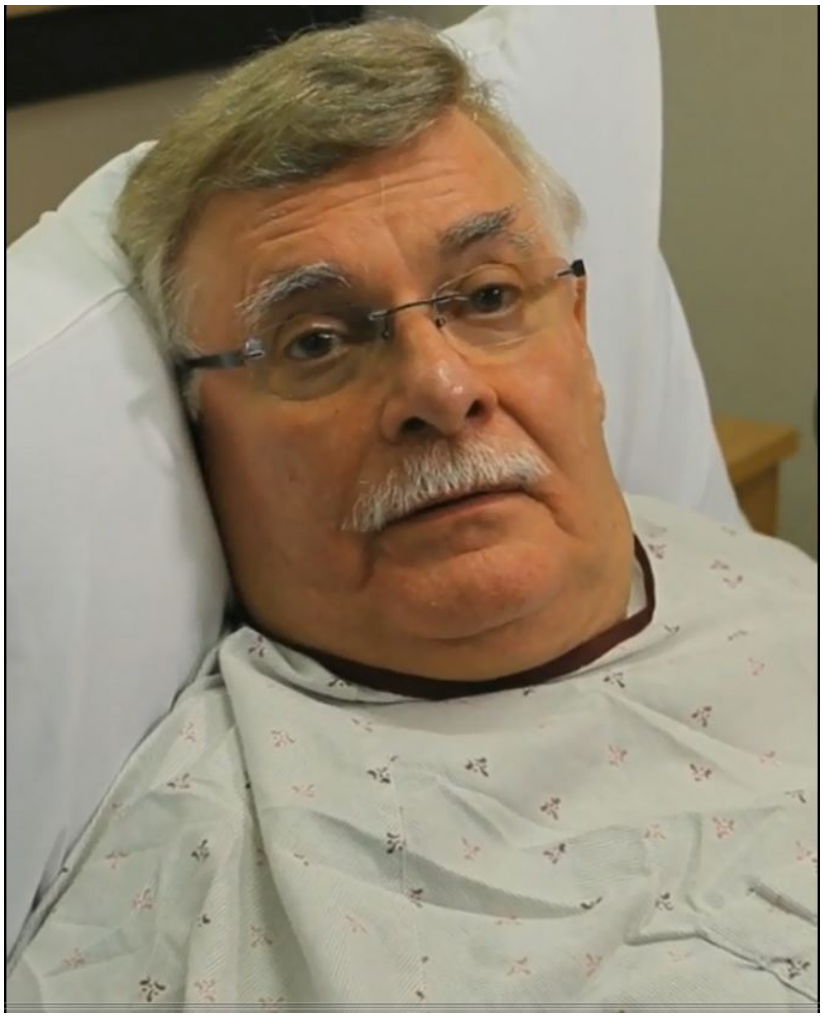

Figure 11.15 Simulated Patient

Joe is a 68-year-old male who was recently diagnosed for colon cancer last week and underwent a colon resection three days ago. See Figure 11.15 for an image of Joe.[2] In the change of shift report, you hear that he is receiving morphine by PCA pump for pain, but he is not using it very often. Staff reports he “needs much encouragement” to get out of bed and participate in self-cares. He has crackles in his lung bases and his oxygen saturation is 88% on room air.

1. What additional assessments (subjective and objective) will you perform on Joe?
2. List the top three priority nursing diagnoses for Joe.
3. Joe states, “I don’t want to use morphine. I am afraid I will become addicted to it like my friend did after he came home from the war.” How will you respond to therapeutically address his concerns, yet also teach Joe about good pain management?
4. What are common side effects of opioids and how will you plan to manage these side effects for Joe?
5. Emotional issues could also be affecting Joe’s perception of pain. What will you further physically assess and therapeutically address?

6. After providing patient education about morphine and the PCA pump, you check on Joe later in the day and notice he has had five self-doses every hour with 15 attempts in the past hour. The pump is set for a maximum of 6 doses per hour. What further assessments will you perform?

---

1. "Male_older_adult.jpg" by Shane VanderBent, Chippewa Valley Technical College is licensed under CC BY 4.0↵
2. "Male_older_adult.jpg" by Shane VanderBent, Chippewa Valley Technical College is licensed under CC BY 4.0↵

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10.8: XI Glossary

Acute pain: Pain that is limited in duration and is associated with a specific cause.

Addiction: A chronic disease of the brain's reward, motivation, memory, and related circuitry reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors. Addiction is characterized by several symptoms, such as the inability to consistently abstain from a substance, impaired behavioral control, cravings, diminished recognition of significant problems with one's behaviors and interpersonal relationships, and a dysfunctional emotional response.

Adjuvant: Medication that is not classified as an analgesic but has been found in clinical practice to have either an independent analgesic effect or additive analgesic properties when administered with opioids.

Analgesics: Medications used to relieve pain.

Chronic pain: Pain that is ongoing and persistent for longer than six months.

Misuse: Taking prescription pain medications in a manner or dose other than prescribed; taking someone else's prescription, even if for a medical complaint such as pain; or taking a medication to feel euphoria (i.e., to get high).

Neuropathic pain: Pain caused by a lesion or disease of the somatosensory nervous system that is typically described by patients as "burning" or "like pins and needles."

Nociceptor: A sensory receptor for painful stimuli.

Pain: An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage.

Patient-Controlled Analgesia (PCA): A method of pain management that allows hospitalized patients with severe pain to safely self-administer opioid medications using a programmed pump according to their level of discomfort.

Physical dependence: Withdrawal symptoms that occur when chronic pain medication is suddenly reduced or stopped because of physiological adaptations that occur from chronic exposure to the medication.

Referred pain: Pain perceived at a location other than the site of the painful stimulus. For example, pain from retained gas in the colon can cause pain to be perceived in the shoulder.

Substance abuse disorder: Significant impairment or distress from a pattern of substance use (i.e., alcohol, drugs or misuse of prescription medications).

Tolerance: A reduced response to pain medication when the same dose of a drug has been given repeatedly, requiring a higher dose of the drug to achieve the same level of response.

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CHAPTER OVERVIEW

11: Sleep and Rest

11.1: Sleep and Rest Introduction
11.2: Basic Concepts
11.3: Applying the Nursing Process
11.4: Putting It All Together
11.5: Learning Activities
11.6: XII Glossary

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11.1: Sleep and Rest Introduction

Learning Objectives

- Assess factors that put patients at risk for problems with sleep
- Identify factors related to sleep/rest across the life span
- Recognize characteristics of sleep deprivation
- Consider the use of nonpharmacological measures to promote sleep and rest
- Identify evidence-based practices

Maslow's hierarchy of needs indicates sleep as one of our physiological requirements. Getting enough quality sleep at the right times according to our circadian rhythms can protect mental and physical health, safety, and quality of life. Conversely, chronic sleep deficiency increases the risk of heart disease, kidney disease, high blood pressure, diabetes, and stroke, as well as weakening the immune system.[1] This chapter will review the physiology of sleep and common sleep disorders, as well as interventions to promote good sleep.

1. Trossman, S. (2018, November 7). Nurses offer strategies to promote patients' rest and sleep. *American Nurse*. https://www.myamericannurse.com/strategies-promote-patients-rest-sleep/↵

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11.2: Basic Concepts

What Causes Sleep?

There are two internal biological mechanisms that work together to regulate wakefulness and sleep referred to as circadian rhythms and sleep-wake homeostasis.

Circadian rhythms direct a wide variety of body functions including wakefulness, core temperature, metabolism, and the release of hormones. They control the timing of sleep, causing a person to feel sleepy at night and creating a tendency to wake in the morning without an alarm. See Figure 12.1[1] for an illustration of circadian rhythms. Circadian rhythms are based roughly on a 24-hour clock and use environmental cues, such as light and temperature to determine the time of day.[2]

Sleep-wake homeostasis keeps track of a person's need for sleep. A pressure to sleep builds with every hour that a person is awake, reaching a peak in the evening when most people fall asleep. The homeostatic sleep drive also regulates sleep intensity, causing a person to sleep longer and more deeply after a period of sleep deprivation.[3] Adenosine is linked to this drive for sleep. While awake, the level of adenosine in the brain continues to rise, with increased levels signaling a shift toward sleep. While sleeping, the body breaks down adenosine. When it gets dark, the body also releases a hormone called melatonin. Melatonin signals the body that it's time to prepare for sleep and creates a feeling of drowsiness. The amount of melatonin in the bloodstream peaks as the evening wears on. A third hormone, cortisol, is released in the early morning hours and naturally prepares the body to wake up.[4]

Factors that influence a person's sleep and wakefulness include medical conditions, medications, stress, sleep environment, and foods and fluids consumed, but the greatest influence is exposure to light. Specialized cells in the retina process light and provide messages to the brain to align the body clock with periods of day or night. Exposure to bright artificial light in the late evening can disrupt this process, making it hard to fall asleep. Examples of bright artificial light include the light from a TV screen, computer, or smartphone. Exposure to light can also make it difficult to return to sleep after being awakened.[5]

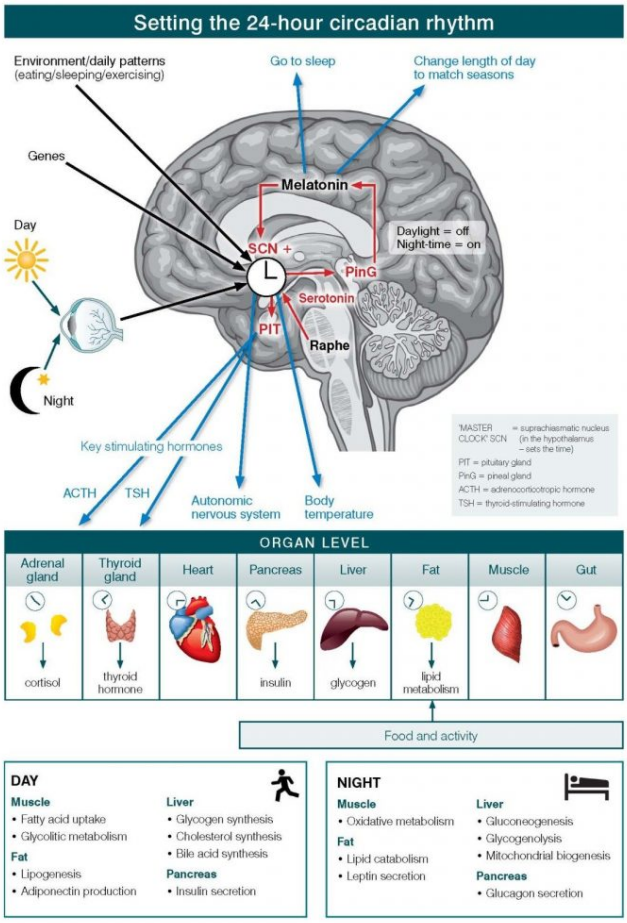

Figure 12.1 Circadian Rhythms

Night shift workers often have trouble falling asleep when they go to bed and may have trouble staying awake at work because their natural circadian rhythm and sleep-wake cycle are disrupted. Jet lag also disrupts circadian rhythms. When flying to a different time zone, a mismatch is created between a person's internal clock and the actual time of day.[6]

The rhythm and timing of the body clock change with age. For example, teenagers fall asleep later at night than younger children and adults because melatonin is released and peaks later in the 24-hour cycle for teens. As a result, it's natural for many teens to prefer later bedtimes at night and sleep later in the morning than adults.[7]

Individuals also need more sleep early in life, when they're growing and developing. For example, newborns may sleep more than 16 hours a day, and preschool-aged children need to take naps. Young children tend to sleep more in the early evening whereas older adults tend to go to bed earlier and wake up earlier.[8]

Sleep Phases and Stages

When sleeping, individuals cycle through two phases of sleep: rapid eye movement (REM) and non-REM sleep. A full sleep cycle takes 80 to 100 minutes to complete, and most people typically cycle through four to six cycles per night. It is common to wake up briefly between cycles.[9]

Restoration takes place mostly during slow-wave **non-REM** sleep, during which the body's temperature, heart rate, and brain oxygen consumption decrease. Brain activity decreases, so this stage is also referred to as slow-wave sleep and is observed during sleep studies. Non-REM sleep has these three stages:

- **Stage 1:** The transition between wakefulness and sleep.
- **Stage 2:** The initiation of the sleep phase.

- **Stage 3:** The deep sleep or slow-wave sleep stage based on a pattern that appears during measurements of brain activity. Individuals spend the most amount of sleep time in this stage during the early part of the night. (Note that the previously considered 4th stage of non-REM sleep is now included within Stage 3).[10]

During **REM** sleep, a person's heart rate and respiratory rate increase. Eyes twitch as they rapidly move back and forth and the brain is active. Brain activity measured during REM sleep is similar to activity during waking hours. Dreaming occurs during REM sleep, and muscles normally become limp to prevent acting out one's dreams. People typically experience more REM sleep as the night progresses. However, hot and cold environments can affect a person's REM sleep because the body does not regulate temperature well during REM sleep.[11] See Figure 12.2[12] for an image illustrating stages of sleep with increased REM sleep through the night indicated in solid red lines.

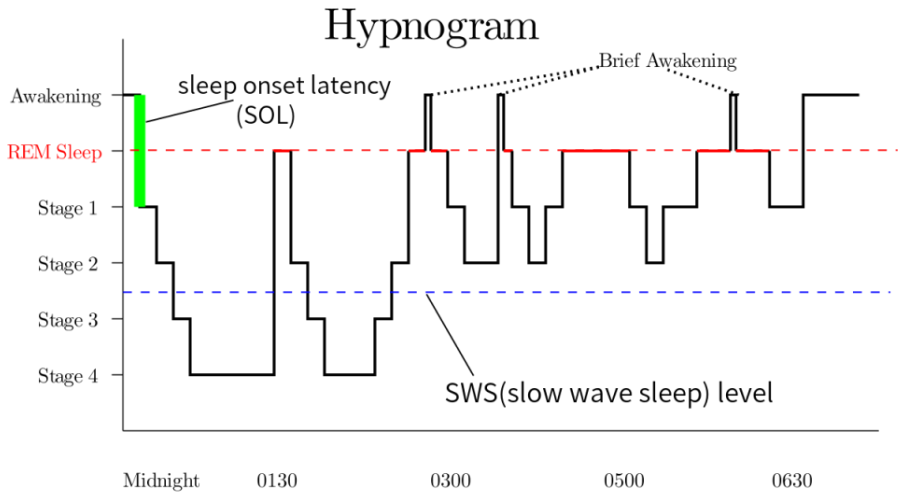

Figure 12.2 Stages of Sleep

The patterns and types of sleep change as people mature. For example, newborns spend more time in REM sleep. The amount of slow-wave sleep peaks in early childhood and then drops sharply in the teenage years. Slow-wave sleep continues to decrease through adulthood, and older people may not have any slow-wave sleep at all.[13]

Why Is Sleep Important?

Sleep plays a vital role in good health and well-being. Getting enough quality sleep at the right times protects mental health and physical health. Lack of sleep affects daytime performance, quality of life, and safety. The way a person feels while awake depends on what happens while they are sleeping. During sleep, the body is working to support healthy brain function and maintain physical health. In children and teens, sleep also helps support growth and development.[14]

Healthy Brain Function and Emotional Well-Being

Sleep helps the brain work properly. While sleeping, the brain is forming new pathways to help a person learn and remember information. Studies show that a good night's sleep improves learning and problem-solving skills. Sleep also helps a person pay attention, make decisions, and be creative. Conversely, sleep deficiency alters activity in some parts of the brain, causing difficulty in making decisions, solving problems, controlling emotions and behavior, and coping with change. Sleep deficiency has also been linked to depression, suicide, and risk-taking behavior.[15]

Physical Health

Sleep also plays an important role in physical health. For example, sleep is involved in healing and repairing the heart and blood vessels. Ongoing sleep deficiency is linked to an increased risk of heart disease, kidney disease, high blood pressure, diabetes, and stroke. Sleep helps maintain a healthy balance of the hormones that cause hunger (ghrelin) or a feeling of fullness (leptin). When a person doesn't get enough sleep, the level of ghrelin increases and the level of leptin decreases, causing a person to feel hungry when sleep deprived. The way the body responds to insulin is also affected, causing increased blood sugar.[16]

Sleep supports healthy growth and development. Deep sleep triggers the body to release hormones that promote normal growth in children and teens. See Figure 12.3.[17] of a sleeping child. These hormones also boost muscle mass and help repair cells and tissues.[18]

Figure 12.3 Sleeping Child

Daytime Performance

Getting enough quality sleep at the right times also enhances functioning throughout the day. People who are sleep deficient are less productive at work and school. They take longer to finish tasks, have a slower reaction time, and make more mistakes. After several nights of losing sleep, even a loss of just 1 or 2 hours per night, the ability to function declines.[19] See Figure 12.4[20] for an image of a student demonstrating sleep deficiency while studying.

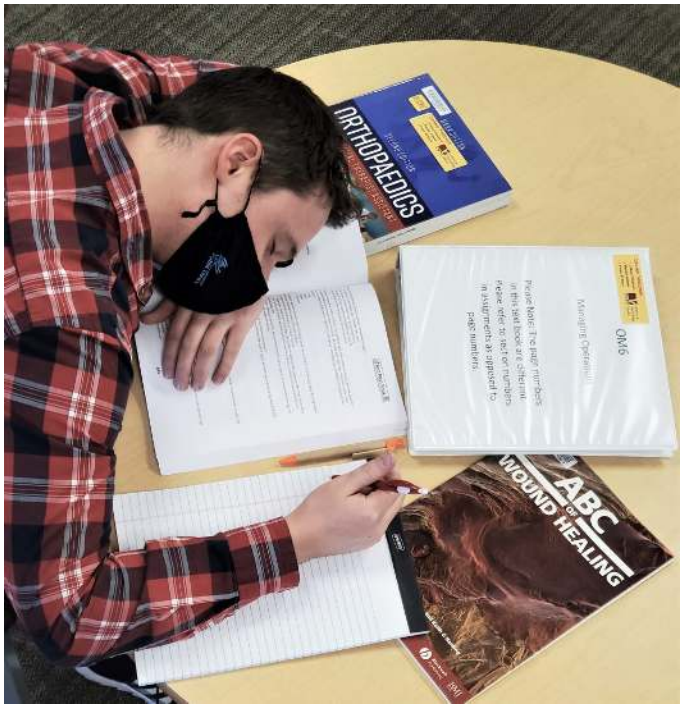

Figure 12.4 Sleep Deficiency

Lack of sleep can lead to microsleep. **Microsleep** refers to brief moments of sleep that occur when one is normally awake. You can't control microsleep, and you might not be aware of it. For example, have you ever driven somewhere and then not remembered part of the trip? If so, you may have experienced microsleep. Even if you're not driving, microsleep can affect how you function. If you're listening to a lecture, for example, you might miss some of the information or feel as if you don't understand the point. In reality, you may have slept through part of the lecture and not been aware of experiencing microsleep.[21]

Effects of Sleep Deficiency

The damage from sleep deficiency can occur in an instant. For example, drowsy drivers may feel capable of driving. Yet, studies show that sleep deficiency harms one's driving ability as much as, or more than, being drunk. It is estimated that driver sleepiness is a factor in about 100,000 car accidents each year, resulting in about 1,500 deaths.[22]

Drivers aren't the only ones affected by sleep deficiency. It can affect people in all lines of work, including health care workers, pilots, students, mechanics, and assembly line workers. As a result, sleep deficiency is harmful not only on a personal level, but also can cause large-scale damage. For example, sleep deficiency has played a role in human errors linked to tragic accidents, such as nuclear reactor meltdowns, grounding of large ships, and aviation accidents.[23]

Sleep deficiency can also cause long-term harm. It increases the risk of obesity. For example, one study of teenagers showed that with each hour of sleep lost, the odds of becoming obese went up. Sleep deficiency increases the risk of obesity in other age groups as well. Sleep also affects how your body reacts to insulin, the hormone that controls your blood glucose (sugar) level. Sleep deficiency results in a higher than normal blood sugar level, which may increase your risk for diabetes.[24] Ongoing sleep deficiency can also change the way in which your immune system responds. For example, if you're sleep deficient, you may have trouble fighting common infections.[25] In addition, children and teens who are sleep deficient may have problems getting along with others. They may feel angry and impulsive, have mood swings, feel sad or depressed, or lack motivation. They also may have problems paying attention, and they may get lower grades and feel stressed.[26]

If a person routinely loses sleep or chooses to sleep less than needed, the sleep loss adds up. The total sleep lost is called sleep debt. For example, if you lose 2 hours of sleep each night, you'll have a sleep debt of 14 hours after a week.[27] See Figure 12.5[28] of an individual feeling the effects of sleep debt on awakening.

Figure 12.5 Sleep Debt

Some people nap as a way to deal with sleepiness. Naps can provide a short-term boost in alertness and performance. However, napping doesn't provide restorative sleep. Some people sleep more on their days off than on work days. They also may go to bed later and get up later on days off. Although extra sleep on days off might help a person feel better, it can upset the body's sleep–wake rhythm.[29] See Figure 12.6[30] of an adult napping during the day.

Figure 12.6 Napping

Sleep deficiency can affect people even when they sleep the total number of hours recommended for their age group. For example, people whose sleep is out of sync with their body clocks (such as shift workers) or whose sleep is routinely interrupted (such as caregivers or emergency responders) often need to pay special attention to their sleep needs.[31] Individuals should also talk to a health care provider if they sleep more than eight hours a night, but don't feel well-rested. This can indicate a sleep disorder or other health problem.[32]

Sleep Disorders

There are several sleep disorders that can cause sleep deficiency, such as insomnia, sleep apnea, and narcolepsy.

Insomnia

Insomnia is a common sleep disorder that causes trouble falling asleep, staying asleep, or getting good quality sleep. Insomnia interferes with daily activities and causes the person to feel unrested or sleepy during the day.[33] Short-term insomnia may be caused by stress or changes in one's schedule or environment. It can last for a few days or weeks. Chronic insomnia occurs three or more nights a week, lasts more than three months, and cannot be fully explained by another health problem or a medication. Chronic insomnia raises the risk of high blood pressure, coronary heart disease, diabetes, and cancer.[34]

Symptoms of insomnia include the following:

- Lying awake for a long time before falling asleep. This is more common in younger adults.
- Sleeping for only short periods due to waking up often during the night or being awake for most of the night. This is the most common symptom and typically affects older adults.
- Waking up too early in the morning and not being able to get back to sleep.
- Having poor-quality of sleep that causes one to wake up feeling unrested. The person often feels sleepy during the day and has difficulty focusing on tasks. Insomnia can also cause irritability, anxiousness, and depression.[35]

See Figure 12.7[36] for an illustration of insomnia.

Figure 12.7 Insomnia

To diagnose insomnia, the health care provider asks about a person's sleep habits and may request the person to keep a sleep diary for 1-2 weeks. A **sleep diary** records the time a person goes to sleep, wakes up, and takes naps each day. Timing of activities such as exercising and drinking caffeine or alcohol are also recorded, as well as feelings of sleepiness throughout the day.[37] A **sleep study** may be ordered to look for other sleep problems, such as circadian rhythm disorders, sleep apnea, and narcolepsy.

Treatment

Lifestyle changes often help improve short-term insomnia. The patient should be educated about healthy sleep habits, such as the following:

- Make your bedroom sleep-friendly. Sleep in a cool, quiet place. Avoid artificial light from the TV or electronic devices, as this can disrupt your sleep-wake cycle.
- Go to sleep and wake up around the same times each day, even on the weekends. If you can, avoid night shifts, irregular schedules, or other things that may disrupt your sleep schedule.
- Avoid caffeine, nicotine, and alcohol before bedtime. Although alcohol can make it easier to fall asleep, it triggers sleep that tends to be lighter than normal. This makes it more likely that you will wake up during the night. The effect of caffeine can last as long as eight hours.
- Get regular physical activity during the daytime (at least 5 to 6 hours before going to bed). Exercising close to bedtime can make it harder to fall asleep.
- Avoid daytime naps, especially in the afternoon. This may help you sleep longer at night.
- Eat meals on a regular schedule and avoid late-night dinners to maintain a regular sleep-wake cycle.
- Limit how much fluid you drink close to bedtime. This may help you sleep longer without having to use the bathroom.
- Learn new ways to manage stress. Follow a routine that helps you wind down and relax before bed. For example, read a book, listen to soothing music, or take a hot bath. Your doctor may also recommend massage therapy, meditation, or yoga to help you relax. Acupuncture may also help improve insomnia, especially in older adults.
- Avoid certain over-the-counter and prescription medicines that can disrupt sleep (for example, some cold and allergy medicines).[38]

A type of counseling called cognitive behavioral therapy for insomnia is usually the first treatment recommended for chronic insomnia. Several prescription medications may also be prescribed to treat insomnia. Some are meant for short-term use while others are meant for long-term use. Some insomnia medications can be habit-forming, and they all can cause dizziness, drowsiness, or worsening of depression or suicidal thoughts.[39] Common medications prescribed to treat insomnia are as follows:

- Benzodiazepines, such as lorazepam (Ativan). Benzodiazepines can be habit-forming and should be taken for only a few weeks. They can interfere with REM sleep.
- Benzodiazepine-receptor agonists, such as zolpidem (Ambien). Side effects may include anxiety. Rare side effects may include a severe allergic reaction or unintentionally doing activities while asleep such as walking, eating, or driving.

- Melatonin-receptor agonists, such as ramelteon (Rozerem). Rare side effects may include doing activities while asleep, such as walking, eating, or driving, or a severe allergic reaction.
- Orexin-receptor antagonists, such as suvorexant (Belsomra). This medicine is not recommended for people who have narcolepsy. Rare side effects may include doing activities while asleep, such as walking, eating, or driving, or not being able to move or speak for several minutes while going to sleep or waking up.[40]

Some patients use over-the-counter (OTC) products as sleep aids. Many contain antihistamines that cause sleepiness. However, they can be unsafe for some people and may not be the best treatment for insomnia. Melatonin supplements are lab-made versions of the sleep hormone melatonin. Many people take melatonin supplements to improve their sleep. However, research has not proven that melatonin is an effective treatment for insomnia. Side effects of melatonin may include daytime sleepiness, headaches, upset stomach, and worsening depression. It can also affect the body's control of blood pressure, causing high or low blood pressure.[41]

Sleep Apnea

Sleep apnea is a common sleep condition that occurs when the upper airway becomes repeatedly blocked during sleep, reducing or completely stopping airflow. If the brain does not send the signals needed to breathe, the condition may be called central sleep apnea.[42]

Sleep apnea can be caused by a person's physical structure or other medical conditions. Risk factors include obesity (causing fat deposits in the neck), large tonsils (that narrow the airway), thyroid disorders, neuromuscular disorders, heart or kidney failure (causing fluid buildup in the neck that narrows the airway), genetic syndromes (such as cleft lip or Down's syndrome), and premature birth (before 37 weeks gestation).[43]

Common signs and symptoms of sleep apnea include the following:

- Reduced or absent breathing, known as apnea events
- Frequent loud snoring
- Gasping for air during sleep
- Excessive daytime sleepiness and fatigue
- Decreases in attention, vigilance, concentration, motor skills, and verbal and visuospatial memory
- Dry mouth or headaches when waking
- Sexual dysfunction or decreased libido
- Waking up often during the night to urinate[44]

Sleep apnea is diagnosed by a health care provider based on the person's medical history, a physical exam, and results from a sleep study. During sleep studies, the number of episodes of slowed or stopped breathing events are recorded, along with documentation of oxygen levels in the blood during these events.[45]

Treatment

A breathing device, such as a CPAP machine, is the most commonly recommended treatment for patients with sleep apnea. CPAP stands for continuous positive airway pressure therapy. It uses mild air pressure to keep the airways open. See Figure 12.8[46] for an illustration of a CPAP.

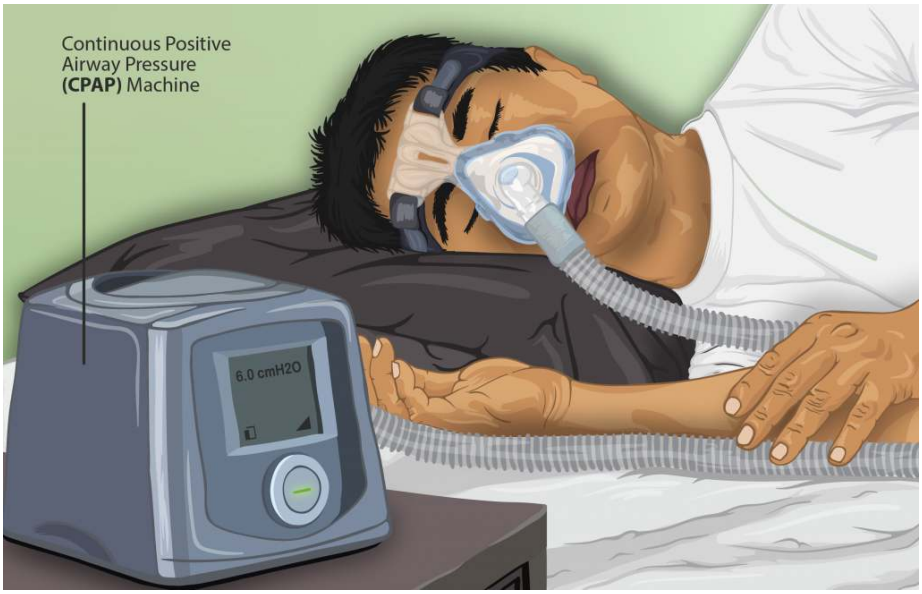

Figure 12.8 CPAP

Note

Read more about CPAP devices in the "Oxygen Therapy" chapter in Open RN *Nursing Skills*.

A mouthpiece may be prescribed for patients with mild sleep apnea or if the apnea occurs only when lying on their back. Mouthpieces, or oral appliances, are custom-fit devices that are worn while sleeping. See Figure 12.9[47] for examples of mouthpieces used to treat sleep apnea. Mouthpieces are custom-fit by a dentist or an orthodontist to the patient's mouth and jaw. There are two types of mouthpieces that work differently to open the upper airway. Mandibular repositioning mouthpieces are devices that cover the upper and lower teeth and hold the jaw in a position that prevents it from blocking the upper airway. Tongue-retaining devices are mouthpieces that hold the tongue in a forward position to prevent it from blocking the upper airway.[48]

Figure 12.9 Mouthpieces Used to Treat Sleep Apnea

Narcolepsy

Narcolepsy is an uncommon sleep disorder that causes periods of extreme daytime sleepiness and sudden, brief episodes of deep sleep during the day. Signs and symptoms of narcolepsy include extreme daytime sleepiness; falling asleep without warning, called sleep attacks; difficulty focusing or staying awake; and waking frequently at night. Individuals may experience hallucinations while falling asleep or waking up or sleep paralysis, a feeling of being awake but being unable to move for several minutes. Narcolepsy is diagnosed based on medical history, family history, a physical exam, and a sleep study. The sleep study looks at daytime naps to identify disturbed sleep or a quick onset of rapid eye movement (REM) sleep. Treatment for narcolepsy combines medications and behavior changes. Medications used to treat narcolepsy include stimulants, modafinil, and sodium oxybate to treat daytime sleepiness, and sedatives to improve nighttime sleep. Daytime sleepiness is often improved by promoting good quality sleep at night with scheduled naps during the day.[49]

1. "The_master_circadian_clock_in_the_human_brain.jpg" by Ian B. Hickie, Sharon L. Naismith, Rébecca Robillard, Elizabeth M. Scott, and Daniel F. Hermens is licensed under CC BY 3.0↵

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11.3: Applying the Nursing Process

Assessment

Begin a focused assessment on a patient's sleep patterns by asking an open-ended question such as, "Do you feel rested upon awakening?" From there, five key sleep characteristics should be assessed: sleep duration, sleep quality, sleep timing, daytime alertness, and the presence of a sleep disorder. Examples of focused interview questions are included in Table 12.3a. These questions have been selected from sleep health questionnaires from the National Sleep Foundation's Sleep Health Index and the National Healthy Sleep Awareness Project.[1]

Table 12.3a Focused Interview Questions Regarding Sleep[2]

Questions	Desired Answers
How many hours do you sleep on an average night?	7-8 hours for adults (See Table 12.3b for recommended sleep by age range.)
During the past month, how would you rate your sleep quality overall?	Very good or fairly good
Do you go to bed and wake up at the same time every day, even on weekends?	Yes, maintain a consistent sleep schedule in general
How likely is it for you to fall asleep during the daytime without intending to struggle to stay awake while you are doing things?	Unlikely
How often do you have trouble going to sleep or staying asleep?	Never, rarely, or sometimes
During the past 2 weeks, how many days did you have loud snoring? Note: It is helpful to ask the patient's sleep partner this question.	Never

It is also helpful to determine the effects of caffeine intake and medications on a patient's sleep pattern. If a patient provides information causing a concern for impaired sleep patterns or a sleep disorder, it is helpful to encourage them to create a sleep diary to share with a health care provider. Use the following hyperlink to view a sample sleep diary.

> **Note**
>
> Download a Sleep Diary from the National Heart, Lung, and Blood Institute.

Additional subjective assessment questions can be used to gather information about a patient's typical sleep routine so that it can be mirrored during inpatient care, when feasible.

Nurses also perform objective assessments of a patient's sleep patterns during inpatient care. The number of hours slept, wakefulness during the night, and episodes of loud snoring or apnea should be documented. Note physical (e.g., sleep apnea, pain, and urinary frequency) or psychological (e.g., fear or anxiety) circumstances that interrupt sleep, as well as sleepiness and napping during the day.[3] [4]

Concerns about signs of sleep disorders should be communicated to the health care provider for follow-up.

Life Span Considerations

The amount of sleep needed changes over the course of a person's lifetime. Although sleep needs vary from person to person, Table 12.3b shows general recommendations for different age groups based on recommendations from the American Academy of Sleep Medicine (AASM) and the American Academy of Pediatrics (AAP).[5]

Table 12.3b Recommended Amounts of Sleep by Age Group[6]

Age	Recommended Amount of Sleep
Infants aged 4-12 months	12-16 hours a day (including naps)
Children aged 1-2 years	11-14 hours a day (including naps)
Children aged 3-5 years	10-13 hours a day (including naps)
Children aged 6-12 years	9-12 hours a day
Teens aged 13-18 years	8-10 hours a day
Adults aged 18 years or older	7–8 hours a day

If an older adult has Alzheimer's disease, it often changes their sleeping habits. Some people with Alzheimer's disease sleep too much; others don't sleep enough. Some people wake up many times during the night; others wander or yell at night. The person with Alzheimer's disease isn't the only one who loses sleep. Caregivers may have sleepless nights, leaving them tired for the challenges they face. Educate caregivers about these steps to promote safety for their loved one, and help them and the patient sleep better at night:

- Make sure the floor is clear of objects.
- Lock up any medications.
- Attach grab bars in the bathroom.
- Place a gate across the stairs.[7]

Diagnostic Tests

A sleep study may be ordered for a patient suspected of having a sleep disorder. A sleep study monitors and records data during a patient's full night of sleep. A sleep study may be performed at a sleep center or at home with a portable diagnostic device. If done at a sleep center, the patient will sleep in a bed at the sleep center for the duration of the study. Removable sensors are placed on the person's scalp, face, eyelids, chest, limbs, and a finger to record brain waves, heart rate, breathing effort and rate, oxygen levels, and muscle movements before, during, and after sleep. There is a small risk of irritation from the sensors, but this will resolve after they are removed.[8] See Figure 12.10[9] of an image of a patient with sensors in place for a sleep study.

Figure 12.10 Sleep Study

Diagnoses

NANDA-I nursing diagnoses related to sleep include *Disturbed Sleep Pattern*, *Insomnia*, *Readiness for Enhanced Sleep*, *and Sleep Deprivation*.[10] When creating a nursing care plan for a patient, review a nursing care planning source for current NANDA-I approved nursing diagnoses and interventions related to sleep. See Table 12.3c for the definition and selected defining characteristics of *Sleep Deprivation*.[11]

Table 12.3c Sample NANDA-I Nursing Diagnosis Related to Sleep Deprivation[12]

NANDA-I Diagnosis	Definition	Selected Defining Characteristics
Sleep Deprivation	Prolonged periods of time without sustained natural, periodic suspension of relative consciousness that provides rest.	Agitation Alteration in concentration Anxiety Apathy Combativeness Decrease in functional ability Decrease in reaction time Drowsiness Fatigue Hallucinations Heightened sensitivity to pain Irritability Restlessness

A sample PES statement is, *"Sleep Deprivation related to an overstimulating environment as evidenced by irritability, difficulty concentrating, and drowsiness."*

Outcome Identification

An overall goal related to sleep is, *"The patient will awaken refreshed once adequate time is spent sleeping."*[13]

A sample SMART outcome is, *"The patient will identify preferred actions to ensure adequate sleep by discharge."*[14]

Planning Interventions

Since the days of Florence Nightingale, sleep has been recognized as beneficial to health and of great importance during nursing care due to its restorative function. It is common for sleep disturbances and changes in sleep pattern to occur in connection with hospitalization, especially among surgical patients. Patients in medical and surgical units often report disrupted sleep, not feeling refreshed by sleep, wakeful periods during the night, and increased sleepiness during the day. Illness and the stress of being hospitalized are causative factors, but other reasons for insufficient sleep in hospitals may be due to an uncomfortable bed, being too warm or too cold, environmental noise such as IV pump alarms, disturbance from health care personnel and other patients, and pain. The presence of intravenous catheters, a urinary catheter, and drainage tubes can also impair sleep. Increased daytime sleepiness, a consequence of poor quality sleep at night, can cause decreased mobility and slower recovery from surgery. Research indicates that postoperative sleep disturbances can last for months. Therefore, it is important to provide effective nursing interventions to promote sleep.[15]

A literature review found evidence for effective nursing interventions including massage, acupuncture, and music or natural sounds. Because massage requires trained personnel and can be somewhat time-consuming, it might only be feasible in particular environments. However, as a promoter of sleep, massage is effective in severely ill patients.[16]

Nurses nationwide have been looking at innovative and common sense ways to transform hospitals into more restful environments. As reported in the *American Nurse*, strategies include using red lights at night, reducing environmental noise, bundling care, offering sleep aids, and providing patient education.[17]

One strategy included reducing patients' light exposure by switching to red lights during the night while using Actiwatches to measure specific light color exposure, sleep, and activity. Both adult and pediatric patients were found to sleep better with reduced white lights, and the red light met the visual needs of nurses while providing care at night.[18]

In addition to reducing light, nurses also sought to reduce environmental noise. Patients were surveyed regarding factors that affected their ability to sleep, and results indicated bed noises, alarms, squeaking equipment, and sounds from other patients. The nurses' efforts led to a number of changes, including replacing the wheels on the trash cans and squeaky wheels on chairs, repairing malfunctioning motors on beds, switching automatic paper towel machines in the hallways with manual ones, and altering the times floors were buffed. Nursing staff also developed visitor rules, such as no overnight stays in semiprivate rooms. Overnight

visitors in private rooms were asked to honor the quiet environment by not using their cell phones, turning on TVs, or using bright lights at night.[19]

In addition to addressing light and noise, nurses also reinforced the importance of bundling care by interdisciplinary team members to reduce sleep interruptions. One interdisciplinary effort is called “Quiet Time” that occurs from 2 p.m. to 4 p.m. and from midnight to 5 a.m. Quiet Time includes dimming lights, closing patient room doors, and talking in lower voices. To bolster this intervention, project team members used a staff intervention called “Hushpuppies.” The aim of the intervention was to build staff awareness and accountability around noise they generate during these Quiet Times, often without realizing it. At the beginning of the shift, everyone, including physicians, is given a clothespin. If someone hears one of their peers talking too loudly, for example, they take away that person’s clothespin. Whoever has the most clothespins at the end of the shift receives a gift card for coffee. The project team felt that Hushpuppies worked well because it allowed staff to address loud conversations and other noise and hold each other accountable in a nonconfrontational way.[20]

Other pro-sleep strategies included asking patients about what aids they use at home to help them sleep, such as extra pillows or listening to music. On admission, patients were given small hospitality kits that included ear plugs and eye masks, along with the offer to use a white noise machine. After dinnertime, warm washcloths were offered to patients. Patients and families were also provided with printed materials on the benefits of sleep and rest, such as decreased length of stay, the prevention of delirium, and the ability of patients to participate in more educational activities and cardiac rehabilitation.[21]

See a summary of other evidence-based nursing interventions used to promote sleep in the following box.

Sleep Enhancement Interventions [22],[23]

- Adjust the environment (e.g., light, noise, temperature, mattress, and bed) to promote sleep
- Encourage the patient to establish a bedtime routine to facilitate wakefulness to sleep
- Facilitate maintenance of the patient’s usual bedtime routines during inpatient care
- Encourage elimination of stressful situations before bedtime
- Instruct the patient to avoid bedtime foods and beverages that interfere with sleep
- Encourage the patient to limit daytime sleep and participate in activity, as appropriate
- Bundle care activities to minimize the number of awakenings by staff to allow for sleep cycles of at least 90 minutes
- Consider sleep apnea as a possible cause and notify the provider for a possible referral for a sleep study when daytime drowsiness occurs despite adequate periods of undisturbed night sleep
- Educate the patient regarding sleep-enhancing techniques

Pharmacological Interventions

See specific information about medications used to facilitate sleep in the previous “Sleep Disorders” section of this chapter.

Implementing Interventions

When implementing interventions to promote sleep, it is important to customize them according to the specific patient’s needs and concerns. If medications are administered to promote sleep, fall precautions should be implemented, and the nurse should monitor for potential side effects, such as dizziness, drowsiness, worsening of depression or suicidal thoughts, or unintentionally walking or eating while asleep.

Evaluation

When evaluating the effectiveness of interventions, start by asking the patient how rested they feel upon awakening. Determine the effectiveness of interventions based on the established SMART outcomes customized for each patient situation.

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11.4: Putting It All Together

Patient Scenario

Mrs. Salvo is a 65-year-old woman admitted to the hospital for a gastrointestinal (GI) bleed. She has been hospitalized for three days on the medical surgical floor. During this time, she has received four units of PRBCs, has undergone a colonoscopy, upper GI series, and had hemoglobin levels drawn every four hours. The nurse reports to the patient's room to conduct an assessment prior to beginning the 11 p.m.-7 a.m. shift.

Although Mrs. Salvo's hemoglobin has stabilized for the last 24 hours, Mrs. Salvo appears fatigued with bags under her eyes. In conversation with her, she yawns frequently and wanders off in her train of thought. She reports, "You can't get any rest in here. I am poked and prodded at least once an hour."

Applying the Nursing Process

Assessment: The nurse notes that Mrs. Salvo has bags under her eyes, is yawning frequently, reports difficulty achieving rest, and seems to have difficulty following the conversation.

Based on the assessment information that has been gathered, the following nursing care plan is created for Mrs. Salvo:

Nursing Diagnosis: *Disturbed Sleep Pattern related to interruptions for therapeutic monitoring.*

Overall Goal: *The patient will demonstrate improvement in sleeping pattern.*

SMART Expected Outcome: *Mrs. Salvo will report feeling more rested on awakening within 24 hours.*

Planning and Implementing Nursing Interventions:

The nurse will assess the patient's sleep pattern and therapeutic monitoring disturbances. The nurse will group lab draws, vital signs, assessments, and other care tasks to decrease sleep disruption. The nurse will ensure the patient's door is closed and lighting is turned down to create a restful environment. The nurse will complete as many tasks as possible when Mrs. Salvo is awake and advocate with the interprofessional team for uninterrupted periods of rest during the night.

Sample Documentation:

Mrs. Salvo has a disturbed sleep pattern due to frequent therapeutic monitoring. Mrs. Salvo reports difficulty achieving rest, and despite stabilization in hemoglobin level, continues to demonstrate signs of fatigue. Interventions have been implemented to group therapeutic care to minimize disruption to the patient's sleep.

Evaluation:

The following morning, Mrs. Salvo reports improved feeling more rested with fewer awakenings throughout the night. SMART outcome "met."

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11.5: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Scenario A

A nurse is caring for a patient who has been hospitalized after undergoing hip-replacement surgery. The patient complains of not sleeping well and feels very drowsy during the day.

1. What factors are affecting the patient’s sleep pattern?
2. What assessments should the nurse perform?
3. What SMART outcome can be established for this patient?
4. Outline interventions the nurse can implement to enhance sleep for this patient.
5. How will the nurse evaluate if the interventions are effective?

Scenario B

A nurse is assigned to work rotating shifts and develops difficulty sleeping.

1. Why do rotating shifts affect a person’s sleep pattern?
2. What are the symptoms of insomnia?
3. Describe healthy sleep habits the nurse can adopt for more restful sleep.

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11.6: XII Glossary

Circadian rhythms: Body rhythms that direct a wide variety of functions, including wakefulness, body temperature, metabolism, and the release of hormones. They control the timing of sleep, causing individuals to feel sleepy at night and creating a tendency to wake in the morning without an alarm.

Insomnia: A common sleep disorder that causes trouble falling asleep, staying asleep, or getting good quality sleep. Insomnia interferes with daily activities and causes the person to feel unrested or sleepy during the day. Short-term insomnia may be caused by stress or changes in one's schedule or environment, lasting a few days or weeks. Chronic insomnia occurs three or more nights a week, lasts more than three months, and cannot be fully explained by another health problem or a medicine. Chronic insomnia raises the risk of high blood pressure, coronary heart disease, diabetes, and cancer.

Microsleep: Brief moments of sleep that occur when a person is awake. A person can't control microsleep and might not be aware of it.

Narcolepsy: An uncommon sleep disorder that causes periods of extreme daytime sleepiness and sudden, brief episodes of deep sleep during the day.

Non-REM sleep: Slow-wave sleep when restoration takes place and the body's temperature, heart rate, and oxygen consumption decrease.

REM sleep: Rapid eye movement (REM) sleep when heart rate and respiratory rate increase, eyes twitch, and brain activity increases. Dreaming occurs during REM sleep, and muscles become limp to prevent acting out one's dreams.

Sleep apnea: A common sleep condition that occurs when the upper airway becomes repeatedly blocked during sleep, reducing or completely stopping airflow. If the brain does not send the signals needed to breathe, the condition may be called central sleep apnea.

Sleep diary: A record of the time a person goes to sleep, wakes up, and takes naps each day for 1-2 weeks. Timing of activities such as exercising and drinking caffeine or alcohol are also recorded, as well as feelings of sleepiness throughout the day.

Sleep study: A diagnostic test that monitors and records data during a patient's full night of sleep. A sleep study may be performed at a sleep center or at home with a portable diagnostic device.

Sleep-wake homeostasis: The homeostatic sleep drive keeps track of the need for sleep, reminds the body to sleep after a certain time, and regulates sleep intensity. This sleep drive gets stronger every hour a person is awake and causes individuals to sleep longer and more deeply after a period of sleep deprivation.

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CHAPTER OVERVIEW

12: Mobility

12.1: Mobility Introduction
12.2: Basic Concepts
12.3: Applying the Nursing Process
12.4: Putting It All Together
12.5: Learning Activities
12.6: XIII Glossary

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12.1: Mobility Introduction

Learning Objectives

- Assess factors that put patients at risk for problems with mobility
- Identify factors related to mobility across the life span
- Assess the effects of immobility on body systems
- Detail the nursing measures to prevent complications of immobility
- Promote the use of effective techniques of body mechanics among caregivers, patients, and significant others
- Identify evidence-based practices

Sit on a sturdy chair with your legs and arms stretched out in front of you, and then try to stand. This basic mobility task can be impaired during recovery from major surgery or for patients with chronic musculoskeletal conditions. Mobility, which includes moving one's extremities, changing positions, sitting, standing, and walking, helps avoid degradation of many body systems and prevents complications associated with immobility. Nurses assist patients to be as mobile as possible, based on their individual circumstances, to achieve their highest level of independence, prevent complications, and promote a feeling of well-being. This chapter will discuss nursing assessments and interventions related to promoting mobility.

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12.2: Basic Concepts

Musculoskeletal Anatomy, Physiology, and Assessment

Before discussing the concept of mobility, it is important to understand the anatomy of the musculoskeletal system, common musculoskeletal conditions, and the components of a musculoskeletal system assessment. Read more about these topics in the "Musculoskeletal Assessment" chapter in Open RN *Nursing Skills*.

Mobility and Immobility

Mobility is the ability of a patient to change and control their body position. Physical mobility requires sufficient muscle strength and energy, along with adequate skeletal stability, joint function, and neuromuscular synchronization. Anything that disrupts this integrated process can lead to impaired mobility or immobility.[1] Mobility exists on a continuum ranging from no impairment (i.e., the patient can make major and frequent changes in position without assistance) to being completely immobile (i.e., the patient is unable to make even slight changes in body or extremity position without assistance). See Figure 13.1[2] for an image of a patient with impaired physical mobility requiring assistance with a wheelchair.

Figure 13.1 Impaired Physical Mobility

Functional mobility is the ability of a person to move around in their environment, including walking, standing up from a chair, sitting down from standing, and moving around in bed. The three main areas of functional mobility are the following:

- **Bed Mobility:** The ability of a patient to move around in bed, including moving from lying to sitting and sitting to lying.
- **Transferring:** The action of a patient moving from one surface to another. This includes moving from a bed into a chair or moving from one chair to another.
- **Ambulation:** The ability to walk. This includes assistance from another person or an assistive device, such as a cane, walker, or crutches.

Immobility can be caused by several physical and psychological factors, including acute and chronic diseases, traumatic injuries, and chronic pain. Several neurological and musculoskeletal disorders can adversely affect mobility, including osteoarthritis, rheumatoid arthritis, muscular dystrophy, cerebral palsy, multiple sclerosis, and Parkinson's disease. Traumatic injuries, such as

skeletal fractures, head injuries, or spinal injuries, also impair mobility. Diseases that cause fatigue, such as heart failure, chronic obstructive pulmonary disease, and depression, or conditions that cause pain also affect the patient's desire to move.

Effects of Immobility

Patients who spend an extended period of time in bed as they recover from surgery, injury, or illness can develop a variety of complications due to loss of muscle strength (estimated at a rate of 20% per week of immobility). Regardless of the cause, immobility can cause degradation of cardiovascular, respiratory, gastrointestinal, and musculoskeletal functioning. Promoting mobility can prevent these complications from occurring. Findings from a literature review demonstrated several benefits of mobilization, including less delirium, pain, urinary discomfort, urinary tract infection, fatigue, deep vein thrombosis (DVT), and pneumonia, as well as an improved ability to void. Mobilization also decreased depression, anxiety, and symptom distress, while enhancing comfort, satisfaction, quality of life, and independence.[3] See Table 13.2a for a summary of the effects of immobility on these body systems.[4] [5] [6] Decreased mobility is also a major risk factor for skin breakdown, as indicated on the Braden Scale. See Figure 13.2[7] for an image of a patient with impaired mobility who developed a DVT.

Figure 13.2 Deep Vein Thrombosis (DVT)

Table 13.2a Effects of Immobility on Body Systems[8]

Body System	Immobility Effects	Potential Complications
Psychological	Depression Anxiety Distress	Decreased quality of life
Cardiovascular	Decreased systemic vascular resistance causing venous pooling in extremities Decreased cardiac output	Orthostatic hypotension Thrombus formation
Respiratory	Decreased strength of respiratory muscles Diminished lung expansion Hypoventilation Impaired gas exchange Decreased cough reflex Pulmonary secretion pooling Blood redistribution and fluid shifts within the lung tissues	Atelectasis Hypoxia Pneumonia Pulmonary edema Pulmonary embolism
Integumentary	Decreased delivery of oxygen and nutrients to tissues Tissue ischemia Inflammation over bony prominences Friction and shear	Skin breakdown Pressure injuries Infection Abrasions
Musculoskeletal	Reduced muscle mass Decreased muscle strength Decreased endurance Shortening of connective tissue Impaired joint mobility Impaired calcium metabolism	Fatigue Decreased stability and balance Muscle atrophy Joint contractures Foot drop Osteoporosis Falls Fractures
Gastrointestinal	Decreased peristalsis Anorexia Decreased fluid intake Increased intestinal gas Altered swallowing	Constipation Fecal impaction Ileus Flatulence Abdominal distention Nausea and vomiting Heartburn Aspiration Malnutrition
Genitourinary	Urinary discomfort Urinary retention	Urinary tract infection

Read additional information pertaining to the content in Table 13.2a using the hyperlinks in the following box.

Note

- Read additional details about assessing the cardiovascular system and assessing for deep vein thrombosis (DVT) in the "Cardiovascular Assessment" chapter in Open RN *Nursing Skills*.
- Read additional details about performing a "Respiratory Assessment" in Open RN *Nursing Skills.*

- Read more about treating hypoxia in the "Oxygenation" chapter of this textbook.
- Read about preventing pressure injuries in the "Integumentary" chapter of this textbook.
- Read details about performing a "Musculoskeletal Assessment" in Open RN *Nursing Skills*.
- Read more about constipation, impaction, ileus, urinary retention, and urinary tract infection in the "Elimination" chapter of this textbook.
- Review how to perform an "Abdominal Assessment" in Open RN *Nursing Skills*.

Strategies to promote patient mobility can be divided into two categories: those used when the patient is in bed and those used when the patient is able to get out of bed. In-bed interventions to enhance mobility include performing repositioning activities, completing range of motion exercises, and assisting the patient to dangle on the edge of a bed. Out-of-bed interventions to enhance mobility include transferring the patient from bed to chair and assisting with ambulation.[9] Unfortunately, ambulation of patients has been identified as the most frequently missed element of inpatient nursing care with rates as high as 76–88% of the time.[10] Before discussing these interventions to promote mobility, let's review the assessments that a nurse must perform prior to safely implementing mobilization interventions.

Assessing Mobility Status and the Need for Assistance

A patient's mobility status and their need for assistance affect nursing care decisions, such as handling and transferring procedures, ambulation, and implementation of fall precautions. Initial mobility assessments are typically performed on admission to a facility by a physical therapist (PT). See Table 13.2b for an example of common types of assistance required.

Table 13.2b Common Types of Assistance Required[11]

Type of Assistance Required	Description
Dependent	The patient is unable to help at all. A mechanical lift and assistance by other personnel are required to perform tasks.
Maximum Assistance	The patient can perform 75% of the mobility task while the caregiver assists with 25%.
Moderate Assistance	The patient can perform 50% of the mobility task while the caregiver assists with 50%.
Minimal Assistance	The patient can perform 75% of the mobility task while the caregiver assists with 25%.
Contact Guard Assist	The caregiver places one or two hands on the patient's body to help with balance but provides no other assistance to perform the functional mobility task.
Stand By Assist	The caregiver does not touch the patient or provide assistance, but remains close to the patient for safety in case they lose their balance or need help to maintain safety during the task being performed.
Independent	The patient can safely perform the functional task with no assistance on their own.

In addition to the amount of assistance required, physical therapists may determine a patient's weight-bearing status. For example, patients with lower extremity fractures or those recovering from knee or hip replacement often progress through stages of weight-bearing activity. See Table 13.2c for common weight-bearing prescriptions.

Table 13.2c Weight-Bearing Prescriptions

Type of Weight-Bearing	Description
Nonweight-bearing (NWB)	The leg must not touch the floor and is not permitted to support any weight at all. Crutches or other devices are used for mobility.
Toe-touch weight-bearing (TTWB)	The foot or toes may touch the floor to maintain balance, but no weight should be placed on the affected leg.
Partial weight-bearing	A small amount of weight may be supported on the affected leg. Weight may be gradually increased to 50% of body weight, which permits the person to stand with body weight evenly supported by both feet (but not walking).
Weight-bearing as tolerated	The patient can support 50% to 100% of weight on the affected leg and can independently choose the weight supported by the extremity based on their tolerance and the circumstances.
Full weight-bearing	The leg can support 100% of a person's body weight, which permits walking.

In addition to reviewing orders regarding weight-bearing and assistance required, all staff should assess patient mobility before and during interventions, such as transferring from surface to surface or during ambulation. Staff may frequently rely on the patient's or a family member's report on the patient's ability to stand, transfer, and ambulate, but this information can be unreliable. For example, the patient may have unrecognized physical deconditioning from the disease or injury that necessitated hospitalization, or they may have developed new cognitive impairments related to the admitting diagnosis or their current medications.[12]

Several objective screening tests, such as the Timed Get Up and Go Test, have traditionally been used by nurses to assess a patient's mobility status. The **Timed Get Up and Go Test** begins by having the patient stand up from an armchair, walk three yards, turn around, walk back to the chair, and sit down. As the patient performs these maneuvers, their posture, body alignment, balance, and gait are analyzed. However, this test and other tests do not provide guidance on what the nurse should do if the patient can't maintain seated balance, bear weight, or stand and walk. The Banner Mobility Assessment Tool (BMAT) was developed to provide guidance regarding safe patient handling and mobility (SPHM). It is used as a nurse-driven bedside assessment of patient mobility and walks the patient through a four-step functional task list and identifies the mobility level the patient can achieve. It then provides guidance regarding the SPHM technology needed to safely lift, transfer, and mobilize the patient.[13] Read additional information about the Banner Mobility Assessment Tool (BMAT) using the following hyperlink.

Note

View the Banner Mobility Assessment Tool for Nurses.[14]

See the following box for an example of a nurse using the BMAT.

Example of Banner Mobility Assessment Tool In Action [15]

A 65-year-old male was admitted to the hospital late in the evening. He is 6'2″ tall and weighs 350 lbs. (158 kg). He needed to have a bowel movement but didn't want to use a bedpan. The nurse wasn't comfortable getting him up to use the bathroom because he hadn't yet been evaluated by physical therapy, and a physical therapist wasn't available until the following morning. Per agency policy, the nurse used the BMAT and determined the patient was currently at Mobility Level 3. He was transferred to the toilet using a nonpowered stand aid. Both the patient and nurse were relieved and satisfied with the outcome.

Safe Patient Handling

Assisting patients with decreased immobility poses an increased risk of injury to health care workers. A focus on safe patient handling and mobility (SPHM) in acute and long-term care over the past decade has resulted in decreased staff lifting injuries for the first time in 30 years. Nonetheless, nurses still suffer more musculoskeletal disorders from lifting than other employees in the

manufacturing and construction industries. Many employers and nurses previously believed that lifting injuries could be prevented by using proper body mechanics, but evidence contradicts this assumption. **Body mechanics** involves the coordinated effort of muscles, bones, and one's nervous system to maintain balance, posture, and alignment when moving, transferring, and positioning patients.[16] The National Institute of Occupational Safety and Health (NIOSH) calculates maximum loads for lifting, pushing, pulling, and carrying for all types of employees. For example, a maximum load for employees lifting a box with handles is 50 pounds (23 kg), but this weight is decreased when the lifter has to reach, lift from near the floor, or assume a twisted or awkward position. Because patients don't come in simple shapes and may sit or lie in awkward positions, move unexpectedly, or have wounds or devices that interfere with lifting, the safe lifting load for patients is less than this maximum 50 pound load. Although using proper body mechanics and good lifting techniques are important, they don't prevent lifting injuries in these patient circumstances[17],[18],[19] Factors that increase risk for lifting injuries in nurses are exertion, frequency, posture, and duration of exposure. Combinations of these factors, such as high exertion while in an awkward posture (for example, holding a patient's leg while bent over and twisted), unpredictable patient movements, and extended reaching, intensify the risk.[20]

In 2013 the American Nurses Association (ANA) published Safe Patient Handling and Mobility (SPHM) standards. See the standards in the following box. Learn more about safe patient handling using the following hyperlinks.

Note

View ANA videos on safe patient handling: Preventing Nurse Injuries and ANA Presents Safe Patient Handling and Mobility.

Read an ANA article on Safe Patient Handling – The Journey Continues.

ANA Standards for Safe Patient Handling and Mobility [21]

Standard 1: Establish a culture of safety. This standard calls for the employer to establish a commitment to a culture of safety. This means prioritizing safety over competing goals in a blame-free environment where individuals can report errors or incidents without fear. The employer is compelled to evaluate systemic issues that contribute to incidents or accidents. The standard also calls for safe staffing levels and improved communication and collaboration. Every organization should have a procedure for nurses to report safety concerns or refuse an assignment due to concern about patients' or their own safety.

Standard 2: Implement and sustain an SPHM program. This standard outlines SPHM program components, including patient assessment and written guidelines for safe patient handling by staff.

Standard 3: Incorporate ergonomic design principles to provide a safe care environment. This standard is based on the concept of prevention of injuries through ergonomic design that considers the physical layout, work-process flow, and use of technology to reduce exposure to injury or illness.

Standard 4: Select, install, and maintain SPHM technology. This standard provides guidance in selecting, installing, and maintaining SPHM technology.

Standard 5: Establish a system for education, training, and maintaining competence. This standard outlines SPHM training for employees, including the demonstration of competency before using SPHM technology with patients.

Standard 6: Integrate patient-centered SPHM assessment, plan of care, and use of SPHM technology. This standard focuses on the patient's needs by establishing assessment guidelines and developing an individual plan of care. It outlines the importance of using SPHM technology in a therapeutic manner with the goal of promoting patients' independence. For example, a patient may need full-body lift technology immediately after surgery, then progress to a sit-to-stand lift for transfers, and then progress to a technology that supports ambulation.

Standard 7: Include SPHM in reasonable accommodation and post-injury return to work. This standard promotes an employee's return to work after an injury.

Standard 8: Establish a comprehensive evaluation system. The final standard calls for evaluation of outcomes related to an agency's implementation of a SPHM program with remediation of deficiencies.

Assistive Devices

There are several types of assistive devices that a nurse may incorporate during safe patient handling and mobility. An **assistive device** is an object or piece of equipment designed to help a patient with activities of daily living, such as a walker, cane, gait belt, or mechanical lift.[22] Assistive devices include other items described below.

Gait Belts

Gait belts should be used to ensure stability when assisting patients to stand, ambulate, or transfer from bed to chair. A gait belt is a 2-inch-wide (5 mm) belt, with or without handles, that is placed around a patient's waist and fastened with a buckle. The gait belt should be applied on top of clothing or a gown to protect the patient's skin. See Figure 13.3[23] for an image of a gait belt.

Figure 13.3 Gait Belt

Slider Boards

A **slider board** (also called a transfer board) is used to transfer an immobile patient from one surface to another while the patient is lying supine (e.g., from a stretcher to hospital bed).[24] See Figure 13.4[25] for an image of a patient being transferred by logrolling off a slider board with several assistants.

Figure 13.4 Slider Board

Sit to Stand Lifts

Sit to Stand Lifts (also referred to as Sara Lifts, Lift Ups, Stand Assist, or Stand Up Lifts) are mobility devices that assist weight-bearing patients who are unable to transition from a sitting position to a standing position using their own strength. They are used to safely transfer patients who have some muscular strength but not enough strength to safely change positions by themselves. Some sit to stand lifts use a mechanized lift whereas others are nonmechanized. See Figure 13.5[26] for an image of a nurse assisting a patient to stand with a sit to stand lift.

Figure 13.5 Sit to Stand Lift

Mechanical Lifts

A **mechanical lift** is a hydraulic lift with a sling used to move patients who cannot bear weight or have a medical condition that does not allow them to stand or assist with moving. It can be a portable device or permanently attached to the ceiling. See Figure 13.6[27] for an image of a mechanical lift.

Most clinical agencies do not allow nursing students to operate mechanical lifts independently without the supervision of agency staff. Review agency policy and obtain assistance as indicated, even if you have experience using mechanical lifts as an employee at another agency.

Figure 13.6 Mechanical Lift

Early Mobility Protocols

Many hospitals use nurse-driven mobility protocols to encourage early mobility of patients in intensive care units and after surgery. The purpose of early mobility protocols is to maintain the patient's baseline mobility and functional capacity, decrease the incidence of delirium, and decrease hospital length of stay. Protocols include a coordinated approach by the multidisciplinary team and may include respiratory therapists, physical therapists, pharmacists, occupational therapists, and the health care provider who focus on getting the patient out of bed faster.[28]

When early mobility protocols are in place, nurses use a screening tool to determine whether a patient is clinically ready to attempt the protocol. This algorithm begins by reviewing the patient's neurological criteria, such as, does the patient open his or her eyes in response to verbal stimulation? If the patient meets neurological criteria, they are assessed against additional criteria for respiratory, circulatory, neurological, and other considerations. If the patient clears these criteria, a registered nurse may carefully initiate an early mobilization protocol in collaboration with a physical therapist. See Figure 13.7[29] for an example of an early mobilization protocol used for patients in an ICU.[30]

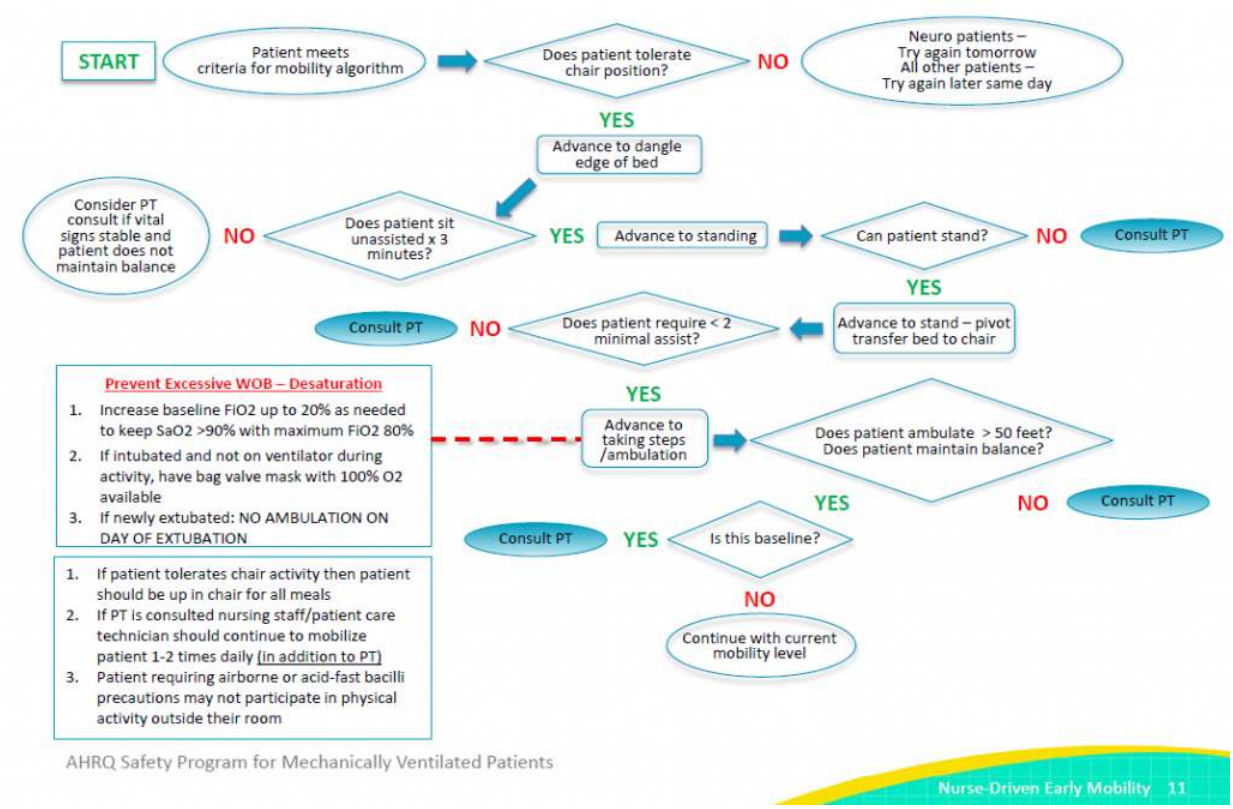

Figure 13.7 Early Mobilization Protocol for ICU Patients

See the following box for an example of a mobilization protocol in an intermediate care unit.

Example of Early Mobilization Protocol [31]

Here is an example of using an early mobilization protocol in an intermediate care unit with patient care technicians (PCT). Three PCTs collaborate with nurses from 7 a.m. to 7 p.m. Each PCT has eight patients and is responsible for mobilizing patients during each 12-hour shift. Each patient care technician discusses each patient's level of activity with the RN at the beginning of the shift and determines how many times each patient will be mobilized throughout the day. Any concerns that arise during mobilization are shared with the nurse for appropriate follow-up.

Range of Motion Exercises

When patients are unable to ambulate or have injury to specific extremities, **range of motion (ROM) exercises** are often prescribed. ROM exercises facilitate movement of specific joints and promote mobility of the extremities. Because changes in joints can occur after three days of immobility, ROM exercises should be started as soon as possible. There are three types of ROM exercises: passive, active, and active assist. **Passive range of motion** is movement applied to a joint solely by another person or by a passive motion machine. When passive range of motion is applied, the joint of an individual receiving exercise is completely relaxed while the outside force moves the body part while they are lying in bed. For example, patients who undergo knee replacement surgery may be prescribed a passive motion machine that continuously flexes and extends the patient's knee while lying in bed. See Figure 13.8[32] for an image of a passive motion machine. **Active range of motion** is movement of a joint by the individual performing the exercise with no outside force aiding in the movement. **Active assist range of motion** is joint movement with partial assistance from an outside force. For example, during the recovery period after shoulder surgery, a patient attends physical therapy and receives 50% assistance in moving the arm with the help of a physical therapy assistant.

Figure 13.8 Passive Motion Machine

Note

View an infographic demonstrating range of motion exercises.

Patients may receive temporary ROM exercises due to injury, surgery, or other temporary conditions. These patients are expected to make a full recovery and over time will no longer need ROM to ensure the proper functioning of their joint. Other patients require long-term ROM exercises to prevent contractures that can occur in conditions such as spinal cord injury, stroke, neuromuscular diseases, or traumatic brain injury. A contracture is the lack of full passive range of motion due to joint, muscle, or soft tissue limitations.[33] See Figure 13.9[34] for an image of a severe leg contracture in a patient with a terminal neurological condition.

Figure 13.9 Contracture

Range of motion exercises are prescribed by a physical therapist and can be performed by physical therapy assistants, nursing assistants, patient technicians, and nurses based on agency policy. Guidelines for performing range of motion exercises include the following:

- A program of passive stretching should be started as early as possible in the course of neuromuscular disease to prevent contractures and become part of a regular morning and evening routine.
- Proper technique is essential for passive stretching to be effective. With each stretch, the position should be held for a count of 15, and each exercise should be repeated 10 to 15 times during a session (or as prescribed). Stretching should be performed slowly and gently. An overly strenuous stretch may cause discomfort and reduce cooperation.
- Written instructional materials should be provided to the patient and family as a supplement to verbal instructions and demonstrations by the physical therapist.

Note

Watch a YouTube video demonstration of passive motion exercises.[35]

Limb positioning with assistive devices can also be used to prevent contracture formation. The limb should be placed in a resting position that opposes or minimizes flexion.[36] Positioning aids include pillows, foot boots, handrolls, hand-wrist splints, heel or elbow protectors, abduction pillows, or a trapeze bar. See Figure 13.10[37] for an image of a brace used to prevent foot drop in a patient with multiple sclerosis. Foot drop is a complication of immobility that results in plantar flexion of the foot, interfering with the ability to complete weight bearing activities.

Figure 13.10 Brace to Prevent Foot Drop

Read additional information about range of motion exercises, preventing contractures, and physical therapy using the following hyperlinks.

Note

Review how to perform Active Range of Motion Exercises.

Read how to Prevent and Manage Contractures.

Read more details about Physical Therapy.

Repositioning Patients

Repositioning a bedridden patient maintains body alignment and prevents pressure injuries, foot drop, and contractures. Proper positioning also provides comfort for patients who have decreased mobility related to a medical condition or treatment. When repositioning a patient in bed, supportive devices such as pillows, rolls, and blankets can aid in providing comfort and safety. There are several potential positions that are determined based on the patient's medical condition, preferences, or treatment related to an illness.[38] It is important to reposition patients appropriately to prevent neurological injury that can occur if a patient is inadvertently placed on their arm.

Supine Position

In **supine positioning**, the patient lies flat on their back. Pillows or other devices may be used to prevent foot drop. Additional supportive devices, such as pillows under the arms, may be added for comfort. See Figure 13.11[39] for an image of a patient in the supine position.[40]

Figure 13.11 Supine Position

Prone Position

In **prone positioning**, the patient lies on their stomach with their head turned to the side.[41] Pillows may be placed under the lower legs to align the feet. See Figure 13.12[42] for an image of a patient in the prone position. Placing patients in the prone position may improve their oxygenation status in certain types of medical disorders, such as COVID-19.[43]

Figure 13.12 Prone Position

Lateral Position

In lateral positioning, the patient lies on one side of their body with the top leg flexed over the bottom leg. This position helps relieve pressure on the coccyx.[44] A pillow may be placed under the top arm for comfort. See Figure 13.13[45] for an image of a patient in the lateral position. The lateral position is often used for pregnant women to prevent inferior vena cava compression and enhance blood flow to the fetus.

Figure 13.13 Lateral Position

Sims Position

In **Sims positioning**, the patient is positioned halfway between the supine and prone positions with their legs flexed. A pillow is placed under the top leg. Their arms should be comfortably placed beside them, not underneath.[46] See Figure 13.14[47] for an image of a patient in Sims position. The Sims position is used during some procedures, such as the administration of an enema.

Figure 13.14 Sims Position

Fowler's Position

In **Fowler's positioning**, the head of bed is placed at a 45- to 90-degree angle. The bed can be positioned to slightly flex the hips to help prevent the patient from migrating downwards in bed.[48] See Figure 13.15[49] for an image of a patient in Fowler's position. High Fowler's position refers to the bed being at a 90-degree angle. The Fowler's position is used to promote lung expansion and improve a patient's oxygenation. It is also used to prevent aspiration in patients while eating or receiving tube feeding.

Figure 13.15 Fowler's Position

Semi-Fowler's Position

In **Semi-Fowler's positioning**, the head of bed is placed at a 30- to 45-degree angle. The patient's hips may or may not be flexed. See Figure 13.16[50] for an image of a patient in Semi-Fowler's position. Semi-Fowler's position is used for the same purposes as Fowler's position but is generally better tolerated over long periods of time.

Figure 13.16 Semi-Fowler's Position

Trendelenburg Position

In **Trendelenburg positioning**, the head of the bed is placed lower than the patient's feet. This position may be used in certain situations to promote venous return to the head and heart, such as during severe hypotension and medical emergencies.[51] See Figure 13.17[52] for an image of Trendelenburg position.

Figure 13.17 Trendelenburg Position

Tripod Position

Patients who are feeling short of breath often naturally assume the tripod position. In the **tripod position**, the patient leans forward while sitting with their elbows on their knees or resting on a table. Patients experiencing breathing difficulties can be placed in this position to enhance lung expansion and air exchange. See Figure 13.18[53] for images of an individual demonstrating breathing difficulty who has assumed the tripod position.

Figure 13.18 Tripod Position

Moving a Patient Up in Bed

When moving a patient up in bed, first determine the level of assistance needed to provide optimal patient care. It is vital to prevent friction and shear when moving a patient up in bed to prevent pressure injuries. If a patient is unable to assist with repositioning in bed, follow agency policy regarding using lifting devices and mechanical lifts. If the patient is able to assist with repositioning and minimal lifting by staff is required, use the following guidelines with assistance from another health care professional to help with the move and prevent injury.[54] See Figure 13.19[55] for an image of moving a patient up in bed.

- Explain to the patient what will happen and how the patient can help.
- Raise the bed to a safe working height and ensure that the brakes are applied.
- Position the patient in the supine position with the bed flat. Place a pillow at the head of the bed and against the headboard to prevent accidentally bumping the patient's head on the headboard.
- Two health care professionals should stand with feet shoulder width apart between the shoulders and hips of the patient at the bedside. This keeps the heaviest part of the patient closest to the center of gravity of the health care providers. Weight will be shifted from back foot to front foot.
- Fan-fold the draw sheet toward the patient with palms facing up. This provides a strong grip to move the patient up with the draw sheet.
- Ask the patient to tilt their head toward their chest, fold arms across their chest, and bend their knees to assist with the movement. Let the patient know when the move will happen. This step prevents injury from occurring to the patient and prepares them for the move.
- Tighten your gluteal and abdominal muscles, bend your knees, and keep your back straight and neutral. Face the direction of movement. Proper body mechanics can help prevent back injury when used in appropriate patient care situations.
- On the count of three by the lead person, gently slide (not lift) the patient up the bed, shifting your weight from the back foot to the front, keeping your back straight and knees slightly bent.
- Replace the pillow under the patient's head, reposition the patient in the bed, and cover them with a sheet or blanket to provide comfort.
- Lower the bed, raise the side rails as indicated, and ensure the call light is within reach. Perform hand hygiene.[56]

Figure 13.19 Moving a Patient Up in Bed

Assisting Patients to Seated Position

Prior to ambulating, repositioning, or transferring a patient from one surface to another (e.g., a bed to a wheelchair), it often necessary to move the patient to the side of the bed to avoid straining or excessive reaching by the health care professional. Positioning the patient to the side of the bed also allows the health care provider to have the patient as close as possible to their center of gravity for optimal balance during patient handling.[57]

Patients who have been lying in bed may experience **vertigo**, a sensation of dizziness as if the room is spinning, or orthostatic hypotension, low blood pressure that occurs when a patient changes position from lying to sitting or sitting to standing and causes the patient to feel dizzy, faint, or light-headed. **Orthostatic hypotension** is defined as a drop in systolic blood pressure of 20 mm Hg or more or a drop of diastolic blood pressure of 10 mm Hg or more within 3 minutes of sitting or standing. For this reason, always begin a transfer or ambulation process by sitting the patient on the side of the bed for a few minutes with their legs dangling.[58]

Begin by explaining to the patient what will happen and how they can help. Determine if additional assistance or a mechanical lift is needed.[59] Ensure the bed is in a low and locked position, and then use the following guidelines to assist a patient to the seated position on the edge of the bed.[60] See Figure 13.20[61] for images of a nurse assisting a patient to a seated position.

- Stand facing the head of the bed at a 45-degree angle with your feet apart, with one foot in front of the other. Stand next to the waist of the patient.
- Ask the patient to turn onto their side, facing you, as they move closer to the edge of the bed.
- Place one hand behind the patient’s shoulders, supporting the neck and vertebrae.
- On the count of three, instruct the patient to use their elbows to push up against the bed and then grasp the side rail as you support their shoulders as they sit. Shift your weight from the front foot to the back foot as you assist them to sit. Do not allow the patient to place their arms around your shoulders because this can lead to serious back injuries.

- As you shift your weight, gently grasp the patient's outer thighs with your other hand and help them slide their feet off the bed to dangle or touch the floor. This step helps the patient sit and move their legs off the bed at the same time. As you perform this action, bend your knees and keep your back straight and neutral.
- Assess the patient for symptoms of orthostatic hypotension or vertigo. If they are experiencing any dizziness, request them to sit and dangle on the edge of the bed and determine if the symptoms resolve before transferring or ambulating.[62]

Figure 13.20 Assisting a Patient to a Seated Position

Ambulating a Patient

Ambulation is the ability of a patient to safely walk independently, with assistance from another person, or with an assistive device, such as a cane, walker, or crutches. After a patient has been assessed and determined safe to ambulate, determine if assistive devices or the assistance of a second staff member is required. Assist the patient to sit on the side of the bed and assess for symptoms of vertigo or orthostatic hypotension before proceeding. Ensure the patient is wearing proper footwear, such as shoes or nonslip socks. Apply a gait belt snugly over their clothing and around their waist if any type of assistance is required. See Figure 13.21[63] for an image of applying a gait belt. The patient should be cooperative, able to bear weight on their own, have good trunk control, and be able to transition to a standing position on their own. If these criteria are not met, then mechanical devices, such as a sit to stand lift, should be used to assist a weight-bearing patient from a sitting position to a standing position. If a patient uses a walker or cane, these assistive devices should be placed near the bed before beginning this procedure.

Figure 13.21 Application of a Gait Belt

Stand in front of the patient, with your legs on the outside of their legs. Grasp each side of the gait belt, while keeping your back straight and knees bent, and then rock your weight backwards while gently steadying the patient into a standing position. After the patient is standing and feels stable, move to their unaffected side and grasp the gait belt in the middle of their back.[64] If needed for stability, place one arm under the patient's arm, gently grasp their forearm, and lock your arm firmly under the patient's axilla. In this position, if the patient starts to fall, you can provide support at the patient's shoulder.[65] If the patient uses a walker or cane,

ensure the patient is using this device before beginning ambulation. See Figure 13.22[66] for an image of a nurse assisting the patient to stand.

Figure 13.22 Assisting a Patient to Stand

Before stepping away from the bed, ask the patient if they feel dizzy or light-headed. If they do, sit the patient back down on the bed until the symptoms resolve. If the patient feels stable, begin walking by matching your steps to the patient's. Instruct the patient to look ahead and lift each foot off the ground. Walk only as far as the patient can tolerate without feeling dizzy or weak. Periodically ask them how they are feeling to check for dizziness or weakness.[67] In some situations of early ambulation, it is helpful for a second staff member to follow behind the patient with a wheeled walker or wheelchair in case the patient needs to sit while walking.

To assist the patient back into the bed or a chair, have them stand with the back of their knees touching the bed or chair. Grasp the gait belt and assist them as they lower into a sitting position, keeping your back straight and knees bent. Remove the gait belt. If the patient is returning to bed, place the bed in the lowest position, raise the side rails as indicated, and ensure the call light is within reach. Cover the patient with a sheet or blanket to provide comfort. Document the length of ambulation and the patient's tolerance of ambulation.

Transfer From Bed to Chair or Wheelchair

Patients often require assistance when moving from a bed to a chair or wheelchair. A patient must be cooperative and predictable, able to bear weight on both legs, and able to take small steps and pivot to safely transfer with a one-person assist. If any of these criteria are not met, a two-person transfer or mechanical lift is recommended. Always complete a mobility assessment and check the provider's or physical therapist's orders prior to transferring patients.[68]

Begin by explaining to the patient what will happen during the transfer and how they can help. Be sure proper footwear is in place. Lower the bed; set it at a 45-degree angle. Place the wheelchair next to the bed and apply the wheelchair brakes. If the patient has weakness on one side, place the wheelchair on their strong side.[69]

Assist the patient to a seated position on the side of the bed with their feet on the floor. (See the previous section on how to assist a patient to a seated position.) Apply the gait belt snugly around their waist. Place your legs on the outside of their legs. Ask them to place their hands on your waist as they raise themselves into a standing position. Do not lift the patient. If additional assistance is required, obtain a mechanical lift, such as a sit to stand device. Do not allow them to put their arms around your neck because this can cause back injury. Stay close to the patient during the transfer to keep the patient's weight close to your center of gravity. Once standing, ask the patient to pivot and then take a few steps back until they can feel the wheelchair on the back of their legs. Have the patient grasp the arm of the wheelchair and lean forward slightly. Assist the patient to lower themselves, while shifting your weight from your back leg to the front leg with your knees bent, trunk straight, and elbows slightly bent. Allow the patient to slowly lower themselves into the wheelchair using the armrests for support.

Note

See Figure 13.23[70] for an image of a staff member assisting a patient to a wheelchair.

Reflective Question: What could be improved during this transfer?

Figure 13.23 Assisting a Patient to a Wheelchair

Note

View a video on Assisting a Patient from Bed to Chair with a Gait Belt or Transfer Belt.[71]

Lowering A Patient to the Floor

A patient may begin to fall while ambulating or while being transferred from one surface to another. If a patient begins to fall from a standing position, do not attempt to stop the fall or catch the patient because this can cause back injury. Instead, try to control their fall by lowering them to the floor.[72]

If a patient starts to fall and you are close by, move behind the patient and take one step back. Support the patient around the waist or hip area or grab the gait belt. Bend one leg and place it between the patient's legs. Slowly slide the patient down your leg, lowering yourself to the floor at the same time. Always protect their head first. Once the patient is on the floor, assess the patient for injuries prior to moving them. Assess the patient's need for assistance to get off the floor. If the patient is unable to get up off the floor, use a mechanical lift. Complete an incident report and follow up according to the patient's condition and agency policy. See Figure 13.24[73] for images of lowering a patient to the floor.

Figure 13.24 Lowering a Patient to the Floor

Preventing Falls

Falls are a major safety concern in health care. Nurses are responsible for identifying, managing, and eliminating potential fall hazards for patients. All patient-handling activities (positioning, transfers, and ambulation) pose a risk to both patients and health care professionals. Older adults are often at increased risk for falls due to impaired mental status, decreased strength, impaired balance and mobility, and decreased sensory perception. Patients may also be at risk for falls due to gait problems, cognitive ability, visual problems, urinary frequency, generalized weakness, cognitive impairments, or medications that may cause hypotension or drowsiness.[74] Falls can cause head injuries, fractures, lacerations, and other injuries.

Fall prevention is key. If a patient begins to feel dizzy while ambulating or transferring, assist them to sit on a chair or on the floor to avoid a fall. The head is the most important part of the body, so protect it as much as possible. In the event of a fall, seek help and stay with the patient until assistance arrives. Follow agency policy for reporting, assessing, and documenting. After a fall, always assess a patient for injuries prior to moving them. If the patient remains weak or dizzy, do not attempt to ambulate them, but instead, ask for assistance to transfer them to a chair or bed.[75]

All patients should be assessed for risk factors for falls and necessary fall precautions implemented per agency policy. Read more information about preventing falls in the "Safety" chapter.

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12.3: Applying the Nursing Process

Assessment

Because mobility issues are directly related to musculoskeletal disorders, perform a thorough assessment of the musculoskeletal system and its effect on the patient's mobility status. Assess muscle strength and coordination, and then assess mobility skills in the following order: mobility in bed, dangling on the bed with supported and unsupported sitting, weight-bearing while transferring from sitting to standing or to a chair, standing and walking with assistance, and walking independently.

> **Note**
>
> Read more details about performing a "Musculoskeletal Assessment" chapter in Open RN *Nursing Skills*.

Because immobility can negatively affect several body systems, perform a thorough assessment for patients with impaired mobility. Assess the cardiovascular system, including blood pressure, heart sounds, apical and peripheral pulses, and capillary refill time. Assess for the presence of lower extremity edema and for signs of a potential deep vein thrombosis (DVT).

Assess the respiratory system, including respiratory rate, oxygen saturation, lung sounds, chest wall movement and symmetry, and depth and effort of respirations. Assess for potential signs of atelectasis and pneumonia.

Assess the gastrointestinal system by inspecting for distension, auscultating bowel sounds, and palpating the abdomen for tenderness. Ask the patient about the date of their last bowel movement, and monitor stool patterns and stool characteristics. If constipation is suspected, palpate the patient's left lower quadrant for signs of stool presence. Assess for the presence of urinary tract abnormalities related to immobility, such as suprapubic distention or tenderness that can result from urinary retention. Monitor 24-hour trend of intake and output, as well as for symptoms of dysuria, urgency, or frequency. Note if urinary incontinence is occurring due to the inability of the patient to reach the restroom in time.[1]

Life Span Considerations

At each stage of growth and development, the nurse assesses a patient's mobility and provides appropriate education. For example, infants move their limbs, hold their head up, roll, sit, crawl, stand, and then eventually walk. Parents are educated about these developmental milestones during well-child visits. When working with school-age children, nurses provide education to prevent injury that can occur with activity, such as using helmets and knee pads to prevent injury while bicycling and skateboarding. As teenagers become adults, the nurse provides education about the effects of alcohol and other drugs on balance and safety while driving. Older adults are at increased risk for immobility. Conditions such as osteoarthritis, orthostatic hypotension, inner ear dysfunction, osteoporosis resulting in hip fractures, stroke, and Parkinson's disease are among the most common causes of immobility in old age.

Hospitalization poses a risk for altered functional status of older adults due to acute illness, decreased mobility, and the negative effects of bedrest. The American Academy of Nursing issued a recommendation in 2014 stating, "Don't let older adults lie in bed or only get up to a chair during their hospital stay." This recommendation highlights the importance of implementing evidence-based measures to promote activity during hospitalization to prevent functional decline in older adults.[2]

> **Note**
>
> View evidence-based strategies to reduce functional decline in hospitalized older adults provided by The Hartford Institute for Geriatric Nursing.[3]

Diagnoses

There are several nursing diagnoses related to mobility. Review a nursing care planning source for current NANDA-I approved nursing diagnoses and interventions. A commonly used NANDA-I nursing diagnosis is *Impaired Physical Mobility*.[4] See Table 13.3 for the definition and selected defining characteristics of this diagnosis.[5]

Table 13.3 NANDA-I Nursing Diagnosis Impaired Physical Mobility[6]

NANDA-I Diagnosis	Definition	Selected Defining Characteristics
Impaired Physical Mobility	Limitation in independent, purposeful movement of the body or of one or more extremities	Alteration in gait Decrease in fine motor skills Decrease in gross motor skills Decrease in range of motion Decrease in reaction time Difficulty turning Exertional dyspnea Postural instability Uncoordinated or slow movement

A sample nursing diagnosis in PES format is, *"Impaired Physical Mobility related to decrease in muscle strength as evidenced by slow movement and alteration in gait."*

Outcome Identification

A sample overall goal for a patient with *Impaired Physical Mobility* is, *"The patient will participate in activities of daily living to the fullest extent possible for their condition."*

A sample SMART outcome is, *"The patient will demonstrate appropriate use of adaptive equipment (e.g., a walker) for safe ambulation by the end of the shift."*

Planning Interventions

Nursing interventions promote a patient's mobility and prevent effects of immobility. To avoid or minimize complications of immobility, mobilize the patient as soon as possible and to the fullest extent possible. Mobilization efforts, ranging from dangling on the edge of the bed, sitting up in a chair, and assisting with early ambulation, depend on the patient's unique circumstances, such as their medical condition and surgery performed. For example, a patient undergoing a cardiac catheterization may be mobilized within a few hours following the procedure, whereas a patient undergoing total knee arthroplasty may begin mobilizing 24 hours following the surgery.[7] See details about early mobilization protocols earlier in this chapter.

Encourage the patient to perform activities of daily living (ADLs) as independently as possible and participate in prescribed physical therapy. Encourage or perform active or passive range of motion exercises as prescribed by the physical therapist. Be aware that pain and fear of falling can be major deterrents to a patient's willingness to ambulate or perform physical therapy. Monitor the patient's level of pain by using a valid pain intensity rating scale. Administer medications if warranted and consider nonpharmacologic measures such as repositioning, splinting, and heat/cold application to reduce musculoskeletal discomfort. Encourage rest between activities. Educate the patient about appropriately using assistive devices and other fall precautions.[8],[9]

For patients at risk for developing pneumonia due to immobility, encourage adequate fluid intake to liquefy pulmonary secretions, and teach deep breathing and coughing exercises to prevent atelectasis. Monitor oxygenation levels and provide supplemental oxygen as prescribed to maintain adequate oxygenation, especially during ambulation.[10]

For bed-bound patients, elevate the head of the bed to 30 to 45 degrees, unless medically contraindicated, and turn and reposition the patient every two hours. Perform hourly rounding to check on the patient's needs and prevent falls. Protect the skin as needed to minimize the potential for breakdown, and advocate for devices to prevent contractures, as needed.[11],[12]

Implementing Interventions

When implementing interventions to promote mobility, in addition to reviewing the current orders regarding assistance and weight-bearing, assess the patient's current status. For example, use the Banner Mobility Assessment Tool to determine the patient's current mobility status and needs for safe patient handling.

Monitor for signs of vertigo and orthostatic hypotension and assist the patient to a sitting or lying position if they occur. Monitor vital signs before, during, and after physical activity and institute appropriate fall prevention strategies as indicated. Orthostatic hypotension is defined as a drop in systolic blood pressure of 20 mmHg or more or in diastolic blood pressure of 10 mm Hg or

more within three minutes of standing. If orthostatic hypotension is suspected, measure the patient's vital signs while he or she is supine, sitting, and standing before encouraging ambulation. Monitor and document the patient's response to activity, such as heart rate, blood pressure, dyspnea, and skin color.[13] [14]

Evaluation

Determine the patient's progress towards their specific SMART outcomes. Encourage their participation in the setting of realistic goals for mobility and modify these goals as needed for safety.

1. Skalsky, A. J., & McDonald, C. M. (2012). Prevention and management of limb contractures in neuromuscular diseases. *Physical Medicine and Rehabilitation Clinics of North America*, *23*(3), 675–687. https://doi.org/10.1016/j.pmr.2012.06.009↵
2. American Academy of Nursing's Expert Panel on Acute and Critical Care. (n.d.). *Reducing functional decline in older adults during hospitalization.* The Hartford Institute for Geriatric Nursing, Rory Meyers College of Nursing, New York University. https://hign.org/consultgeri/try-this-series/reducing-functional-decline-older-adults-during-hospitalization↵
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6. Herdman, T. H., & Kamitsuru, S. (Eds.). (2018). *Nursing diagnoses: Definitions and classification, 2018-2020*. Thieme Publishers New York, p. 219 ↵
7. Skalsky, A. J., & McDonald, C. M. (2012). Prevention and management of limb contractures in neuromuscular diseases. *Physical Medicine and Rehabilitation Clinics of North America*, *23*(3), 675–687. https://doi.org/10.1016/j.pmr.2012.06.009↵
8. Butcher, H., Bulechek, G., Dochterman, J., & Wagner, C. (2018). *Nursing Interventions Classification (NIC)*. Elsevier, pp. 281-282. ↵
9. Skalsky, A. J., & McDonald, C. M. (2012). Prevention and management of limb contractures in neuromuscular diseases. *Physical Medicine and Rehabilitation Clinics of North America*, *23*(3), 675–687. https://doi.org/10.1016/j.pmr.2012.06.009↵
10. Skalsky, A. J., & McDonald, C. M. (2012). Prevention and management of limb contractures in neuromuscular diseases. *Physical Medicine and Rehabilitation Clinics of North America*, *23*(3), 675–687. https://doi.org/10.1016/j.pmr.2012.06.009↵
11. Butcher, H., Bulechek, G., Dochterman, J., & Wagner, C. (2018). *Nursing Interventions Classification (NIC)*. Elsevier, pp. 281-282. ↵
12. Skalsky, A. J., & McDonald, C. M. (2012). Prevention and management of limb contractures in neuromuscular diseases. *Physical Medicine and Rehabilitation Clinics of North America*, *23*(3), 675–687. https://doi.org/10.1016/j.pmr.2012.06.009↵
13. Butcher, H., Bulechek, G., Dochterman, J., & Wagner, C. (2018). *Nursing Interventions Classification (NIC)*. Elsevier, pp. 281-282. ↵
14. Skalsky, A. J., & McDonald, C. M. (2012). Prevention and management of limb contractures in neuromuscular diseases. *Physical Medicine and Rehabilitation Clinics of North America*, *23*(3), 675–687. https://doi.org/10.1016/j.pmr.2012.06.009↵

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12.4: Putting It All Together

Patient Scenario

Mrs. Howard is a 73-year-old woman who was recently admitted to the medical surgical floor with pneumonia. She has an underlying history of emphysema and has experienced a recent exacerbation in dyspnea during activity. This morning when being assisted to the bathroom, she reports, “I have to stop and catch my breath when walking.” Vital signs this morning indicated oxygen saturation 91% and respiratory rate 18 on room air at rest. During report it was communicated that Mrs. Howard is able to ambulate with the assistance of one but only moves short distances around the room before she needs to stop and rest.

Applying the Nursing Process

Assessment: The nurse identifies a relevant cue that the patient, diagnosed with pneumonia and a previous history of emphysema, is experiencing increased dyspnea when walking around the room that requires her to stop and rest. Vital signs at 0700 were reviewed, and it was noted that the patient’s respiratory rate was 24 with oxygen saturation level 91% on room air at rest. The nurse gathers additional assessment data while the patient is walking and discovers her respiratory rate increases to 30 and her oxygen saturation level decreases to 85% after walking for 2 minutes. Additionally, the patient stops and catches her breath after walking approximately 10 feet, causing her to limit her mobility.

The nurse reviews the patient’s chart and finds an order for “Oxygen via nasal cannula up to 5 L/min PRN to maintain oxygen saturation at 90%.” The nurse also notes a referral for physical therapy assessment and strengthening exercises.

Based on the assessment information gathered, the following nursing care plan is created for Mrs. Howard:

Nursing Diagnosis: *Impaired Physical Mobility r/t activity intolerance as manifested by decreased oxygen saturation, increased respirations, and patient report of “I have to stop and catch my breath while walking.”*

Overall Goal: *The patient will demonstrate improvement in mobility.*

SMART Expected Outcomes:

- *Mrs. Howard will ambulate 50 feet in the hallway within 24 hours.*
- *Mrs. Howard will maintain an oxygen saturation level of 90% or higher while walking within 24 hours.*

Planning and Implementing Nursing Interventions:

The nurse plans to administer oxygen to the patient via nasal cannula as needed to maintain an oxygen saturation level of 90% or higher. The nurse will teach the patient about the importance of balancing periods of activity with periods of rest and reinforce the use of pursed-lip breathing. The nurse will encourage patient ambulation and her active participation in completing ADLs. The nurse will collaborate with physical therapy to educate the patient regarding strengthening exercises and reinforce principles of progressive exercise. The nurse plans to further assess the patient’s smoking history and promote smoking cessation.

Sample Documentation

At 0800 when assisting the patient to the bathroom, the patient reported, “I have to stop and catch my breath when walking.” Vital signs at 0700 were respiratory rate 24 and oxygen saturation level 91% on room air at rest. At 0830, vital signs were reassessed while the patient was walking. Her respiratory rate increased to 30 and her oxygen saturation level decreased to 85% after 2 minutes of walking. The patient stopped to catch her breath after walking approximately 10 feet. Oxygen via nasal cannula at 1 L/min was applied to the patient before ambulating in the hallway at 1000. The patient’s oxygen saturation level dropped to 88% after one minute of walking and the oxygen was increased to 2 L/min. The patient’s oxygen saturation then remained at 90% for the remainder of the walk, and she was able to ambulate 50 feet. Pursed-lip breathing was demonstrated and reinforced during the walk. Physical therapy was contacted and an assessment scheduled for later this morning. The patient reports a smoking history of a pack per day for 50 years. She is interested in stopping smoking. A smoking cessation brochure was provided and discussed. Dr. Smith was notified of these events at 1030.

Evaluation

Within 24 hours, Mrs. Howard successfully ambulated 50 feet in the hallway while maintaining oxygen saturation level of 90%. SMART outcomes were “met.” Planned interventions will continue. SMART outcome is revised to, “*Mrs. Howard will ambulate*

100 feet in the hallway within 24 hours.”

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12.5: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Ms. Curtis is a 67-year-old patient admitted for a left total knee replacement. She is post-op Day 2 and is currently receiving care on the medical surgical unit. Ms. Curtis has been complaining of pain and refused her previous two physical therapy appointments. She agrees to sitting up in the chair, but declines walking.

1. What focused assessments should the nurse perform and why?
2. What complications could occur related to Ms. Curtis’ immobility?
3. What SMART outcomes should the nurse plan in collaboration with Ms. Curtis?
4. List interventions the nurse should plan for Ms. Curtis and their rationale.
5. How will the nurse evaluate if the interventions are successful?

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12.6: XIII Glossary

Active assist range of motion exercise: A patient's joint receiving partial assistance in movement from an outside force.

Active range of motion: Movement of a joint by the individual performing the exercise.

Ambulation: The ability of a patient to safely walk independently, with assistance from another person, or with an assistive device, such as a cane, walker, or crutches.

Assistive device: An object or piece of equipment designed to help a patient with activities of daily living, such as a walker, cane, gait belt, or mechanical lift.

Bed mobility: The ability of a patient to move around in bed, including moving from lying to sitting and sitting to lying.

Body mechanics: The coordinated effort of muscles, bones, and the nervous system to maintain balance, posture, and alignment during moving, transferring, and repositioning patients.

Fowler's position: A position where the patient is supine with the head of bed placed at a 45- to 90-degree angle. The bed can be used to slightly flex the hips to help prevent the patient from migrating downwards in bed.

Functional mobility: The ability of a person to move around in their environment, including walking, standing up from a chair, sitting down from standing, and moving around in bed.

Gait belt: A 2-inch-wide (5 mm) belt, with or without handles, that is fastened around a patient's waist used to ensure stability when assisting patients to stand, ambulate, or to transfer from bed to chair.

Lateral positioning: A position where the patient lies on one side of the body with the top leg over the bottom leg. This position helps relieve pressure on the coccyx.

Mechanical lift: A hydraulic lift with a sling used to move patients who cannot bear weight or have a medical condition that does not allow them to stand or assist with moving. It can be a portable device or permanently attached to the ceiling.

Mobility: The ability of a patient to change and control body position. Mobility exists on a continuum ranging from no impairment (i.e., the patient can make major and frequent changes in position without assistance) to being completely immobile (i.e., the patient is unable to make even slight changes in body or extremity position without assistance).

Orthostatic hypotension: Low blood pressure that occurs when a patient changes position from lying to sitting or sitting to standing that causes symptoms of dizziness or light-headedness. Orthostatic hypotension is defined as a drop in systolic blood pressure of 20 mm Hg or more or a drop of diastolic blood pressure of 10 mm Hg or more within three minutes of sitting or standing.

Passive range of motion exercises: Movement applied to a joint solely by another person or a passive motion machine. When passive range of motion is applied, the joint of an individual receiving exercise is completely relaxed while the outside force moves the body part.

Prone positioning: A position where the patient lies on their stomach with their head turned to the side.

Range of motion (ROM) exercises: Activities aimed to facilitate movement of specific joints and promote mobility of extremities.

Semi-Fowler's position: A position where the head of the bed is placed at a 30- to 45-degree angle. The patient's hips may or may not be flexed.

Sims positioning: A position where the patient is positioned halfway between the supine and prone positions with their legs flexed.

Sit to stand lifts: Mobility devices that assist weight-bearing patients who are unable to transition from a sitting position to a standing position by using their own strength. They are used to safely transfer patients who have some muscular strength, but not enough strength to safely change positions by themselves. Some sit to stand lifts use a mechanized lift whereas others are nonmechanized.

Slider board: A board (also called a transfer board) used to transfer an immobile patient from one surface to another while the patient is lying supine (e.g., from a stretcher to hospital bed).

Supine positioning: A position where the patient lies flat on their back.

Timed Get Up and Go Test: A mobility assessment by nurses that begins by having the patient stand up from an armchair, walk three yards, turn, walk back to the chair, and sit down. As the patient performs these maneuvers, their posture, alignment, balance, and gait are analyzed as the patient's mobility status is assessed.

Transferring: The action of a patient moving from one surface to another. This includes moving from a bed into a chair or moving from one chair to another.

Trendelenburg position: A position where the head of the bed is placed lower than the patient's feet. This position is used in situations such as hypotension and medical emergencies because it helps promote venous return to major organs such as the brain and heart.

Tripod position: A position where the patient sits in a chair with their elbows on their knees or at the side of the bed with their arms resting on an overbed table. This position is often naturally assumed by patients with breathing difficulties.

Vertigo: A sensation of dizziness as if the room is spinning.

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CHAPTER OVERVIEW

13: Nutrition

13.1: Nutrition Introduction
13.2: Nutrition Basic Concepts
13.3: Applying the Nursing Process
13.4: Putting It All Together
13.5: Learning Activities
13.6: XIV Glossary

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13.1: Nutrition Introduction

Learning Objectives

- Describe variables that influence nutrition
- Identify factors related to nutrition across the life span
- Assess a patient's nutritional status
- Outline specific nursing interventions to promote nutrition
- Base your decisions on the action of nutrients, signs of excess and deficiency, and specific foods associated with each nutrient
- Base your decisions on the interpretation of diagnostic tests and lab values indicative of a disturbance in nutrition
- Give examples of appropriate vitamin use across the life span
- Identify evidence-based practices related to nutrition

Nurses promote healthy nutrition to prevent disease, assist patients to recover from illness and surgery, and teach patients how to optimally manage chronic illness with healthy food choices. Healthy nutrition helps to prevent obesity and chronic diseases, such as diabetes mellitus and cardiovascular disease. By proactively encouraging healthy eating habits, nurses provide the tools for patients to maintain their health, knowing it is easier to stay healthy than to become healthy after disease sets in. When patients are recovering from illness or surgery, nurses use strategies to promote good nutrition even when a patient has a poor appetite or nausea. If a patient develops chronic disease, the nurse provides education about prescribed diets that can help manage the disease, such as a low carbohydrate diet for patients with diabetes or a low fat, low salt, low cholesterol diet for patients with cardiovascular disease.

Nurses also advocate for patients with conditions that can cause nutritional deficits. For example, a nurse may be the first to notice that a patient is having difficulty swallowing at mealtime and advocates for a swallow study to prevent aspiration. A nurse may also notice other psychosocial risk factors that place a patient at risk for poor nutrition in their home environment and make appropriate referrals to enhance their nutritional status. Nurses also administer alternative forms of nutrition, such as enteral (tube) feedings or parenteral (intravenous) feedings.

This chapter will review basic information about the digestive system, essential nutrients, nutritional guidelines, and then discuss the application of the nursing process to addressing patients' nutritional status.

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13.2: Nutrition Basic Concepts

Before discussing assessments and interventions related to promoting good nutrition, let's review the structure and function of the digestive system, essential nutrients, and nutritional guidelines.

Digestive System

The digestive system breaks down food and then absorbs nutrients into the bloodstream via the small intestine and large intestine. Because good health depends on good nutrition, any disorder affecting the functioning of the digestive system can significantly impact overall health and well-being and increase the risk of chronic health conditions.

Structure and Function

The gastrointestinal system (also referred to as the digestive system) is responsible for several functions, including digestion, absorption, and immune response. Digestion begins in the upper gastrointestinal tract at the mouth, where chewing of food occurs, called mastication. **Mastication** results in **mechanical digestion** when food is broken down into small chunks and swallowed. Masticated food is formed into a bolus as it moves toward the pharynx in the back of the throat and then into the esophagus. Coordinated muscle movements in the esophagus called **peristalsis** move the food bolus into the stomach where it is mixed with acidic gastric juices and further broken down into chyme through a **chemical digestion** process. As chyme is moved out of the stomach and into the duodenum of the small intestine, it is mixed with bile from the gallbladder and pancreatic enzymes from the pancreas for further digestion.[1]

Absorption is a second gastrointestinal function. After chyme enters the small intestine, it comes into contact with tiny fingerlike projections along the inside of the intestine called villi. Villi increase the surface area of the small intestine and allow nutrients, such as protein, carbohydrates, fat, vitamins, and minerals, to absorb through the intestinal wall and into the bloodstream. Absorption of nutrients is essential for metabolism to occur because nutrients fuel bodily functions and create energy. Peristalsis moves leftover liquid from the small intestine into the large intestine, where additional water and minerals are absorbed. Waste products are condensed into feces and excreted from the body through the anus.[2] See Figure 14.1[3] for labeled parts of the gastrointestinal system.

In addition to digestion and absorption, the gastrointestinal system is also involved in immune function. Good bacteria in the stomach create a person's gut biome. Gut biome contributes to a person's immune response through antibody production in response to foreign materials, chemicals, bacteria, and other substances.[4] For example, patients may develop *Clostridium difficile* (C-diff) after taking antibiotics that kill these beneficial bacteria in the gut. Read additional details about our microbiome and immune response in the "Infection" chapter of this book.

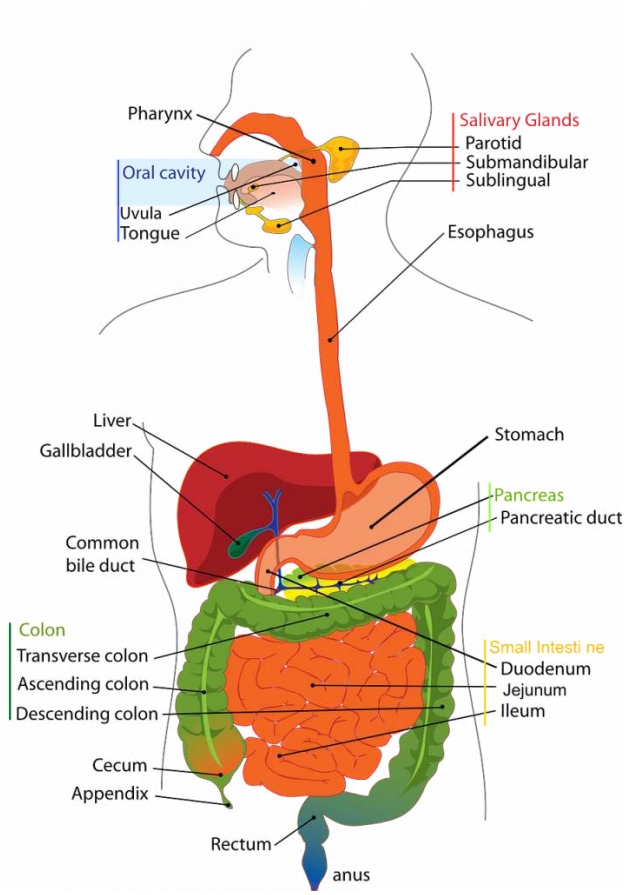

Figure 14.1 The Gastrointestinal System

Essential Nutrients

Nutrients from food and fluids are used by the body for growth, energy, and bodily processes. **Essential nutrients** refer to nutrients that are necessary for bodily functions but must come from dietary intake because the body is unable to synthesize them. Essential nutrients include vitamins, minerals, some amino acids, and some fatty acids.[5] Essential nutrients can be further divided into macronutrients and micronutrients.

Macronutrients

Macronutrients make up most of a person's diet and provide energy, as well as essential nutrient intake. Macronutrients include carbohydrates, proteins, and fats. However, too many macronutrients without associated physical activity cause excess nutrition that can lead to obesity, cardiovascular disease, diabetes mellitus, kidney disease, and other chronic diseases. Too few macronutrients result in undernutrition, which contributes to nutrient deficiencies and malnourishment.[6]

Carbohydrates

Carbohydrates are sugars and starches and are an important energy source that provides 4 kcal/g of energy. **Simple carbohydrates** are small molecules (called monosaccharides or disaccharides) and break down quickly. As a result, simple carbohydrates are easily digested and absorbed into the bloodstream, so they raise blood glucose levels quickly. Examples of simple carbohydrates include table sugar, syrup, soda, and fruit juice. **Complex carbohydrates** are larger molecules (called polysaccharides) that break down more slowly, which causes slower release into the bloodstream and a slower increase in blood sugar over a longer period of time. Examples of complex carbohydrates include whole grains, beans, and vegetables.[7]

Foods can also be categorized according to their **glycemic index**, a measure of how quickly glucose levels increase in the bloodstream after carbohydrates are consumed. The glycemic index was initially introduced as a way for people with diabetes mellitus to control their blood glucose levels. For example, processed foods, white bread, white rice, and white potatoes have a high glycemic index. They quickly raise blood glucose levels after being consumed and also cause the release of insulin, which can

result in more hunger and overeating. However, foods such as fruit, green leafy vegetables, raw carrots, kidney beans, chickpeas, lentils, and bran breakfast cereals have a low glycemic index. These foods minimize blood sugar spikes and insulin release after eating, which leads to less hunger and overeating. Eating a diet of low glycemic foods has been linked to a decreased risk of obesity and diabetes mellitus. [8] See Figure 14.2 [9] for an image of the glycemic index of various foods.

Figure 14.2 Glycemic Index

Proteins

Proteins are peptides and amino acids that provide 4 kcal/g of energy. Proteins are necessary for tissue repair and function, growth, energy, fluid balance, clotting, and the production of white blood cells. Protein status is also referred to as **nitrogen balance**. Nitrogen is consumed in dietary intake and excreted in the urine and feces. If the body excretes more nitrogen than it takes in through the diet, this is referred to as a negative nitrogen balance. Negative nitrogen balance is seen in patients with starvation or severe infection. Conversely, if the body takes in more nitrogen through the diet than what is excreted, this is referred to as a positive nitrogen balance. [10] During positive nitrogen balance, excess protein is converted to fat tissue for storage.

Proteins are classified as complete, incomplete, or partially complete. **Complete proteins** must be ingested in the diet. They have enough amino acids to perform necessary bodily functions, such as growth and tissue maintenance. Examples of foods containing complete proteins are soy, quinoa, eggs, fish, meat, and dairy products. **Incomplete proteins** do not contain enough amino acids to sustain life. Examples of incomplete proteins include most plants, such as beans, peanut butter, seeds, grains, and grain products. Incomplete proteins must be combined with other types of proteins to add to amino acids and form complete protein combinations. [11] For example, vegetarians must be careful to eat complementary proteins, such as grains and legumes, or nuts and seeds and legumes, to create complete protein combinations during their daily food intake. **Partially complete proteins** have enough amino acids to sustain life, but not enough for tissue growth and maintenance. Because of the similarities, most sources consider partially complete proteins to be in the same category as incomplete proteins. See Figure 14.3 [12] for an image of protein-rich foods.

Figure 14.3 Protein-Rich Foods

Fats

Fats consist of fatty acids and glycerol and are essential for tissue growth, insulation, energy, energy storage, and hormone production. Fats provide 9 kcal/g of energy.[13] While some fat intake is necessary for energy and uptake of fat-soluble vitamins, excess fat intake contributes to heart disease and obesity. Due to its high-energy content, a little fat goes a long way.

Fats are classified as saturated, unsaturated, and trans fatty acids. **Saturated fats** come from animal products, such as butter and red meat (e.g., steak). Saturated fats are solid at room temperature. Recommended intake of saturated fats is less than 10% of daily calories because saturated fat raises cholesterol and contributes to heart disease.[14]

Unsaturated fats come from oils and plants, although chicken and fish also contain some unsaturated fats. Unsaturated fats are healthier than saturated fats. Examples of unsaturated fats include olive oil, canola oil, avocados, almonds, and pumpkin seeds. Fats containing omega-3 fatty acids are considered polyunsaturated fats and help lower LDL cholesterol levels. Fish and other seafood are excellent sources of omega-3 fatty acids.

Trans fats are fats that have been altered through a hydrogenation process, so they are not in their natural state. During the hydrogenated process, fat is changed to make it harder at room temperature and have a longer shelf life. Trans fats are found in processed foods, such as chips, crackers, and cookies, as well as in some margarines and salad dressings. Minimal trans fat intake is recommended because it increases cholesterol and contributes to heart disease.[15]

Micronutrients

Micronutrients include vitamins and minerals.

Vitamins

Vitamins are necessary for many bodily functions, including growth, development, healing, vision, and reproduction. Most vitamins are considered essential because they are not manufactured by the body and must be ingested in the diet. Vitamin D is also manufactured through exposure to sunlight.[16]

Vitamin toxicity can be caused by overconsumption of certain vitamins, such as vitamins A, D, C, B6, and niacin. Conversely, vitamin deficiencies can be caused by various factors including poor food intake due to poverty, malabsorption problems with the gastrointestinal tract, drug and alcohol abuse, proton pump inhibitors, and prolonged parenteral nutrition. Deficiencies can take years to develop, so it is usually a long-term problem for patients.[17]

Vitamins are classified as water soluble or fat soluble. **Water-soluble vitamins** are not stored in the body and include vitamin C and B-complex vitamins: B1 (thiamine), B2 (riboflavin), B3 (niacin), B6 (pyridoxine), B12 (cyanocobalamin), and B9 (folic acid). Additional water-soluble vitamins include biotin and pantothenic acid. Excess amounts of these vitamins are excreted through the kidneys in urine, so toxicity is rarely an issue, though excess intake of vitamin B6, C, or niacin can result in toxicity.[18] See Table 14.2a for a list of selected water-soluble vitamins, their sources, and their function.[19],[20],[21],[22],[23],[24],[25],[26],[27]

Table 14.2a Selected Water-Soluble Vitamins

Water-Soluble Vitamin	Sources	Functions	Deficiency
C (Ascorbic Acid)	Citrus fruits, broccoli, greens, sweet peppers, tomatoes, lettuce, potatoes, tropical fruits, and strawberries	Infection prevention, wound healing, collagen formation, iron absorption, amino acid metabolism, antioxidant, and bone growth in children.	Early Signs: weakness, weight loss, myalgias, and irritability. Late Signs: scurvy; swollen, spongy gums; loose teeth; bleeding gums and skin; poor wound healing; edema; leg pain; anorexia; irritability; and poor growth in children.
B1 (Thiamine)	Nuts, liver, whole grains, pork, and legumes	Nerve function; metabolism of carbohydrates, fat, amino acids, glucose, and alcohol; appetite and digestion.	Fatigue, memory deficits, insomnia, chest pain, abdominal pain, anorexia, numbness of extremities, muscle wasting, heart failure, and shock in severe cases.
B2 (Riboflavin)	Eggs, liver, leafy greens, milk, and whole grains	Protein and carbohydrate metabolism, healthy skin, and normal vision.	Pallor, lip fissures, and seborrheic dermatitis.
B3 (Niacin)	Fish, chicken, eggs, dairy, mushrooms, peanut butter, whole grains, and red meat	Glycogen metabolism, cell metabolism, tissue regeneration, fat synthesis, nerve function, digestion, and skin health.	Pellagra characterized by skin lesions at pressure points/sun exposed skin, glossitis (swollen tongue), constipation progressing to bloody diarrhea, abdominal pain, abdominal distention, nausea, psychosis, and encephalopathy.
B6 (Pyridoxine)	Organ meats, fish, and various fruits and vegetables	Protein metabolism and red blood cell formation.	Rare due to presence in most foods. Peripheral neuropathy, seizures refractory to antiseizure medications, anemia, glossitis (swollen tongue), seborrheic dermatitis, depression, and confusion.
B9 (Folic Acid)	Liver, legumes, leafy greens, seeds, orange juice, and enriched refined grains	Coenzyme in protein metabolism and cell growth, red blood cell formation, and prevention of fetal neural tube defects in utero.	Glossitis (swollen tongue), confusion, depression, diarrhea, anemia, and fetal neural tube defects.
B12 (Cyanocobalamin)	Meat, organ meat, dairy, seafood, poultry, and eggs	Mature red blood cell formation, DNA/RNA synthesis, new cell formation, and nerve function.	Pernicious anemia from lack of intrinsic factor in intestines. Early Signs: weight loss, abdominal pain, peripheral neuropathy, weakness, hyporeflexia, and ataxia. Late Signs: irritability, depression, paranoia, and confusion.

Fat-soluble vitamins are absorbed with fats in the diet and include vitamins A, D, E, and K. They are stored in fat tissue and can build up in the liver. They are not excreted easily by the kidneys due to storage in fatty tissue and the liver, so overconsumption can cause toxicity, especially with vitamins A and D.[28] See Table 14.2b for a list of selected fat-soluble vitamins, their sources, their function, and manifestations of deficiencies and toxicities.[29],[30],[31],[32],[33],[34],[35],[36],[37]

Table 14.2b Selected Fat-Soluble Vitamins

Fat-Soluble Vitamin	Source	Function	Deficiency	Toxicity
A (Retinol)	Retinol: fortified milk and dairy, egg yolks, and fish liver oil Beta carotene: green leafy vegetables, and dark orange fruits and vegetables	Eyesight, epithelial, bone and tooth development, normal cellular proliferation, and immunity.	Night blindness, rough scaly skin, dry eyes, and poor tooth/ bone development. Causes poor growth and infections common with mortality >50%.	Dry, itchy skin; headache; nausea; blurred vision; and yellowing skin (carotenosis).
D	Milk, dairy, sun exposure, egg yolks, fatty fish, and liver	Changed to active form with sun exposure. Needed for calcium/ phosphorus absorption, immunity, and bone strength.	Rickets, poor dentition, tetany, osteomalacia, muscle aches and weakness, bone pain, poor calcium absorption leading to hypocalcemia and subsequent hyperparathyroidism and tetany.	Hypercalcemia resulting in nausea, vomiting, anorexia, renal failure, weakness, pruritus, and polyuria.
E	Green leafy vegetables, whole grains, liver, egg yolks, nuts, and plant oils	Anticoagulant, antioxidant, and cellular protection.	Red blood cell breakdown leading to anemia, neuron degeneration, neuropathy, and retinopathy.	Rare. Occasionally muscle weakness, fatigue, GI upset with diarrhea, and hemorrhagic stroke.
K	Green leafy vegetables and green vegetables *produced by bacteria in intestines	Needed for producing clotting factors in the liver.	Rare in adults. Prolonged clotting times, hemorrhaging (especially in newborns causing morbidity & mortality), and jaundice.	Rare, but can interfere with effectiveness of certain anticoagulant medications (Warfarin).

Minerals

Minerals are inorganic materials essential for hormone and enzyme production, as well as for bone, muscle, neurological, and cardiac function. Minerals are needed in varying amounts and are obtained from a well-rounded diet. In some cases of deficiencies, mineral supplements may be prescribed by a health care provider. Deficiencies can be caused by malnutrition, malabsorption, or certain medications, such as diuretics.

Minerals are classified as either macrominerals or trace minerals. **Macrominerals** are needed in larger amounts and are typically measured in milligrams, grams, or milliequivalents. Macrominerals include sodium, potassium, calcium, magnesium, chloride, and phosphorus. Macrominerals are discussed in further detail in the "Electrolytes" section of the "Fluids and Electrolytes" chapter of this book.

Trace minerals are needed in tiny amounts. Trace minerals include zinc, iron, chromium, copper, fluorine, iodine, manganese, molybdenum, and selenium.[38] See Table 14.2c for a list of selected macrominerals and Table 14.2d for a list of trace minerals.[39],[40],[41],[42]

Table 14.2c Macrominerals

Macromineral	Source	Function
Sodium	Table salt, spinach, and milk	Water balance
Potassium	Legumes, potatoes, bananas, and whole grains	Muscle contraction, cardiac muscle function, and nerve function
Calcium	Dairy, eggs, and green leafy vegetables	Bone and teeth development, nerve function, muscle contraction, immunity, and blood clotting
Magnesium	Raw nuts, spinach (cooked has higher magnesium content), tomatoes, and beans	Cell energy, muscle function, cardiac function, and glucose metabolism
Chloride	Table salt	Fluid and electrolyte balance and digestion
Phosphorus	Red meat, poultry, rice, oats, dairy, and fish	Bone strength and cellular function

Table 14.2d Trace Minerals

Trace Mineral	Source	Function
Zinc	Eggs, spinach, yogurt, whole grains, fish, and brewer's yeast	Immune function, healing, and vision
Iron	Red meat, organ meats, spinach, shrimp, tuna, salmon, kidney beans, peas, and lentils (nonanimal forms are harder to absorb, so need more!)	Hemoglobin production and collagen production
Chromium	Whole grains, meat, and brewer's yeast	Glucose metabolism
Copper	Shellfish, fruits, nuts, and organ meats	Hemoglobin production, collagen, elastin, neurotransmitter production, and melanin production
Flourine	Fluoridated water and toothpaste	Retention of calcium in bones and teeth
Iodine	Iodized salt and seafood	Energy production and thyroid function
Manganese	Whole grain and nuts	Not fully understood
Molybdenum	Organ meats, green leafy vegetables, legumes, whole grains, and dairy	Not fully understood; detoxification
Selenium	Broccoli, cabbage, garlic, whole grains, brewer's yeast, celery, onions, and organ meats	Not fully understood

Nutritional Guidelines

Nutritional guidelines are developed by governmental agencies to provide guidance to the population on how to best meet nutritional needs. These guidelines may vary by country. The National Academies of Sciences, Engineering, and Medicine set the **Dietary Reference Intakes** (DRIs) for the United States and Canada. Dietary Reference Intakes (DRIs) are a set of reference values used to plan and assess nutrient intakes of healthy people, including proteins, carbohydrates, fats, vitamins, minerals, and fiber. Nutrients included in the DRIs are obtained through a typical diet, although some foods may be fortified with certain nutrients that are commonly deficient in diets.[43]

Choose MyPlate Food Guide

The U.S. Department of Agriculture (USDA) issues dietary guidelines for appropriate serving sizes of each food group and number of servings recommended each day. The “Choose MyPlate” food guide is an easy-to-understand visual representation of how a healthy plate of food should be divided based on food groups. See Figure 14.4[44] for a Choose MyPlate image. A little more than half of the plate should be grains and vegetables, with a focus on whole grains and a variety of vegetables. About one quarter of the plate should be fruits, with an emphasis on whole fruits. About one quarter of the plate should be protein, with an emphasis on consuming a variety of low-fat protein sources. All of these groups combined should make up no more than 85% of daily caloric intake based on a 2,000 calorie diet. Fats, oils, and added sugars are not included, but should make up no more than 15% of daily caloric intake. Foods should be selected that are as nutrient-dense as possible. **Nutrient-dense** means there is a high proportion of nutritional value relative to calories contained in the food, such as fruits and vegetables. Conversely, **calorie-dense** foods should be minimized because they have a large amount of calories with few nutrients. For example, candy and soda are calorie-dense with few nutrients and should be minimized.[45],[46] See the following hyperlink to the MyPlate web site for further information on USDA dietary guidelines and patient educational materials.

Note

Read more about USDA dietary guidelines at https://www.myplate.gov/.[47]

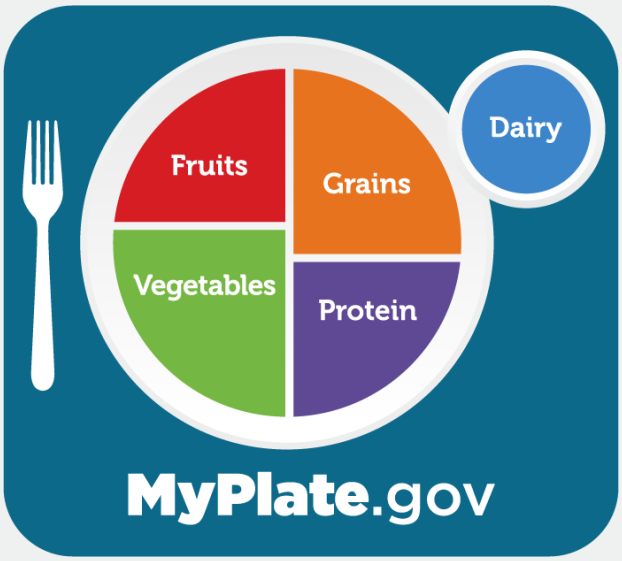

Figure 14.4 MyPlate Food Guide

MyPlate information and images are also available in several other languages so that education can be tailored to the patient’s preferred language. For example, Figure 14.5[48] shows MyPlate in Vietnamese. This image would be accompanied with written information about food groups that include the patient’s typical dietary choices.

Figure 14.5 MyPlate in Vietnamese

Vegetable Group

For a well-rounded diet, a variety of vegetables should be consumed, including vegetables from all five vegetable groups: dark green leafy vegetables; red and orange vegetables; beans, peas, and lentils (formerly called the legumes group); starchy vegetables; and other vegetables. Vegetables can be fresh, frozen, canned, or dried. Dark green leafy vegetables include kale, Swiss chard, spinach, broccoli, and salad greens. Red and orange vegetables include carrots, bell peppers, sweet potatoes, tomatoes, tomato juice, and squash. The beans, peas, and lentils group includes dried beans, black beans, chickpeas, kidney beans, split peas, and black-eyed peas. (Note that this group does not include green beans or green peas.) This vegetable group also supplies some protein and can be included in the protein group as well. Starchy vegetables include root vegetables, such as potatoes, as well as corn. The "other vegetables" category includes any vegetable that doesn't fit in the other four categories, such as asparagus, avocados, brussels sprouts, cabbage, cucumbers, snow peas, and mushrooms, and a variety of others.

Daily serving suggestions of vegetables for individuals with a 2,000 calorie diet are 2 ½ cup equivalents of vegetables per day. For example, a "one cup equivalent" equals 1 cup raw or cooked vegetables, one cup 100% vegetable juice, ½ cup of dried vegetables, or 2 cups of leafy green vegetables. Approximately 90% of Americans do not meet the recommended daily intake of vegetables.[49] See Figure 14.6[50] for an image of vegetables.

Figure 14.6 Vegetables

Grain Group

Grains are classified as whole grains or refined grains. **Whole grains** include the entire grain kernel and supply more fiber than refined grains. Examples of whole grains include amaranth, whole barley, popcorn, oats, whole grain cornmeal, brown or wild rice, and whole grain cereal or crackers. **Refined grains** have been processed to remove parts of the grain kernel and supply little fiber. As a result, they quickly increase blood glucose levels. Examples of refined grains include white bread, white rice, Cream of Wheat, pearled barley, white pasta, and refined-grain cereals or crackers. Some grains are fortified to ensure adequate intake of folic acid. See Figure 14.7[51] for an image of whole grain whole wheat bread.

The daily serving suggestions of grains for an individual with a 2,000 calorie diet are six ounce equivalents per day, split equally between whole and refined grains. For example, a "one ounce equivalent" of grains equals ½ cup of cooked rice, pasta, or cereal or 1 cup of flaked cereal. Most Americans consume adequate amounts of total grains, although roughly 98% are deficient in recommended whole grain amounts, and 74% consume more than the recommended refined grain amounts.[52]

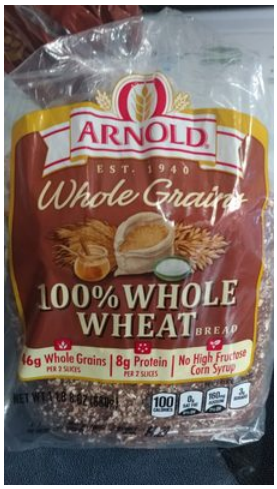

Figure 14.7 Whole Grain, Whole Wheat Bread

Fruit Group

Fruits can be frozen, canned, or dried, in addition to 100% fruit juice. A few examples of fruits include apples, oranges, bananas, melons, peaches, apricots, pineapples, and rhubarb. Daily serving suggestions of fruits for an individual with a 2,000 calorie diet are 2 cup equivalents per day. For example, “one cup equivalent” equals 1 cup of raw or cooked fruit, 8 ounces of 100% fruit juice, or ½ cup of dried fruit. Approximately 80% of Americans do not consume the recommended daily intake of fruits.[53] See Figure 14.8[54] for an image of fruits.

Figure 14.8 Fruits

Dairy Group

Dairy products can be liquid, dried, semi-solid, or solid depending on the type of product. Dairy products include milk, lactose-free milk, fortified soy milk, buttermilk, cheese, yogurt, and kefir. Sour cream and cream cheese are not considered dairy items in terms of nutritional benefits. Daily serving suggestions of dairy products for an individual with a 2,000 calorie diet are 3 cup equivalents per day. For example, “one cup equivalent” equals 1 cup of milk, soy milk, or yogurt; 1 ½ ounces of natural cheese, or 2 ounces of processed cheese. Approximately 90% of Americans consume less than the recommended daily intake of dairy products.[55] See Figure 14.9[56] for an image of dairy products.

Figure 14.9 Dairy Products

Protein Group

Proteins are categorized by the type of protein source. The meats, poultry, and eggs category consists of any type of animal or poultry meat, organ meat, or poultry egg. Lean meats should be selected to minimize fat and calorie intake from high-fat meats.

The seafood category includes any type of fish, clams, crab, lobster, oyster, and scallops. It is important to choose fish with low mercury levels to prevent negative effects of a buildup of mercury in the body. In general, large, fatty ocean fish, such as tuna, have higher levels of mercury due to their diet and storage of mercury in their fatty tissues.

The nuts, seeds, and soy products category includes tree nuts, peanuts, nut butters, seeds, or seed butters. Soy products include tofu and any other products made from soy. Unsalted nuts should be selected to avoid excess salt intake.

Protein is also contained in other food groups, such as dairy or the vegetable category of peas, beans, and lentils. Daily serving suggestions of proteins for individuals with a 2,000 calorie diet are 5 ½ ounce equivalents per day. Servings should total up to 26 ounce equivalents per week of meats, eggs, and poultry; 8 ounce equivalents per week of seafood; and 5 ounce equivalents per week of nuts, seeds, or soy products. A “one ounce equivalent” of protein equals 1 ounce of lean meat, one egg, ¼ cup cooked beans, or 1 tablespoon of peanut butter. Most Americans consume adequate amounts of protein, but many consume proteins high in saturated fat and sodium that contribute to diseases such as coronary artery disease.[57]

Oil/Fat Group

Examples of oils are vegetable oil, canola oil, olive oil, butter, lard, and coconut oil. Daily serving suggestions of fats or oils for individuals with a 2,000 calorie diet are 27 grams per day. While it is important to limit oils and fats due to their calorie-dense nature, some fat and oil intake is essential for nutrient absorption and overall health. It is best to select healthy unsaturated fats, such as avocados, nuts, or olive oil.[58]

Gender

A person’s gender affects their calorie and nutrient requirements. Males typically have higher calorie and protein needs related to increased muscle mass. Females typically require fewer calories to maintain their body weight due to a higher proportion of adipose (fat tissue) than muscle. Menstruating females also have higher iron requirements to offset losses that occur during menstruation.

Note

Read Nutrition and Food Safety Information and Resources for Healthcare Professionals from the U.S. Food and Drug Administration.

View the infographic "What's MyPlate All About?" from the USDA.

Factors Affecting Nutritional Status

Now that we have discussed basic nutritional concepts and dietary guidelines, let's discuss factors that can affect a person's nutritional status. Many things that can cause altered nutrition, such as physiological factors, cultural and religious beliefs, economic resources, drug and nutrient disorders, surgery, altered metabolic states, alcohol and drug abuse, and psychological states.

Physiological Factors

Nutritional intake is affected by several physiological factors. Appetite is controlled by the hypothalamus, a tiny gland deep within the brain that triggers feelings of hunger or fullness depending on hormone and neural signals being sent and received. See Figure 14.10[59] for an image of the hypothalamus indicated by the red arrow. Hunger causes a feeling of emptiness in the abdomen and is often accompanied by audible noises coming from the abdomen as the stomach contracts due to emptiness. Hunger can cause feelings of discomfort, nausea, and tiredness. Satiety is a feeling of fullness that often comes after eating, although it can also be caused by impairments of the hypothalamus. Electrolyte imbalances and fluid volume imbalances can also trigger hunger and thirst by sending signals to the hypothalamus.[60]

Figure 14.10 Hypothalamus

The five senses play an important role in food intake. For example, food with a pleasing aroma may induce mouth watering and hunger, whereas food or environments with displeasing aromas often suppress the appetite. Texture and taste of foods also play a role in stimulation of appetite.

Poor dentition or poor oral care has a negative effect on appetite, so adequate oral care is crucial for patients prior to eating.[61] Additionally, the condition of a patient's teeth and gums, the fit of dentures, and gastrointestinal function also play an important role in nutrition. Loose teeth, swollen gums, or poor-fitting dentures can make eating difficult.

Difficulty swallowing, called **dysphagia**, can make it dangerous for the patient to swallow food because it can result in pneumonia from aspiration of food into the lungs. Special soft diets or enteral or parenteral nutrition are typically prescribed for patients with dysphagia. Nurses collaborate with speech therapists when assessing and managing dysphagia.

A poorly functioning gastrointestinal tract makes nutrient absorption difficult and can result in malnourishment. Diseases that cause inflammation of the gastrointestinal tract impair absorption of nutrients. Examples of these conditions include esophagitis, gastritis, inflammatory bowel disease, and cholecystitis. Patients with these disorders should select nutrient-dense foods and may require prescribed supplements to increase nutrient intake.

Cultural and Religious Beliefs

Cultural and religious beliefs often influence food selection and food intake. It is important for nurses to conduct a thorough patient assessment, including food preferences, to ensure adequate nutritional intake during hospitalization. The nurse should not assume a particular diet based on a patient's culture or religion, but instead should determine their individual preferences through the assessment interview.

Cultural beliefs affect types of food eaten and when they are eaten. Some foods may be restricted due to beliefs or religious rituals, whereas other foods may be viewed as part of the healing process. For example, some cultures do not eat pork because it is considered unclean, and others eat "kosher" food that prescribes how food is prepared. Some religions fast during religious holidays from sunrise to sunset, where others avoid eating meat during the time of Lent.[62] [63]

> **Note**
>
> Read more about the impact of religious and cultural beliefs on food intake in the "Spirituality" chapter of this book.

Economic Resources

If a patient has inadequate financial resources, food security and food choices are often greatly impacted. Healthy, nutrient-dense, fresh foods typically cost more than prepackaged, heavily processed foods. Poor economic status is correlated with the consumption of calorie-dense, nutrient-poor food choices, putting these individuals at risk for inadequate nutrition and obesity.[64] Social programs such as Meals on Wheels, free or reduced-cost school breakfast and lunch programs, and government subsidies based on income help reduce food insecurity and promote the consumption of healthy, nutrient-dense foods. Nurses refer at-risk patients to social workers and case managers for assistance in applying for these social programs.

Drug and Nutrient Interactions

Some prescription drugs affect nutrient absorption. For example, some medications such as proton pump inhibitors (omeprazole) alter the pH of stomach acid, resulting in poor absorption of nutrients. Other medications, such as opioids, often decrease a person's appetite or cause nausea, resulting in decreased calorie and nutrient intake.

Surgery

Surgery can affect a patient's nutritional status due to several factors. Food and drink are typically withheld for a period of time prior to surgery to prevent aspiration of fluid into the lungs during anesthesia. Anesthesia and pain medication used during surgery slow peristalsis, and it often takes time to return to normal. Slow peristalsis can cause nausea, vomiting, and constipation. Until the patient is able to pass gas and bowel sounds return, the patient is typically ordered to have nothing by mouth (NPO). If a patient experiences prolonged NPO status, such as after significant abdominal surgery, intravenous fluids and nutrition may be required.

Surgery also stimulates the physiological stress response and increases metabolic demands, causing the need for increased calories. The stress response can also cause elevated blood glucose levels due to the release of corticosteroids, even if the patient has not been previously diagnosed with diabetes mellitus. For this reason, nurses often monitor post-op patients' bedside blood glucose levels carefully.

Bowel resection surgery in particular has a negative impact on nutrient absorption. Because all or parts of the intestine are removed, there is decreased absorption of nutrients, which can result in nutrient deficiencies. Many patients who have experienced bowel resection require nutrient supplementation.

Bariatric surgery is used to treat obesity and reduce obesity-related cardiovascular risk factors. Bariatric procedures alter the anatomy and physiology of the gastrointestinal tract, which makes patients susceptible to nutritional deficiencies.[65] Read more about bariatric surgery and long-term nutritional issues using the hyperlink in the following box.

> **Note**
>
> Read more about bariatric surgery and long-term nutritional issues.[66]

Altered Metabolic States

Metabolic demands impact nutrient intake. In conditions where metabolic demands are increased, such as during growth spurts in childhood or adolescence, nutritional intake should be increased. Disease states, such as cancer, hyperthyroidism, and AIDS, can increase metabolism and require an increased amount of nutrients. However, cancer treatment, such as radiation and chemotherapy, often causes nausea, vomiting, and decreased appetite, making it difficult for patients to obtain adequate nutrients at a time when they are needed in high amounts due to increased metabolic demand.

Other diseases like diabetes mellitus cause complications with nutrient absorption due to insulin. Insulin is necessary for the metabolism of fats, proteins, and carbohydrates, but in patients with diabetes mellitus, insulin production is insufficient or their body is not able to effectively use circulating insulin. This lack of insulin can result in impaired nutrient metabolism.

Alcohol and Drug Abuse

Alcohol and drug abuse can affect nutritional status. Alcohol is calorie-dense and nutrient-poor. With alcohol use, the consumption of water, food, and other nutrients often decreases as patients "drink their calories." This may result in decreased protein intake and body protein deficiency. Nutrient digestion and absorption can also decrease with alcohol consumption if the stomach lining becomes eroded or scarred. This can cause hemoglobin, hematocrit, albumin, folate, thiamine, vitamin B12, and vitamin C deficiencies, as well as decreased calcium, magnesium, and phosphorus levels.[67]

Drug abuse of stimulants, such as methamphetamine and cocaine abuse, causes an increased metabolic rate and decreased appetite and contributes to weight loss and malnourishment.

Psychological State

Various psychological states have a direct effect on appetite and a patient's desire to eat. Acute and chronic stress stimulates the hypothalamus and increases production of glucocorticoids and glucose. This can increase the person's appetite, causing increased calorie intake, fat storage, and subsequent weight gain. When a person feels stressed, their food choices are often nutrient-poor and calorie-dense, which further increases weight gain and nutrient deficiencies. In other individuals, the stress response causes loss of appetite, weight loss, and nutrient deficiencies.[68]

Depression can cause loss of appetite or overeating. Many people eat calorie-dense "comfort foods" as a coping mechanism. Additionally, many antidepressants can cause weight gain as a side effect.

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13.3: Applying the Nursing Process

Now that we have discussed basic nutritional concepts, dietary guidelines, and factors affecting nutritional status, let's apply the nursing process to this information when caring for patients.

Assessment

A thorough nutritional assessment provides information about an individual's nutritional status, as well as risk factors for nutritional imbalances. Assessment starts with reviewing the patient's medical record and initiating a patient interview, followed by a physical exam and review of lab and diagnostic test results.

Subjective Assessment

Subjective assessments include questions regarding normal eating patterns and risk factor identification. Subjective assessment data is obtained by interviewing the patient as a primary source or a family member or caregiver as a secondary source. While a wealth of subjective information can be obtained through a chart review, it is important to verify this information with either the patient or family member because details may be recorded inaccurately or may have changed over time. Subjective information to obtain when completing a nutritional assessment includes age, sex, history of illness or chronic disease, surgeries, dietary intake including a 24-hour diet recall or food diary, food preferences, cultural practices related to diet, normal snack and meal timings, food allergies, special diets, and food shopping or preparation activities.

A detailed nutritional assessment can also provide important clues for identification of risk factors for nutritional deficits or excesses. For example, a history of anorexia or bulimia will put the patient at risk for vitamin, mineral, and electrolyte disturbances, as well as potential body image disturbances. Swallowing impairments place the patient at risk for decreased intake that may be insufficient to meet metabolic demands. Use of recreational drugs or alcohol places the patient at risk for insufficient nutrient intake and impaired nutrient absorption. Use of nutritional supplements places the patient at risk for excess nutrient absorption and potential toxicity. Recognizing and identifying risks to nutritional status help the nurse anticipate problems that may arise and identify complications as they occur. Ideally, the nurse will recognize subtle cues of impending or actual dysfunction and prevent bigger problems from happening.

Objective Assessment

Objective assessment data is information derived from direct observation by the nurse and is obtained through inspection, auscultation, and palpation. The nurse should consider nutritional status while performing a physical examination.

The nurse begins the physical examination by making general observations about the patient's status. A well-nourished patient has normal skin color and hair texture for their ethnicity, healthy nails, a BMI within normal range according to their height, and appears energetic.

Height and weight should be accurately measured and documented. Height and weight in infants and children are plotted on a growth chart to give a percentile ranking across the United States. The infant or child should show a trend of consistent height and weight increase.

Height and weight in adults are often compared to a **Body Mass Index (BMI)** graph. BMI can also be calculated using the following formulas:

- BMI = weight (kilograms)/height(meters)^2
- BMI = weight (pounds) x 703)/height(inches)^2

To calculate BMI using a BMI table, the patient's height is plotted on the horizontal axis and their weight is plotted on the perpendicular axis. The BMI is measured where the lines intersect. See Figure 14.11[1] for an image of a BMI table. BMI is interpreted using the following ranges:

- Less than 18.5: Underweight
- 18.5-24.9: Desirable range
- 25-29.9: Overweight
- Equal or greater than 30: Obese[2]

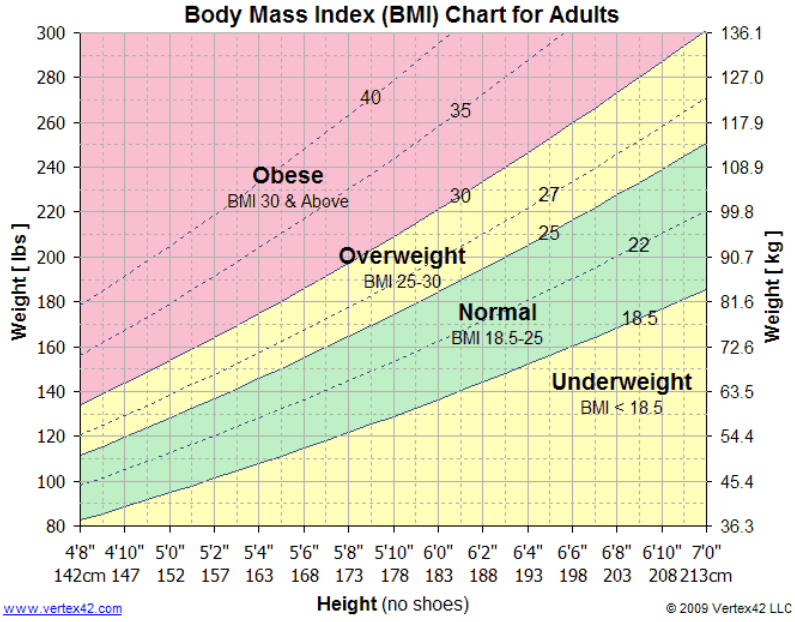

Figure 14.11 BMI Table

After completing the subjective and objective assessment, the data should be analyzed for expected and unexpected findings. See Table 14.3a for a comparison of expected versus unexpected assessment findings related to nutritional status on assessment, including those that require notification of the health care provider in bold font.

Table 14.3a Expected Versus Unexpected Findings During Nutritional Assessment[3]

Assessment	Expected Findings	Unexpected Findings *Bolded items are critical conditions that require immediate health care provider notification.
General appearance	Energetic; normal skin, hair, and nails; and normal weight related to height	Lethargic, skin ulcerations, rashes, bruising, thinning or loss of hair, spooning of nails, obese, or underweight
Eyes	Normal vision and normal eye moisture	Impaired night vision or dry eyes
Mouth	Moist mucous membranes, intact oral mucosa, and intact smooth tongue	Dry/sticky mucous membranes, oral ulcerations, **glossitis (swollen tongue)**, **coughing while swallowing or inability to swallow,** or **swollen throat**
Extremities/Integumentary	Normal skin, nontenting (good skin turgor) and supple texture	Tenting (poor skin turgor), dry skin, edema, or shiny skin
Neurological	Normal sensation and normal cognition	**Numbness or tingling, tetany,** dementia, or **acute confusion**
Cardiac	Normal heart tones, capillary refill < 3 seconds, normal pulses, and normal EKG tracing	Bounding pulses, **S3 heart tone, jugular venous distention, abnormal EKG tracing,** or **cardiac arrhythmias**
Respiratory	Clear lung sounds throughout, normal respiratory rate, and no shortness of breath	**Crackles in lung fields, pink frothy sputum, shortness of breath, or respiratory distress**
Gastrointestinal	Normal stool quality and frequency for patient, bowel sounds present x 4 quadrants, and absence of nausea/vomiting	Constipation, diarrhea, nausea, or vomiting
Urinary	Clear urine, normal urine specific gravity, and urine output >30 mL/hr	**Decreased urine output <30 mL/hr or <0.5 mL/kg/hr,** concentrated urine, or **burning with urination**
Weight	Normal BMI of 18.5-24.9, weight loss or gain of 0.5 to 1 pound per week is realistic, and <5% weight loss over 6 months	BMI <18.5 or >25, **weight gain or loss of > 1kg over 24 hrs**, or severe weight loss of >10% over 6 months

Note

Review how to perform a physical examination on the body systems listed in Table 14.3a in Open RN *Nursing Skills*.

Diagnostic and Lab Work

Diagnostic and lab work results can provide important clues about a patient's overall nutritional status and should be used in conjunction with a thorough subjective and objective assessment to provide an accurate picture of the patient's overall health status. Common lab tests include hemoglobin (hgb), hematocrit (HCT), white blood cells (WBC), albumin, prealbumin, and transferrin.

Anemia is a medical condition diagnosed by low hemoglobin levels. Hemoglobin is important for oxygen transport throughout the body. Anemia can be caused acutely by hemorrhage, but it is often the result of chronic iron deficiency, vitamin B12 deficiency, or folate deficiency. Iron supplements, B12 injections, folate supplements, and increased iron or folate intake in the diet can help increase hemoglobin levels.

Albumin and prealbumin are proteins in the bloodstream. They maintain oncotic pressure so that fluid does not leak out of blood vessels into the extravascular space. (Read more about oncotic pressure in the "Fluids and Electrolytes" chapter.) Albumin and prealbumin levels are used as markers of malnutrition, but these levels can also be affected by medical conditions such as liver failure, kidney failure, inflammation, and zinc deficiency. Low albumin levels can indicate prolonged protein deficiency intake over several weeks, whereas prealbumin levels reflect protein intake over the previous few weeks. For this reason, prealbumin is often used to monitor the effectiveness of parenteral nutrition therapy.[4] [5]

Transferrin is a protein required for iron transport on red blood cells. Transferrin levels increase during iron deficiency anemia and decrease with renal or liver failure and infection.

A patient's amount of muscle wasting due to malnutrition is measured by a 24-hour urine creatinine level.[6] If insufficient calories are consumed, the body begins to break down its own tissues in a process called catabolism. Blood urea nitrogen and creatinine are released as a by-product. A 24-hour urine collection measures these by-product levels to assess the degree of catabolism occurring.

White blood cells will decrease with malnourishment, specifically with protein and vitamins C, D, and E and B-complex deficiencies. Low white blood cell counts place the patient at risk for infection because adequate white blood cells are necessary for a fully functioning immune system.

See Table 14.3b for a description of selected lab values associated with nutritional status.

Table 14.3b Selected Lab Values Associated with Nutritional Status[7] [8] [9]

Lab	Normal Range	Nursing Considerations ***Bolded items are critical conditions and require immediate health care provider notification.**
Hemoglobin (Hgb)	Females: 12 – 16 g/dL Males: 14 – 17.4 g/dL	Hemoglobin measures the oxygen-carrying capacity of blood. Decreased levels occur due to hemorrhage or deficiencies in iron, folate, or B12. **10 – 14: mild anemia** **6 – 10: moderate anemia** **< 6: severe anemia**
Hematocrit (Hct)	37 – 50%	Hematocrit is normally three times the patient's hemoglobin level during normal fluid status. Increased levels occur with dehydration, and decreased levels occur with fluid overload or hemorrhage.
White blood cells (WBC)	5,000 – 10,000 mm^3	Increased levels occur due to infection. Decreased levels occur due to prolonged stress, poor nutrition, and vitamins C, D, and E and B-complex deficiencies. **<4000: at risk for infection or sepsis** **>11,000: infection present**
Magnesium	1.6 – 2.6 mg/dL	Decreased level with poor nutrition or alcohol abuse. Increased levels due to kidney dysfunction. Critical values can cause cardiac complications: **<1.2 mg/dL or >4.9 mg/dL**
Albumin	3.4 – 5.4 g/dL	Increased with dehydration. Decreased level due to zinc deficiency, corticosteroid use, protein deficiency over several weeks, or conditions resulting in muscle wasting/muscle loss.
Prealbumin	15 – 36 mg/dL	Increased levels with corticosteroid or contraceptive use. Decreased levels due to inflammation, poor immunity, protein depletion over a few weeks.
Transferrin	250 – 450 mcg/dL	Increased levels due to dehydration and iron deficiency. Decreased levels due to anemia; vitamin B12, folate, and zinc deficiency; protein depletion; and conditions resulting in muscle wasting/muscle loss.
24-hour urine creatinine	Males: 0.8 – 1.8 g/24 hrs Females: 0.6 – 1.6 g/24 hrs	Increased levels with renal disease and muscle breakdown. Decreased levels with progressive malnutrition as muscles atrophy.

Various diagnostic tests may be ordered by the health care provider based on the patient's medical conditions and circumstances. For example, a swallow study is a diagnostic test used for patients having difficulty swallowing. An abdominal X-ray is used to determine the correct placement of a feeding tube or to note any excess air or stool in the colon. A barium swallow is used in conjunction with a CT scan to note any blockages in the intestines.

Life Span and Cultural Considerations

Newborns and Infants

A crucial amount of growth and development happens between birth to age two. For proper growth, development, and brain function, this age group requires nutrient-dense food choices, primarily because they eat so little compared to adults, but also because of their rapid growth rate that is higher than any other time of development. Ideally, newborns through age 6 months should be fed exclusively human breast milk if possible to develop immunity. Vitamin D and iron supplementation may be needed.[10] For the first two to three days after birth, human milk contains colostrum, a thick yellowish-white fluid rich in proteins and immunoglobulin A (IgA). Colostrum is lower in carbohydrates and fat than mature breast milk. **Colostrum** helps protect the newborn from infection and builds normal intestinal bacteria. As breast milk matures after two to three days postpartum, it becomes lower in proteins and IgA and higher in carbohydrates and fat.[11] Human donor milk may be used in some situations when the mother cannot breastfeed. If human donor milk is given, it should be sourced through an accredited human milk bank and pasteurized to minimize risk of spreading infectious diseases.

There are many reasons infants may not be breastfed, including insufficient breast milk production, a personal choice not to breastfeed, or adoption of the newborn. If breastfeeding or donor milk is not an option, an iron-fortified commercial infant formula should be used exclusively through at least 6 months of age. Homemade or non-FDA approved infant formulas or toddler formulas should not be used because they may not meet the high nutritional needs of infants. Infants fed 100% commercial infant formula will not need vitamin D supplementation.[12]

After about six months of age, infants should begin to be introduced to additional nutrient-dense complementary foods that are developmentally appropriate. Foods should be introduced one at a time to monitor for food sensitivities. Introducing food at this time is to provide a varied diet, additional nutrients, and an introduction to different flavors and textures of food. Research shows that introduction to certain allergy-risk foods, such as peanut butter prior to one year of age, helps decrease the risk of developing a peanut allergy later in life. It is important to strictly avoid honey and other unpasteurized food and drink before one year of age to prevent botulism and other bacteria. Additionally, cow's milk, fortified soy drinks, and fruit or vegetable juices should not be introduced before 1 year of age.[13]

Children and Adolescents

Growth rate continues to be rapid from ages one through five, requiring adequate nutrition to meet these growth and metabolic demands. Caloric and nutritional intake requirements increase proportionately with age, but unfortunately, the quality of diet tends to decrease proportionately with age. This is in part due to younger children being dependent on adults for nutritional choices and intake while older children and adolescents begin to make their own food choices as they enter school. Poverty can also negatively impact nutritional intake in children and adolescents. School lunch and breakfast programs help mitigate the effects of poverty on nutrition by providing free to low-cost, nutritionally-balanced meals.[14]

Healthy dietary habits formed in childhood through adolescence help prevent obesity, cardiovascular disease, diabetes mellitus, and other chronic diseases later in life. It is important to provide children with a variety of different foods prepared in different ways to increase the likelihood of children accepting and growing accustomed to different foods. It is common for children to become picky in their food choices or decide to only eat one or a few different food items over a period of time. Allowing children to help select and prepare food can increase their acceptance of different food choices.[15]

Adults

The adult life stage is ages 19 through 59. A major limiting factor to healthy nutrition in adults is development of poor nutritional habits early in life. These unhealthy diet habits can be very difficult to change due to food preferences, as well as lack of knowledge about proper nutrition. Metabolic rate and caloric needs decrease with increasing age. Females tend to require less caloric intake than males, though caloric and nutritional needs increase with pregnancy and breastfeeding. Without appropriate

dietary intake or activity, weight gain will occur that can lead to obesity and other chronic diseases. Over 50% of Americans have one or more chronic diseases that are associated with poor diet and physical inactivity.

Education regarding a healthy diet, including appropriate calorie, saturated fat, sugar, and sodium intakes, helps improve health in adults. Roughly 73% of males and 70% of females in America exceed the recommended daily intake of saturated fat, and up to 97% of males and 82% of females exceed the recommended daily intake of sodium. Approximately 97% of males and 90% of women in America do not consume the recommended intake of dietary fiber, including underconsumption of fruits, vegetables, and whole grains, which contributes to diet-related chronic diseases.

Alcohol consumption can be problematic for maintaining a healthy diet. Chronic alcohol abuse can interfere with vitamin and mineral absorption and result in general malnourishment. Alcohol should be limited to one drink per day or less for women and two drinks or less per day for men. Alcohol should be avoided by those who are pregnant, breastfeeding, younger than 21 years old, have a chemical dependency, or have other underlying health conditions such as diabetes mellitus.[16]

Pregnancy and Lactation

A well-balanced, healthy diet is essential during pregnancy and **lactation** to prevent maternal, fetal, and newborn problems. Nutritional requirements, such as calories, vitamins, and minerals, increase during pregnancy and lactation. Increased caloric needs should be met with nutrient-dense foods rather than calorie-dense foods that are higher in fats and sugars. Prenatal vitamins and mineral supplements are often prescribed during pregnancy and lactation, in addition to a nutrient-rich diet, to help ensure women meet requirements for folic acid, iron, iodine, choline, and vitamin D. Folic acid is necessary to prevent neural tube defects in the fetus during the first trimester of pregnancy. Iron requirements increase during pregnancy to support fetal development and prevent anemia. Iodine requirements increase during pregnancy and lactation for fetal neurocognitive development. Choline requirements also increase due to the need to replace maternal stores, as well as for fetal brain and spinal cord development.[17]

Older Adults

People aged 65 years and older are considered older adults. Older adults are more likely to suffer from chronic illness and disease. Older adults have lower calorie needs than younger people, though they still need a diet full of nutrient-dense foods because their nutrient needs increase. Caloric needs decrease due to decreased activity, decreased metabolic rates, and decreased muscle mass. Chronic disease and medication can contribute to decreased nutrient absorption. Protein and vitamin B12 are commonly under consumed in older adults. Protein is necessary to prevent loss of muscle mass. Vitamin B12 deficiency can be a problem for older adults because absorption of vitamin B12 decreases with age and with certain medications. Adequate hydration is also a concern for older adults because feelings of thirst decrease with age, leading to poor fluid intake. Additionally, older adults may be concerned with bladder dysfunction so they may consciously choose to limit fluid intake. Loneliness, ability to chew and swallow, and poverty can also decrease dietary intake in older adults.[18] Meals on Wheels, local senior centers, and other community programs can provide socialization and well-balanced meals to older adults.

The Mini-Nutritional Assessment Short-Form is a screening tool used to identify older adults who are malnourished or at risk of malnutrition. Use the hyperlink in the following box to download this tool.

Note

Download the Mini-Nutritional Assessment Short-Form from The Hartford Institute for Geriatric Nursing.[19]

Diagnosis

After the assessment stage is conducted, data is analyzed, and pertinent information is clustered together, nursing diagnoses are selected based on defining characteristics. When creating a care plan for a patient, review a current nursing care planning source for current NANDA-I approved nursing diagnoses and interventions related to nutritional imbalances. NANDA-I nursing diagnoses related to nutrition include *Imbalanced Nutrition: Less than Body Requirements*, *Overweight*, *Obesity*, *Risk for Overweight*, *Readiness for Enhanced Nutrition*, and *Impaired Swallowing*.[20] See Table 14.3c for additional information related to the diagnosis *Imbalanced Nutrition: Less than Body Requirements*.[21]

Table 14.3c Sample NANDA-I Nursing Diagnosis Related to Nutrition[22]

NANDA-I Diagnosis	Definition	Sample Defining Characteristics
Imbalanced Nutrition: Less than Body Requirements	Intake of nutrients insufficient to meet metabolic needs.	Abdominal cramping Abdominal pain Alteration in taste sensation Body weight 20% or more below ideal weight range Diarrhea Food intake less than recommended daily allowance (RDA) Hyperactive bowel sounds Pale mucous membranes Satiety immediate upon ingesting food Sore buccal cavity Weakness of muscles required for chewing and swallowing

A sample nursing diagnosis written in PES format is, "*Imbalanced Nutrition: Less than Body Requirements related to insufficient dietary intake as evidenced by body weight 20% below ideal weight range and food intake less than recommended daily allowance*."

Outcome Identification

Goals for patients experiencing altered nutritional status depend on the selected nursing diagnosis and specific patient situation. Typically, goals relate to resolution of the nutritional imbalance and are broad in nature. An overall goal related to nutritional imbalances is, "*The patient will weigh within normal range for their height and age*."[23]

Outcome criteria are specific, measurable, achievable, realistic, and time-oriented. A sample SMART goal is, "*The patient will select three dietary modifications to meet their long-term health goals using USDA MyPlate guidelines by discharge*."[24]

Planning Interventions

After SMART outcome criteria are customized to the patient's situation, nursing interventions are selected to help them achieve their identified outcomes. Interventions are specific to the alteration in nutritional status and should accomodate the patient's cultural and religious beliefs. The box below outlines selected interventions related to nutrition therapy.

Nutrition Therapy [25]

- Monitor food/fluid ingested and calculate daily caloric intake, as appropriate
- Monitor appropriateness of diet orders to meet daily nutritional needs, as appropriate
- Determine in collaboration with the dietician, the number of calories and types of nutrients needed to meet nutritional requirements, as appropriate
- Determine food preferences with consideration of the patient's cultural and religious preferences
- Encourage nutritional supplements, as appropriate
- Provide patients with nutritional deficits high-protein, high-calorie, nutritious finger foods and drinks that can be readily consumed, as appropriate
- Determine need for enteral tube feedings in collaboration with a dietician
- Administer enteral feedings, as prescribed
- Administer parenteral nutrition, as prescribed
- Structure the environment to create a pleasant and relaxing meal atmosphere
- Present food in an attractive, pleasing manner, giving consideration to color, texture, and variety
- Provide oral care before meals
- Assist the patient to a sitting position before eating or feeding
- Implement interventions to prevent aspiration in patients receiving enteral nutrition

- Monitor laboratory values, as appropriate
- Instruct the patient and family about prescribed diets
- Refer for diet teaching and planning, as appropriate
- Give the patient and family written examples of prescribed diet

Patients may be prescribed special diets due to medical conditions or altered nutrition states. See Table 14.3d for commonly prescribed special diets.

Table 14.3d Commonly Prescribed Special Diets

Diet	Description	Example	Indication
NPO	Nothing by mouth–no food or drink allowed *Note: Oral care is very important during NPO status.		Before and after surgery or procedures, when peristalsis is absent, or during severe nausea or vomiting episodes, or for changes in mental status
Clear liquids	Fluids or solids that are liquid at room temperature, without residue, clear, or see-through	Water, apple juice, clear soda, Jello, popsicles, and broth	After surgery when peristalsis is slow and diet is being advanced from NPO status
Full liquids	Fluids with residue	Creamed soups, pudding, milk, orange juice, and creamed cereals	Next step after clear liquids as diet is being advanced
Mechanical soft	Chopped, ground, pureed foods that break apart easily without a knife	Soft cheeses, cottage cheese, ground meat, broiled or baked fish, cooked vegetables, and fruit	Poor or absent dentition; dysphagia
Pureed	Spoon thick with consistency of baby food	Applesauce, pudding, mashed potatoes, pureed meats, vegetables, and fruit	Dysphagia
Restrictive	Depends on the disease process	Diabetic: controlled amount of carbohydrates Cardiac: low fat and no added salt Renal: low-sodium and low-potassium containing foods	Diabetes mellitus Heart disease Renal failure or dialysis

“Thickened liquids” are typically prescribed for patients with difficulty swallowing (dysphagia). Three consistencies of thickened liquids are:

- Nectar-thick liquids: Easily pourable liquid comparable to apricot nectar or thick cream soups.
- Honey-thick liquids: Slightly thicker liquid that is less pourable and drizzles from a cup or bowl.
- Pudding-thick liquids: Liquids that hold their own shape. They are not pourable and usually require a spoon to eat.

Nurses often thicken liquids in the patient’s room using a commercial thickener. Most commercial thickeners include directions for achieving the consistency prescribed.

Enteral Nutrition

Enteral nutrition is administered directly to a patient’s gastrointestinal tract while bypassing chewing and swallowing. Enteral feedings are prescribed for patients when chewing and/or swallowing are impaired or when there is poor nutritional intake and/or malnutrition.

Examples of enteral tube access are nasogastric tubes (NG), orogastric tubes (OG), percutaneous endoscopic gastrostomy (PEG) tubes, or percutaneous endoscopic jejunostomy (PEJ) tubes. See Figure 14.12[26] for an illustration of common enteral tube placement. Nasogastric tubes enter the nare and travel through the esophagus and into the stomach. Liquid tube feedings are infused through this tube and directly into the stomach. Orogastric tubes work in the same manner except they are inserted through the mouth into the esophagus and then into the stomach. Orogastric tubes are typically used with mechanically intubated and sedated patients and should never be used in conscious patients because they can induce a gag reflex and cause vomiting. PEG tubes are inserted through the abdominal wall directly into the stomach, bypassing the esophagus. PEG tubes are used when there is an obstruction to the esophagus, the esophagus has been removed, or if long-term enteral feedings are expected. PEJ tubes are inserted through the abdominal wall directly into the jejunum, bypassing the esophagus and stomach. PEJ tubes are used when all or part of the stomach has been removed or if the provider determines PEJ placement would best suit the patient's needs.

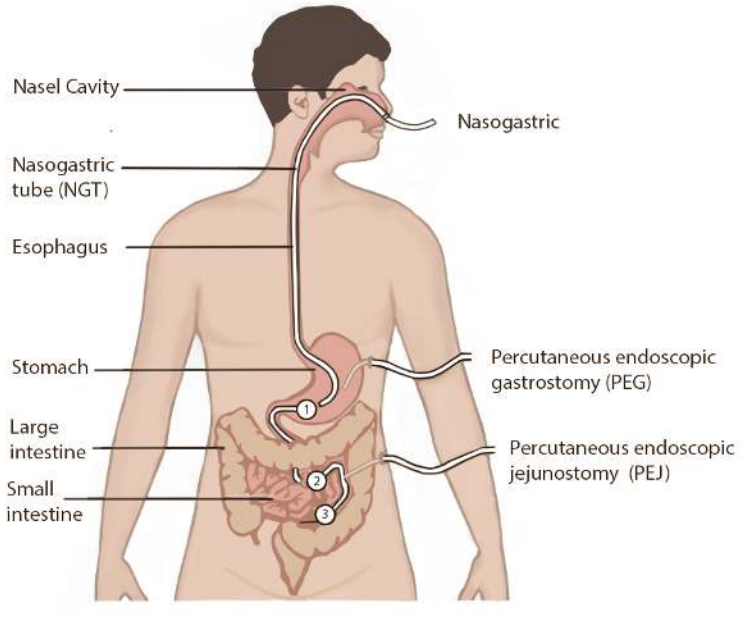

Figure 14.12 Enteral Tube Access

There are several safety considerations for nurses to implement when enteral nutrition is being administered to prevent aspiration and dehydration. Tube placement must be verified after insertion, as well as before every medication or feeding is administered, to prevent inadvertent administration into the lungs if the tube has migrated out of position. Follow agency policy regarding checking placement. The American Association of Critical-Care Nursing recommends that the position of a feeding tube should be checked and documented every four hours and prior to the administration of enteral feedings and medications by measuring the visible tube length and comparing it to the length documented during X-ray verification. Older methods of checking tube placement included observing aspirated GI contents or the administration of air with a syringe while auscultating (commonly referred to as the "whoosh test"). However, research has determined these methods are unreliable and should no longer be used to verify placement.[27],[28]

In addition to verifying tube placement before administering feedings or medications, nurses perform additional interventions to prevent aspiration. The American Association of Critical-Care Nurses recommends the following guidelines to reduce the risk for aspiration:

- Maintain the head of the bed at 30°- 45° unless contraindicated
- Use sedatives as sparingly as possible

- Assess feeding tube placement at four-hour intervals
- Observe for change in the amount of external length of the tube
- Assess for gastrointestinal intolerance at four-hour intervals[29] [30]

Measurement of gastric residual volume (GRV) is often performed when a patient is receiving enteral feeding by using a 60-mL syringe to aspirate stomach contents through the tube. GRVs in the range of 200–500 mL have traditionally triggered nursing interventions, such as slowing or stopping the feeding, to reduce the patient's risk of aspiration. However, according to recent research, it is not appropriate to stop enteral nutrition for GRVs less than 500 mL in the absence of other signs of intolerance because of the impact on the patient's overall nutritional status. Additionally, the aspiration of gastric residual volumes can contribute to tube clogging. Follow agency policy regarding measuring gastric residual volume and implementing interventions to prevent aspiration.[31] [32]

Patients receiving enteral nutrition should be monitored daily for signs of tube feeding intolerance, such as abdominal bloating, nausea, vomiting, diarrhea, cramping, and constipation. If cramping occurs during bolus feedings, it can be helpful to administer the enteral nutritional formula at room temperature to prevent symptoms. Notify the provider of signs of intolerance with anticipated prescription changes regarding the type of formula or the rate of administration.

Electrolytes and blood glucose levels should also be monitored for signs of imbalances. Carbohydrates in tube feedings are absorbed quickly, so blood glucose levels are monitored, and elevated levels are typically treated with sliding scale insulin according to health care provider orders.

> **Note**
>
> Read about "Enteral Tube Management" in Open RN *Nursing Skills*.

Parenteral Nutrition

Parenteral nutrition is nutrition delivered through a central intravenous line, generally the subclavian or internal jugular vein, to patients who require nutritional supplementation but are not candidates for enteral nutrition. Parenteral nutrition is an intravenous solution containing glucose, amino acids, minerals, electrolytes, and vitamins. A lipid solution is typically given in a separate infusion in a hospital setting. This combination of solutions is called total parenteral nutrition because it supplies complete nutritional support. Parenteral nutrition is administered via an IV pump.

Because parenteral nutrition consists of concentrated glucose, amino acids, and minerals, it is very irritating to the blood vessels. For this reason, a large central vein must be used for administration. The patient's lab work must also be closely monitored for signs of nutrient excesses. See Figure 14.13[33] for an image of home parenteral nutrition formula. In this image are three compartments: one with glucose, one with amino acids, and one with lipids. The three compartments are kept separate to enable storage at room temperature, but are mixed together before use.

Parenteral nutrition is typically used when the patient's intestines or stomach is not working properly and must be bypassed, such as during paralytic ileus where peristalsis has completely stopped, or after postoperative bowel surgeries, such as bowel resection. It may also be prescribed for severe malnutrition, severe burns, metastatic cancer, liver failure, or hyperemesis with pregnancy.

Figure 14.13 Total Parenteral Nutrition

Implementing Interventions

When implementing interventions to promote good nutrition, it is vital to consider the patient's cultural and religious beliefs. Encourage patients to make healthy food selections based on their food preferences.

If a patient has nutritional deficit, perform nursing interventions prior to mealtime to promote their appetite. For example, if the patient has symptoms of pain or nausea, administer medications prior to mealtime to manage these symptoms. Do not perform procedures that may affect the patient's appetite, such as wound dressing changes, immediately prior to meal time. Manage the environment prior to the food arriving and remove any unpleasant odors or sights. For example, empty the trash can of used dressings or incontinence products. If the patient is out of the room when the meal tray arrives and the food becomes cold, reheat the food or order a new meal tray.

When assisting patients to eat, help them to wash their hands and use the restroom if needed. Assist them to sit in a chair or sit in high Fowler's position in bed. Set the meal tray on an overbed table and open containers as needed. Encourage the patient to feed themselves as much as possible to promote independence. If a patient has vision impairments, explain the location of the food using the clock method. For example, "Your vegetables are at 9 o'clock, your potatoes are at 12 o'clock, and your meat is at 3 o'clock." When feeding a patient, ask them what food they would like to eat first. Allow them to eat at their own pace with time between bites for thorough chewing and swallowing. If any signs of difficulty swallowing occur, such as coughing or gagging, stop the meal and notify the provider of suspected swallowing difficulties.

Evaluation

It is always important to evaluate the effectiveness of interventions implemented. Evaluation helps the nurse and care team determine if the interventions are appropriate for the patient or if they need to be revised. Table 14.3e provides a list of assessment findings indicating that alterations of nutritional status are improving with the planned interventions.

Table 14.3e Evaluation of Alterations in Nutritional Status

Imbalance	How Do We Know It Is Improved?
Imbalanced Nutrition: Less than Body Requirements	Stable or increasing weight; sufficient daily calories; well-balanced meal intake; improved energy, appearance of hair, nails, skin, or vision
Imbalanced Nutrition: More than Body Requirements	Stable or decreasing weight, <5% body weight loss over 6 months, well-balanced meal intake

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13.4: Putting It All Together

Patient Scenario

Mr. Curtis is a 47-year-old patient admitted to the hospital with increased weakness, fatigue, and dehydration. His skin appears dry, and tenting occurs when skin turgor is evaluated. He is currently undergoing chemotherapy treatment for multiple myeloma and has experienced weight loss of 10 pounds within the last two weeks. He describes that "nothing tastes good," and he feels as if there is "metal taste in his mouth." When he does eat small meals, he reports that he is often nauseous. The patient's serum protein level is 3.1 g/dL.

Applying the Nursing Process

Assessment: The nurse identifies that the patient is experiencing signs of imbalanced nutrition with the signs of increased weakness, fatigue, and signs of dehydration such as skin tenting and dryness. The patient has demonstrated a significant weight loss over the past two weeks and reports "nothing tastes good" and "a metal taste in the mouth." The patient also reports nausea after eating. His serum protein level reflects signs of malnutrition.

Based on the assessment information that has been gathered, the following nursing care plan is created for Mr. Curtis:

Nursing Diagnosis: *Imbalanced Nutrition: Less Than Body Requirements r/t insufficient dietary intake as manifested by weight loss of 10 pounds in the last two weeks, skin tenting and dryness, reports of "nothing tastes good," and serum protein of 3.1 g/dL.*

Overall Goal: *The patient will demonstrate improvement in nutrition intake.*

SMART Expected Outcome: *Mr. Curtis will eat 50% of offered meals and demonstrate dietary tolerance within 24 hours.*

Planning and Implementing Nursing Interventions:

The nurse will validate the patient's feelings regarding his current symptoms and provide emotional support. The nurse will determine the time of day when the patient's appetite is highest and offer the highest calorie meal at that time. The nurse will offer high-calorie protein shakes to the patient at frequent intervals. The nurse will assess the patient's food preferences and ensure that small frequent meals are offered that incorporate those preferences. The nurse will also encourage the use of plastic utensils and encourage the patient to eat mints or chew gum to minimize the metallic taste in the mouth.

Sample Documentation:

Mr. Curtis demonstrates signs of imbalanced nutrition: less than body requirements. He reported a significant weight loss of 10 pounds over the past two weeks associated with chemotherapy. He reports feeling nauseous following small meals. He also reports "nothing tastes good" and having "a metal taste in the mouth." He demonstrates signs of weakness, fatigue, and dehydration. Interventions have been implemented to increase the patient's nutritional intake.

Evaluation:

Twenty-four hours later, the nurse evaluates Mr. Curtis and finds he is able to consume 50% of breakfast with his preferred dietary items. Planned interventions will continue and the nurse plan to reevaluate his progress the following day.

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13.5: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Scenario 1

Mr. Jones is a 67-year-old patient on the medical surgical floor who recently underwent a bowel resection. He is post-op Day 2 and has been NPO since surgery. He has been receiving IV fluids but has been asking about when he can resume eating.

1. What assessments should be performed to determine if the patient’s diet can be progressed?
2. What are the first steps during dietary transition from NPO status?

Scenario 2[1]

Mrs. Casey is a 78 year-old widow who recently had a stroke and continues to experience mild right-sided weakness. See Figure 14.14 for an image of Mrs. Casey.[2] She is currently receiving physical therapy in a long-term care facility and ambulates with the assistance of a walker. Mrs. Casey confides, “I am looking forward to going home, but I will miss the three meals a day here.”

Figure 14.14 Mrs. Casey

Her height is 5’2″ and she weighs 84 pounds. Her recent lab work results include the following:

Hgb: 8.8 g/dL, WBC 3500, Magnesium 1.4 mg/dL, Albumin 10 g/dL

1. What is Mrs. Casey’s BMI and what does this number indicate?
2. Analyze Mrs. Casey’s recent lab work and interpret the findings.
3. Describe focused assessments the nurse should perform regarding Mrs. Casey’s nutritional status.
4. Create a PES nursing diagnosis statement for Mrs. Casey based on her nutritional status.
5. Create a SMART outcome statement for Mrs. Casey.
6. Outline planned nutritional interventions for Mrs. Casey while she is at the facility, as well as when she returns home.
7. How will you evaluate if your nursing care plan is successful for Mrs. Casey?

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13.6: XIV Glossary

Body Mass Index (BMI): A measure of weight categories including underweight, normal weight, overweight, and obese taking height and weight into consideration.

Calorie-dense foods: Foods with a substantial amount of calories and few nutrients.

Carbohydrates: Sugars and starches that provide an important energy source, providing 4 kcal/g of energy.

Chemical digestion: Breakdown of food with stomach acids, bile, and pancreatic enzymes for nutrient release.

Chyme: Broken-down food that has undergone chemical digestion in the stomach.

Colostrum: A thick yellowish-white fluid rich in proteins and immunoglobulin A (IgA) and lower in carbohydrates and fat than mature breast milk secreted within the first 2-3 days after giving birth.

Complete proteins: Proteins with enough amino acids in enough quantities to perform necessary functions such as growth and tissue maintenance. These must be ingested in the diet.

Complex carbohydrates: Larger molecules of polysaccharides that break down more slowly and release sugar into the bloodstream more slowly than simple carbohydrates.

Dietary Reference Intakes (DRIs): Set requirements or limit amounts of a certain nutrient, including proteins, carbohydrates, fats, vitamins, minerals, and fiber.

Dysphagia: Difficulty swallowing.

Enteral nutrition: Liquid nutrition given through the gastrointestinal tract via a tube while bypassing chewing and swallowing.

Essential nutrients: Nutrients that must be ingested from dietary intake. Essential nutrients cannot be synthesized by the body.

Fat-soluble vitamins: Vitamins that dissolve in fats and oils and are stored in fat tissue and can build up in the liver, resulting in toxicity. Fat-soluble vitamins include vitamins A, D, E, and K.

Fats: Fatty acids and glycerol that are essential for tissue growth, insulation, energy source, energy storage, and hormone production. Fats provide 9 kcal/g of energy.

Glycemic index: A measure of how quickly plasma glucose levels are released into the bloodstream after carbohydrates are consumed.

Incomplete proteins: Proteins that do not contain enough amino acids to sustain life. Incomplete proteins can be combined with other types of proteins to add to amino acids consumed to form complete protein combinations.

Lactation: Breast milk production.

Macrominerals: Minerals needed in larger amounts and measured in milligrams, grams, and milliequivalents.

Macronutrients: Nutrients needed in larger amounts due to energy needs. Macronutrients include carbohydrates, proteins, and fats.

Mastication: The chewing of food in the mouth.

Mechanical digestion: Breaking food down into small chunks through chewing prior to swallowing.

Nitrogen balance: The net loss or gain of nitrogen excreted compared to nitrogen taken into the body in the form of protein consumption; an indicator of protein status where a negative nitrogen balance equates to a protein deficit in the diet and a positive nitrogen balance equates to a protein excess in the diet.

Nutrient-dense foods: Foods with a high proportion of nutritional value relative to calories contained in the food.

Parenteral nutrition: An intravenous solution containing glucose, amino acids, minerals, electrolytes, and vitamins, along with supplemental lipids.

Partially complete proteins: Proteins that have enough amino acids to sustain life, but not enough for tissue growth and maintenance. Typically interchanged with incomplete proteins.

Peristalsis: Coordinated muscle movements in the esophagus that move food or liquid through the esophagus and into the stomach or coordinated muscle movements in the intestines that move food/waste products through the intestines.

Proteins: Sources of peptides, amino acids, and some trace elements that provide 4 kcal/g of energy. Proteins are necessary for tissue repair, tissue function, growth, fluid balance, and clotting, as well as energy in the absence of sufficient intake of carbohydrates.

Refined grains: Grains that have been processed to remove parts of the grain kernel and supply little fiber.

Saturated fats: Fats derived from animal products, such as butter, tallow, and lard for cooking, or from meat products such as steak. Saturated fats are generally solid at room temperature and can raise cholesterol levels, contributing to heart disease.

Simple carbohydrates: Small molecules of monosaccharides or disaccharides that break down quickly and raise blood glucose levels quickly.

Trace minerals: Minerals needed in tiny amounts.

Trans fats: Fats that have been altered through hydrogenation and as such are not in their natural state. Fat is changed to make it harder at room temperature and to make it have a longer shelf life and contributes to increased cholesterol and heart disease.

Unsaturated fats: Fats derived from oils and plants, though chicken and fish contain some unsaturated fats as well. Unsaturated fats are healthier than saturated fats, and some containing omega-3 fatty acids are considered polyunsaturated fats and help lower LDL cholesterol levels.

Water-soluble vitamins: Vitamins that are not stored in the body and include vitamin C and B-complex vitamins: B1 (thiamine), B2 (riboflavin), B3 (niacin), B6 (pyridoxine), B12 (cyanocobalamin), and B9 (folic acid, biotin, and pantothenic acid). Toxicity is rare as excess water-soluble vitamins are excreted in the urine.

Whole grains: Grains with the entire grain kernel that supply more fiber than refined grains.

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CHAPTER OVERVIEW

14: Fluids and Electrolytes

14.1: Fluids and Electrolytes Introduction
14.2: Basic Fluid and Electrolyte Concepts
14.3: Intravenous Solutions
14.4: Electrolytes
14.5: Acid-Base Balance
14.6: Applying the Nursing Process
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14.1: Fluids and Electrolytes Introduction

Learning Objectives

- Describe variables that influence fluid and electrolyte balance
- Identify factors related to fluid/electrolyte balance across the life span
- Assess a patient's nutritional and fluid/electrolyte status
- Outline specific nursing interventions to promote fluid and electrolyte balance
- Base decisions on the signs and symptoms of fluid volume excess and fluid volume deficit
- Base decisions on the interpretation of diagnostic tests and lab values indicative of a disturbance in fluid and electrolyte balance
- Identify evidence-based practices

The human body maintains a delicate balance of fluids and electrolytes to help ensure proper functioning and homeostasis. When fluids or electrolytes become imbalanced, individuals are at risk for organ system dysfunction. If an imbalance goes undetected and is left untreated, organ systems cannot function properly and ultimately death will occur. Nurses must be able to recognize subtle changes in fluid or electrolyte balances in their patients so they can intervene promptly. Timely assessment and intervention prevent complications and save lives.

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14.2: Basic Fluid and Electrolyte Concepts

Before learning about how to care for patients with fluid and electrolyte imbalances, it is important to understand the physiological processes of the body's regulatory mechanisms. The body is in a constant state of change as fluids and electrolytes are shifted in and out of cells within the body in an attempt to maintain a nearly perfect balance. A slight change in either direction can have significant consequences on various body systems.

Body Fluids

Body fluids consist of water, electrolytes, blood plasma and component cells, proteins, and other soluble particles called solutes. Body fluids are found in two main areas of the body called intracellular and extracellular compartments. See Figure 15.1[1] for an illustration of intracellular and extracellular compartments.

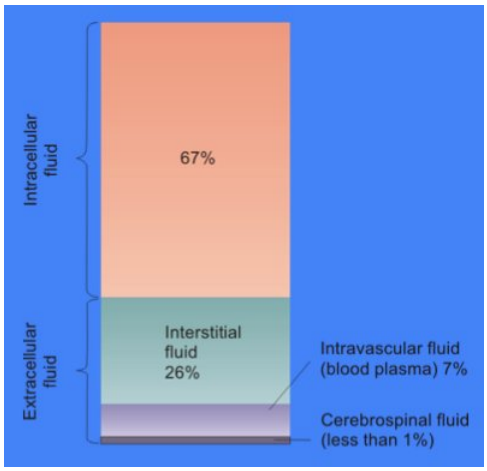


Figure 15.1 Intracellular and Extracellular Compartments

Intracellular fluids (ICF) are found inside cells and are made up of protein, water, electrolytes, and solutes. The most abundant electrolyte in intracellular fluid is potassium. Intracellular fluids are crucial to the body's functioning. In fact, intracellular fluid accounts for 60% of the volume of body fluids and 40% of a person's total body weight![2]

Extracellular fluids (ECF) are fluids found outside of cells. The most abundant electrolyte in extracellular fluid is sodium. The body regulates sodium levels to control the movement of water into and out of the extracellular space due to osmosis.

Extracellular fluids can be further broken down into various types. The first type is known as intravascular fluid that is found in the vascular system that consists of arteries, veins, and capillary networks. Intravascular fluid is whole blood volume and also includes red blood cells, white blood cells, plasma, and platelets. Intravascular fluid is the most important component of the body's overall fluid balance.

Loss of intravascular fluids causes the nursing diagnosis *Deficient Fluid Volume*, also referred to as **hypovolemia**. **Intravascular fluid** loss can be caused by several factors, such as excessive diuretic use, severe bleeding, vomiting, diarrhea, and inadequate oral fluid intake. If intravascular fluid loss is severe, the body cannot maintain adequate blood pressure and perfusion of vital organs. This can result in hypovolemic shock and cellular death when critical organs do not receive an oxygen-rich blood supply needed to perform cellular function.

A second type of extracellular fluid is **interstitial fluid** that refers to fluid outside of blood vessels and between the cells. For example, if you have ever cared for a patient with heart failure and noticed increased swelling in the feet and ankles, you have seen an example of excess interstitial fluid referred to as **edema**.

The remaining extracellular fluid, also called **transcellular fluid**, refers to fluid in areas such as cerebrospinal, synovial, intrapleural, and gastrointestinal system.[3]

Fluid Movement

Fluid movement occurs inside the body due to osmotic pressure, hydrostatic pressure, and osmosis. Proper fluid movement depends on intact and properly functioning vascular tissue lining, normal levels of protein content within the blood, and adequate hydrostatic pressures inside the blood vessels. Intact vascular tissue lining prevents fluid from leaking out of the blood vessels. Protein content of the blood (in the form of albumin) causes **oncotic pressure** that holds water inside the vascular compartment. For example, patients with decreased protein levels (i.e., low serum albumin) experience edema due to the leakage of intravascular fluid into interstitial areas because of decreased oncotic pressure.

Hydrostatic pressure is defined as pressure that a contained fluid exerts on what is confining it. In the intravascular fluid compartment, hydrostatic pressure is the pressure exerted by blood against the capillaries. Hydrostatic pressure opposes oncotic pressure at the arterial end of capillaries, where it pushes fluid and solutes out into the interstitial compartment. On the venous end of the capillary, hydrostatic pressure is reduced, which allows oncotic pressure to pull fluids and solutes back into the capillary.[4],[5] See Figure 15.2[6] for an illustration of hydrostatic pressure and oncotic pressure in a capillary.

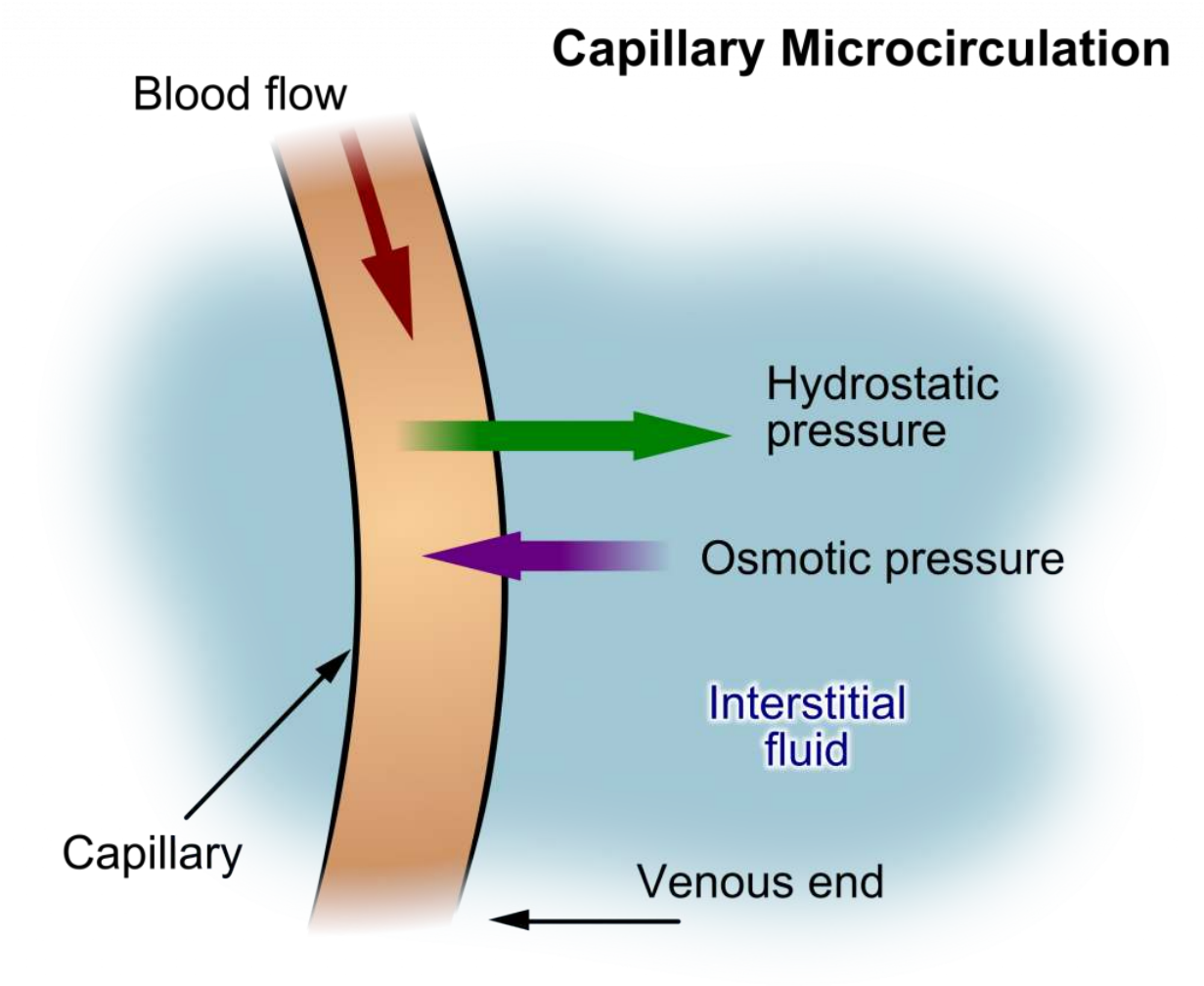


Figure 15.2 Hydrostatic Pressure

Filtration occurs when hydrostatic pressure pushes fluids and solutes through a permeable membrane so they can be excreted. An example of this process is fluid and waste filtration through the glomerular capillaries in the kidneys. This filtration process within the kidneys allows excess fluid and waste products to be excreted from the body in the form of urine.

Fluid movement is also controlled through osmosis. **Osmosis** is water movement through a semipermeable membrane, from an area of lesser solute concentration to an area of greater solute concentration, in an attempt to equalize the solute concentrations on either side of the membrane. Only fluids and some particles dissolved in the fluid are able to pass through a semipermeable

membrane; larger particles are blocked from getting through. Because osmosis causes fluid to travel due to a concentration gradient and no energy is expended during the process, it is referred to as **passive transport**.[7] See Figure 15.3[8] for an illustration of osmosis where water has moved to the right side of the membrane to equalize the concentration of solutes on that side with the left side.

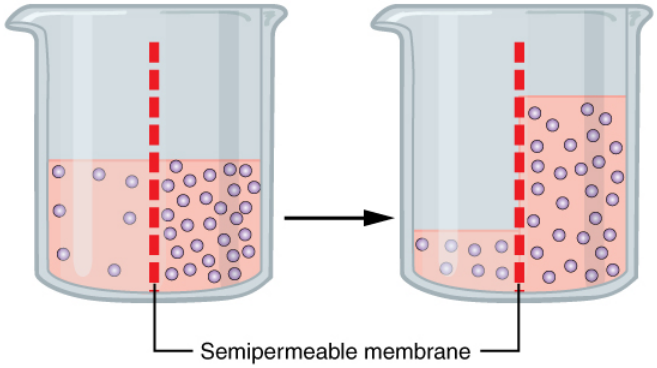


Figure 15.3 Osmosis

Osmosis causes fluid movement between the intravascular, interstitial, and intracellular fluid compartments based on solute concentration. For example, recall a time when you have eaten a large amount of salty foods. The sodium concentration of the blood becomes elevated. Due to the elevated solute concentration within the bloodstream, osmosis causes fluid to be pulled into the intravascular compartment from the interstitial and intracellular compartments to try to equalize the solute concentration. As fluid leaves the cells, they shrink in size. The shrinkage of cells is what causes many symptoms of dehydration, such as dry, sticky mucous membranes. Because the brain cells are especially susceptible to fluid movement due to osmosis, a headache may occur if adequate fluid intake does not occur.

Solute Movement

Solute movement is controlled by diffusion, active transport, and filtration. **Diffusion** is the movement of molecules from an area of higher concentration to an area of lower concentration to equalize the concentration of solutes throughout an area. (Note that diffusion is different from osmosis because osmosis is the movement of fluid whereas diffusion is the movement of solutes.) See Figure 15.4[9] for an image of diffusion. Because diffusion travels down a concentration gradient, the solutes move freely without energy expenditure. An example of diffusion is the movement of inhaled oxygen molecules from alveoli to the capillaries in the lungs so that they can be distributed throughout the body.

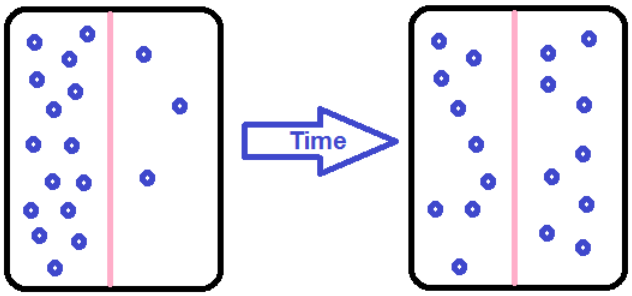


Figure 15.4 Diffusion

Active transport, unlike diffusion, involves moving solutes and ions across a cell membrane from an area of lower concentration to an area of higher concentration. Because active transport moves solutes against a concentration gradient to prevent an overaccumulation of solutes in an area, energy is required for this process to take place.[10] An example of active transport is the sodium-potassium pump, which uses energy to maintain higher levels of sodium in the extracellular fluid and higher levels of potassium in the intracellular fluid. See Figure 15.5[11] for an image of diffusion and the sodium-potassium pump regulating sodium

and potassium levels in the extracellular and intracellular compartments. Recall that sodium (Na+) is the primary electrolyte in the extracellular space and potassium (K+) is the primary electrolyte in the intracellular space.

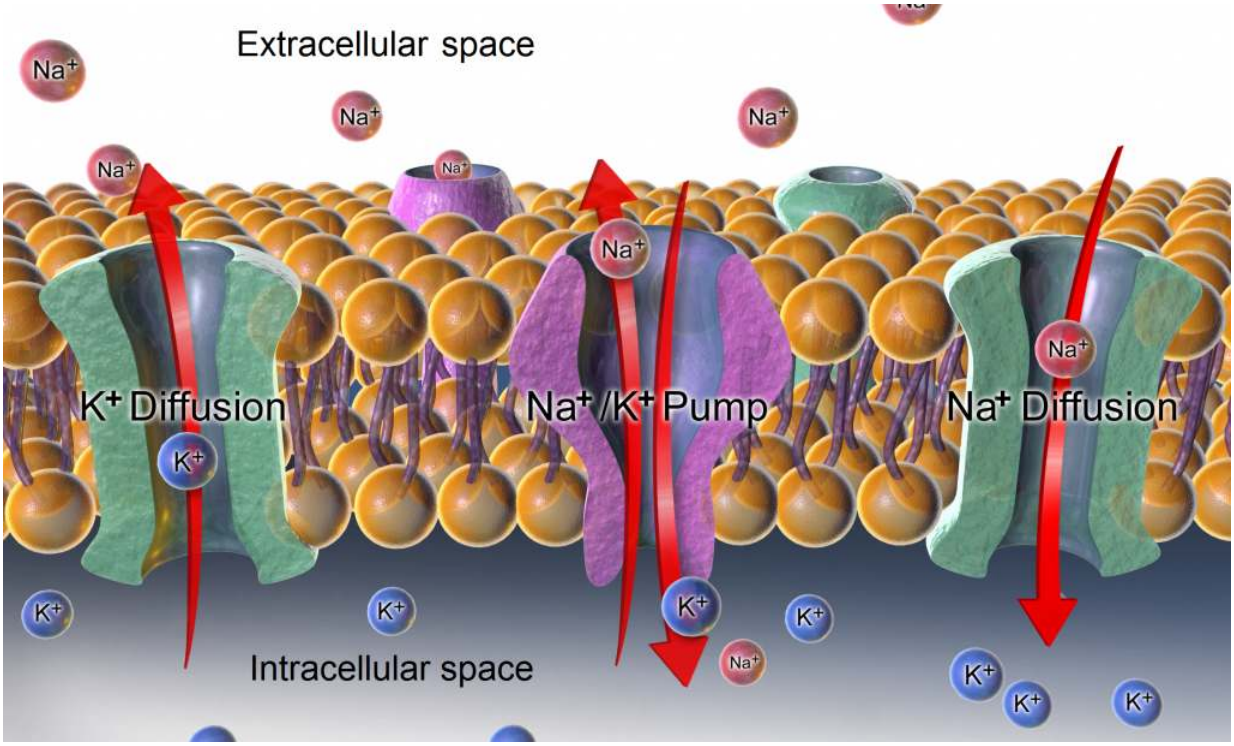


Figure 15.5 Sodium-Potassium Pump

Fluid and Electrolyte Regulation

The body must carefully regulate intravascular fluid accumulation and excretion to prevent fluid volume excesses or deficits and maintain adequate blood pressure. Water balance is regulated by several mechanisms including ADH, thirst, and the Renin-Angiotensin-Aldosterone System (RAAS).

Fluid intake is regulated by thirst. As fluid is lost and the sodium level increases in the intravascular space, serum osmolality increases. Serum **osmolality** is a measure of the concentration of dissolved solutes in the blood. Osmoreceptors in the hypothalamus sense increased serum osmolarity levels and trigger the release of ADH (antidiuretic hormone) in the kidneys to retain fluid. The osmoreceptors also produce the feeling of thirst to stimulate increased fluid intake. However, individuals must be able to mentally and physically respond to thirst signals to increase their oral intake. They must be alert, fluids must be accessible, and the person must be strong enough to reach for fluids. When a person is unable to respond to thirst signals, dehydration occurs. Older individuals are at increased risk of dehydration due to age-related impairment in thirst perception. The average adult intake of fluids is about 2,500 mL per day from both food and drink. An increased amount of fluids is needed if the patient has other medical conditions causing excessive fluid loss, such as sweating, fever, vomiting, diarrhea, and bleeding.

The **Renin-Angiotensin-Aldosterone System (RAAS)** plays an important role in regulating fluid output and blood pressure. See Figure 15.6[12] for an illustration of the Renin-Angiotensin-Aldosterone System (RAAS). When there is decreased blood pressure (which can be caused by fluid loss), specialized kidney cells make and secrete renin into the bloodstream. Renin acts on angiotensinogen released by the liver and converts it to angiotensin I, which is then converted to angiotensin II. Angiotensin II does a few important things. First, angiotensin II causes vasoconstriction to increase blood flow to vital organs. It also stimulates the adrenal cortex to release aldosterone. Aldosterone is a steroid hormone that triggers increased sodium reabsorption by the kidneys and subsequent increased serum osmolality in the bloodstream. As you recall, increased serum osmolality causes osmosis to move fluid into the intravascular compartment in an effort to equalize solute particles. The increased fluids in the intravascular compartment increase circulating blood volume and help raise the person's blood pressure. An easy way to remember this physiological process is "aldosterone saves salt" and "water follows salt."[13]

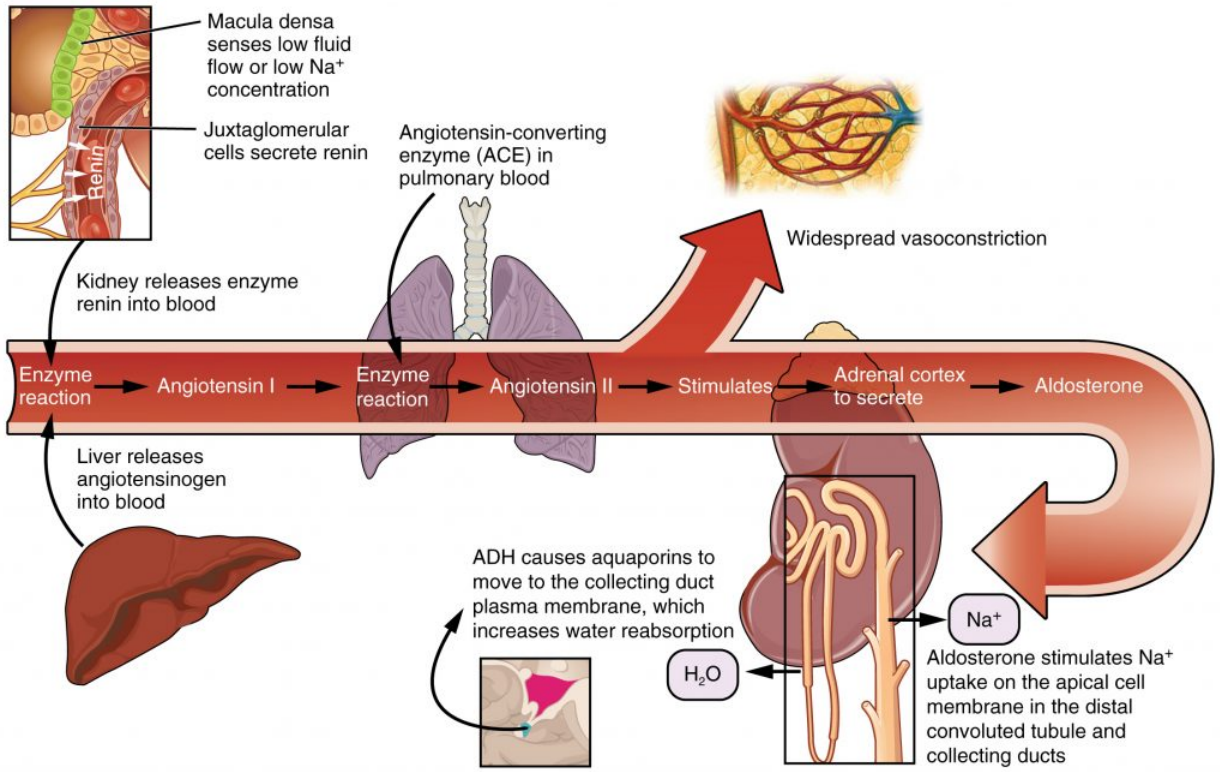


Figure 15.6 Renin Angiotensin Aldosterone System (RAAS)

Fluid output occurs mostly through the kidneys in the form of urine. Fluid is also lost through the skin as perspiration, through the gastrointestinal tract in the form of stool, and through the lungs during respiration. Forty percent of daily fluid output occurs due to these “insensible losses” through the skin, gastrointestinal tract, and lungs and cannot be measured. The remaining 60% of daily fluid output is in the form of urine. Normally, the kidneys produce about 1,500 mL of urine per day when fluid intake is adequate. Decreased urine production is an early sign of dehydration or kidney dysfunction. It is important for nurses to assess urine output in patients at risk. If a patient demonstrates less than 30 mL/hour (or 0.5 mL/kg/hour) of urine output over eight hours, the provider should be notified for prompt intervention. See Figure 15.7[14] for an illustration of an average adult’s daily water balance of 2,500 mL fluid intake balanced with 2,500 mL fluid output.

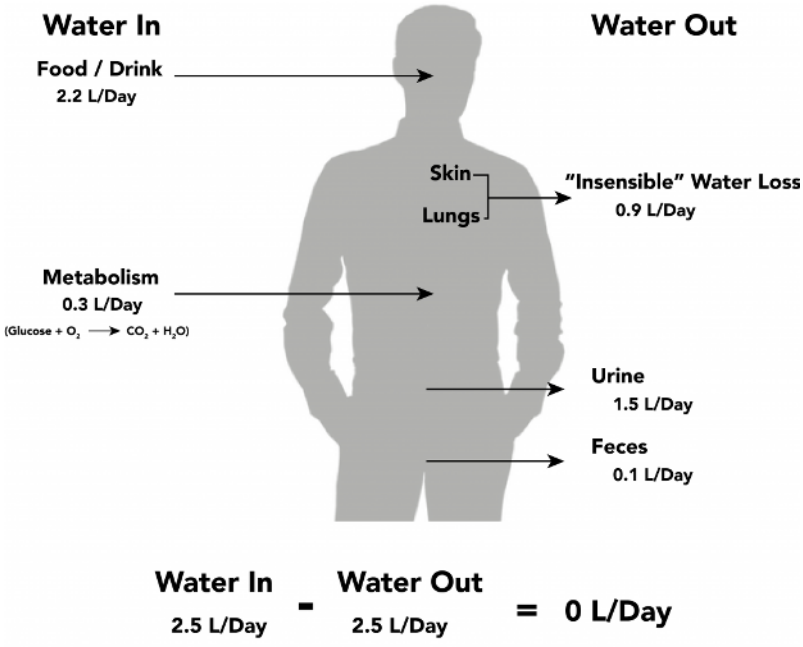


Figure 15.7 Water Balance

Fluid Imbalance

Two types of fluid imbalances are excessive fluid volume (also referred to as hypervolemia) and deficient fluid volume (also referred to as hypovolemia). These imbalances primarily refer to imbalances in the extracellular compartment, but can cause fluid movement in the intracellular compartments based on the sodium level of the blood.

Excessive Fluid Volume

Excessive fluid volume (also referred to as hypervolemia) occurs when there is increased fluid retained in the intravascular compartment. Patients at risk for developing excessive fluid volume are those with the following conditions:

- Heart Failure
- Kidney Failure
- Cirrhosis
- Pregnancy[15]

Symptoms of fluid overload include pitting edema, ascites, and dyspnea and crackles from fluid in the lungs. Edema is swelling in dependent tissues due to fluid accumulation in the interstitial spaces. Ascites is fluid retained in the abdomen.

Treatment depends on the cause of the fluid retention. Sodium and fluids are typically restricted and diuretics are often prescribed to eliminate the excess fluid. For more information about the nursing care of patients with excessive fluid volume, see the "Applying the Nursing Process" section.

Deficient Fluid Volume

Deficient fluid volume (also referred to as hypovolemia or dehydration) occurs when loss of fluid is greater than fluid input. Common causes of deficient fluid volume are diarrhea, vomiting, excessive sweating, fever, and poor oral fluid intake. Individuals who have a higher risk of dehydration include the following:

- Older adults
- Infants and children
- Patients with chronic diseases such as diabetes mellitus and kidney disease
- Patients taking diuretics and other medications that cause increased urine output
- Individuals who exercise or work outdoors in hot weather[16]

In adults, symptoms of dehydration are as follows:

- Feeling very thirsty
- Dry mouth
- Headache
- Dry skin
- Urinating and sweating less than usual
- Dark, concentrated urine
- Feeling tired
- Changes in mental status
- Dizziness due to decreased blood pressure
- Elevated heart rate[17]

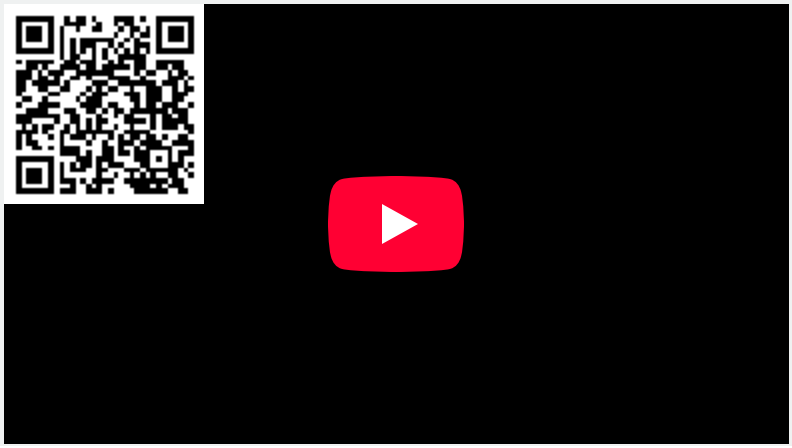
In infants and young children, additional symptoms of dehydration include the following:

- Crying without tears
- No wet diapers for three hours or more
- Being unusually sleepy or drowsy
- Irritability
- Eyes that look sunken
- Sunken fontanel[18]

Dehydration can be mild and treated with increased oral intake such as water or sports drinks. Severe cases can be life-threatening and require the administration of intravenous fluids.

For more information about water balance and fluid movement, review the following video.

Video Review of Fluid and Electrolytes[19]



1. “Cellular_Fluid_Content.jpg” by Welcome1To1The1Jungle is licensed under CC BY 3.0↵
2. Fluid. (2012). In *Britannica*. https://www.britannica.com/science/fluid-biology↵
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7. BBC. (n.d.) *Movement across cell membranes*. https://www.bbc.co.uk/bitesize/guides/zc9tyrd/revision/5↵
8. “0307_Osmosis.jpg” by OpenStax is licensed under CC BY 4.0. Access for free at https://openstax.org/books/anatomy-and-physiology/pages/3-1-the-cell-membrane↵
9. “Simple_Diffusion.png” by Elizabeth2424 is licensed under CC BY-SA 3.0↵
10. BBC. (n.d.) *Movement across cell membranes*. https://www.bbc.co.uk/bitesize/guides/zc9tyrd/revision/5↵
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15. Lewis, J. L., III. (June 2020). *Volume overload*. Merck Manual Professional Version. https://www.merckmanuals.com/professional/endocrine-and-metabolic-disorders/fluid-metabolism/volume-overload↵
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19. Forciea, B. (2017, April 21). *Fluids and electrolytes: Water*. [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/VMxmDeduKR0↵

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14.3: Intravenous Solutions

When patients experience deficient fluid volume, intravenous (IV) fluids are often prescribed. IV fluid restores fluid to the intravascular compartment, and some IV fluids are also used to facilitate the movement of fluid between compartments due to osmosis. There are three types of IV fluids: isotonic, hypotonic, and hypertonic.

Isotonic Solutions

Isotonic solutions are IV fluids that have a similar concentration of dissolved particles as blood. An example of an isotonic IV solution is 0.9% Normal Saline (0.9% NaCl). Because the concentration of the IV fluid is similar to the blood, the fluid stays in the intravascular space and osmosis does not cause fluid movement between compartments. See Figure 15.8[1] for an illustration of isotonic IV solution administration with no osmotic movement of fluid with cells. Isotonic solutions are used for patients with fluid volume deficit (also called hypovolemia) to raise their blood pressure. However, infusion of too much isotonic fluid can cause excessive fluid volume (also referred to as hypervolemia).

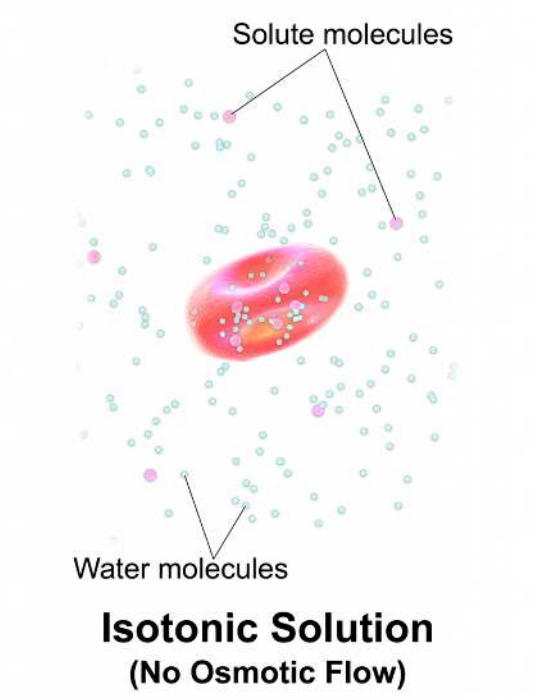

Figure 15.8 Lack of Fluid Movement When Isotonic IV Solution Is Administered

Hypotonic Solutions

Hypotonic solutions have a lower concentration of dissolved solutes than blood. An example of a hypotonic IV solution is 0.45% Normal Saline (0.45% NaCl). When hypotonic IV solutions are infused, it results in a decreased concentration of dissolved solutes in the blood as compared to the intracellular space. This imbalance causes osmotic movement of water from the intravascular compartment into the intracellular space. For this reason, hypotonic fluids are used to treat cellular dehydration. See Figure 15.9[2] for an illustration of the osmotic movement of fluid into a cell when a hypotonic IV solution is administered, causing lower concentration of solutes (pink molecules) in the bloodstream compared to within the cell.

However, if too much fluid moves out of the intravascular compartment into cells, cerebral edema can occur. It is also possible to cause worsening hypovolemia and hypotension if too much fluid moves out of the intravascular space and into the cells. Therefore, patient status should be monitored carefully when hypotonic solutions are infused.

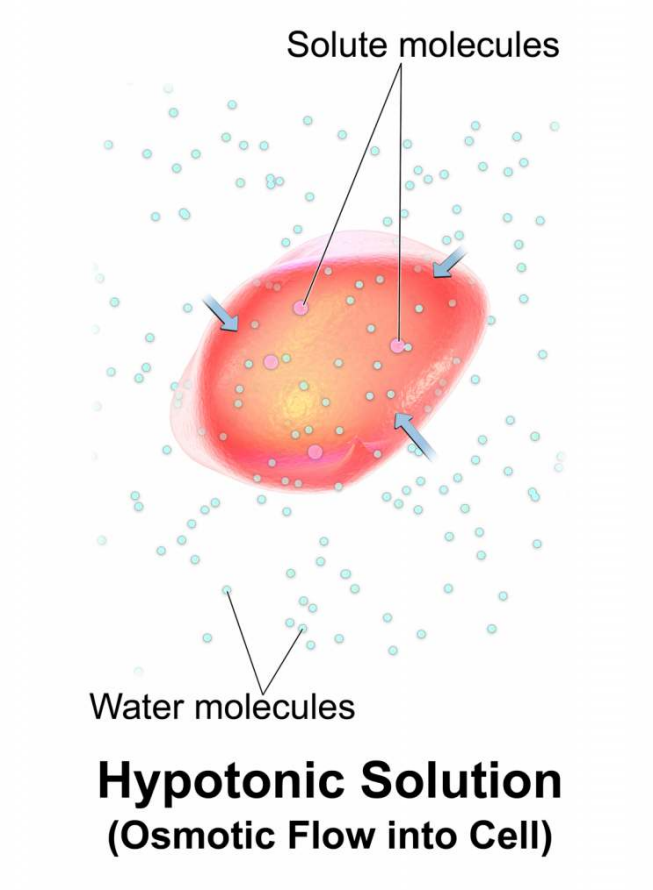

Figure 15.9 Hypotonic IV Solution Causing Osmotic Movement of Fluid Into Cell

Hypertonic Solutions

Hypertonic solutions have a higher concentration of dissolved particles than blood. An example of hypertonic IV solution is 3% Normal Saline (3% NaCl). When infused, hypertonic fluids cause an increased concentration of dissolved solutes in the intravascular space compared to the cells. This causes the osmotic movement of water out of the cells and into the intravascular space to dilute the solutes in the blood. See Figure 15.10[3] for an illustration of osmotic movement of fluid out of a cell when hypertonic IV fluid is administered due to a higher concentration of solutes (pink molecules) in the bloodstream compared to the cell.

When administering hypertonic fluids, it is essential to monitor for signs of hypervolemia such as breathing difficulties and elevated blood pressure. Additionally, if hypertonic solutions with sodium are given, the patient's serum sodium level should be closely monitored.[4] See Table 15.3 for a comparison of types of IV solutions, their uses, and nursing considerations.

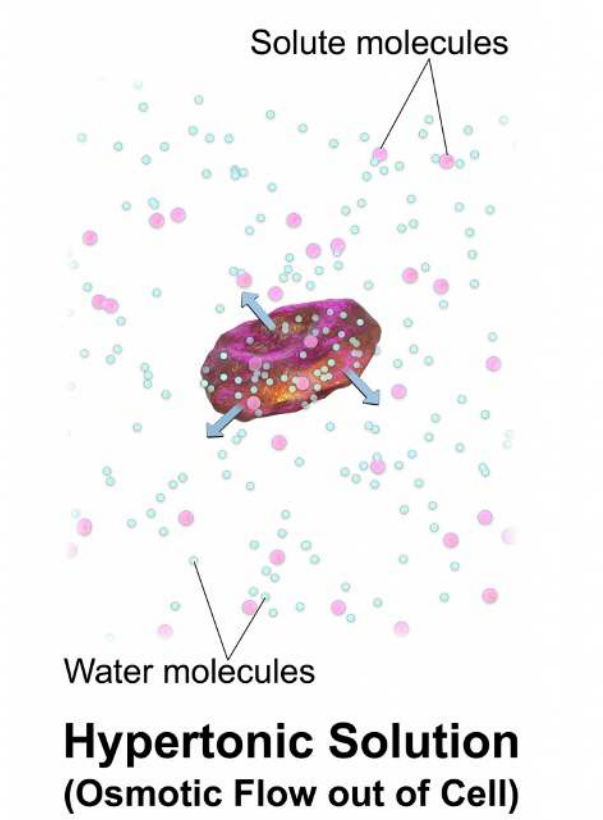

Figure 15.10 Hypertonic IV Solution Causing Osmotic Fluid Movement Out of a Cell

See Figure 15.11[5] for an illustration comparing how different types of IV solutions affect red blood cell size.

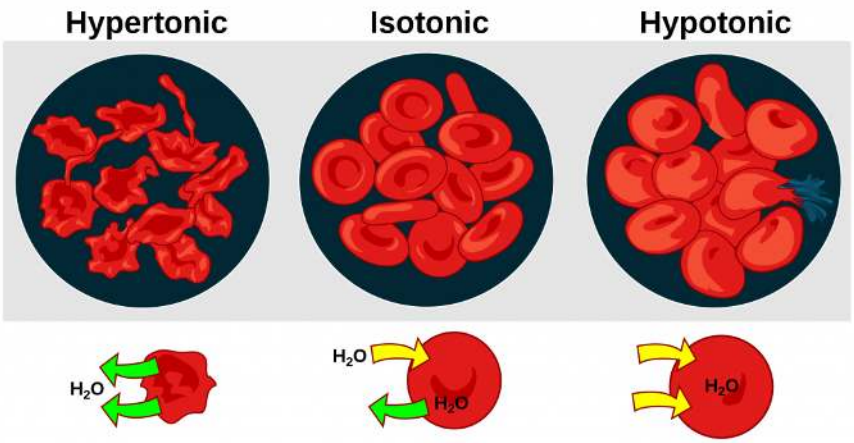

Figure 15.11 Comparison of Osmotic Effects of Hypertonic, Isotonic, and Hypotonic IV Fluids on Red Blood Cells

Table 15.3 Comparison of IV Solutions[6]

Type	IV Solution	Uses	Nursing Considerations
Isotonic	0.9% Normal Saline (0.9% NaCl)	Fluid resuscitation for hemorrhaging, severe vomiting, diarrhea, GI suctioning losses, wound drainage, mild hyponatremia, or blood transfusions.	Monitor closely for hypervolemia, especially with heart failure or renal failure.
Isotonic	Lactated Ringer's Solution (LR)	Fluid resuscitation, GI tract fluid losses, burns, traumas, or metabolic acidosis. Often used during surgery.	Should not be used if serum pH is greater than 7.5 because it will worsen alkalosis. May elevate potassium levels if used with renal failure.
Isotonic	5% Dextrose in Water (D5W) *starts as isotonic and then changes to hypotonic when dextrose is metabolized	Provides free water to help renal excretion of solutes, hypernatremia, and some dextrose supplementation.	Should not be used for fluid resuscitation because after dextrose is metabolized, it becomes hypotonic and leaves the intravascular space, causing brain swelling. Used to dilute plasma electrolyte concentrations.
Hypotonic	0.45% Sodium Chloride (0.45% NaCl)	Used to treat intracellular dehydration and hypernatremia and to provide fluid for renal excretion of solutes.	Monitor closely for hypovolemia, hypotension, or confusion due to fluid shifting into the intracellular space, which can be life-threatening. Avoid use in patients with liver disease, trauma, and burns to prevent hypovolemia from worsening. Monitor closely for cerebral edema.
Hypotonic	5% Dextrose in Water (D5W)	Provides free water to promote renal excretion of solutes and treat hypernatremia, as well as some dextrose supplementation.	Monitor closely for hypovolemia, hypotension, or confusion due to fluid shifting out of the intravascular space, which can be life-threatening. Avoid use in patients with liver disease, trauma, and burns to prevent hypovolemia from worsening. Monitor closely for cerebral edema.
Hypertonic	3% Sodium Chloride (3% NaCl)	Used to treat severe hyponatremia and cerebral edema.	Monitor closely for hypervolemia, hypernatremia, and associated respiratory distress. Do not use it with patients experiencing heart failure, renal failure, or conditions caused by cellular dehydration because it will worsen these conditions.

Type	IV Solution	Uses	Nursing Considerations
Hypertonic	5% Dextrose and 0.45% Sodium Chloride (D50.45% NaCl)	Used to treat severe hyponatremia and cerebral edema.	Monitor closely for hypervolemia, hypernatremia, and associated respiratory distress. Do not use it with patients experiencing heart failure, renal failure, or conditions caused by cellular dehydration because it will worsen these conditions.
Hypertonic	5% Dextrose and Lactated Ringer's (D5LR) D10	Used to treat severe hyponatremia and cerebral edema.	Monitor closely for hypervolemia, hypernatremia, and associated respiratory distress. Do not use it with patients experiencing heart failure, renal failure, or conditions caused by cellular dehydration because it will worsen these conditions.

Osmolarity is defined as the proportion of dissolved particles in an amount of fluid and is generally the term used to describe body fluids. As the dissolved particles become more concentrated, the osmolarity increases. **Osmolality** refers to the proportion of dissolved particles in a specific weight of fluid. The terms osmolarity and osmolality are often used interchangeably in clinical practice.

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1. "Blausen_0685_OsmoticFlow_Isotonic.png" by BruceBlaus.com staff is licensed under CC BY 3.0↵
2. "Blausen_0684_OsmoticFlow_Hypotonic.png" by BruceBlaus.com staff is licensed under CC BY 3.0↵
3. "Blausen_0683_OsmoticFlow_Hypertonic.png" by BruceBlaus.com staff is licensed under CC BY 3.0↵
4. Harris, H. (2011). I.V. fluids: What nurses need to know. *Nursing2017*, *41*(5), 30-38. ↵
5. "Osmotic pressure on blood cells diagram.svg" by LadyofHats is in the Public Domain↵
6. Harris, H. (2011). I.V. fluids: What nurses need to know. *Nursing2017*, *41*(5), 30-38. ↵

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14.4: Electrolytes

Electrolytes play an important role in bodily functions and fluid regulation. There is a very narrow target range for normal electrolyte values, and slight abnormalities can have devastating consequences. For this reason, it is crucial to understand normal electrolyte ranges, causes of electrolyte imbalances, signs and symptoms of imbalances, and appropriate treatments.

Sodium

Sodium levels in the blood typically range from 136-145 mEq/L.[1] Refer to each agency's normal reference range on the lab report. Sodium is the most abundant electrolyte in the extracellular fluid (ECF) and is maintained by the sodium-potassium pump. Sodium plays an important role in maintaining adequate fluid balance in the intravascular and interstitial spaces. See the "Fluid and Electrolyte Regulation" section of this chapter for more information about how the body regulates sodium and water balance.

Hypernatremia refers to an elevated sodium level in the blood. Typically, hypernatremia is caused by excess water loss due to lack of fluid intake, vomiting, or diarrhea. As you recall, elevated sodium levels in the blood cause the osmotic movement of water out of the cells to dilute the blood. This causes the body's cells to shrink, referred to as cellular dehydration. This fluid shift can have a significant impact on various organs within the body and is especially notable in the patient's neurological function. As fluid shifts out of the brain cells, the nurse may notice symptoms such as confusion, irritability, lethargy, and even seizures. Other signs and symptoms of hypernatremia include severe thirst and sticky mucous membranes. See Figure 15.12[2] for an illustration of a patient with severe thirst due to hypernatremia. Treatment for hypernatremia includes decreasing sodium intake, increasing oral water intake, and rehydrating with a hypotonic IV solution.[3],[4]

Figure 15.12 Hypernatremia

Hyponatremia refers to a decreased sodium level in the blood. Hyponatremia can be caused by excess water intake or excessive administration of hypotonic IV solutions. For example, a marathon runner who only rehydrates with water (without other fluids with solutes like Gatorade) can develop hyponatremia. As with hypernatremia, altered sodium levels often cause neurological symptoms due to the movement of water into brain cells, causing them to swell. Symptoms of hyponatremia are headache, confusion, seizures, and coma. Treatment for hyponatremia depends on the cause and often consists of limiting water intake or discontinuing administration of hypotonic IV fluids. If hyponatremia is severe, a hypertonic IV saline solution may be prescribed to gradually raise the patient's sodium level.[5]

Video Review of Fluids and Electrolytes: Sodium[6]

Potassium

Potassium levels normally range from 3.5 to 5.1 mEq/L.[7] Refer to each agency's normal reference range on the lab report. Potassium is the most abundant electrolyte in intracellular fluid and is maintained inside the cell by the sodium-potassium pump. Potassium is regulated by aldosterone in the kidneys and is obtained in the diet through consumption of foods such as bananas, oranges, and tomatoes. See Figure 15.13[8] for an illustration of potassium regulation by aldosterone. Recall that aldosterone causes reabsorption of sodium and excretion of potassium in the distal tubule of the kidneys. In response to potassium levels rising or sodium levels falling in the bloodstream, the adrenal cortex releases aldosterone and targets the kidneys. In response, the kidneys excrete potassium and reabsorb sodium. Potassium is also impacted by the hormone insulin that moves potassium into the cells from the ECF.[9]

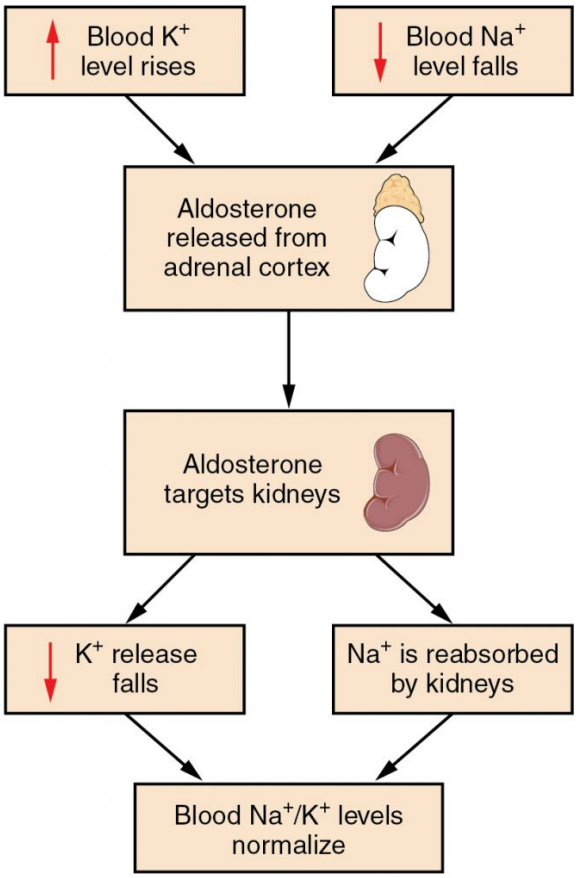

Figure 15.13 Potassium Regulation by Aldosterone

Potassium is necessary for normal cardiac function, neural function, and muscle contractility, including effective contractility of the cardiac muscles. Abnormal potassium levels can cause significantly abnormal heart rhythms and contractility. Potassium is poorly conserved by the body and much is lost with urine output. For this reason, it is often necessary to provide potassium supplements when administering loop and thiazide diuretics because potassium is excreted from the kidneys along with water.[10] Potassium supplementation can be given orally or by IV infusion mixed with fluids. Potassium must NEVER be administered IV push because it can immediately stop the heart.

Hyperkalemia refers to increased potassium levels in the blood. Hyperkalemia can be caused by kidney failure, metabolic acidosis, and administration of potassium-sparing diuretics or oral/intravenous potassium supplements. Signs and symptoms of hyperkalemia are generally cardiac in nature and include irritability, cramping, diarrhea, and electrocardiogram (ECG) abnormalities. As hyperkalemia worsens, ECG abnormalities may progress to cardiac dysrhythmias and cardiac arrest.

Treatment for hyperkalemia depends on the severity of the hyperkalemia symptoms. For mild symptoms, decreased potassium intake in the diet is helpful. Adjustment to medications contributing to increased levels of potassium may be indicated. For severe symptoms, administration of sodium polystyrene sulfonate (Kayexalate) orally or rectally helps bind excess potassium so it is excreted through the GI tract. Insulin may be administered to push potassium into cells and decrease serum potassium levels. When administering an insulin infusion, it is important to monitor blood glucose levels closely, often hourly per agency policy. The patient often requires supplemental IV dextrose to prevent low blood sugar levels when insulin is used for potassium reduction. IV calcium gluconate may also be given to prevent excess potassium from affecting cardiac muscle. This is a temporary measure and wears off quickly but allows time for other treatments to take effect and lower potassium levels before cardiac arrest develops. For severe symptomatic hyperkalemia, temporary hemodialysis may also be used to quickly decrease potassium levels.[11]

Hypokalemia refers to decreased potassium level in the blood. Hypokalemia can be caused by excessive vomiting, diarrhea, potassium-wasting diuretics, and insulin use, as well as lack of potassium in the diet. Signs and symptoms of hypokalemia include weakness, arrhythmias, lethargy, and a thready pulse. View helpful mnemonics for hypokalemia using the following hyperlink. Treatment for hypokalemia includes increasing oral intake of potassium in the diet and oral or IV potassium in fluids supplementation. It is important to remember that administering IV potassium too quickly can cause cardiac arrest. In fact, potassium is one of the ingredients used during lethal injection to stop the heart.

Note

View helpful mnemonics for hypokalemia at Hypokalemia NCLEX Review Notes.

Video Review About Potassium[12]

Calcium

Calcium levels normally range from 8.6-10.2 mg/dL.[13] Refer to each agency's normal reference range on the lab report. Calcium circulates in the bloodstream, but the majority is stored in bones. Calcium is important for bone and teeth structure, nerve transmission, and muscle contraction. Calcium excretion and reabsorption are regulated by the parathyroid hormone (PTH) that is

secreted from the parathyroid glands near the thyroid. See Figure 15.14[14] for an illustration of the parathyroid glands. As PTH is secreted in response to low calcium levels in the blood, calcium is reabsorbed in both the kidneys and the intestine and released from the bones to increase serum calcium levels. Calcium is also affected by dietary intake and physical activity. Activity causes calcium to move into bones whereas immobility causes the release of calcium from bones, which cases them to become weak. Dietary sources of calcium include dairy products, green leafy vegetables, sardines, and whole grains.[15]

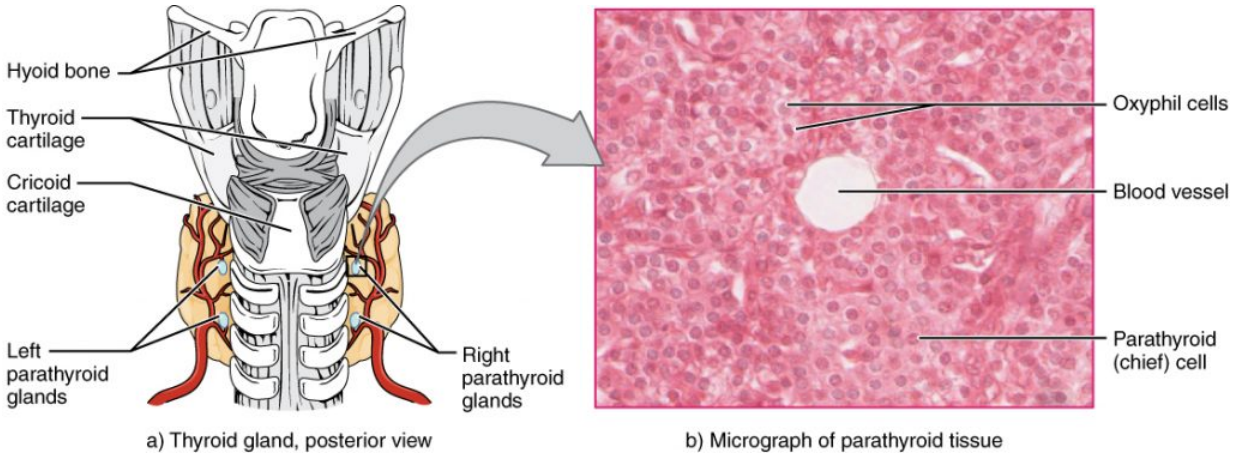

Figure 15.14 Parathyroid Glands

Hypercalcemia refers to an increased calcium level. It can be caused by prolonged immobilization that allows calcium to leach out of the bones and into the serum. Additionally, there are many types of cancers that may cause excessive calcium release from bones. Hypercalcemia can also be caused by hyperparathyroidism and parathyroid tumors, which can cause too much PTH secretion, causing too much calcium to be reabsorbed in the kidneys and intestines and released from bone.

Signs and symptoms of hypercalcemia often impact the gastrointestinal and musculoskeletal systems. These symptoms include nausea, vomiting, constipation, increased thirst and/or urination, and skeletal muscle weakness. Treatment for hypercalcemia includes decreasing calcium intake in the diet, phosphate supplementation (which has an inverse relationship to calcium), hemodialysis, surgical removal of the parathyroid gland (if hyperparathyroidism is causing the hypercalcemia), and weight-bearing exercises as tolerated.[16]

Hypocalcemia refers to a decreased calcium level in the blood. Hypocalcemia can be caused by hypoparathyroidism where not enough PTH is excreted, causing a decreased reabsorption of calcium and decreased release of calcium from the bones. Hypocalcemia is also caused by vitamin D deficiency and renal disease. Because phosphorus is inversely related to calcium, an abnormally high phosphorus level as seen with renal failure can also result in hypocalcemia.

Signs and symptoms of hypocalcemia often impact the musculoskeletal and nervous systems. These include paresthesias (numbness and tingling) of the lips, tongue, hands and feet, muscle cramps, and tetany. **Chvostek's sign** is a classic sign of acute hypocalcemia and is an involuntary twitching of facial muscles when the facial nerve is tapped. A second classic sign of acute hypocalcemia is **Trousseau's sign** where a hand spasm is caused by inflating a blood pressure cuff to a level above systolic pressure for 3 minutes. See a video of a patient experiencing Chvostek's and Trousseau's signs in the hyperlink below. Treatment of hypocalcemia includes increasing oral intake of dietary calcium and vitamin D and oral or IV calcium supplementation and decreasing the phosphorus level if it is elevated.[17]

Note

View a video of a patient exhibiting Chvostek's Sign and Trousseau's Signs of hypocalcemia.

Phosphorus

Phosphorus levels typically range from 2.5-4.0 mg/dL. Refer to each agency's normal reference range on the lab report. Phosphorus is stored in the bones and is predominantly found in the ICF with small amounts in the ECF. Phosphorus is important in energy metabolism, RNA and DNA formation, nerve function, muscle contraction, and for bone, teeth, and membrane building and repair.

Phosphorus is excreted by the kidneys and absorbed by the intestines. Dietary phosphorus sources include dairy products, fruits, vegetables, meat, and cereal.[18]

Hyperphosphatemia refers to an increased phosphorus level in the blood and can be caused by kidney disease, crush injuries, or overuse of phosphate-containing enemas. Hyperphosphatemia itself is usually asymptomatic, but signs of associated hypocalcemia may be present due to the inverse relationship between phosphorus and calcium. Treatment for hyperphosphatemia includes decreasing intake of phosphorus, administration of phosphate-binder medications to help with excretion, and hemodialysis.[19]

Hypophosphatemia is a decreased phosphorus level in the blood. Acute hypophosphatemia can be caused by acute alcohol abuse, burns, diuretic use, respiratory alkalosis, resolving diabetic ketoacidosis, and starvation. Chronic hypophosphatemia is caused by hyperparathyroidism, vitamin D deficiency, prolonged use of phosphate binders, and hypomagnesemia or hypokalemia. Hypophosphatemia is usually asymptomatic, but in severe cases, it can cause muscle weakness, anorexia, encephalopathy, seizures, and death. Treatment for hypophosphatemia includes treating what is causing the imbalance, oral or IV phosphorus replacement, and increased phosphate-containing foods in the diet.[20]

Magnesium

Magnesium levels typically range from 1.5-2.4 mEq/L. Refer to each agency's reference range on the lab report. Magnesium is essential for normal cardiac, nerve, muscle, and immune system functioning. About half of the body's magnesium is stored in the bones. About 1% is stored in ECF and the rest is found in ICF.[21] Dietary sources of magnesium include green leafy vegetables, citrus, peanut butter, almonds, legumes, and chocolate.

Hypermagnesemia refers to an elevated magnesium level in the blood. It is usually the result of renal failure, excess magnesium replacement, or use of magnesium containing laxatives or antacids. Signs and symptoms of hypermagnesemia include bradycardia, weak and thready pulse, lethargy, tremors, hyporeflexia, muscle weakness, and cardiac arrest. Treatment for hypermagnesemia involves increasing fluid intake, discontinuing magnesium-containing medications, and in severe cases, hemodialysis or peritoneal dialysis. Additionally, administration of calcium gluconate can be helpful to reduce the cardiac effects of hypermagnesemia until the magnesium level can be lowered.[22]

Hypomagnesemia refers to decreased magnesium level in the blood. It typically results from inadequate magnesium in the diet, or from loop diuretics that excrete magnesium. Patients with alcohol use disorder often have hypomagnesemia due to concurrent poor diet and impaired nutrient absorption that occurs with alcohol consumption. Chronic proton pump inhibitor use can also cause hypomagnesemia due to impaired nutrient absorption.

Signs and symptoms of hypomagnesemia include nausea, vomiting, lethargy, weakness, leg cramps, tremor, dysrhythmias, and tetany that is associated with concurrent hypocalcemia that can occur with hypomagnesemia. Treatment for hypomagnesemia consists of increasing dietary intake of magnesium containing foods and oral or IV magnesium supplementation.[23]

See Table 15.4 for a comparison of causes, symptoms, and treatments of different electrolyte imbalances.

Table 15.4 Comparison of Causes, Symptoms, and Treatments of Imbalanced Electrolyte Levels

	Elevated Level	Decreased Level
Sodium (Na+) Normal range 136-145 mEq/L	**Hypernatremia** **Causes:** Excessive salt intake **Symptoms:** Lethargy, irritability, seizures, and weakness **Treatments:** Rehydrate w/ D5W and increase water intake	**Hyponatremia** **Causes:** Excessive water intake and diuretics **Symptoms:** Headache, confusion, coma **Treatments:** 3% NS and fluid restriction
Potassium (K+) Normal range 3.5-5.1 mmol/L	**Hyperkalemia** **Causes:** Kidney dysfunction, excessive potassium intake, and ACE inhibitors **Symptoms:** Cardiac arrhythmias, cramping, diarrhea, and irritability **Treatments:** Limit potassium in diet, loop diuretic, insulin, dialysis, and kayexalate	**Hypokalemia** **Causes:** Loop and thiazide diuretics and IV administration of insulin **Symptoms:** Weakness, arrhythmias, lethargy, and thready pulse (WALT) **Treatments:** PO/IV potassium and increase K+ in diet
Calcium (Ca++) Normal range 8.6 -10.2 mg/dL	**Hypercalcemia** **Causes:** Overactive parathyroid glands and cancer **Symptoms:** Nausea, vomiting, constipation, and thirst **Treatments**: Decrease calcium in diet, increase mobility, and administer phosphorous	**Hypocalcemia** **Causes:** Diuretic use and removal of parathyroid glands **Symptoms:** Numbness, tingling, Chvotek's sign, and tetany **Treatments:** Increase Ca++ in diet and IV/PO calcium
Magnesium (Mg+) Nornal range 1.5-2.4 mg/dL	**Hypermagnesemia** **Causes:** Kidney disease and excessive magnesium intake (i.e., laxatives and antacids) **Symptoms:** Muscle weakness, bradycardia, asystole, tremors, and slow reflexes **Treatments:** Dialysis, increased fluid intake, and stopping medications containing Mg+	**Hypomagnesemia** **Causes:** Diuretics, undernutrition, and long-term alcohol use disorder **Symptoms:** Nausea, vomiting, lethargy, weakness, tetany, leg cramps, tremors, and arrhythmias **Treatments:** Increase Mg+ in diet and PO/IV magnesium

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14.5: Acid-Base Balance

As with electrolytes, correct balance of acids and bases in the body is essential to proper body functioning. Even a slight variance outside of normal can be life-threatening, so it is important to understand normal acid-base values, as well their causes and how to correct them. The kidneys and lungs work together to correct slight imbalances as they occur. As a result, the kidneys compensate for shortcomings of the lungs, and the lungs compensate for shortcomings of the kidneys.

Arterial Blood Gases

Arterial blood gases (ABG) are measured by collecting blood from an artery, rather than a vein, and are most commonly collected via the radial artery. ABGs measure the pH level of the blood, the partial pressure of arterial oxygen (PaO2), the partial pressure of arterial carbon dioxide (PaCO2), the bicarbonate level (HCO3), and the oxygen saturation level (SaO2).

Prior to collecting blood gases, it is important to ensure the patient has appropriate arterial blood flow to the hand. This is done by performing the Allen test. When performing the Allen test, pressure is held on both the radial and ulnar artery below the wrist. Pressure is released from the ulnar artery to check if blood flow is adequate. If arterial blood flow is adequate, warmth and color should return to the hand.

pH

pH is a scale from 0-14 used to determine the acidity or alkalinity of a substance. A neutral pH is 7, which is the same pH as water. Normally, the blood has a pH between 7.35 and 7.45. A blood pH of less than 7.35 is considered acidic, and a blood pH of more than 7.45 is considered alkaline.

The pH of blood is a measure of hydrogen ion concentration. A low pH, less than 3.5, occurs in acidosis when the blood has a high hydrogen ion concentration. A high pH, greater than 7.45, occurs in alkalosis when the blood has a low hydrogen ion concentration. Hydrogen ions are by-products of the metabolism of substances such as proteins, fats, and carbohydrates. These by-products create extra hydrogen ions (H^+) in the blood that need to be balanced and kept within normal range as described earlier.

The body has several mechanisms for maintaining blood pH. The lungs are essential for maintaining pH and the kidneys also play a role. For example, when the pH is too low (i.e., during acidosis), the respiratory rate quickly increases to eliminate acid in the form of carbon dioxide (CO_2). The kidneys excrete additional hydrogen ions (acid) in the urine and retain bicarbonate (base). Conversely, when the pH is too high (i.e., during alkalosis), the respiratory rate decreases to retain acid in the form of CO_2. The kidneys excrete bicarbonate (base) in the urine and retain hydrogen ions (acid).

PaCO2

PaCO2 is the partial pressure of arterial carbon dioxide in the blood. The normal PaCO2 level is 35-45 mmHg. CO_2 forms an acid in the blood that is regulated by the lungs by changing the rate or depth of respirations.

As the respiratory rate increases or becomes deeper, additional CO_2 is removed causing decreased acid (H^+) levels in the blood and increased pH (so the blood becomes more alkaline). As the respiratory rate decreases or becomes more shallow, less CO_2 is removed causing increased acid (H^+) levels in the blood and decreased pH (so the blood becomes more acidic).

Generally, the lungs work quickly to regulate the PaCO2 levels and cause a quick change in the pH. Therefore, an acid-base problem caused by hypoventilation can be quickly corrected by increasing ventilation, and a problem caused by hyperventilation can be quickly corrected by decreasing ventilation. For example, if an anxious patient is hyperventilating, they may be asked to breathe into a paper bag to rebreathe some of the CO_2 they are blowing off. Conversely, a postoperative patient who is experiencing hypoventilation due to the sedative effects of receiving morphine is asked to cough and deep breathe to blow off more CO_2.

HCO3

HCO3 is the bicarbonate level of the blood and the normal range is 22-26. HCO3 is a base managed by the kidneys and helps to make the blood more alkaline. The kidneys take longer than the lungs to adjust the acidity or alkalinity of the blood, and the response is not visible upon assessment. As the kidneys sense an alteration in pH, they begin to retain or excrete HCO3, depending on what is needed. If the pH becomes acidic, the kidneys retain HCO3 to increase the amount of bases present in the blood to increase the pH. Conversely, if the pH becomes alkalotic, the kidneys excrete more HCO3, causing the pH to decrease.

PaO2

PaO2 is the partial pressure of arterial oxygen in the blood. It more accurately measures a patient's oxygenation status than SaO2 (the measurement of hemoglobin saturation with oxygen). Therefore, ABG results are also used to manage patients in respiratory distress.

Note

Read more information about interpreting ABG results in the "Oxygen Therapy" chapter in Open RN *Nursing Skills*.

See Table 15.5a for a review of ABG components, normal values, and key critical values. A critical ABG value means there is a greater risk of serious complications and even death if not corrected rapidly. For example, a pH of 7.10, a shift of only 0.25 below normal, is often fatal because this level of acidosis can cause cardiac or respiratory arrest or significant hyperkalemia.[1] As you can see, failure to recognize ABG abnormalities can have serious consequences for your patients.

Table 15.5a ABG Components, Descriptions, Adult Normal Values, and Critical Values[2]

ABG Component	Description	Adult Normal Value	Critical Value
pH	• Acidity (<7.35) or alkalinity (>7.45) of blood. • Measure of H+ ions (acids). • Affected by the lungs via hypo- or hyperventilation or the kidneys through bicarbonate retention.	7.35-7.45	<7.25 >7.60
PaO2	• Pressure of oxygen in the blood.	80-100 mmHg	<60 mmHg
PaCO2	• Pressure of carbon dioxide in the blood. • CO2 is an acid managed by the lungs. • As PaCO2 increases, the blood becomes more acidic and the pH decreases. • As PaCO2 decreases, the blood becomes less acidic and the pH increases.	35-45 mmHg	<25 mmHg >60 mmHg
HCO3	• Bicarbonate level in the blood. • HCO3 is a base managed by the kidneys. • As HCO3 increases, the blood becomes more alkaline and the pH increases. • As HCO3 decreases, the blood becomes more acidic and the pH decreases.	22-26 mEq/L	<10 mEq/L >40 mEq/L
SaO2	• Oxygen saturation in the blood.	95-100%	<88%

Video Review of Acid-Base Balance[3]

Interpreting Arterial Blood Gases

After the ABG results are received, it is important to understand how to interpret them. A variety of respiratory, metabolic, electrolyte, or circulatory problems can cause acid-base imbalances. Correct interpretation also helps the nurse and other health care providers determine the appropriate treatment and evaluate the effectiveness of interventions.

Arterial blood gasses can be interpreted as one of four conditions: respiratory acidosis, respiratory alkalosis, metabolic acidosis, or metabolic alkalosis. Once this interpretation is made, conditions can further be classified as compensated, partially compensated, or uncompensated. A simple way to remember how to interpret ABGs is by using the ROME method of interpretation, which stands for **R**espiratory **O**pposite, **M**etabolic **E**qual. This means that the respiratory component (PaCO2) moves in the opposite direction of the pH if the respiratory system is causing the imbalance. If the metabolic system is causing the imbalance, the metabolic component (HCO3) moves in the same direction as the pH. Some nurses find the Tic-Tac-Toe method of interpretation helpful. If you would like to learn more about this method, click on the hyperlink below to view a video.

Review of Tic-Tac-Toe Method of ABG Interpretation[4]

Respiratory Acidosis

Respiratory acidosis develops when carbon dioxide (CO2) builds up in the body (referred to as **hypercapnia**), causing the blood to become increasingly acidic. Respiratory acidosis is identified when reviewing ABGs and the pH level is below 7.35 and the PaCO2 level is above 45, indicating the cause of the acidosis is respiratory. Note that in respiratory acidosis, as the PaCO2 level increases, the pH level decreases. Respiratory acidosis is typically caused by a medical condition that decreases the exchange of oxygen and carbon dioxide at the alveolar level, such as an acute asthma exacerbation, chronic obstructive pulmonary disease (COPD), or an acute heart failure exacerbation causing pulmonary edema. It can also be caused by decreased ventilation from anesthesia, alcohol, or administration of medications such as opioids and sedatives.

Chronic respiratory diseases, such as COPD, often cause chronic respiratory acidosis that is fully compensated by the kidneys retaining HCO3. Because the carbon dioxide levels build up over time, the body adapts to elevated PaCO2 levels so they are better tolerated. However, in acute respiratory acidosis, the body has not had time to adapt to elevated carbon dioxide levels, causing mental status changes associated with hypercapnia. Acute respiratory acidosis is caused by acute respiratory conditions, such as an asthma attack or heart failure exacerbation with pulmonary edema when the lungs suddenly are not able to ventilate adequately. As breathing slows and respirations become shallow, less CO2 is excreted by the lungs and PaCO2 levels quickly rise.

Signs of symptoms of hypercapnia vary depending upon the level and rate of CO2 accumulation in arterial blood:

- Patients with mild to moderate hypercapnia may be anxious and/or complain of mild dyspnea, daytime sluggishness, headaches, or hypersomnolence.
- Patients with higher levels of CO2 or rapidly developing hypercapnia develop delirium, paranoia, depression, and confusion that can progress to seizures and coma as levels continue to rise.

Individuals with normal lung function typically exhibit a depressed level of consciousness when the PaCO2 is greater than 75 to 80 mmHg, whereas patients with chronic hypercapnia may not develop symptoms until the PaCO2 rises above 90 to 100 mmHg.[5]

When a patient demonstrates signs of potential hypercapnia, the nurse should assess airway, breathing, and circulation. Urgent assistance should be sought, especially if the patient is in respiratory distress. The provider will order an ABG and prescribe treatments based on assessment findings and potential causes. Treatment for respiratory acidosis typically involves improving ventilation and respiration by removing airway restrictions, reversing oversedation, administering nebulizer treatments, or increasing the rate and depth of respiration by using a BiPAP or CPAP devices. BiPAP and CPAP devices provide noninvasive positive pressure ventilation to increase the depth of respirations, remove carbon dioxide, and oxygenate the patient. If these noninvasive interventions are not successful, the patient is intubated and placed on mechanical ventilation.[6],[7]

Note

Read more details about oxygenation equipment in "Oxygen Therapy" in Open RN *Nursing Skills*.

Respiratory Alkalosis

Respiratory alkalosis develops when the body removes too much carbon dioxide through respiration, resulting in increased pH and an alkalotic state. When reviewing ABGs, respiratory alkalosis is identified when pH levels are above 7.45 and the PaCO2 level is below 35. With respiratory alkalosis, notice that as the PaCO2 level decreases, the pH level increases.

Respiratory alkalosis is caused by hyperventilation that can occur due to anxiety, panic attacks, pain, fear, head injuries, or mechanical ventilation. Overdoses of salicylates and other toxins can also cause respiratory alkalosis initially and then often progress to metabolic acidosis in later stages. Acute asthma exacerbations, pulmonary embolisms, or other respiratory disorders can initially cause respiratory alkalosis as the lungs breath faster in an attempt to increase oxygenation, which decreases the PaCO2. After a while, however, these hypoxic disorders cause respiratory acidosis as respiratory muscles tire, breathing slows, and CO2 builds up in the blood.

Patients experiencing respiratory alkalosis often report feelings of shortness of breath, dizziness or light-headedness, chest pain or tightness, paresthesias, and palpitations as a result of decreased carbon dioxide levels.[8] Respiratory alkalosis is not fatal, but it is important to recognize that underlying conditions such as an asthma exacerbation or pulmonary embolism can be life-threatening, so treatment of these underlying conditions is essential. As the pH level increases, the kidneys will attempt to compensate for the shortage of H+ ions by reabsorbing HCO3 before it can be excreted in the urine. This is a slow process, so additional treatment may be necessary.

Treatment of respiratory alkalosis involves treating the underlying cause of the hyperventilation. Acute management of patients who are hyperventilating should focus on patient reassurance, an explanation of the symptoms the patient is experiencing, removal of any stressors, and initiation of breathing retraining. Breathing retraining attempts to focus the patient on abdominal (diaphragmatic) breathing. Read more about breathing retraining in the following box.

Breathing Retraining

While sitting or lying supine, the patient should place one hand on their abdomen and the other on the chest, and then be asked to observe which hand moves with greater excursion. In hyperventilating patients, this will almost always be the hand on the chest. Ask the patient to adjust their breathing so that the hand on the abdomen moves with greater excursion and the hand on the chest barely moves at all. Assure the patient that this is hard to learn and will take some practice to fully master. Ask the patient to breathe in slowly over four seconds, pause for a few seconds, and then breathe out over a period of eight seconds. After 5 to 10 such breathing cycles, the patient should begin to feel a sense of calmness with a reduction in anxiety and an improvement in hyperventilation. Symptoms should ideally resolve with continuation of this breathing exercise.

If the breathing retraining technique is not successful in resolving a hyperventilation episode and severe symptoms persist, the patient may be prescribed a small dose of a short-acting benzodiazepine (e.g., lorazepam 0.5 to 1 mg orally or 0.5 to 1 mg intravenously). Current research indicates that instructing patients who are hyperventilating to rebreathe carbon dioxide (CO2) by

breathing into a paper bag can cause significant hypoxemia with significant complications, so this intervention is no longer recommended. If rebreathing is used, oxygen saturation levels should be continuously monitored.[9]

Metabolic Acidosis

Metabolic acidosis occurs when there is an accumulation of acids (hydrogen ions) and not enough bases (HCO3) in the body. Under normal conditions, the kidneys work to excrete acids through urine and neutralize excess acids by increasing bicarbonate (HCO3) reabsorption from the urine to maintain a normal pH. When the kidneys are not able to perform this buffering function to the level required to excrete and neutralize the excess acid, metabolic acidosis results.

Metabolic acidosis is characterized by a pH level below 7.35 and an HCO3 level below 22 when reviewing ABGs. It is important to notice that both the pH and HCO3 decrease with metabolic acidosis (i.e., the pH and HCO3 move in the same downward direction). A common cause of metabolic acidosis is diabetic ketoacidosis, where acids called ketones build up in the blood when blood sugar is extremely elevated. Another common cause of metabolic acidosis in hospitalized patients is lactic acidosis, which can be caused by impaired tissue oxygenation. Metabolic acidosis can also be caused by increased loss of bicarbonate due to severe diarrhea or from renal disease that causes decreased acid elimination. Additionally, toxins such as salicylate excess can cause metabolic acidosis.[10]

Nurses may first suspect that a patient has metabolic acidosis due to rapid breathing that occurs as the lungs try to remove excess CO2 in an attempt to resolve the acidosis. Other symptoms of metabolic acidosis include confusion, decreased level of consciousness, hypotension, and electrolyte disturbances that can progress to circulatory collapse and death if not treated promptly. It is important to quickly notify the provider of suspected metabolic acidosis so that an ABG can be drawn and treatment prescribed (based on the cause of the metabolic acidosis) to allow acid levels to improve. Treatment includes IV fluids to improve hydration status, glucose management, and circulatory support. When pH drops below 7.1, IV sodium bicarbonate is often prescribed to help neutralize the acids in the blood.[11],[12]

Metabolic Alkalosis

Metabolic alkalosis occurs when there is too much bicarbonate (HCO3) in the body or an excessive loss of acid (H+ ions). Metabolic alkalosis is defined by a pH above 7.45 and an HCO3 level above 26 on ABG results. Note that both pH and HCO3 are elevated in metabolic alkalosis.

Metabolic alkalosis can be caused by gastrointestinal loss of hydrogen ions, excessive urine loss, excessive levels of bicarbonate, or a shift of hydrogen ions from the bloodstream into cells.

Prolonged vomiting or nasogastric suctioning can also cause metabolic alkalosis. Gastric secretions have high levels of hydrogen ions (H+), so as acid is lost, the pH level of the bloodstream increases.

Excessive urinary loss (due to diuretics or excessive mineralocorticoids) can cause metabolic alkalosis due to loss of hydrogen ions in the urine. Intravenous administration of sodium bicarbonate can also cause metabolic alkalosis due to increased levels of bases introduced into the body. Although it was once thought that excessive intake of calcium antacids could cause metabolic alkalosis, it has been found that this only occurs if they are administered concurrently with Kayexelate.[13]

Hydrogen ions may shift into cells due to hypokalemia, causing metabolic alkalosis. When hypokalemia occurs (i.e., low levels of potassium in the bloodstream), potassium shifts out of cells and into the bloodstream in an attempt to maintain a normal level of serum potassium for optimal cardiac function. However, as the potassium (K+) molecules move out of the cells, hydrogen (H+) ions then move into the cells from the bloodstream to maintain electrical neutrality. This transfer of ions causes the pH in the bloodstream to drop, causing metabolic alkalosis.[14]

A nurse may first suspect that a patient has metabolic alkalosis due to a decreased respiratory rate (as the lungs try to retain additional CO2 to increase the acidity of the blood and resolve the alkalosis). The patient may also be confused due to the altered pH level. The nurse should report signs of suspected metabolic alkalosis because uncorrected metabolic alkalosis can result in hypotension and cardiac dysfunction.[15]

Treatment is prescribed based on the ABG results and the suspected cause. For example, treat the cause of the vomiting, stop the gastrointestinal suctioning, or stop the administration of diuretics. If hypokalemia is present, it should be treated. If bicarbonate is being administered, it should be stopped. Patients with kidney disease may require dialysis.[16]

Analyzing ABG Results

Now that we've discussed the differences between the various acid-base imbalances, let's review the steps to systematically interpret ABG results. Table 15.5b outlines the steps of ABG interpretation.

Table 15.5b Analyzing ABG Results[17],[18]

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Step	Action
Step 1: pH (normal 7.35-7.45)	If pH is out of range, determine if it is acidosis or alkalosis: • pH <7.35 is acidosis. • pH >7.45 is alkalosis.

Step 2: PaCO2 (normal 35-45 mmHg)	• Is the PaCO2 normal?
	  ◦ PaCO2 <35 is considered alkalotic.
	  ◦ PaCO2 >45 is considered acidotic.
	• If the PaCO2 is abnormal, determine if this is caused by a respiratory problem. Recall that if the imbalance is caused by a respiratory problem, the PaCO2 moves in the opposite direction of the pH:
	  ◦ If the pH is <7.35 (acidosis) and the PaCO2 is >45 (acidotic), this is respiratory acidosis.
	  ◦ If the pH is >7.45 (alkalosis) and the PaCO2 is <35 (alkalotic), this is respiratory alkalosis.
	**If the imbalance does not appear to be caused by a respiratory problem, move on to evaluate the HCO3.

Step 3: HCO3 (normal 22-26)	• Is the HCO3 normal?
	  ◦ HCO3 <22 is considered acidotic.
	  ◦ HCO3 >26 is considered alkalotic.
	• If the HCO3 is abnormal, determine if this caused by a metabolic problem. Recall that the HCO3 moves in the same direction as the pH if the imbalance is caused by a metabolic problem:
	  ◦ If pH is <7.35 (acidosis) and the HCO3 is <22 (acidotic), this is metabolic acidosis.
	  ◦ If the pH is >7.45 (alkalosis) and the HCO3 is >26 (alkalotic), this is metabolic alkalosis.

Step 4: Determine level of compensation	After determining the cause of the pH imbalance, determine if compensation is occurring.
	• **Fully compensated** = the body has fixed the imbalance by bringing the pH back to normal:
	  ◦ pH is normal (7.35-7.45).
	  ◦ PaCO2 and HCO3 are both out of range.
	  ◦ The cause of the disorder is out of range, and the other value is significantly out of range indicating compensation is occurring.
	  ◦ Recall the respiratory rate quickly compensates for metabolic disorders, and the kidneys take longer to compensate for respiratory disorders.
	• **Partially compensated** = the body is working to fix the imbalance but hasn't yet brought the pH back to normal:
	  ◦ pH is abnormal (<7.35 or >7.45).
	  ◦ PaCO2 and HCO3 are abnormal.
	  ◦ The CAUSE of the disorder is out of range and the other value is moving out of range, indicating compensation is occurring.
	• **Uncompensated** = the body is not yet working to bring the pH back to normal:
	  ◦ pH is abnormal (<7.35 or >7.45)

Step	Action
	○ PaCO2 or HCO3 is abnormal, but not both. ○ The CAUSE of the disorder is out of range but the other value is not yet out of range, indicating compensation is not yet occurring.

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14.6: Applying the Nursing Process

The nursing process is used continuously when caring for individuals who have fluid, electrolyte, or acid-base imbalances, or at risk for developing them, because their condition can change rapidly. This systematic approach to nursing care ensures that subtle cues or changes are not overlooked and that appropriate outcomes and interventions are implemented according to the patient's current condition.

Assessment

A thorough assessment provides valuable information about a patient's current fluid, electrolyte, and acid-base balance, as well as risk factors for developing imbalances. Performing a chart review or focused health history is a good place to start collecting data, with any identified gaps or discrepancies verified during the physical assessment. It is also important to consider pertinent life span or cultural considerations that impact a patient's fluid and electrolyte status.

Subjective Assessment

Subjective assessment data is information obtained from the patient as a primary source or family members or friends as a secondary source. This information must be obtained by interviewing the patient or someone accompanying the patient. Some of this information can be obtained through a chart review, but should be verified with the patient or family member for accuracy.

Subjective data to obtain includes age; history of chronic disease, surgeries, or traumas; dietary intake; activity level; prescribed medications and compliance with taking medications; pain; and bowel and bladder functioning. Subjective assessment data is helpful to determine normal pattern identification and risk identification. For example, a history of kidney disease or heart failure places the patient at risk for fluid volume excess, whereas diuretic use places the patient at risk for fluid volume deficit and electrolyte and acid-base imbalances. A history of diabetes mellitus also places a patient at risk for fluid, electrolyte, and acid-base imbalances. Recognizing these risks helps nurses be prepared for complications that may arise and allows the nurse to recognize subtle cues as problems develop.

Objective Assessment

Objective assessment data is information that the nurse directly observes. This data is obtained through a physical examination using inspection, auscultation, and palpation. A complete head-to-toe assessment should be performed to avoid missing clues to the patient's condition.

Focused assessments such as trends in weight, 24-hour intake and output, vital signs, pulses, lung sounds, skin, and mental status are used to determine fluid balance, electrolyte, and acid-base status.

- Accurate daily weights can provide important clues to fluid balance. Weights must be taken on the same scale, at the same time of day, with the patient wearing similar clothing in order to be accurate. A one kilogram change in weight in 24 hours is considered significant because this represents a one liter fluid gain or loss and should be reported to the provider.
- Accurate measurement of 24-hour intake and output helps validate weight findings. Averaged urine output of less than 30 mL/hour or 0.5mL/hr/kg of concentrated urine should be reported to the provider.
- Vital signs should be analyzed. An elevated blood pressure and bounding pulses are often seen with fluid volume excess. Decreased blood pressure with an elevated heart rate and a weak or thready pulse are hallmark signs of fluid volume deficit. Systolic blood pressure less than 100 mm Hg in adults, unless other parameters are provided, should be reported to the health care provider.
- Lung crackles can signify fluid volume excess and are often first auscultated in the lower posterior lung fields.
- Tight, edematous, shiny skin indicates fluid volume excess. See Figure 15.15[1] for an image of edema. Conversely, skin tenting, dry mucous membranes, or dry skin indicate fluid volume deficit.
- New mental status changes such as confusion or decreased level of consciousness can indicate fluid, electrolyte, or acid-base imbalance, especially hypo- or hypernatremia, acid-base imbalances, or fluid volume deficit.
- Cardiac arrhythmias can be seen with acid-base imbalances and electrolyte imbalances, especially with hypo- or hyperkalemia and alkalosis. See Table 15.6a for a comparison of expected and unexpected findings and those that require notification of a health care provider.

Figure 15.15 Edema

Table 15.6a Expected Findings Versus Unexpected Findings Indicating a Fluid Imbalance[2]

Assessment	Expected Findings	Unexpected Findings Indicating Excessive Fluid Volume *Bolded items are critical conditions that require immediate health care provider notification.	Unexpected Findings Indicating Deficient Fluid Volume
Vital signs	Blood pressure, heart rate, and oxygen saturation levels within normal limits	**Elevated blood pressure, increased respiratory rate,** or **decreased oxygen saturation**	**Decreased blood pressure** or **elevated heart rate**
Neurological	Alert and oriented	Headache	Headache, **confusion, decreased level of consciousness, dizziness,** or weakness
Cardiac	Normal heart rate and rhythm, capillary refill <3 seconds, and normal pulses	Bounding pulses, **S3 heart sound,** or **jugular venous distention**	Weak, thready pulses; sluggish capillary refill; or chest pain
Respiratory	Clear lung sounds throughout, normal respiratory rate, and no shortness of breath	**Crackles in lung fields, pink frothy sputum, shortness of breath,** or **respiratory distress**	Shortness of breath possible
Gastrointestinal	Bowel sounds present x4 quadrants and normal stool consistency and frequency for patient		Constipation with dry, hard stools
Urinary	Clear urine, normal urine specific gravity, and urine output greater than 30 ml/hr	**Decreased urine output <30 mL/hr** or **< 0.5 mL/kg/hr concentrated urine**	**Decreased urine output <30 mL/hr** or **<0.5 mL/kg/hr concentrated urine**, or elevated urine specific gravity
Integumentary	Normal skin turgor and moist mucous membranes	Tight, edematous, or shiny skin	Tenting (poor skin turgor); dry, sticky mucous membranes; or dry skin
Weight	<1kg change in weight over 24 hours	>1kg increase over 24 hours	>1kg decrease over 24 hours

Note

Review additional details about assessing these body systems in Open RN *Nursing Skills*.

Diagnostic and Lab Work

Diagnostic tests and lab work provide important information about fluid status, electrolyte, and acid-base balance and should be used in conjunction with a thorough subjective and objective assessment to form a complete picture of the patient's overall status. It is important to cluster diagnostic and lab assessment data with subjective and objective assessment data to ensure a complete assessment picture. This will help ensure correct information is reported to the provider as necessary.

Lab work provides important clues to overall fluid status. Common lab tests used to evaluate fluid status include serum osmolarity, urine specific gravity, hematocrit, and blood urea nitrogen (BUN).

Serum osmolarity (often interchanged with the term serum osmolality) measures the concentration of particles in the blood with a normal range of 275 to 295 mmol/kg). Normal value ranges may vary slightly among different laboratories. In healthy people, when serum osmolality in the blood becomes high, the body releases antidiuretic hormone (ADH). This hormone causes the kidneys to reabsorb water, resulting in dilution of the blood and the return of serum osmolarity to normal range. An elevated serum osmolarity level means the blood is more concentrated than normal and often indicates deficient fluid volume deficit. A decreased serum osmolarity means the blood is more dilute than normal and may indicate a fluid volume excess.[3]

Urine osmolarity measures the concentration of particles in the urine. An increased urine osmolarity result means the urine is concentrated and can indicate fluid volume deficit. A decreased urine osmolarity result means the urine is dilute and can indicate excess fluid intake.[4] **Urine specific gravity** is a urine test that commonly measures hydration status by measuring the concentration of particles in urine. Normal urine specific gravity levels are between 1.010 and 1.020. A urine specific gravity above 1.020 indicates concentrated urine and can indicate a fluid volume deficit, similarly to an elevated urine osmolarity. A urine specific gravity below 1.010 indicates dilute urine, which can occur with excessive fluid intake.[5]

When a condition called "*Excessive Fluid Volume*" occurs, altered physiological mechanisms impact the kidney's ability to increase urine output to eliminate excessive fluid volume, causing urine output to decrease. As a result, the serum osmolarity decreases as fluid is retained but the urine specific gravity is elevated because urine is concentrated.

Hematocrit (HCT) is a blood test that measures how much of your blood is made up of red blood cells compared to the liquid component of blood called plasma. It is often part of a complete blood count (CBC), a routine test that measures different components of your blood. The normal hematocrit for men is 42 to 52%; for women it is 37 to 47%, but these ranges may vary slightly across labs.

In addition to measuring red blood cells, hematocrit levels can also be used to evaluate fluid balance. When deficient fluid volume is occurring, the plasma component of the blood also decreases, causing an elevated concentration of red blood cells (and an elevated hematocrit). In this case, drinking more fluid or receiving intravenous fluids will bring the hematocrit level back to normal range. Conversely, if a patient is experiencing "*Excessive Fluid Volume*," the plasma component of the blood is increased, causing dilution of the red blood cells and a decreased hematocrit level.[6],[7] See Figure 15.16[8] for an illustration of normal hematocrit, elevated hematocrit, and decreased hematocrit due to fluid imbalance.

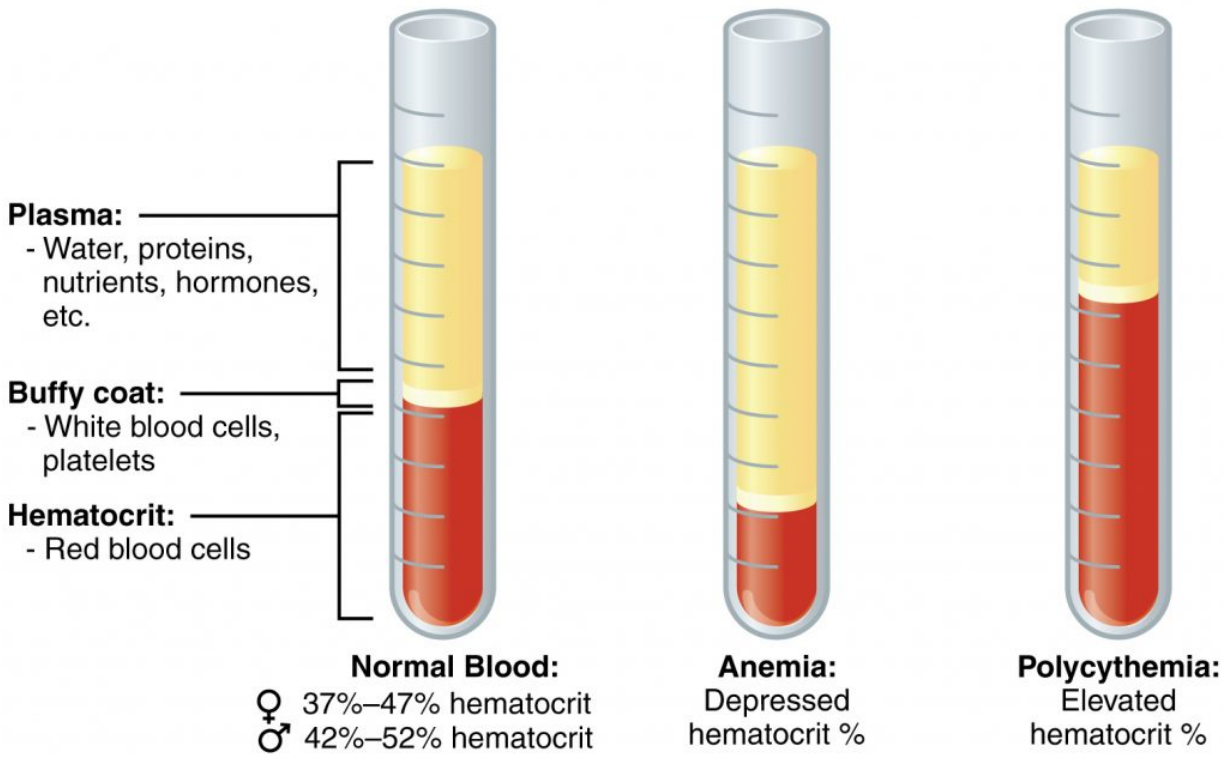

Figure 15.16 Effects of Fluid Imbalance on Hematocrit

Blood Urea Nitrogen (BUN) measures the amount of urea nitrogen in your blood. BUN and serum creatinine levels are used to evaluate kidney function, with increased levels indicating worsening kidney function. In general, the normal BUN range is 7 to 20 mg/dL, but normal ranges vary depending on the reference range used by the lab and the patient's age. Patients with "*Deficient Fluid Volume*" can also have elevated BUN levels for the same reason that hematocrit is affected; as plasma levels decrease, the blood becomes more concentrated.

In addition to monitoring lab work for results indicating fluid imbalance, electrolytes, specifically sodium, potassium, calcium, phosphorus, and magnesium, should be monitored closely for patients at risk. Refer to Table 15.4 in the "Electrolytes" section for an overview of electrolyte imbalances, common symptoms, and common treatments.

Additional diagnostic tests used to evaluate for signs of fluid and electrolyte imbalances are the chest X-ray and the electrocardiogram. A chest X-ray evaluates for fluid in the lungs, a common complication of excessive fluid volume. An electrocardiogram (ECG) evaluates for cardiac complications resulting from electrolyte imbalances.

Arterial blood gases are used to closely monitor critically ill patients, such as patients in diabetic ketoacidosis or in severe respiratory distress. ABG results provide important clues about respiratory status, oxygenation, and metabolic processes occurring in the body. See Table 15.6b for a summary of laboratory findings associated with fluid, electrolyte, and acid-base imbalances.

Table 15.6b Lab Values Associated with Fluid and Electrolyte Imbalances

Lab Value	Normal Ranges
Serum osmolarity	275 to 295 mmol/kg
Urine Specific Gravity	1.010 and 1.020
Hematocrit	Men: 42 to 52% Women: 37 to 47%
BUN	7 to 20 mg/dL
Serum sodium	135-150 mEq/L
Serum potassium	3.5-5 mEq/L
Serum magnesium	1.5-2.4 mEq/L
Serum calcium	8.5-10.3 mg/dL
Serum phosphorus	2.5-4 mg/dL
ABG	pH: 7.35 and 7.45 PaO2: 80-100 mm Hg HCO3: 22-26 mEq/L PaO2: 35-45 mm Hg

Life Span Considerations

There are several life span considerations when assessing for fluid, electrolyte, and acid-base balance.

Newborns and Infants

Newborns and infants have a large proportion of water weight compared to adults, with approximately 75% of weight being water. During the first week after birth, extracellular fluid is lost in urine along with sodium. Additionally, compensatory mechanisms such as the Renin-Angiotensin-Aldosterone System are less developed, and newborn kidneys are less able to concentrate urine, resulting in a decreased ability to retain sodium. Newborns and infants also have a greater body surface area, making them more susceptible to insensible fluid losses through the skin and lungs via evaporation. This causes increased risk of developing

hyponatremia and fluid volume deficit. In contrast, newborns are less able to excrete potassium, placing them at risk for hyperkalemia.[9] Episodes of vomiting and diarrhea also place infants at an increased risk of quickly developing fluid and electrolyte disturbances.

When monitoring urine output in infants, parents are often asked about the number of wet diapers in a day. Nurses may also weigh diapers for hospitalized infants for more accurate measurement of urine output.

Children and Adolescents

Children and adolescents are at risk for dehydration when physically active in hot environments causing excessive sweating. Illnesses causing diarrhea, vomiting, or fever can also quickly cause fluid deficit if there is little fluid intake to replace the water and sodium lost. For this reason, it is important to educate parents regarding the importance of fluid intake when their child is sweating or ill.[10]

Older Adults

Older adults are at risk for fluid and electrolyte imbalances for a variety of reasons, including surgery, chronic diseases such as heart and kidney disease, diuretic use, and decreased mobility that limits the ability to obtain hydration. They also have a decreased thirst reflex, which contributes to decreased fluid consumption. Kidney function naturally decreases with age, resulting in decreased sodium and water retention, as well as decreased potassium excretion. These factors place older patients at risk for fluid volume deficit and electrolyte abnormalities.[11]

Diagnoses

There are many nursing diagnoses applicable to fluid, electrolyte, and acid-base imbalances. Review a nursing care planning resource for current NANDA-I approved nursing diagnoses, related factors, and defining characteristics. See Table 15.6c for commonly used NANDA-I diagnoses associated with patients with fluid and electrolyte imbalances.[12]

Table 15.6c Common NANDA-I Nursing Diagnoses Related to Fluid and Electrolyte Imbalances[13]

NANDA-I Diagnosis	Definition	Defining Characteristics
Excess Fluid Volume	Surplus intake and/or retention of fluid.	Adventitious breath sounds Elevated blood pressure Altered mental status Anxiety Decreased hematocrit, serum osmolarity, and BUN Dyspnea Edema Fluid intake exceeds output Jugular vein distension Restlessness Weight gain >1 kg/24 hours
Deficient Fluid Volume	Decreased intravascular, interstitial, and/or intracellular fluid. This refers to dehydration, water loss alone without change in sodium.	Altered mental status Decreased skin turgor Decreased blood pressure Decreased urine output Dry skin and mucous membranes Increased heart rate Increased serum osmolarity, hematocrit, and BUN Increased urine concentration Sudden weight loss Thirst Weakness
Risk for Imbalanced Fluid Volume	Susceptible to a decrease, increase, or rapid shift from one to the other of intravascular, interstitial, and/or intracellular fluid, which may compromise health. This refers to body fluid loss, gain, or both.	Diarrhea Vomiting Excessive fluid volume Insufficient fluid volume
Risk for Electrolyte Imbalance	Susceptible to changes in serum electrolyte levels, which may compromise health.	Diarrhea Vomiting Excessive fluid volume Insufficient fluid volume

Excess Fluid Volume Example

A patient with heart failure has been hospitalized with an acute exacerbation with dyspnea and increased edema in the lower extremities. A sample PES statement is, *"Fluid Volume Excess related to a compromised regulatory mechanism as evidenced by edema, crackles in lower posterior lungs, and weight gain of 2 kg in 24 hours."*

Deficient Fluid Volume Example

An elderly patient develops severe diarrhea due to food poisoning and is admitted to the hospital with dehydration. A sample PES statement is, *"Deficient Fluid Volume related to insufficient fluid intake as evidenced by blood pressure 90/60, dry mucous membranes, decreased urine output, and an increase in hematocrit."*

Risk for Imbalanced Fluid Volume Example

A patient who is ten weeks pregnant has developed severe vomiting due to severe morning sickness. A sample PES statement is, *"Risk for Imbalanced Fluid Volume as evidenced by vomiting."* The nurse plans to educate the patient about tips to stay hydrated despite vomiting, as well as when to contact the provider if signs of dehydration develop.

Risk for Electrolyte Imbalance Example

A patient with chronic kidney disease is prescribed a diuretic to control fluid retention. A sample PES statement is, *"Risk for Electrolyte Imbalance as evidenced by insufficient knowledge of modifiable factors."* The nurse plans to educate the patient about signs and symptoms of fluid and electrolyte imbalance and when to contact the provider.

Note: Recall that risk diagnoses do not contain related factors in PES statements because a vulnerability for a potential problem is being identified for the patient. Instead, the phrase "as evidenced by" is used to refer to the evidence of risk that exists. Read more about formulating PES statements in the "Nursing Process" chapter.

Outcome Identification

Goals for a patient experiencing fluid, electrolyte, or acid-base imbalances depend on the chosen nursing diagnosis and specific patient situation. Typically, goals should relate to resolution of the imbalance. For example, if the nursing diagnosis is *Excess Fluid Volume*, then an appropriate goal would pertain to resolution of the fluid volume excess. Remember that goals are broad and outcomes should be narrowly focused and written in SMART format (Specific, Measurable, Achievable, Realistic, and Time Oriented).

For the nursing diagnosis of *Excess Fluid Volume*, an overall goal is, *"Patient will achieve fluid balance."* Fluid balance for a patient with *Excess Fluid Volume* is indicated by body weight returning to baseline with no peripheral edema, neck vein distention, or adventitious breath sounds.[14] An example of a SMART outcome is, *"The patient will maintain clear lung sounds with no evidence of dyspnea over the next 24 hours."*

For patients experiencing *Electrolyte Imbalances*, an appropriate goal is, *"Patient will maintain serum sodium, potassium, calcium, phosphorus, magnesium, and/or pH levels within normal range."* An additional goal is, *"The patient will maintain a normal sinus heart rhythm with regular rate,"* because many electrolyte imbalances impact the electrical conduction system of the heart and this is a life-threatening complication.

Planning Interventions

Evidence-based interventions should be planned according to the patient's history and specific fluid, electrolyte, or acid-base imbalance present. Refer to a nursing care planning resource for evidence-based interventions for specific nursing diagnoses. Table 15.6d lists selected interventions for key imbalances.[15],[16],[17],[18]

Table 15.6d Interventions for Imbalances

Nursing Diagnosis	Interventions
Excessive Fluid Volume	• Administer prescribed diuretics to eliminate excess fluid as appropriate and monitor for effect. Monitor for side effects of diuretics such as orthostatic hypotension and electrolyte imbalances. • Position the patient with the head of the bed elevated to facilitate respiratory function as needed. • Implement fluid restrictions if ordered. For comfort, provide ice chips as appropriate. • Assist in diet choices to reduce sodium intake. • Monitor weight and notify the provider for weight gain > 1 kg in 24 hours. • Accurately measure and monitor fluid intake and output, as ordered. Notify provider for urine output less than 30 mL/hour or 0.5mL/kg/hour or as ordered. • Monitor blood pressure, heart rate, respiratory rate, and pulse oximeter. Monitor lungs sounds for new or worsening crackles. Notify the provider of new abnormal findings. • Monitor for worsening edema and notify the provider as indicated. • Monitor for jugular vein distension with the head of bed elevated 30 to 45 degrees. • Monitor the patient for restlessness, anxiety, or confusion. Implement safety precautions if present. Notify the provider of new or worsening findings. • If edema is present in the extremities, provide care such as elevation and compression, and reposition to prevent skin breakdown. • Monitor lab results relevant to fluid status such as serum osmolarity, urine specific gravity, hematocrit, and BUN. • Educate the patient and family members about medications, fluid restrictions, sodium restrictions, and monitoring at home for sudden weight changes, worsening edema, or worsening dyspnea.
Deficient Fluid Volume	• Encourage oral fluid intake, as tolerated. Provide fluids the patient prefers within easy reach. • Minimize intake drinks with diuretic or laxative effects (e.g., coffee, tea, alcohol, prune juice). • Administer IV fluids as ordered and monitor the patient's response. Generally, isotonic fluids are ordered for hydration. Monitor for the potential development of excessive fluid volume. • Monitor weight and watch for sudden decreases, especially in the presence of decreased urine output. • Monitor total fluid intake and output every four hours. Report urine output equal or less than 30 mL/hour or 0.5 mL/kg/hour to the provider because this may indicate kidney injury in addition to deficient fluid volume. • Monitor pulse, respirations, and blood pressure every 15 minutes to one hour for unstable patients and every 4 hours for stable patients.

	• Recognize and report signs of impending hypovolemic shock, including elevated pulse and respirations; decreased blood pressure below baseline; cold, clammy skin; weak, thready pulse; and confusion. Patients progressing towards hypovolemic shock require emergent care. • Check orthostatic blood pressures with the patient lying and standing. To perform this procedure, have the patient lie down for 5 minutes. Measure blood pressure (BP) and pulse rate. Have the patient stand. Repeat the BP and pulse rate measurements after standing 1 and 3 minutes. A decrease in systolic blood pressure ≥ 20 mm Hg or a decrease in diastolic blood pressure ≥ 10 mm Hg, or if the patient reports feeling light-headed or dizzy, is considered abnormal.[19] Orthostatic hypotension should be reported to the provider and safety measures implemented to prevent falls. • Recognize and address factors contributing to deficient fluid volume, such as diarrhea, vomiting, fever, diuretic therapy, or uncontrolled diabetes mellitus. Administer medications such as antidiarrheals and antiemetics as appropriate. • Monitor lab results relevant to fluid status such as serum osmolarity, urine specific gravity, hematocrit, and BUN. • Educate the patient and family members about signs of dehydration to watch for at home. Remind older adults that thirst sensation often decreases with age.
Risk for Electrolyte Imbalance	• Monitor mental status, vital signs, and heart rhythm at least every 8 hours or more frequently as needed. Electrolyte imbalances can cause confusion, cardiac dysrhythmias, muscle weakness, edema, and respiratory failure. • Review associated laboratory results and report abnormal findings to the provider. • Review the patient's medical record for possible causes of altered electrolyte levels, such as diuretics, kidney disease, gastrointestinal fluid loss, drainage from wounds or burns, and excessive perspiration. Address potential causes with the provider. • Administer PO and IV electrolyte supplements as ordered for deficiencies. • Limit dietary intake of specific electrolyte excesses. • Administer electrolyte-binding medications, such as Kayexalate for hyperkalemia, as prescribed. • Administer IV fluids to promote renal excretion of excess electrolyte levels, as prescribed. • Educate the patient and family members about dietary choices corresponding to the specific electrolyte imbalance. Provide information about monitoring for potential electrolyte imbalances at home resulting from their medications.

Note

Read more about medications affecting fluid and electrolyte balance, such as diuretics, in the "Cardiovascular and Renal System" chapter in Open RN *Nursing Pharmacology*.

> Read about intravenous fluids used to treat *Fluid Volume Deficit* in the "IV Therapy Management" chapter in Open RN *Nursing Skills*.

Implement Interventions Safely

Patients with fluid and electrolyte imbalances can quickly move from one imbalance to another based on treatments received. It is vital to reassess a patient before implementing interventions to ensure current status warrants the prescribed intervention. For example, a patient admitted with *Fluid Volume Deficit* received intravenous fluids (IV) over the past 24 hours. When the nurse prepares to administer the next bag of IV fluids, she notices the patient has developed pitting edema in his lower extremities. She listens to his lungs and discovers crackles. The nurse notifies the prescribing provider, and the order for intravenous fluids is discontinued and a new order for diuretic medication is received.

Therefore, assessments for new or worsening imbalances should be performed prior to implementing interventions:[20]

- Monitor daily weights for sudden changes. A weight change of greater than 1 kg in 24 hours (using the same scale and type of clothing) should be reported to the provider.
- Monitor location and extent of edema using the 1+ to 4+ scale to quantify edema.
- Monitor intake and output over a 24-hour period; note trends of decreasing urine output in relation to fluid intake indicating potential development of *Fluid Volume Excess*.
- Monitor lab work such as serum osmolarity, serum sodium, BUN, and hematocrit for abnormalities. (For example, a patient receiving IV fluids may develop *Fluid Volume Excess*, resulting in decreased levels of serum osmolarity, serum sodium, BUN, and hematocrit. Conversely, a patient receiving IV diuretics can quickly become dehydrated, resulting in elevated levels of serum osmolarity, serum sodium, BUN, and hematocrit.)
- For patients receiving intravenous fluids, monitor for the development of excessive fluid volume. Monitor lung sounds for crackles and ask about the presence of dyspnea. Report new abnormal findings to the provider.
- For patients receiving diuretic therapy, monitor for fluid volume deficit and electrolyte imbalances such as hypokalemia and hyponatremia.

Implement fall precautions for patients with orthostatic hypotension, restlessness, anxiety, or confusion related to fluid imbalances.

Evaluation

The effectiveness of interventions implemented to maintain fluid balance must be continuously evaluated. Evaluation helps the nurse determine whether goals and outcomes are met and if interventions are still appropriate for the patient. If outcomes and goals are met, the plan of care can likely be discontinued. If outcomes and goals are not met, they may need to be revised. It is also possible that interventions may need to be added or revised to help the patient meet their goals and outcomes. Table 15.6e provides a list of assessment findings indicating imbalances are improved.

Table 15.6e Evaluating for Improvement of Imbalances

Imbalance	Signs and Symptoms of Improvement
Fluid Volume Excess	Decreased crackles, decreased edema, decreased shortness of breath, and/or improved jugular venous distention
Fluid Volume Deficit	Increased blood pressure, decreased heart rate, normal skin turgor, and/or moist mucous membranes
Electrolyte Imbalances	Electrolyte levels return to normal and/or absence of signs or symptoms of deficit or excess
Acid-Base Imbalance	ABGs return to normal or baseline, resolution of vomiting or diarrhea, and/or no respiratory distress

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14.7: Putting It All Together

Patient Scenario

Mr. Hernandez is a 54-year-old patient admitted to the medical telemetry floor with a diagnosis of heart failure exacerbation. He tells the nurse, “My breathing has gotten worse the past last three days and I have a lot of swelling in my feet.”

Applying the Nursing Process

Assessment: Vital signs at the start of shift were blood pressure 154/94, heart rate 88, respiratory rate 24, and oxygen saturation 88%. On assessment, the nurse finds fine crackles in bilateral posterior lower lung bases, an S3 heart sound, and 2+ pitting edema in bilateral lower extremities midway to the knee. The nurse reviews the patient’s chart and discovers Mr. Hernandez has gained 10 pounds since his previous office visit last week.

Based on the assessment information that has been gathered, the nurse creates the following nursing care plan for Mr. Hernandez:

Nursing Diagnosis: *Excess Fluid Volume related to compromised regulatory mechanism as evidenced by fine crackles in bilateral posterior lung bases, S3 heart sound, weight gain of 10 pounds in the past week, and the patient states, “My breathing has gotten worse the past last three days and I have a lot of swelling in my feet.”*

Overall Goal: *The patient will demonstrate stabilization in fluid volume.*

SMART Expected Outcomes:

- *Mr. Hernandez’s vital signs and weight will return to his baseline in the next 48 hours.*
- *Mr. Hernandez will verbalize three rules of dietary and fluid restriction to follow at home following his educational session.*

Planning and Implementing Nursing Interventions:

The nurse will weigh the patient daily and analyze weight trends and 24-hour intake and output. The nurse will closely monitor lung sounds, respiratory rate, and oxygenation status. The nurse will establish a 24-hour schedule for fluid intake and educate the patient regarding fluid restriction. The nurse will closely monitor lab results, especially sodium and potassium, and monitor for symptoms of fluid shifts. The nurse will provide patient education regarding fluid and sodium restrictions.

Sample Documentation:

The patient was admitted with acute heart failure exacerbation and stated, “My breathing has gotten worse the past last three days and I have a lot of swelling in my feet.” On admission to the unit at 0900, vital signs were blood pressure 154/94, heart rate 88, respiratory rate 24, and oxygen saturation 88%. Fine crackles were present in bilateral posterior lower lung bases, an S3 heart sound was present, and there was 2+ pitting edema in bilateral lower extremities midway to the knee. The chart indicates he has gained 10 pounds since his previous office visit last week. Provider orders and fluid restrictions were implemented. Lab results are within normal ranges. Patient education regarding fluid and sodium restrictions and a handout were provided. At the end of the session, Mr. Hernandez was able to report back three rules of dietary and fluid restrictions to follow at home when discharged.

Evaluation:

By the end of the shift, the second SMART outcome was “met” when Mr. Hernandez was able to report back three rules of dietary and fluid restrictions after the patient education session. The first SMART outcome was not yet met but will be reevaluated every shift for the next 24 hours.

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14.8: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Scenario A[1]

Mr. Smith, a 60-year-old male, was admitted to the general medical floor with a diagnosis of an exacerbation of heart failure. See Figure 15.17 for an image of Mr. Smith.[2] He has a past medical history of hypertension and coronary artery disease. His admitting weight was 225 pounds. His baseline weight from a previous clinic visit was 210 pounds. On admission, he had fine crackles throughout his lower posterior lobes and 4+ pitting edema in his lower extremities. His ABG results on admission were: pH 7.30, PaCO2 50 mmHg, PaO2 80 mm Hg, HCO3- 21 mEq/L, SaO2 85%.

Figure 15.17 Mr. Smith

Questions

1. Interpret Mr. Smith’s ABG results on admission.
2. Explain the likely cause of the ABG results.
3. Create a nursing diagnosis for Mr. Smith’s fluid status in PES format based on his admission data.

Mr. Smith has received multiple doses of IV diuretics over the past three days since admission. During your morning assessment, Mr. Smith tells you he very thirsty and feels dizzy. You notice he is irritable and is becoming increasingly confused. You quickly obtain his vital signs: BP 85/45, HR 110, RR 24/minute, O2 saturation 98% on 2L/min per nasal cannula, and temperature 37.2 degrees Celsius. His lung sounds are clear and his heart sounds are regular sinus rhythm. You notice his weight this morning was 205 pounds. You call the provider and receive orders for STAT Basic Metabolic Panel and to initiate 0.9% Normal Saline IV fluids at 250 mL/hour until the provider arrives to evaluate the patient.

The Basic Metabolic Panel results (with the lab’s normal reference range in parentheses) are:

Sodium: 155 mEq/L (135-145)

Potassium: 3.3 mEq/L (3.5-5.3)

Chloride: 103 mEq/L (98-108)

Carbon dioxide: 25 mEq/L (23-27)

Blood urea nitrogen (BUN): 30 mg/dL (10-25)

Creatinine: 1.9 mg/dL (0.5-1.5)

Glucose: 100 mg/dL (fasting 70-99)

Questions

4. What is Mr. Smith's fluid balance this morning? Support your answer with data.

5. What is the probable cause of his fluid balance?

6. Interpret Mr. Smith's lab results. What are the potential causes of these results?

7. Create a nursing diagnosis statement in PES format for Mr. Smith's current fluid status.

8. Create a new expected outcome in SMART format for Mr. Smith.

9. In addition to providing intravenous fluids, what additional interventions will you implement for Mr. Smith?

10. How will you evaluate if the nursing interventions are effective?

Scenario B[3]

A 74-year-old male, Mr. M., was admitted to the general medical floor during the night shift with a diagnosis of pneumonia. See Figure 15.18 for an image of Mr. M.[4] He has a past medical history of alcohol abuse and coronary artery disease. You are the day shift nurse, and during your morning assessment you notice that Mr. M. becomes increasingly lethargic and is not following commands consistently. You obtain the following vital signs: BP 80/45, HR 110, RR 8 and labored, O2 saturation 80% on 3L per nasal cannula, temperature 38.1 degrees Celsius. His lung sounds reveal coarse crackles throughout, and you notice he is using accessory muscles with breathing. You notify the provider using an SBAR report and receive orders to increase oxygen to 10L per non-rebreather mask.

Figure 15.18 Mr. M.

Lab results are ordered with the following results:

ABGs: pH 7.30, PaCO2 50, PaO2 59, HCO3 24, SaO2 80

Potassium: 5.9 mEq/L

Magnesium: 1.0 mEq/L

Calcium: 10.2 mg/dL

Sodium: 137 mEq/L

Hematocrit: 55%

Serum Osmolarity: 305 mmol/kg

BUN: 30 mg/dL

Urine Specific Gravity: 1.025

Questions:

1. What is Mr. M.'s fluid balance? Provide data supporting the imbalance.
2. What is your interpretation of Mr. M.'s ABGs?
3. What is your interpretation of Mr. M.'s electrolyte studies?

4. Is Mr. M. stable or unstable? Why?
5. For what complications will you monitor?
6. Write an SBAR communication you would have with the health care provider to notify them about Mr. M.'s condition.
7. Create a NANDA-I diagnosis for Mr. M. in PES format.
8. Identify an expected outcome for Mr. M. in SMART format.
9. What interventions will you plan for Mr. M.?
10. How will you evaluate if your interventions are effective?
11. Write a nursing note about Mr. M.'s condition and your actions taken. This can be in the form of a DAR, SOAP, or summary nursing note.

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2. "HF-RTD.JPG" by ARISE project is licensed under CC BY 4.0↵
3. "Hospitalized Male" by ARISE project is licensed under CC BY 4.0↵
4. "Hospitalized Male" by ARISE project is licensed under CC BY 4.0↵

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14.9: XV Glossary

Active transport: Movement of solutes and ions across a cell membrane against a concentration gradient from an area of lower concentration to an area of higher concentration using energy during the process.

Chvostek's sign: An assessment sign of acute hypocalcemia characterized by involuntary facial muscle twitching when the facial nerve is tapped.

Diffusion: The movement of solute particles from an area of higher concentration to an area of lower concentration.

Edema: Swelling caused by excessive interstitial fluid retention.

Extracellular fluids (ECF): Fluids found outside cells in the intravascular or interstitial spaces.

Filtration: Movement of fluids through a permeable membrane utilizing hydrostatic pressure.

Hydrostatic pressure: The pressure that a contained fluid exerts on what is confining it.

Hypercapnia: Elevated levels of retained carbon dioxide in the body.

Hypertonic solution: Intravenous fluids with a higher concentration of dissolved particles than blood plasma.

Hypervolemia: Excess intravascular fluid. Used interchangeably with "excessive fluid volume."

Hypotonic solution: Intravenous fluids with a lower concentration of dissolved particles than blood plasma.

Hypovolemia: Intravascular fluid loss. Used interchangeably with "deficient fluid volume" and "dehydration."

Interstitial fluids: Fluids found between the cells and outside of the vascular system.

Intracellular fluids (ICF): Fluids found inside cells consisting of protein, water, and electrolytes.

Intravascular fluids: Fluids found in the vascular system consisting of the body's arteries, veins, and capillary networks.

Isotonic solution: Intravenous fluids with a similar concentration of dissolved particles as blood plasma.

Oncotic pressure: Pressure inside the vascular compartment created by protein content of the blood (in the form of albumin) that holds water inside the blood vessels.

Osmolality: Proportion of dissolved particles in a specific weight of fluid.

Osmolarity: Proportion of dissolved particles or solutes in a specific volume of fluid.

Osmosis: Movement of fluid through a semipermeable membrane from an area of lesser solute concentration to an area of greater solute concentration.

Passive transport: Movement of fluids or solutes down a concentration gradient where no energy is used during the process.

Renin-Angiotensin-Aldosterone System (RAAS): A body system that regulates extracellular fluids and blood pressure by regulating fluid output and electrolyte excretion.

Trousseau's sign: A sign associated with hypocalcemia that causes a spasm of the hand when a blood pressure cuff is inflated.

Urine specific gravity: A measurement of hydration status that measures the concentration of particles in urine.

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CHAPTER OVERVIEW

15: Elimination

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15.2: Basic Concepts
15.3: Urinary Tract Infection
15.4: Urinary Incontinence
15.5: Urinary Retention
15.6: Constipation
15.7: Diarrhea
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15.1: Elimination Introduction

Learning Objectives

- Assess factors that put a patient at risk for alterations in urinary and bowel elimination
- Identify factors related to alterations in elimination across the life span
- Outline the data that must be collected for identification of alterations in bowel/urine elimination
- Base decisions on the interpretation of basic diagnostic tests of urinary and bowel elimination: urinalysis and occult blood
- Detail the nonpharmacologic measures to promote urinary and bowel elimination
- Identify evidence-based practices

After ingesting food and fluids, our body eliminates waste products through the urinary system and the gastrointestinal system. Nurses provide care for patients with commonly occuring elimination alterations, including urinary tract infections, urinary incontinence, urinary retention, constipation, diarrhea, and bowel incontinence. This chapter will provide an overview of these alterations and the associated nursing care.

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15.2: Basic Concepts

Let’s begin by reviewing the basic anatomy and physiology of the urinary and gastrointestinal systems.

Urinary System

The urinary system, also referred to as the renal system or urinary tract, consists of the kidneys, ureters, bladder, and urethra. The purpose of the urinary system is to eliminate waste from the body, regulate blood volume and blood pressure, control levels of electrolytes and metabolites, and regulate blood pH. The kidneys filter blood in the nephrons and remove waste in the form of urine. Urine exits the kidney via the ureters and enters the urinary bladder, where it is stored until it is expelled by urination (also referred to as voiding).[1] See Figure 16.1[2] for an image of the male urinary system. The female urinary system is similar except for a smaller urethra.

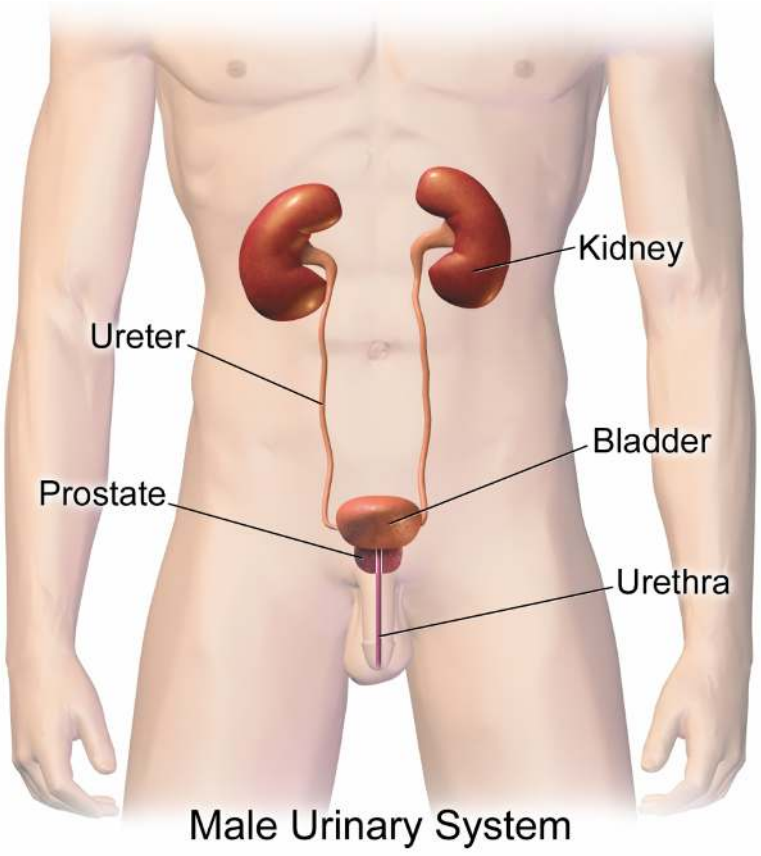

Figure 16.1 Male Urinary System

A healthy adult with normal kidney function produces 800-2,000 mL of urine per day, depending on fluid intake, as well as the amount of fluid lost through sweating and breathing. The bladder typically holds about 360-480 mL of urine. As the bladder fills, it sends signals to the brain that it is time to urinate. The urinary tract includes two sets of muscles that work together as a sphincter, closing off the urethra to keep urine in the bladder until the brain sends signals to urinate. Urination occurs when the brain sends signals to the wall of the bladder to contract and squeeze urine out of the bladder and through the urethra. Frequency of urination depends on how quickly the kidneys produce urine and how much urine a person’s bladder can comfortably hold.[3]

Normal urine should be clear, pale to light yellow in color, and not foul-smelling. However, some foods or medications may change the smell or color of urine. For instance, phenazopyridine (Pyridium), a common medication prescribed to treat the pain, frequency, and burning associated with urinary tract infections, can cause urine to appear orange.[4]

Nurses frequently monitor and document a patient’s urine output as part of the overall plan of care. It can be collected by placing a collection hat in the patient’s toilet and then measured in a graduated cylinder. If the patient has an indwelling catheter, the urine is emptied every shift from the catheter bag and measured in a graduated cylinder. For infants and toddlers, the number of daily wet

diapers provides a general measure of urine output. For more specific measurement of urine output during hospitalization, wet diapers are weighed.

Terms commonly used to document conditions related to the urinary tract are as follows:

- **Anuria:** Absence of urine output, typically found during kidney failure, defined as less than 50 mL of urine over a 24-hour period.
- **Dysuria:** Painful or difficult urination.
- **Frequency:** The need to urinate several times during the day or at night (nocturia) in normal or less-than-normal volumes. It may be accompanied by a feeling of urgency.[5]
- **Hematuria:** Blood in the urine, either visualized or found during microscopic analysis.
- **Oliguria:** Decreased urine output, defined as less than 500 mL of urine in adults in a 24-hour period. In hospitalized patients, oliguria is further defined as less than 0.5 mL of urine per kilogram per hour for adults and children or less than 1 mL of urine per kilogram per hour for infants.[6] New oliguria should be reported to the health care provider because it can indicate dehydration, fluid retention, or decreasing kidney function.
- **Nocturia:** The need to get up at night on a regular basis to urinate. Nocturia often causes sleep deprivation that affects a person's quality of life.[7]
- **Polyuria:** Greater than 2.5 liters of urine output over 24 hours, also referred to as diuresis. Urine is typically clear with no color.[8] New polyuria should be reported to the health care provider because it can be a sign of many medical conditions.
- **Pyuria:** At least ten white blood cells in each cubic millimeter of urine in a urine sample, typically indicating infection. In severe infections, pus may be visible in the urine.[9] See Figure 16.2[10] for an image of pyuria for a patient with urosepsis.
- **Urgency:** A sensation of an urgent need to void.[11] Urgency can cause urge incontinence if the patient is not able to reach the bathroom quickly.

Figure 16.2 Pyuria

Note

Read more details about the renal system in the "Review of Basic Concepts" section in the "Cardiovascular and Renal System" chapter in Open RN *Pharmacology*.

View an activity reviewing the Vascular System of the Kidneys.

Gastrointestinal System

The gastrointestinal (GI) system includes the mouth, esophagus, stomach, small intestine, large intestine, and anus. See Figure 16.3[12] for an image of the gastrointestinal system. Ingested food and liquid are pushed through the GI tract by **peristalsis**, the involuntary contraction and relaxation of muscle creating wave-like movements of the intestines. The stomach mixes food and liquid with digestive enzymes and then empties into the small intestine. The muscles of the small intestine mix food with enzymes and bile from the pancreas, liver, and intestine and push the mixture forward for further digestion. Bacteria in the GI tract, called normal flora or microbiome, also assist with digestion. The walls of the small intestine absorb water and the digested nutrients into the bloodstream. As peristalsis continues, the waste products of the digestive process move into the large intestine. The large intestine absorbs water and changes the waste from liquid into stool. The rectum, at the lower end of the large intestine, stores stool until it is pushed out of the anus during a bowel movement.[13]

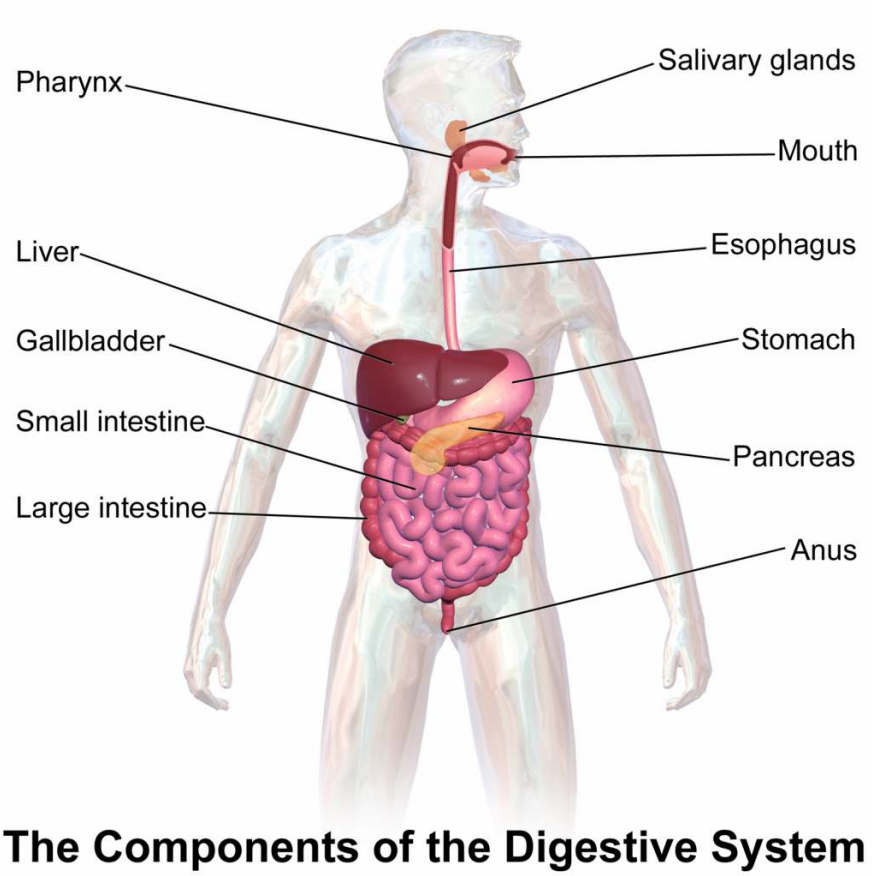

Figure 16.3 Gastrointestinal System

This section will focus on common alterations in bowel elimination, including constipation, diarrhea, and bowel incontinence. These alterations are common symptoms of several diseases and conditions of the gastrointestinal system. Nurses provide care to help manage these alterations.

Terms related to alterations in bowel elimination include the following:

- **Black stools:** Black-colored stools can be side effects of iron supplements or bismuth subsalicylate (Pepto-Bismol).
- **Rectal bleeding:** Rectal bleeding refers to bright red blood in the stools, also referred to as hematochezia. It is a sign of bleeding from the lower GI tract. Rectal bleeding can range in severity from minimal drops of blood on the toilet tissue caused

by hemorrhoids to severe bleeding in large amounts that are life-threatening and require emergency care.[14] New bleeding should always be reported to the health care provider.

- **Tarry stools:** Stools that are black, sticky, and appear like tar are referred to as **melena**. Melena is typically caused by bleeding in the upper part of the gastrointestinal tract, such as the esophagus, stomach, or the first part of the small intestine, or due to the patient swallowing blood. The blood appears darker and tarry-looking because it undergoes digestion on its way through the GI tract.[15] Bleeding from the upper part of the GI tract can also range from mild to life-threatening, depending upon the cause, and should always be reported to the health care provider.

Note

Read information about the "Gastrointestinal" system in Open RN *Nursing Pharmacology*.

Newborns and Infants

Meconium refers to the first bowel movement of a newborn that appears sticky and black to dark green in color. See Figure 16.4[16] for an image of meconium. The stool of a breastfed baby usually appears like a curdled yellow, while that of a formula-fed baby is more pasty. Breastfed babies often have bowel movements after every feeding. Formula-fed babies tend to have fewer bowel movements.

Figure 16.4 Meconium

Toddlers

Toddlers usually begin the process of toilet training between 2 and 3 years old. **Enuresis** is the term used to describe incontinence when sleeping (i.e., bed-wetting). Enuresis in children is considered normal unless it continues past 7 or 8 years of age, when it should be addressed with a pediatrician. Toddlers often have undigested food in their bowel movements due to the intestinal system not fully digesting some foods, such as corn or grapes.

Children

School-aged children may be at risk for developing constipation due to delaying bowel movements during school times until they are in the privacy of their homes.

Adults

Adult females often develop urinary incontinence related to pregnancy and delivery, menopause, or vaginal hysterectomy. Adults males may have urgency and urinary retention with possible overflow urinary incontinence as their prostate enlarges. Adults over the age of 30 may develop nocturia.

Older Adults

Peristalsis typically slows as aging occurs. Older adults should be encouraged to increase fluids, fiber, and activity, as appropriate, to prevent constipation. If a patient is not able to meet the goal of a bowel movement with soft, formed stools every three days, then a bowel management program should be initiated.

Now that we have reviewed the basic structure and function of the urinary and gastrointestinal systems, let's review common alterations of urinary tract infection, urinary incontinence, urinary retention, constipation, diarrhea, and bowel incontinence in the following sections.

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16. Meconium_Diaper.jpg" by Azoreg is licensed under CC BY-SA 3.0↵

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15.3: Urinary Tract Infection

A urinary tract infection (UTI) is a common infection that occurs when bacteria, typically from the rectum, enter the urethra and infect the urinary tract. Infections can affect several parts of the urinary tract, but the most common type is a bladder infection (cystitis). Kidney infections (pyelonephritis) are more serious than a bladder infection because they can have long-lasting effects on the kidneys.[1]

Some people are at higher risk of getting a UTI. UTIs are more common in females because their urethras are shorter and closer to the rectum, which makes it easier for bacteria to enter the urinary tract. Other factors that can increase the risk of UTIs include the following:

- A previous UTI
- Sexual activity, especially with a new sexual partner
- Pregnancy
- Age (Older adults and young children are at higher risk. Refer to the "Care of the Older Adult" chapter for more details about older adults.)
- Structural problems in the urinary tract, such as prostate enlargement[2]

Symptoms of a UTI include the following:[3]

- Pain or burning while urinating (dysuria)
- Frequent urination (frequency)
- Urgency with small amounts of urine
- Bloody urine
- Pressure or cramping in the groin or lower abdomen
- Confusion or altered mental status in older adults

Symptoms of a more serious kidney infection (pyelonephritis) include fever above 101 degrees F (38.3 degrees C), shaking chills, lower back pain or flank pain (i.e., on the sides of the back), and nausea or vomiting.[4] It is important to remember that older adults with a UTI may not exhibit these symptoms but often demonstrate an increased level of confusion. Sometimes UTIs can spread to the blood (septicemia), leading to life-threatening infection called sepsis. Read more about sepsis in the "Infection" chapter.

When a patient presents with symptoms of a UTI, the provider will order diagnostic tests, such as a urine dip, urinalysis, or urine culture. Read more about diagnostic tests in the "Assessment" section of the "Nursing Process" chapter.

Interventions

Antibiotics are prescribed for urinary tract infections. Nurses provide important patient education to patients with a UTI, such as the importance of finishing their antibiotic therapy as prescribed, even if they begin to feel better after a few days. Patients should also be encouraged to drink extra fluids to help flush bacteria from the urinary tract. Additional patient education regarding preventing future UTIs includes the following:

- Urinate after sexual activity.
- Stay well-hydrated and urinate regularly.
- Take showers instead of baths.
- Minimize douching, sprays, or powders in the genital area.
- Teach girls when potty training to wipe front to back.[5]

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15.4: Urinary Incontinence

Urinary incontinence is the involuntary loss of urine. Although abnormal, it is a common symptom that can seriously affect the physical, psychological, and social well-being of affected individuals of all ages. It has been estimated that 1 in 5 women develop urinary incontinence, but many are too embarrassed to discuss the condition with their health care providers. Some believe it's a normal part of aging that they have to live with. The result can be isolation and depression when they limit their activities and social interactions because of embarrassment due to incontinence. Nurses can greatly improve the quality of life for these patients by assessing for incontinence in a sensitive manner and then providing patient education about methods to prevent and/or manage incontinence.

Types of Urinary Incontinence

Continence is achieved through an interplay of the physiology of the bladder, urethra, sphincter, pelvic floor, and the nervous system coordinating these organs.[1] A disruption in any of these areas can cause several types of urinary incontinence.

- **Stress urinary incontinence** is the involuntary loss of urine with intra-abdominal pressure (e.g., laughing and coughing) or physical exertion (e.g., jumping). It is caused by weak pelvic floor muscles that is often the result of pregnancy and vaginal delivery, menopause, and vaginal hysterectomy.[2]
- **Urge urinary incontinence** (also referred to as "overactive bladder") is urine leakage caused by the sensation of a strong desire to void (urgency). It can be caused by increased sensitivity to stimulation by the detrusor muscle in the bladder or decreased inhibitory control of the central nervous system.[3]
- **Mixed urinary incontinence** is a mix of urinary frequency, urgency, and stress incontinence.[4]
- **Overflow incontinence** occurs when small amounts of urine leak from a bladder that is always full. This condition tends to occur in males with enlarged prostates that prevent the complete emptying of the bladder.[5]
- **Functional incontinence** occurs in older adults who have normal bladder control but have a problem getting to the toilet because of arthritis or other disorders that make it hard to move quickly or manipulate zippers or buttons. Patients with dementia also have increased risk for functional incontinence.

It is important to understand the types of incontinence so that appropriate interventions can be targeted to the cause.

Assessment of Incontinence

Assessment begins with screening questions during a health history, including questions such as, "Do you have any problems with the leakage or dribbling of urine? Do you ever have problems making it to the bathroom in time?" If a patient responds "Yes" to either of these questions, it is helpful to encourage them to start a voiding diary to record their urination habits and activities. The voiding diary should include the following:

- When and how much the patient urinates
- Urinary leakage and what the patient was doing when it happened (for example, running, biking, laughing)
- Sudden urges to urinate
- How often the patient wakes at night to use the bathroom
- Type and volume of food and beverages and the time of intake
- Medication use, such as diuretics, and the timing of administration
- Any pain or problems experienced before, during, and after urinating (for example, sudden urges, difficulty urinating, dribbling urine, feeling as if the bladder is never empty, weak urine flow).[6]

The provider will review information from the voiding diary, perform a physical assessment, and likely order diagnostic testing, such as a urine dip to check for a urinary tract infection, and urodynamic diagnostic testing that includes a variety of tests about bladder function, including filling, urine storage, and emptying.[7] Individualized treatment will be based on the assessment and tests to assess any structural abnormalities and bladder function.

Interventions

Nurses should use therapeutic communication with patients experiencing urinary incontinence to help them feel comfortable in expressing their fears, worries, and embarrassment about incontinence and work toward improving their quality of life. Let them

know they're not alone and that urinary incontinence is not something they have to live with. Provide education about pelvic floor muscle training exercises, timed voiding, lifestyle modification, and incontinence products. Encourage them to learn more about their condition so they can optimally manage it and improve their quality of life.[8]

Nurses play an important role in educating patients about bladder control training to prevent incontinence. Bladder control training includes several these techniques:

- Pelvic muscle exercises (also known as Kegel exercises) work the muscles used to stop urination, which can help prevent stress incontinence. Learn more about pelvic floor exercises in the box below.
- Timed voiding can be used to help a patient regain control of the bladder. Timed voiding encourages the patient to urinate on a set schedule, for example, every hour, whether they feel the urge to urinate or not. The time between bathroom trips is gradually extended with the general goal of achieving four hours between voiding. Timed voiding helps to control urge and overflow incontinence as the brain is trained to be less sensitive to the sensation of the bladder walls expanding as they fill.[9]
- Lifestyle changes can help with incontinence. Losing weight, drinking less caffeine (found in coffee, tea, and many sodas), preventing constipation, and avoiding lifting heavy objects may help with incontinence. Limiting fluid intake before bedtime and scheduling prescribed diuretic medication in the morning or early afternoon are also helpful.[10]
- Protective products may be needed to protect the skin from breakdown and prevent leakage onto clothing. Incontinence underwear has a waterproof liner and built-in cloth pad to absorb large amounts of urine to protect skin from moisture and control odor. It is available in daytime and nighttime styles (designed to hold more urine). A product resembling a tampon is another option for females. It is made of absorbent fibers that support the urethra and prevents accidental leaks but doesn't inhibit urination and won't move or fall out during bowel movements.[11]

Teaching Pelvic Floor Exercises

Kegel exercises are designed to make your pelvic floor muscles stronger. Your pelvic floor muscles hold up your bladder and prevent it from leaking urine.

- Start by finding the right muscles. There are two easy ways to do this: stop the stream of urine as you are urinating or imagine that you are trying to stop the passage of gas. Squeeze the muscles you would use to do both. If you sense a "pulling" feeling, you are squeezing the right muscles for pelvic exercises. Many people have trouble finding the right muscles. A doctor, nurse, or therapist can check to make sure you are doing the exercises correctly and targeting the correct muscles.
- Find a quiet spot to practice so you can concentrate. Lie on the floor. Pull in the pelvic muscles and hold for a count of 3. Then relax for a count of 3. Work up to 10 to 15 repeats each time you exercise.
- Complete pelvic exercises at least three times a day. Try to use three different positions while performing the exercises: lying down, sitting, and standing. For example, you can exercise while lying on the floor, sitting at a desk, or standing in the kitchen. Using all three positions while exercising makes these muscles their strongest.
- Be patient. Most people notice an improvement after a few weeks, but the maximum effect may take up to 3-6 weeks.

Note

View a YouTube video about Kegel Exercises[12] from Michigan Medicine.

Patient education regarding other treatment options may be provided:

- Biofeedback uses sensors to help a patient become more aware of signals from the body to regain control over the muscles in their bladder and urethra.[13] Mechanical devices, such as pessaries, support the urethra and can support vaginal prolapse to prevent or reduce urinary leakage. They come in various sizes and are professionally fitted by trained health care providers. They should be removed, cleaned, and reinserted regularly to prevent infection. Some of the devices, such as ring pessaries, can be removed and reinserted by the patient. They are similar to a diaphragm and can be removed or left in place for sexual intercourse.[14]
- Anticholinergic medications, such as oxybutynin, may be prescribed to treat urge urinary incontinence and mixed urinary incontinence. They block the action of acetylcholine and provide an antispasmodic effect on smooth muscle to relieve

symptoms. However, side effects include dry mouth, constipation, dizziness, and drowsiness, which can increase fall risk in older adults.

- If bladder training and medications are not effective, surgery may be performed, such as a sling procedure or a bladder neck suspension.[15]

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15.5: Urinary Retention

Urinary retention is a condition when the patient cannot empty all of the urine from their bladder. Urinary retention can be acute (i.e., the sudden inability to urinate after receiving anesthesia during surgery) or chronic (i.e., a gradual inability to completely empty the bladder due to enlargement of the prostate gland in males). Urinary retention is caused by a blockage that partially or fully prevents the flow of urine or the bladder not being able to create a strong enough force to expel all the urine. In addition to causing discomfort, urinary retention increases the patient's risk for developing a urinary tract infection (UTI). See Figure 16.5[1] for an image of an enlarged prostate gland blocking the flow of urine from the bladder into the urethra.

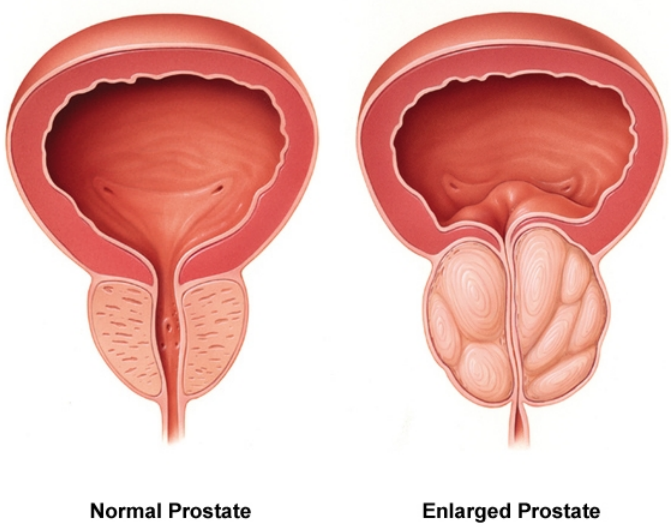

Figure 16.5 Enlarged Prostate Gland

Symptoms of urinary retention can range from none to severe abdominal pain.[2] Health care providers use a patient's medical history, physical exam finding, and diagnostic tests to find the cause of urinary retention. Nurses typically receive orders to measure post-void residual amounts when urinary retention is suspected. **Post-void residual** measurements are taken after a patient has voided by using a bladder scanner or inserting a straight urinary catheter to determine how much urine is left in the bladder. See the following box regarding how to perform a bladder scan at the bedside. Read about other diagnostic tests related to urinary retention, such as urodynamic testing and cystoscopy, under the "Applying the Nursing Process" section of this chapter.[3]

Performing a Bladder Scan

A bladder scanner is a portable, noninvasive medical device that uses sound waves to calculate the amount of urine in a patient's bladder. Nurses use bladder scanners at the bedside to determine post-void residual urine amounts in patients to avoid the need to perform an invasive urinary catheterization. Typically the use of a bladder scan does not require a physician order, but be sure to check agency policy.

After the patient voids and is lying in a supine position, turn on the device and indicate if the patient is male or female. (If the female has had a hysterectomy, then "male" is selected.) Apply warmed gel to the transducer head, and then place it approximately one inch above the symphysis pubis with the probe directed towards the bladder. Press the "scan" button, making sure to hold the scanner steady until you hear a beep. The bladder scanner will display the volume measured using a display with crosshairs. If the crosshairs are not centered on the urine displayed, adjust the probe and rescan until it is properly centered. If the post-void residual is greater than 300 mL, the provider should be notified and typically an order will be received for a straight urinary catheterization. Whenever possible, indwelling urinary catheterization (also referred to as a "Foley") placement is avoided to reduce the patient's risk of developing a catheter-associated urinary tract infection (CAUTI).[4]

View this following YouTube video to see a bladder scanner in use[5]: How to Use BladderScan Prime Plus™ by Diane Newman

Interventions

Treatment for urinary retention depends on the cause. It may include urinary catheterization to drain the bladder, bladder training therapy, medications, or surgery.[6] Read more about bladder training therapy under the "Urinary Incontinence" section. Alpha blockers, such as tamsulosin (Flomax), are used to treat urinary retention caused by an enlarged prostate. A surgery called transurethral resection of the prostate (TURP) may be performed to treat urinary retention caused by an enlarged prostate that is not responsive to medication.

Note

Read more about urinary catheterization and preventing catheter-associated urinary tract infection (CAUTI) in "Facilitation of Elimination" in Open RN *Nursing Skills*.

Read more about alpha-blocker medication (i.e., tamsulosin) in the "Autonomic Nervous System" chapter in Open RN *Nursing Pharmacology*.

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15.6: Constipation

Constipation is defined by NANDA-I as, “A decrease in normal frequency of defecation accompanied by difficult or incomplete passage of stool and/or passage of excessively hard, dry stool.”[1] Typically a patient is diagnosed with constipation if they have less than three bowel movements per week. Constipation can be caused by slowed peristalsis due to decreased activity, dehydration, lack of fiber, medications such as opioids, depression, or surgical procedures in the abdominal area. As the stool moves slowly through the large intestine, additional water is reabsorbed, resulting in the stool becoming hard, dry, and difficult to move through the lower intestines. See Figure 16.6[2] for the Bristol Stool Chart used to assess the characteristics of stools ranging from constipation to diarrhea.

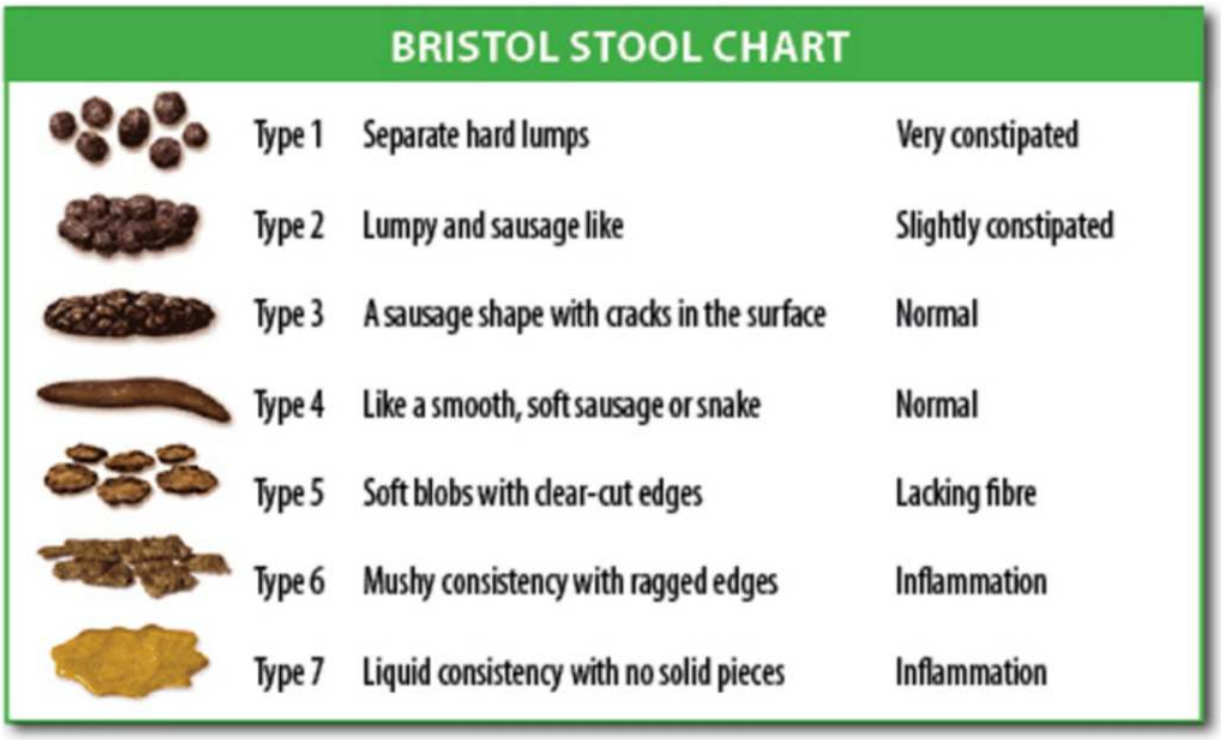

Figure 16.6 Bristol Stool Chart

The patient may experience associated symptoms such as rectal pressure, abdominal cramps, bloating, distension, and straining. **Fecal impaction** can occur when stool accumulates in the rectum, usually due to the patient not feeling the presence of stool or not using the toilet when the urge is felt. Large balls of hard stool need to be digitally removed or treated with mineral oil enemas.

Interventions

The goal of interventions implemented to treat constipation is to establish what is considered a normal bowel pattern for each patient and to set an expected outcome of a bowel movement at least every 72 hours regardless of intake. Treatment typically includes a prescribed daily bowel regimen, such as oral stool softeners (e.g., docusate) and a mild stimulant laxative (e.g., sennosides). Stronger laxatives (e.g., Milk of Magnesia or bisacodyl), rectal suppositories, or enemas are implemented when oral medications are not effective.

Patients should be educated about the importance of increased fluids, increased dietary fiber, and increased activity to prevent constipation. Some food sources, such as prune juice, prunes, and apricots, are helpful in preventing constipation. Over-the-counter medication, such as methylcellulose or psyllium, can be used to increase dietary fiber. When administering these medications, mix in a full 8-ounce glass of water to avoid the development of an intestinal obstruction.

Note

Read more about laxatives used to treat constipation in the "Gastrointestinal" chapter in Open RN *Nursing Pharmacology*.

Intestinal Obstruction or Paralytic Ileus

Intestinal obstruction is a partial or complete blockage of the intestines so that contents of the intestine cannot pass through it. It can be caused by **paralytic ileus**, a condition where peristalsis is not propelling the contents through the intestines, or by a mechanical cause, such as fecal impaction. Patients who have undergone abdominal surgery or received general anesthesia are at increased risk for paralytic ileus. Other risk factors include the chronic use of opioids, electrolyte imbalances, bacterial or viral infections of the intestines, decreased blood flow to the intestines, or kidney or liver disease. If an obstruction blocks the blood supply to the intestine, it can cause infection and tissue death (gangrene).[3]

Symptoms of an intestinal obstruction or paralytic ileus include abdominal distention or a feeling of fullness, abdominal pain or cramping, inability to pass gas, vomiting, constipation, or diarrhea. Because of the common occurrence of paralytic ileus in postoperative patients, nurses routinely monitor for these symptoms, and diet orders are not upgraded until the patient is able to pass gas.

Treatment may include insertion of an NG tube attached to suction to help relieve abdominal distention and vomiting until peristalsis returns. Obstructions may require surgery if the tube does not relieve the symptoms or if there are signs of tissue death.[4]

Note

Read more about NG tubes in "Enteral Tube Management" in Open RN *Nursing Skills*.

1. Herdman, T., & Kamitsuru, S. (2017). *NANDA international nursing diagnoses: Definitions & classification 2018-2020* (11th ed.). Thieme Publishers ↵
2. "Bristol_stool_chart.svg" by Cabot Health, Bristol Stool Chart is licensed under CC BY-SA 3.0↵
3. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2021. Intestinal obstruction and ileus; [updated 2021, Feb 8; cited 2021, Feb 16]. https://medlineplus.gov/ency/article/000260.htm↵
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15.7: Diarrhea

Diarrhea is defined as having more than three unformed stools in 24 hours. It can cause dehydration, skin breakdown, and electrolyte imbalances. Diarrhea is caused by increased peristalsis causing the stool to move too quickly through the large intestines so that water is not effectively reabsorbed, resulting in loose, watery stools.

Many conditions can cause diarrhea, such as infectious processes (bacteria, viruses, and protozoa), food poisoning, medications (such as antibiotics and laxatives), food intolerances, allergies, anxiety, and medical conditions like irritable bowel disease and Crohn's disease, or dumping syndrome for patients receiving tube feeding. Antibiotic therapy also places patients at risk of developing *Clostridium difficile* (C-diff) due to the elimination of normal flora in the gastrointestinal tract. Patients with C-diff have very watery, foul-smelling stools, and transmission-based precautions are implemented to prevent the spread of infection.

> **Note**
>
> Read more about C-diff and transmission-based precautions in the "Infection" chapter in this text.

Interventions

Treatment of diarrhea includes promoting hydration with water or other fluids (e.g., sports drinks) that improve electrolyte status. Intravenous fluids may be required if the patient becomes dehydrated. Medications such as loperamide, psyllium, and anticholinergic agents may be prescribed to treat diarrhea causing dehydration. In some cases, rectal tubes may be prescribed to collect watery stool. However, strict monitoring is required due to possible damage to the rectal mucosa.

> **Note**
>
> Read about medications used to treat diarrhea in the "Gastrointestinal" chapter in Open RN *Nursing Pharmacology*.

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15.8: Bowel Incontinence

Bowel incontinence is the accidental loss of bowel control causing the unexpected passage of stool. Incontinence can range from leaking a small amount of stool or gas to not being able to control bowel movements. The rectum, anus, pelvic muscles, and nervous system must work together to control bowel movements. A patient must also be able to recognize and respond to the urge to have a bowel movement. If there is a problem with any of these factors, bowel incontinence can occur.[1]

Causes of bowel incontinence include the following:

- Ongoing (chronic) constipation, causing the anus muscles and intestines to stretch and weaken, leading to diarrhea and stool leakage
- Fecal impaction with a lump of hard stool that partly blocks the large intestine
- Long-term laxative use
- Colectomy or bowel surgery
- Lack of sensation of the need to have a bowel movement
- Gynecological, prostate, or rectal surgery
- Injury to the anal muscles in women due to childbirth
- Nerve or muscle damage from injury, a tumor, or radiation
- Severe diarrhea that causes leakage
- Severe hemorrhoids or rectal prolapse
- Stress of being in an unfamiliar environment
- Emotional or mental health issues[2]

Interventions

Many people feel embarrassed about bowel incontinence and do not share this information with their health care provider. It is essential for nurses to communicate therapeutically with patients experiencing bowel incontinence and let them know it can often be treated with simple changes such as diet changes, bowel retraining, pelvic floor exercises, or surgery.[3]

Ask the patient to track the foods eaten to determine if certain types of foods cause problems. Foods that may lead to incontinence in some people include the following:

- Alcohol
- Caffeine
- Dairy products (due to lactose intolerance)
- Fatty, fried, or greasy foods
- Spicy foods
- Cured or smoked meats
- Sweeteners such as fructose, mannitol, sorbitol, and xylitol[4]

It is often helpful to add fiber to the diet to add bulk and thicken loose stool. To increase fiber, encourage the patient to eat whole grains with a goal of 30 grams of fiber a day. Other products, such as psyllium, can be used to add bulk to stools.[5]

Bowel retraining involves teaching the body to have a bowel movement at a certain time of the day. This also includes encouraging the patient to go to the bathroom when feeling the urge to do so and not ignoring it. For some people, it is helpful to schedule this consistent time in the morning when the natural urge occurs after drinking warm fluids or eating breakfast. For other people, especially those with a neurological cause, a laxative may be scheduled every three days to stimulate the urge to have a bowel movement.[6]

Patients can be educated about pelvic floor exercises to regain control of their anal sphincter muscle.[7] Read more about pelvic floor exercises under the "Urinary Incontinence" section.

Some patients can't tell when it's time to have a bowel movement or they can't move well enough to get to the bathroom safely on their own. These patients require special care in long-term care settings. To promote effective bowel movements, assist them to the toilet after meals and when they feel the urge. Also, make sure the bathroom is comfortable and private.[8]

If these simple treatments do not work, surgery may be needed to correct the problem. There are several types of procedures that a surgeon selects based on the cause of the bowel incontinence and the person's general health.[9]

Encourage patients with bowel incontinence to use special pads or undergarments to help them feel protected from accidents when they leave home. These products are available in pharmacies and in many other stores.

1. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2021. Bowel incontinence; [updated 2021, Feb 8; cited 2021, Feb 16]. https://medlineplus.gov/ency/article/003135.htm?utm_source=email&utm_medium=share&utm_campaign=mplus_share↵
2. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2021. Bowel incontinence; [updated 2021, Feb 8; cited 2021, Feb 16]. https://medlineplus.gov/ency/article/003135.htm?utm_source=email&utm_medium=share&utm_campaign=mplus_share↵
3. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2021. Bowel incontinence; [updated 2021, Feb 8; cited 2021, Feb 16]. https://medlineplus.gov/ency/article/003135.htm?utm_source=email&utm_medium=share&utm_campaign=mplus_share↵
4. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2021. Bowel incontinence; [updated 2021, Feb 8; cited 2021, Feb 16]. https://medlineplus.gov/ency/article/003135.htm?utm_source=email&utm_medium=share&utm_campaign=mplus_share↵
5. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2021. Bowel incontinence; [updated 2021, Feb 8; cited 2021, Feb 16]. https://medlineplus.gov/ency/article/003135.htm?utm_source=email&utm_medium=share&utm_campaign=mplus_share↵
6. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2021. Bowel incontinence; [updated 2021, Feb 8; cited 2021, Feb 16]. https://medlineplus.gov/ency/article/003135.htm?utm_source=email&utm_medium=share&utm_campaign=mplus_share↵
7. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2021. Bowel incontinence; [updated 2021, Feb 8; cited 2021, Feb 16]. https://medlineplus.gov/ency/article/003135.htm?utm_source=email&utm_medium=share&utm_campaign=mplus_share↵
8. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2021. Bowel incontinence; [updated 2021, Feb 8; cited 2021, Feb 16]. https://medlineplus.gov/ency/article/003135.htm?utm_source=email&utm_medium=share&utm_campaign=mplus_share↵
9. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2021. Bowel incontinence; [updated 2021, Feb 8; cited 2021, Feb 16]. https://medlineplus.gov/ency/article/003135.htm?utm_source=email&utm_medium=share&utm_campaign=mplus_share↵

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15.9: Applying the Nursing Process

Now that we have discussed several alterations in elimination, let's apply the nursing process to patients experiencing these conditions.

Assessment

Urinary Elimination Assessment

Assessment of the urinary system includes asking questions about voiding habits, frequency, and if there is difficult or painful urination. The bladder may be palpated above the symphysis pubis for distention. If the patient has incontinence, the perineal area should be inspected for skin breakdown. If urinary retention is suspected, a post-void residual amount may be measured by using a bladder scanner or by straight urinary catheterization. For a summary of common signs and symptoms associated with alterations in urinary elimination, see the "Selected Defining Characteristics" listed in Table 16.9a under the "Diagnosis" subsection.

If a patient has had an indwelling urinary catheter removed recently, specific assessments should be performed to monitor for urinary tract infection and other complications. Read more about caring for patients with urinary catheters in the "Facilitation of Elimination" chapter in Open RN *Nursing Skills*.

Bowel Elimination Assessment

Subjective assessment of the bowel system includes asking about the patient's normal bowel pattern, the date of the last bowel movement, characteristics of the stool, and if any changes have occurred recently in stool characteristics or pattern. A normal pattern is typically one bowel movement every one to three days with stools having a soft or formed consistency. Refer to Figure 16.6[1] under the "Constipation" section regarding using the Bristol Stool Chart to evaluate stool consistency.

Based on the patient's answers, additional questions can be included, such as bowel routines/toileting, the amount of fiber and fluid in the daily diet, daily activity, and the use of opioid medications. Keep in mind that patients who have recently undergone diagnostic procedures that include barium contrast can have significant hardening of the stool if the barium is not expelled within a day or two of the procedure. Patients are typically prescribed a stimulant laxative (such as Milk of Magnesia) to promote barium expulsion after these types of procedures. Additionally, patients who have recently had abdominal surgical procedures under general anesthesia are at increased risk of paralytic ileus.

For a summary of common symptoms associated with alterations in urinary elimination, see the "Selected Defining Characteristics" listed in Table 16.9a under the "Diagnosis" subsection.

The abdomen should be auscultated for bowel sounds, noting if they are present, hyperactive, or hypoactive in all four quadrants. If bowel sounds are absent or there are other signs of possible obstruction or paralytic ileus, the provider should be notified immediately. A light palpitation of the abdomen is performed to determine if there are tender areas, abnormal masses, or a firmness in the left lower quadrant indicating the presence of stool.

During inpatient care, the patient is often requested to call the nurse when a bowel movement has occurred so the stool characteristics can be assessed. Document the amount (small, medium, or large), consistency (soft, formed, or hard) and color (brown or other color). Alterations in these characteristics can be caused by several conditions, such as infection, parasites, inflammatory conditions of the intestines, or gallbladder or liver conditions.

Some patients have surgical diversions for diseases such as diverticulitis or cancer. Ostomies are surgical openings in the abdomen for the expulsion of stool into a bag-like appliance. An ileostomy is an opening created at the juncture of the small and large intestines, so the stool has a liquid consistency. A colostomy is placed farther along the large intestines, where more water has been absorbed, so the stool is more formed.

Note

Read about expected and unexpected findings during an abdominal assessment in the "Abdominal Assessment" chapter in Open RN *Nursing Skills*.

Read about caring for patients with ostomies in the "Facilitation of Elimination" chapter in Open RN *Nursing Skills*.

Urinary Diagnostic Tests

There are several commonly ordered diagnostic tests for urinary conditions, such as a urine dip, urinalysis, urine culture, cystoscopy, and urodynamic flow studies.

Urine Dip

A urine dip test refers to a treated chemical strip (dipstick) being placed in a urine sample. Patches on the dipstick will change color to indicate the presence of substances such as white blood cells, protein, or glucose. See Figure 16.7[2] for an image of a urine dipstick test. Urine is collected for a urine dip test in a clean container. Using the "clean catch" technique, the skin surrounding the urethra should be cleaned with a special towelette before the urine is collected. Catching the urine "midstream" is the goal, so request the patient to start urinating, stop, and then urinate into the container.

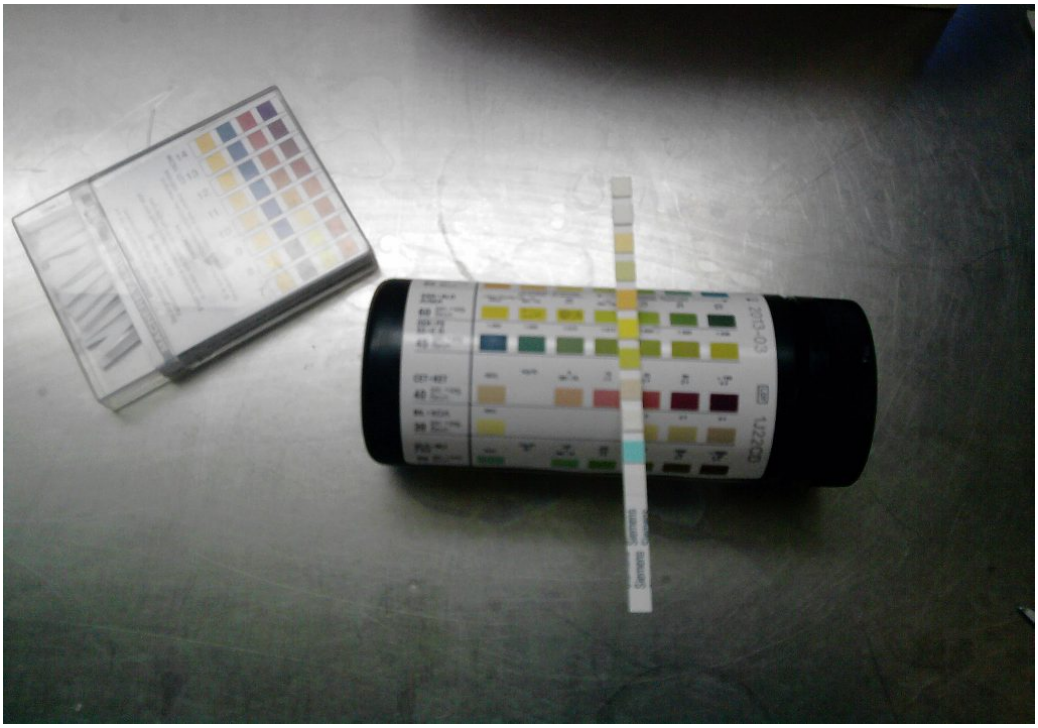

Figure 16.7 Urine Dipstick Test

Urinalysis

A urinalysis includes a physical, chemical, and microscopic examination of urine by a lab technician. It requires collection of a "clean catch" urine sample in a sterile container. It involves checking the urine with a microscope for the following:

- Color
- Appearance (i.e., clear or cloudy)
- Odor
- pH level (acidity)
- Substances not usually found in significant amounts in the urine, such as red blood cells, white blood cells, leukocyte esterase, bacteria, protein, glucose, ketones, and bilirubin
- Cells, crystals, and casts[3]

See Figure 16.8[4] for an image of white blood cells, referred to as pyuria, as seen on a urinalysis under a microscope. A urinalysis looks for evidence of infection, including elevated numbers of bacteria and white blood cells. A positive leukocyte esterase test or the presence of nitrite also supports the diagnosis of a UTI.[5]

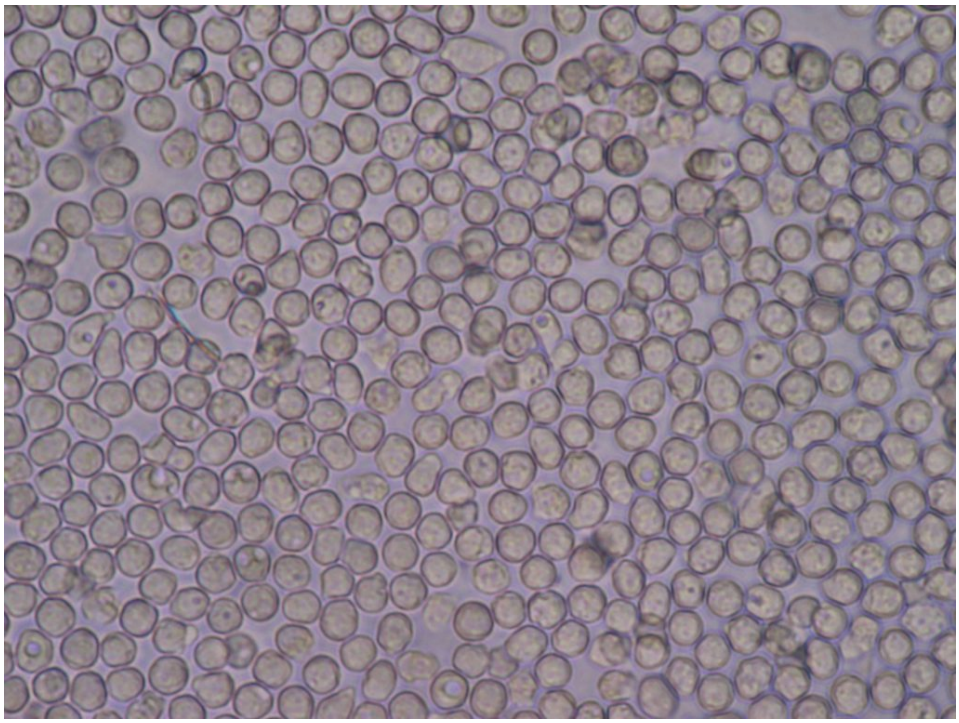

Figure 16.8 Urinalysis Demonstrating White Blood Cells

Urine Culture

A urine culture identifies the specific microbe causing a urinary tract infection. If this is the patient's first, uncomplicated UTI of the lower urinary tract, the provider often assumes it is caused by the most common microbe, E. coli, and treats it with antibiotics without performing a culture. However, cultures are typically performed for patients with recurring UTIs or hospitalized patients at risk for hospital-associated infections.[6]

When interpreting urine culture results, the presence of a single type of bacteria growing at high colony counts is typically considered a positive urine culture. For clean catch samples that have been properly collected, cultures with greater than 100,000 colony forming units (CFU)/milliliter of one type of bacteria usually indicate infection.[7]

If a culture is positive, susceptibility testing is performed to guide treatment. Although a variety of bacteria can cause UTIs, most are due to *Escherichia coli* (E. coli) bacteria that are common in the digestive tract and routinely found in stool. Other bacteria that commonly cause UTIs include *Proteus*, *Klebsiella*, *Enterobacter, Staphylococcus*, and *Acinetobacter*. Susceptibility testing determines which antibiotics will inhibit the growth of the specific bacteria causing the infection. It is important for nurses to review culture results to verify the antibiotic therapy being administered has been found to be effective against the type of bacteria discovered in the culture. If there is any concern about the susceptibility results and current antibiotic therapy, the health care provider should be notified.

A culture that is reported as "no growth in 24 or 48 hours" usually indicates that there is no infection. If a culture shows growth of several different types of bacteria, then it is likely due to contamination of the urine sample during collection. This is especially true in voided urine samples if the organisms present include *Lactobacillus* and/or other common nonpathogenic vaginal bacteria in women. The provider may request a repeat culture on a sample that is more carefully collected.[8]

Cystoscopy

A cystoscopy is a procedure completed by a health care provider with a cystoscope, a small, thin tube with a camera on the end that is inserted into the urethra and into the bladder. See Figure 16.9[9] for an illustration of cystoscopy. Fluid is inserted to expand the bladder so the bladder walls can be visualized. Biopsy samples can be taken from abnormal tissue through the tube and then sent to

a medical lab for analysis. The patient will feel the need to urinate when the bladder is full, but the bladder must stay full until the procedure is completed. A slight pinch may be felt if a biopsy sample is obtained. After the procedure, the patient should be encouraged to drink 4 to 6 glasses of water per day, as appropriate for their medical status. A small amount of blood may be present in the urine after the procedure, but if the bleeding continues after urinating three times, or if other signs of infection are present, the provider should be notified.[10]

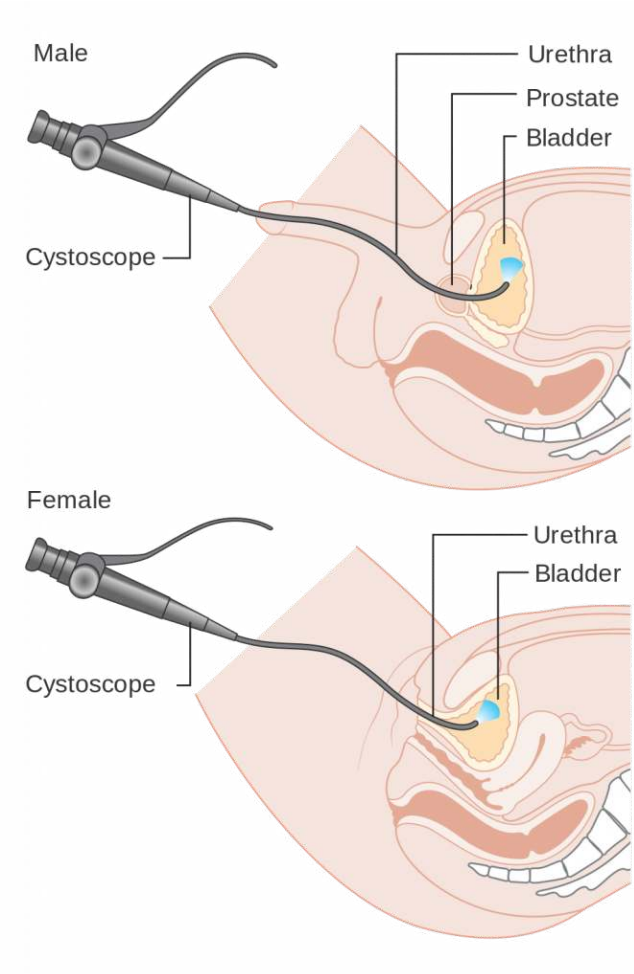

Figure 16.9 Cystoscopy

Urodynamic Flow Test

Urodynamic testing is any procedure that looks at how well the bladder, sphincters, and urethra are storing and releasing urine. Most urodynamic tests focus on the bladder's ability to hold urine and empty steadily and completely. Urodynamic tests can also show whether the bladder is having involuntary contractions that cause urine leakage.[11]

Bowel Diagnostic Tests

There are several common diagnostic tests related to bowel elimination, including stool-based tests, a colonoscopy, a barium enema, and an abdominal CT scan.

Stool-Based Tests

Stool samples can be tested for cancer, parasites, or for **occult blood** (i.e., hidden blood). Follow specific instructions from the lab for collecting the sample.

The Guaiac-Based Fecal Occult Blood Test finds hidden blood in the stool. As a screening test for colon cancer, it is performed annually. Before the test, the patient should avoid many foods, such as red meat, melons, beets, and grapefruit for three days. They should not take aspirin or NSAIDs for seven days prior to the test. Stool samples from three separate bowel movements are

smeared onto small paper cards and then returned to the medical lab for testing. If the test is positive (i.e., hidden blood is found), a follow-up colonoscopy is scheduled.[12] See Figure 16.10[13] for an image of a typical card used to collect the stool smear for the test after a special solution has been applied. The blue color indicates a positive result for occult blood.

Figure 16.10 Guaiac Test

The Stool DNA Test (also called Cologuard) looks for certain abnormal sections of DNA from cancer or polyp cells and also checks for occult blood. Specific collection kits, including a sample container, liquid preservative, and specific instructions are provided.[14]

Colonoscopy

During a colonoscopy, an instrument called a colonoscope is used. The colonoscope has a tiny camera attached to a long, thin tube that is inserted into the anus to check the entire colon and rectum. See Figure 16.11[15] for an illustration of a colonoscopy. This procedure is used to screen patients for colon cancer. Screening is recommended to start at age 50 (or 45 for high-risk populations, including African Americans), and thereafter once every ten years or as prescribed by the provider. It is also used to evaluate the colon for inflamed tissue and abnormal growths or lesions. Before the procedure, the patient must complete a bowel prep that typically consists of a clear liquid diet and laxatives the day before the procedure to clean out the intestine so that everything can be seen clearly. Each provider typically has their own specific set of bowel prep instructions. Medications such as aspirin or anticoagulants may be ordered to be withheld for several days before the test. Patients are generally NPO after a specific time the night before the test. During the procedure, the patient receives sedative medication to stay relaxed. If a polyp is found, it can be removed during the procedure and sent for biopsy. Because air is inserted into the colon during procedure, the patient may feel bloated or have abdominal cramps and should be encouraged to freely pass the gas. Because this is typically an outpatient procedure, the patient is unable to drive after the test and requires transportation. Potential complications of the procedure are rare but include bleeding and perforation of the colon. The patient should receive written instructions for when to contact the health care provider or emergency services if complications occur.[16] [17]

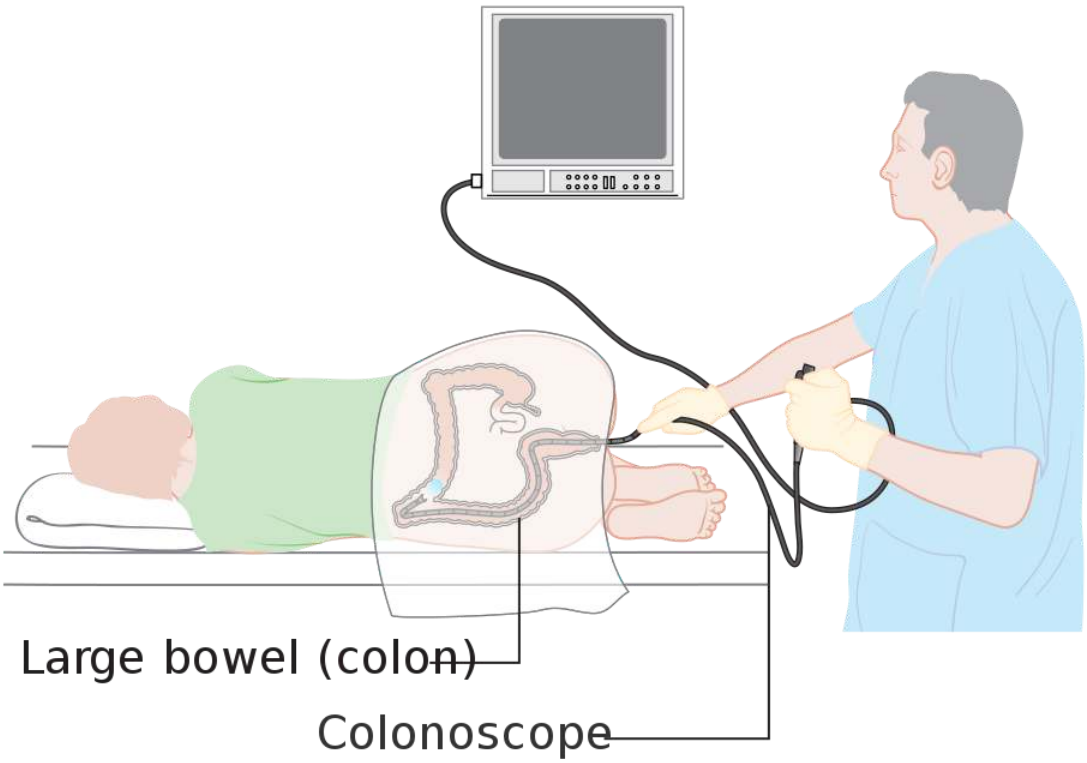

Figure 16.11 Colonoscopy

Barium Enema

A barium enema is a special X-ray of the large intestine including the colon and rectum. This test may also be referred to a “lower GI series.” It is an older diagnostic test that has been mostly replaced by the colonoscopy test. Prior to the procedure, the patient completes a bowel preparation regimen to cleanse the colon, which typically includes a clear liquid diet for 1-3 days, followed by the administration of laxative medication and/or an enema. During the procedure, an X-ray is taken, and then an enema containing barium is administered. Additional X-rays are taken as the patient changes position to get different views of the colon. See Figure 16.12[18] for an image of barium enema results. After the procedure, it is normal for the patient to have white stools for a few days. The patient should be encouraged to drink extra fluids, as appropriate, and a laxative may be prescribed to prevent hard stools that can cause constipation.[19]

Figure 16.12 Barium Enema

Abdominal CT Scan

An abdominal CT scan is an imaging method that uses a series of X-rays to create cross-sectional pictures of the abdomen. Because of the series of X-rays, patients are exposed to more radiation than when receiving a traditional X-ray. They will lie on a narrow table that slides into the CT scanner where the machine's X-ray beam rotates around them. A computer creates separate images, called slices, that can be viewed on a monitor or printed on film. Three-dimensional models of the area can be made by stacking the slices together.[20] See Figure 16.13[21] for an image of a CT scan.

Figure 16.13 CT Scan

A special dye, called **contrast**, is administered to patients before some tests so that certain areas show up better on the X-rays. If contrast is used, the patient may be required to be NPO for 4 to 6 hours before the test. Contrast can be administered orally or intravenously.

Oral contrast has a chalky taste and will pass out of your body through the stools. Patients receiving IV contrast may feel a slight burning sensation, metallic taste in the mouth, or warm flushing of the body that resolves in a few seconds.

Before sending the patient for a procedure using contrast, check for previous allergies to iodine or other contrast dyes. Some patients may be prescribed diphenhydramine or corticosteroids before receiving the contrast if they have had a previous allergic reaction. Verify their kidney status because IV contrast can worsen kidney function. If the patient is currently taking the antidiabetic

medication metformin, there may be restrictions placed on the administration of metformin before or after the procedure. Jewelry should be removed before the procedure.[22]

After the procedure, encourage patients who have received contrast to increase their fluid intake to help eliminate it from their body, as appropriate. If they received barium, their stools will be light in color. Post-procedural laxatives are typically prescribed to prevent the stool from hardening, which can cause an impaction or obstruction.

Diagnosis

There are several nursing diagnoses related to alterations in elimination. Refer to a nursing care planning resource for current NANDA-I nursing diagnoses and evidence-based interventions. See Table 16.9a for common NANDA-I diagnoses related to elimination.

Table 16.9a Common NANDA-I Nursing Diagnoses Related to Alterations in Elimination

NANDA-I Diagnosis	Definition	Selected Defining Characteristics
Constipation	Decrease in normal frequency of defecation accompanied by difficult or incomplete passage of stool and/or passage of excessively hard, dry stool	• Abdominal pain • Change in bowel pattern • Hard, formed stool • Hypoactive bowel sounds • Liquid stool • Palpable abdominal mass • Rectal pressure • Straining with defecation • Vomiting
Diarrhea	Passage of loose, unformed stools	• Abdominal pain • Bowel urgency • Cramping • Hyperactive bowel sounds • Loose liquid stools • Greater than three stools in 24 hours
Bowel Incontinence	Involuntary passage of stool	• Bowel urgency • Lack of recognition and of urge to defecate • Fecal staining • Inability to delay defecation
Stress Urinary Incontinence	Sudden leakage of urine with activities that increase intraabdominal pressure	• Involuntary leakage of small volume of urine
Urge Urinary Incontinence	Involuntary passage of urine occurring soon after a strong sensation or urgency to void	• Inability to reach toilet in time to avoid urine loss • Urinary urgency • Involuntary loss of urine with bladder contractions
Urinary Retention	Inability to empty bladder completely	• Bladder distension • Dribbling of urine • Frequent voiding • Sensation of bladder fullness • Small voids • Residual urine

Sample PES Statements

Sample PES statements for the nursing diagnoses are as follows:

- *Constipation related to insufficient fluid and fiber intake as evidenced by decreased stool frequency, hypoactive bowel sounds, and straining with defecation.*
- *Diarrhea associated with gastrointestinal irritation as evidenced by cramping, hyperactive bowel sounds, and greater than three liquid stools in 24 hours.*
- *Bowel Incontinence related to generalized decline in muscle tone as evidenced by a constant passage of soft stool.*
- *Stress Incontinence related to weak pelvic muscle floor muscles as evidenced by leakage of a small amount of urine when laughing and jumping.*
- *Urinary Urge Incontinence related to ineffective toileting habits as evidenced by the inability to reach the toilet in time to avoid urine loss and frequently wet underclothes.*
- *Urinary Retention associated with blockage in the urinary tract as evidenced by dribbling of urine in small amounts with frequent voiding and a reported sensation of bladder fullness.*

Outcome Identification

See Table 16.9b for sample goals and outcome criteria associated with nursing diagnoses related to elimination alterations.

Table 16.9b Sample Goals and Outcome Criteria for Alterations in Elimination

Nursing Diagnosis	Overall Goal	SMART Outcomes
Constipation	The patient will have a bowel movement every 1-3 days with soft, formed stool and ease of stool passage.	The patient will have a bowel movement with soft, formed stool in the next 24 hours.
Diarrhea	The patient will have a regular bowel elimination pattern with soft, formed stool.	The patient will report relief from cramping and fewer episodes of diarrhea in the next eight hours.
Stress Incontinence	The patient will have urinary continence as evidenced by no urine leakage with intra-abdominal pressure and dry underclothes and bedding.	The patient will report fewer episodes of stress incontinence in their bladder log over the next month.
Urge Incontinence	The patient will have urinary continence as evidenced by adequate time to reach the toilet and dry underclothes and bedding.	The patient will report fewer incontinence episodes over the next month.
Urinary Retention	The patient will experience improved urinary elimination as evidenced by complete emptying of the bladder and absence of urinary leakage.	The patient will report a feeling of complete emptying of the bladder by next week.

Planning Interventions

Plan interventions customized to each patient's alteration, cause of the condition, and related SMART outcomes. See interventions for each alteration under the corresponding sections earlier in this chapter.

Implementing Interventions

Assess a hospitalized patient's bowel pattern and date of last bowel movement daily. Implement a bowel management plan as needed to achieve the goal of a bowel movement every one to three days to avoid constipation and impaction. Before administering laxatives and stool softeners, always assess the patient's recent stool characteristics and withhold medication if loose stools or diarrhea are occurring. In the same manner, when administering medications for a patient with diarrhea, assess recent stool consistency and bowel pattern and withhold medication if the diarrhea is resolved or constipation is developing.

For many patients, alterations in elimination require patient education to teach the patient and their caregivers how to manage these conditions at home. Keep in mind that patient education is an independent nursing intervention, so a provider order is not necessary to provide this important information.

Evaluation

Evaluate the effectiveness of interventions based on the SMART outcomes established for each patient and their situation.

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15.10: Putting It All Together

Patient Scenario

Mrs. Jones is a 38-year-old woman who presents to the pediatrician office with her three-year-old daughter, Aubrey. Mrs. Jones explains that her daughter has been experiencing infrequent bowel movements. She states, “Aubrey only passes stool 1 to 2 times per week. She strains to pass the stool and it is dry and hard when it passes.” Aubrey nods and says, “My tummy hurts a lot when that happens.”

Applying the Nursing Process

Assessment: The nurse notes the mother’s report of Aubrey experiencing increased difficulty passing stool, infrequent bowel movements, and only passing stool one to two times per week with hard, dry feces. She records Aubrey’s complaint that her “tummy hurts a lot when that happens.” The nurse assesses Aubrey’s abdomen and finds it rounded and firm with decreased bowel sounds present in all four quadrants.

Based on the assessment information that has been gathered, the nurse creates the following nursing care plan for Aubrey:

Nursing Diagnosis: *Constipation related to insufficient fluid and fiber intake as manifested by decreased stool frequency, hypoactive bowel sounds, straining with defecation, hard dry stools, and patient reports “my tummy hurts a lot when that happens.”*

Overall Goal: *The patient will have soft bowel movements without difficulty.*

SMART Expected Outcome: *The patient will have a soft, formed stool every 24-48 hours.*

Planning and Implementing Nursing Interventions:

The nurse will provide education to the patient and her mother regarding the importance of adequate fluid sources and fiber intake in addition to medications prescribed by the provider. The nurse will encourage water for hydration and provide education regarding beverage sources that may contribute to constipation. The nurse will describe the value of fresh fruits, vegetables, and whole grains in diet and describe strategies for encouraging toddler consumption of these foods. The nurse will encourage scheduling regular times to attempt elimination. The nurse will provide positive reinforcement to the child regarding using of the toilet regularly for bowel elimination and encourage the mother to track bowel movements and intake using an elimination diary.

Sample Documentation:

Mother presents with the patient to the clinic reporting infrequent bowel movements. She states, “Aubrey only passes stool 1 to 2 times per week. She strains to pass the stool and it is dry and hard when it passes.” The patient reports, “My tummy hurts a lot when that happens.” The patient’s abdomen is firm and round with decreased bowel sounds present in all four quadrants. Patient education was provided to improve bowel elimination.

Evaluation:

The nurse calls Aubrey’s mother in two days. The mother reports that Aubrey had a soft, formed bowel movement on each of the past two days. The SMART outcome was initially “met.” The nurse encourages the mother to continue the planned interventions and to follow-up with the provider at the next clinic visit.

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15.11: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

1. Mrs. Gonzalez is a 57-year-old woman who presents to her internal medicine provider for her annual physical. The patient notes that she has been having recent increasing bouts of urinary incontinence. She reports feeling embarrassed by this condition and states, “I guess this is just a part of getting older.” As the nurse providing care for Mrs. Gonzalez, what patient education and interventions might be beneficial?

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15.12: XVI Glossary

Anuria: Absence of urine output that is typically found during kidney failure. Can be defined as less than 50 mL of urine over a 24-hour period.

Black stools: Black-colored stools can be caused by iron supplements or bismuth subsalicylate (Pepto-Bismol) taken for an upset stomach.

Bowel incontinence: The loss of bowel control, causing the unexpected passage of stool.

Bowel retraining: Involves teaching the body to have a bowel movement at a certain time of the day.

Constipation: A decrease in normal frequency of defecation accompanied by difficult or incomplete passage of stool and/or passage of excessively hard, dry stool.

Contrast: A special dye administered to patients before some diagnostic tests so that certain areas show up better on the X-rays.

Diarrhea: More than three unformed stools in 24 hours.

Dysuria: Painful or difficult urination.

Enuresis: Incontinence when sleeping (i.e., bedwetting).

Fecal impaction: A condition that occurs when stool accumulates in the rectum usually due to the patient not feeling the presence of stool or not using the toilet when the urge is felt. Large balls of soft stool may need to be digitally removed or treated with mineral oil enemas.

Frequency: Urinary frequency is the need to urinate many times during the day or at night (nocturia) in normal or less-than-normal volumes. It may be accompanied by a feeling of urgency.

Functional incontinence: Occurs in older adults who have normal bladder control but have a problem getting to the toilet because of arthritis or other disorders that make it hard to move quickly. Patients with dementia also have increased risk for functional incontinence.

Hematuria: Blood in urine, either visualized or found during microscopic analysis.

Intestinal obstruction: A partial or complete blockage of the intestines so that contents of the intestine cannot pass through it.

Meconium: The black to dark green, sticky first bowel movement of a newborn.

Melena: Black, sticky, tar-looking stools. Melena is typically caused by bleeding in the upper part of the gastrointestinal tract, such as the esophagus, stomach, or the first part of the small intestine, or due to the patient swallowing blood. The blood appears darker and tarry-looking because it undergoes digestion on its way through the GI tract.

Mixed urinary incontinence: Urinary frequency, urgency, and stress incontinence.

Nocturia: The need for a patient to get up at night on a regular basis to urinate. Nocturia often causes sleep deprivation that affects a person's quality of life.

Occult blood: Hidden blood in the stool not visible to the naked eye.

Oliguria: Decreased urine output, defined as less than 500 mL urine in adults in a 24-hour period. In hospitalized patients, oliguria is further defined as less than 0.5 mL of urine per kilogram per hour for adults and children or less than 1 mL of urine per kilogram per hour for infants.

Overflow incontinence: Occurs when small amounts of urine leak from a bladder that is always full. This condition tends to occur in males with enlarged prostates that prevent the complete emptying of the bladder.

Paralytic ileus: A condition where peristalsis is not propelling the contents through the intestines.

Peristalsis: The involuntary contraction and relaxation of the muscles of the intestine creating wave-like movements that push the digested contents forward.

Polyuria: Greater than 2.5 liters of urine output over 24 hours; also referred to as diuresis. Urine is typically clear with no color.

Postvoid residual: A measurement of urine left in the bladder after a patient has voided by using a bladder scanner or straight catheterization.

Pyuria: At least ten white blood cells in each cubic millimeter of urine in a urine sample that typically indicates infection. In some cases, pus may be visible in the urine.

Rectal bleeding: Bright red blood in the stools; also referred to as hematochezia.

Stress urinary incontinence: The involuntary loss of urine on intra-abdominal pressure (e.g., laughing and coughing) or physical exertion (e.g., jumping).

Tarry stools: Stools that are black and sticky that appear like tar; also referred to as melena.

Urgency: A sensation of an urgent need to void. Urgency may be associated with urge incontinence.

Urge urinary incontinence: Also referred to as "overactive bladder"; urine leakage accompanied by a strong desire to void. It can be caused by increased sensitivity to stimulation of the detrusor in the bladder or decreased inhibitory control of the central nervous system.

Urinary retention: A condition when the patient cannot empty all of the urine from their bladder.

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CHAPTER OVERVIEW

16: Grief and Loss

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16.2: Basic Concepts
16.3: Applying the Nursing Process to Grief
16.4: Palliative Care Management
16.5: Nursing Care During the Final Hours of Life
16.6: Applying the Nursing Process at End of Life
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16.1: Grief and Loss Introduction

Learning Objectives

- Advocate for the ethical/legal concerns of the patient and family members making end-of-life decisions
- Identify evidence-based practices associated with end of life care
- Employ nursing measures to support palliative care during the dying process
- Demonstrate respect for the cultural and spiritual beliefs of the patient, caregiver(s), and family members experiencing grief and loss
- Outline available personal and community resources
- Describe nursing responsibilities associated with postmortem care

Have you ever experienced the loss of something important to you like a job, a relationship with a friend or significant other, or a pet? We all experience loss and grief at some point in our lives, with the ultimate loss being death. Nurses are typically the first line of support as they assist patients and their family members to cope with serious illness, feelings of loss, and the end of life.

This chapter is based on a curriculum established by the End-of-Life Nursing Care Consortium (ELNEC), an international educational project sponsored by the American Association of Colleges of Nursing. The ELNEC project gives nurses and other health care professionals the knowledge and skills required to provide specialized care and positively impact the lives of patients and families facing serious illness and/or the end of life.[1] This chapter will discuss concepts related to grief and loss and evidence-based interventions advocated by the ELNEC.

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16.2: Basic Concepts

Three major concepts associated with grieving are loss, grief, and mourning. **Loss** is the absence of a possession or future possession with the response of grief and the expression of mourning. The feeling of loss can be associated with the loss of health, changes in relationships and roles, and eventually the loss of life. After a patient dies, the family members and other survivors experience loss.[1]

Grief is the emotional response to a loss, defined as the individualized and personalized feelings and responses that an individual makes to real, perceived, or anticipated loss. These feelings may include anger, frustration, loneliness, sadness, guilt, regret, and peace. Grief affects survivors physically, psychologically, socially, and spiritually. The grief process is not orderly and predictable. Emotional oscillation is normal and expected. There are times when the person experiencing the loss feels in control and accepting, and there are other times when the loss feels unbearable and they feel out of control.[2] See Figure 17.1[3] for an image of an individual experiencing grief.

Figure 17.1 Grief

Mourning is the outward, social expression of loss. Individuals outwardly express loss based on their cultural norms, customs, and practices, including rituals and traditions. Some cultures may be very emotional and verbal in their expression of loss, such as wailing or crying loudly. Other cultures are stoic and show very little reaction to loss. Culture also dictates how long one mourns and how the mourners "should" act. The expression of loss is also affected by an individual's personality and previous life experiences.[4]

Types of Grief

There are five different categories of grief: anticipatory grief, acute grief, normal grief, disenfranchised grief, and complicated grief.

Anticipatory Grief

Anticipatory grief is defined as grief before a loss, associated with diagnosis of an acute, chronic, and/or terminal illness experienced by the patient, family, or caregivers. Examples of anticipatory grief include actual or fear of potential loss of health,

independence, body part, financial stability, choice, or mental function.[5]

Sometimes anticipatory grief starts at the time of a terminal diagnosis and can proceed until the person dies. Both patients and their family members can feel anticipatory loss. The patient often anticipates the loss of independence, function, or comfort, which can cause significant pain and anxiety if not given the proper support. A patient may also have concrete fears such as the loss of the ability to drive, live independently, or maintain their current body image. They may also have grief regarding the loss of anticipated family experiences, such as celebrating the marriage of a child, the birth of a grandchild, an anniversary, or another significant life event. The family often starts grieving for the loss of their loved one before they die as they envision their life without their loved one in it. This type of grief has been shown to help cushion a person's bereavement reaction.[6]

Acute Grief

Acute grief begins immediately after the death of a loved one and includes the separation response and response to stress. During this period of acute grief, the bereaved person may be confused and/or uncertain about their identity or social role. They may disengage from their usual activities and experience disbelief and shock that their loved one is gone.[7] See Figure 17.2[8] for an image of a sculpture depicting acute grief.

Figure 17.2 Acute Grief

Normal Grief

Normal grief includes the common feelings, behaviors, and reactions to loss. Normal grief reactions to a loss can include the following:

- Physical symptoms such as hollowness in the stomach, tightness in the chest, weakness, heart palpitations, sensitivity to noise, breathlessness, tension, lack of energy, and dry mouth
- Emotional symptoms such as numbness, sadness, fear, anger, shame, loneliness, relief, emancipation, yearning, anxiety, guilt, self-reproach, helplessness, and abandonment
- Cognitive symptoms such as a state of depersonalization, confusion, inability to concentrate, dreams of the deceased, idealization of the deceased, or a sense of presence of the deceased
- Behavioral signs such as impaired work performance, crying, withdrawal, overreactivity, changed relationships, or avoidance of reminders of the deceased[9]

Acute grieving may take months and but can also take years, depending on the loss. No one ever truly gets over the loss, but there is an eventual reconnection with the world of the living as the relationship with the deceased changes.[10]

Disenfranchised Grief

Disenfranchised grief is grief over any loss that is not validated or recognized. Those affected by this type of grief do not feel the freedom to openly acknowledge their grief. Individuals at risk for disenfranchised grief are those who have lost loved ones to stigmatized illnesses or events, such as AIDS. Mothers and/or fathers may grieve over terminated pregnancies or stillborn babies. The loss of a previously severed relationship or divorce can contribute to this type of grief because the individual may not be able to mourn openly due to the circumstances surrounding the relationship.

Complicated Grief

Complicated grief is seen in 10-20% of individuals experiencing the death of a romantic partner and with higher estimates for parents who have lost a child. According to the ELNEC, there are four types of complicated grief, including chronic grief, delayed grief, exaggerated grief, and masked grief. Risk factors for developing complicated grief include sudden or traumatic death, suicide, homicide, a dependent relationship with the deceased, chronic illness, death of a child, multiple losses, unresolved grief from prior losses, concurrent stressors, witnessing a difficult dying process such as pain and suffering, lack of support systems, and lack of a faith system. Complicated grief may require professional assistance depending on its severity. Factors that contribute to complicated grief in older adults include lack of a support network, concurrent losses, poor coping skills, and loneliness.[11]

- **Chronic Grief:** Normal grief reactions that do not subside and continue over very long periods of time.
- **Delayed Grief:** Normal grief reactions that are suppressed or postponed by the survivor consciously or unconsciously to avoid the pain of the loss.
- **Exaggerated Grief:** An intense reaction to grief that may include nightmares, delinquent behaviors, phobias, and thoughts of suicide.
- **Masked Grief:** Grief that occurs when the survivor is not aware of behaviors that interfere with normal functioning as a result of the loss. For example, an individual cancels lunch with friends so they can go to the cemetery daily to visit their loved one's grave.[12]

Stages of Grief

There are several stages of grief that may occur following a loss. It can be helpful for nurses to have an understanding of these stages to recognize the emotional reactions as symptoms of grief so they can support patients and families as they cope with loss. Famed Swiss psychiatrist Elizabeth Kubler-Ross identified five main stages of grief in her book *On Death and Dying*.[13] Patients and families may experience these stages along a continuum, move randomly and repeatedly from stage to stage, or skip stages altogether. There is no one correct way to grieve, and an individual's specific needs and feelings must remain central to care planning.

Kuber-Ross identified that patients and families demonstrate various characteristic responses to grief and loss. These stages include denial, anger, bargaining, depression, and acceptance, commonly referred to by the mnemonic "DABDA." See Figure 17.3[14] for an illustration of the Kubler-Ross Grief Cycle. Keep in mind that these stages of grief not only occur due to loss of life, but also occur due to significant life changes such as divorce, loss of friendships, loss of a job, or diagnosis with a chronic or terminal illness.[15]

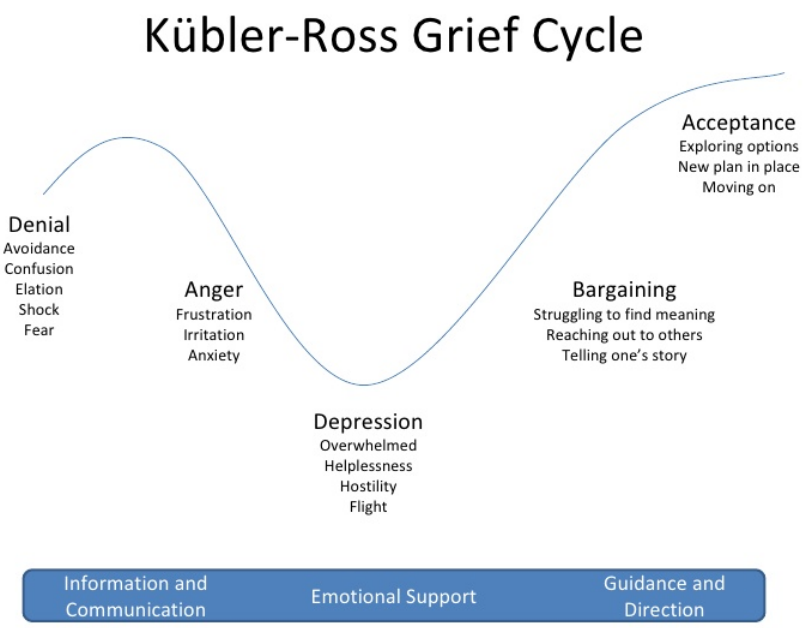

Figure 17.3 Kubler-Ross Grief Cycle

Note

View the beginning of this YouTube video clip[16] from the movie *Steel Magnolias* that shows a mother demonstrating stages of the grieving process.

Denial

Denial occurs when the individual refuses to acknowledge the loss or pretends it isn't happening. This stage is characterized by an individual stating, "This can't be happening." The feeling of denial is self-protective as an individual attempts to numb overwhelming emotions as they process the information. The denial process can help to offset the immediate shock of a loss. Denial is commonly experienced during traumatic or sudden loss or if unexpected life-changing information or events occur. For example, a patient who presents to the physician for a severe headache and receives a diagnosis of terminal brain cancer may experience feelings of denial. See Figure 17.4[17] for an image of a person reacting to unexpected news with denial.

Figure 17.4 Denial

Anger

Anger in the grief process often masks pain and sadness. The subject of anger can be quite variable; anger can be directed to the individual who was lost, internalized to self, or projected toward others. Additionally, an individual may lash out at those uninvolved with the situation or have bursts of anger that seemingly have no apparent cause. Health care professionals should be aware that anger may often be directed at them as they provide information or provide care. It is important that health care team members, family members, and others who become the target of anger seek to recognize that the anger and emotion are not a personal attack, but rather a manifestation of the challenging emotions that are a part of the grief process. If possible, the nurse can provide supportive presence and allow the patient or family member time to vent their anger and frustration while still maintaining boundaries for respectful discussion. Rather than focusing on what to say or not to say, allowing a safe place for a patient or family member to verbalize their frustration, sorrow, and anger can offer great support. See Figure 17.5[18] for an image of a patient experiencing anger.

Figure 17.5 Anger

Bargaining

Bargaining can occur during the grief process in an attempt to regain control of the loss. When individuals enter this phase, they are looking to find ways to change or negotiate the outcome by making a deal. Some may try to make a deal with God or their higher power to take away their pain or to change their reality by making promises to do better or give more of themselves if only the circumstances were different. For example, a patient might say, “I promised God I would stop smoking if He would heal my wife’s lung cancer.”

Depression

Feelings of depression can occur with intense sadness over the loss of a loved one or the situation. Depression can cause loss of interest in activities, people, or relationships that previously brought one satisfaction. Additionally, individuals experiencing depression may experience irritability, sleeplessness, and loss of focus. It is not uncommon for individuals in the depression phase to experience significant fatigue and loss of energy. Simple tasks such as getting out of bed, taking a shower, or preparing a meal can feel so overwhelming that individuals simply withdraw from activity. In the depression phase, it can be difficult for individuals to find meaning, and they may struggle with identifying their own sense of personal worth or contribution. Depression can be associated with ineffective coping behaviors, and nurses should watch for signs of self-medicating through the use of alcohol or drugs to mask or numb depressive feelings. See Figure 17.6[19] for an image of a patient demonstrating feelings of depression.

Figure 17.6 Depression

Acceptance

Acceptance refers to an individual understanding the loss and knowing it will be hard but acknowledging the new reality. The acceptance phase does not mean absence of sadness but is the acknowledgement of one's capabilities in coping with the grief experience. In the acceptance phase, individuals begin to re-engage with others, find comfort in new routines, and even experience happiness with life activities again. See Figure 17.7[20] of an image of a patient who has reached acceptance of the new reality related to his loss.

Figure 17.7 Acceptance

Grief Tasks

Kubler-Ross's grief stages describe many feelings that individuals commonly experience while grieving loss. Other experts also describe the grieving process in terms of tasks that one must accomplish. These tasks include notification and shock, experiencing the loss, and reintegration.[21]

- **Notification and shock:** This phase occurs when a person first learns of the loss and experiences feelings of numbness or shock. The person may isolate themselves from others while processing this information. The first task for the person to complete is to acknowledge the reality of the loss by assessing and recognizing the loss.
- **Experiencing the loss:** The second task involves experiencing the loss emotionally and cognitively. The person must work through the pain by reacting to, expressing, and experiencing the pain of separation and grief.
- **Reintegration:** The third task involves reorganization and restructuring of family systems and relationships by adjusting to the environment without the deceased. The person must form a new reality without the deceased and adapt to a new role while also retaining memories of the deceased.[22]

As a nurse, you can greatly assist patients and families members as they move through the grieving process by being willing and committed to spending time with them. Listen to their stories, be present, and bear witness to their pain. Remember that you cannot fix everything, but taking time to assess their symptoms of grief helps you identify other resources for support.

Palliative Care and Hospice

There are specialty care areas related to the care of patients and their families experiencing loss and the grieving process. The specialties include palliative care and hospice care.

Palliative care is a broad philosophy of care defined by the World Health Organization as improving the quality of life of patients with life-limiting illnesses, as well as their family members, through the prevention and relief of physical, psychosocial, and spiritual suffering.[23] In the United States, palliative care is further described as, "Patient and family-centered care that optimizes quality of life by anticipating, preventing, and treating suffering. Palliative care occurs throughout the continuum of care and involves the interdisciplinary team collaboratively addressing physical, intellectual, emotional, social, and spiritual needs and

facilitating patient autonomy, access to information, and choice."[24] Palliative care focuses on comfort and quality of life but also includes continuing curative treatment such as dialysis, chemotherapy, and surgery.

Hospice care is a type of palliative care that addresses care for patients who are terminally ill when a health care provider has determined they are expected to live six months or less. Like palliative care, hospice provides comprehensive comfort care and support for the family, but in hospice, curative treatments are stopped. It is based on the idea that dying is part of the normal life cycle and supports the patient and family through the dying and grief process. It also supports the surviving family members through the bereavement process. Hospice care does not hasten death but focuses on providing comfort.

Many patients decide to receive hospice care at home with the support of family, nurses, and hospice staff, but hospice services are also available across a variety of settings such as long-term care, assisted living facilities, hospitals, and prisons. In the United States, older adults enrolled in Medicare can choose to receive hospice care and stop receiving curative treatment. It is important to remember that stopping curative treatment does not mean discontinuing all medical treatment. For example, a patient with cancer who is no longer responding to chemotherapy can decide to enter hospice care and focus on comfort and quality of life. The chemotherapy treatment will stop, but other medical care, such as blood pressure medications or antibiotics to treat infection, will continue as long as they are helpful in promoting quality of life. Medicare will also pay for all related home durable medical equipment (such as a hospital bed and home oxygen therapy equipment) and all medications related to the terminal diagnosis (including pain medications).[25],[26] See Figure 17.8[27] for an image of a patient receiving hospice care.

Figure 17.8 Hospice Care

Unfortunately, instead of viewing hospice as a care option to promote quality of life and reduce suffering, many patients and their families associate hospice care with "giving up," or as a "death sentence," and are resistant to this type of care. For this reason, many health care teams advocate the implementation of palliative care until patients and their family members are ready to discuss hospice care.

When a patient and their family members make the decision to implement home hospice, their desire is for the patient to comfortably spend their final days in their home environment. However, if the patient's condition later becomes challenging for family members to manage at home, it can be very difficult to consider transferring the patient to a hospice inpatient unit at that

time. It is often helpful to encourage patients and family members to tour alternative care agencies when considering hospice and be prepared if this decision is later warranted.

Comfort Care

Comfort care is a term commonly used in the acute care setting that is similar to palliative care and hospice. Comfort care occurs when the patient's and medical team's goals shift from curative intervention to symptom control, pain relief, and quality of life. However, there is no formal admission to hospice or palliative care that can impact insurance coverage. Rather than focusing on aggressive medical intervention, the focus changes to symptom control to provide the patient with the greatest degree of comfort possible as they approach their end of life.

> **Note**
>
> Read more about the National Coalition for Hospice and Palliative Care's Palliative Care Guidelines.

Ethical and Legal Considerations

End-of-life care often includes unique complexities for the patient, family, and nurse. There may be times when what the physician or nurse believes to be the best treatment conflicts with what the patient desires. There may also be challenges related to decision-making that cause disagreements within a family or cause conflict with the treatment plan. Additional challenging factors include availability of resources and insurance company policies and programs.

Despite these complexities, it is important for the nurse to honor and respect the wishes of the patient. Despite any conflicts in decision-making among health care providers, family members, and the patient, the nurse must always advocate for the patient's wishes. Nurses should also be aware of the practice guidelines for ethical dilemmas stated in the American Nurses Association's Standards of Professional Nursing Practice and Code of Ethics.[28],[29] These resources assist the nurse in implementing expected behaviors according to their professional role as a nurse.

If complex ethical dilemmas occur, many organizations have dedicated ethics committees that offer support, guidance, and resources for complex ethical decisions. These committees can serve as support systems, share resources, provide legal insight, and make recommendations for action. The nurse should feel supported in raising concerns within their health care organization if they believe an ethical dilemma is occurring.

Do-Not-Resuscitate Orders and Advance Directives

Additional legal considerations when providing care at the end of life are do-not-resuscitate orders (DNR) orders and advance directives. A **do-not-resuscitate (DNR) order** is a medical order that instructs health care professionals not to perform **cardiopulmonary resuscitation (CPR)** if a patient's breathing stops or their heart stops beating. The order is only written with the permission of the patient (or the patient's health care power of attorney, if activated.) Ideally, a DNR order is set up before a critical condition occurs. CPR is emergency treatment provided when a patient's blood flow or breathing stops that may involve chest compressions and mouth-to-mouth breathing, electric shocks to restart the heart, breathing tubes to open the airway, or cardiac medications. The DNR order only refers to not performing CPR and is recorded in a patient's medical record. Wallet cards, bracelets, or other DNR documents are also available to have at home or in non-hospital settings. The decision to implement a DNR order is typically very difficult for a patient and their family members to make.[30] Many people have unrealistic ideas regarding the success rates of CPR and the quality of life a patient experiences after being revived, especially for patients with multiple chronic diseases or those receiving palliative care. For example, a recent study found the overall rate of survival leading to hospital discharge for someone who experiences cardiac arrest is about 10.6 percent.[31] Nurses can provide up-to-date patient education regarding CPR and its effectiveness based on the patient's current condition and facilitate discussion about a DNR order.

Advance directives include the health care power of attorney and living will. The **health care power of attorney** legally identifies a trusted individual to serve as a decision maker for health issues when the patient is no longer able to speak for themselves. It is the responsibility of this designated individual to carry out care actions in accordance with the patient's wishes. A health care power of attorney can be a trusted family member, friend, or colleague who is of sound mind and is over the age of 18. They should be someone who the patient is comfortable expressing their wishes to and someone who will enact those desired wishes on the patient's behalf.

The health care power of attorney should also have knowledge of the patient's wishes outlined in their living will. A **living will** is a legal document that describes the patient's wishes if they are no longer able to speak for themselves due to injury, illness, or a persistent vegetative state. The living will addresses issues like ventilator support, feeding tube placement, cardiopulmonary resuscitation, and intubation. It is a vital means of ensuring that the health care provider has a record of one's wishes. However, the living will cannot feasibly cover every possible potential circumstance, so the health care power of attorney is vital when making decisions outside the scope of the living will document.

Note

Read more about advance care planning at the National Institute on Aging and at Honoring Choices Wisconsin.

Nurses must understand the health care practice legalities for the state in which they practice nursing. There can be practice issues in various states that raise additional ethical complexities for the practicing nurse. For example, Oregon, Washington, Vermont, and New Mexico all have laws that allow patients to participate in assisted dying practices involving assisted suicide or active euthanasia. In assisted suicide, the patient is provided the means to carry out suicide such as a lethal dose of medication. Active euthanasia involves someone other than the patient carrying out action to end a person's life. Most nursing organizations prevent a nurse from participating in assisted dying practices. Nurses must be aware of the Practice Act in their state and the legalities and ethical challenges of nursing actions surrounding complex issues such as assisted suicide, active euthanasia, and abortion.

Care of the Family

When caring for a patient who is nearing the end of life, the family members require nursing care as well. **Fading away** is a transition that families make when they realize their seriously ill family member is dying. Although they may have been previously told by a health care provider that their loved one would die from the illness, there is often a sudden realization their family member "is not going to get any better" when their health begins to significantly decline. With this realization comes the transition of fading away.[32]

There are various dimensions that both patients and family members experience during this fading away process:

- **Redefining:** There is a shift for both patients and families from "what used to be" to "what is now."
- **Burdening:** As patients become more dependent, they may feel as if they are a burden to their family–physically, financially, emotionally, socially, and spiritually. Yet, family members typically do not feel the care they are providing is a burden, but rather, "something you do for someone you love."
- **Searching for Meaning:** Patients journey inward, seek spiritual reflection, and become more connected to important family members and friends. Family members may search for meaning inwardly through spiritual reflection or explore for meaning with family members and friends.
- **Living Day to Day:** Patients who eventually find meaning in their illness live each day with a more positive attitude. Family members who try to "make the best of it" make efforts to enjoy the limited time left with their loved one.
- **Preparing for Death:** Patients often want to leave a legacy. Spouses often want to meet every need of their ill spouse. Patients and family members may begin to make pre-arrangements for the funeral, as well as get their will and other financial matters in order.
- **Contending with Change:** Patients and their family members change roles, social patterns, and work patterns. They know the life they used to have will soon be gone.[33]

Nurses can assist patients and family members during the fading away transition by being present and actively listening. Suggestions regarding preparation for death can be made.

Note

An excellent resource to provide families is a pamphlet called "Gone From My Sight – The Dying Experience" by Barbara Karnes. This pamphlet is typically provided to families when a patient signs up for hospice services. It explains how people with chronic illness die in stages of months, weeks, days, and hours. It helps to answer the common question, "How long?" from patients and their family members.

Caregiver Support

Most patients with chronic illness have family caregivers that are an extension of the health care team and work 24/7/365. They typically provide 70-80% of the care at home. It is important for nurses to assess the caregiver when seeing them with the patient in the home, clinic, hospital, or long-term setting and provide encouragement. It is helpful to acknowledge their work is very difficult and to praise them for their efforts.[34] See Figure 17.9[35] for an image of a mother acting as caregiver and supporting her son's health.

Figure 17.9 Caregiver Support

What do caregivers want? Research shows they want the following:

- Support, assistance, and practical help (e.g., finding others to assist with grocery shopping, going to the pharmacy, and food preparation)
- Honest conversations with the health care team
- Assurance their loved one is being honored
- Inclusion in the decision-making
- Desire to be listened to and their concerns heard
- Remembrance as a good and compassionate caregiver
- Assurance that they did all they possibly could for their loved one[36]

Assess caregivers' needs for further assistance, as well as their social support network. Assess their physical needs, sleep patterns, and ability to perform other responsibilities. Watch for signs of declining health, clinical depression, or signs of increased use of alcohol and drugs. Listen to their stories and provide presence, active listening, and touch. Assist them in identifying and using support systems and refer them to resources and support groups in the community as needed.[37]

Cultural Considerations Regarding Death

When assessing patients, family members, and caregivers, it is important to respect their values, beliefs, and traditions related to health, illness, family caregiver roles, and decision-making. Information gathered through this comprehensive assessment is used to develop a nursing care plan that incorporates culturally sensitive resources and strategies to meet the needs of patients and their family members.[38] See Figure 17.10[39] for an image of a community grieving.

Figure 17.10 Community Grieving

Nurses can acquire knowledge about how different cultural beliefs influence a patient and their family members' decision-making, approach to illness, pain, spirituality, grief, dying, death, and bereavement. See Table 17.2 for a brief comparison of various spiritual beliefs about death.[40],[41]

To review holistic nursing care that addresses the spiritual needs of patients and their significant others, refer to the "Spirituality" chapter.

Table 17.2 Comparison of Spiritual Beliefs about Death[42]

Religion	Beliefs Pertaining to Death	Preparation of the Body	Funeral
Christian (Catholic and Protestant)	Belief in Jesus Christ, the Bible, and an afterlife are central, although differences in interpretation exist in the various denominations. Catholics receive a sacrament called “anointing of the sick” when approaching the end of life.	Organ donation and autopsy are permitted.	Individuals are buried in cemeteries. Some denominations accept cremation as an alternative. Funerals or celebration of life services are typically held in a funeral home or church.
Jewish	Tradition cherishes life but death itself is not viewed as a tragedy. Views on an afterlife vary with the denomination (Reform, Conservative, or Orthodox).	Autopsy and embalming are forbidden under ordinary circumstances. Open caskets are not permitted.	Funeral is held as soon as possible after death. Dark clothing is worn at the funeral and after burial. It is forbidden to bury the deceased on the Sabbath or during festivals. Three mourning periods may be held after the burial, with Shiva being the first that occurs seven days after burial.
Buddhist	Both a religion and way of life with the goal of enlightenment. Life is believed to be a cycle of death and rebirth.	Goal is a peaceful death. Statue of Buddha may be placed at the bedside as the person is dying. Organ donation is not permitted. Incense is lit in the room following death.	Family washes and prepares the body after death. Cremation is preferred, but if buried, deceased are typically dressed in regular daily clothes instead of fancy clothing. Monks may be present at the funeral and lead the chanting.
Native American	Beliefs vary among tribes. Sickness is thought to mean that one is out of balance with nature. It is thought that ancestors can guide the deceased. Death is perceived as a journey to another world. Family may or may not be present for death.	Preparation of the body may be done by family. Organ donation is generally not preferred.	Various practices differ with tribes. Among the Navajo, hearing an owl or coyote is a sign of impending death, and the casket is left slightly open so the spirit can escape. Navajo and Apache tribes believe that spirits of the deceased can haunt the living. The Comanche tribe buries the dead in the place of death when possible or in a cave.
Hindu	Beliefs include reincarnation where a deceased person returns in the form of another, as well as Karma.	Organ donation and autopsy are acceptable. Death and dying must be peaceful. It is customary for the body to not be left alone until cremated.	Prefer cremation within 24 hours after death. Ashes are often scattered in sacred rivers.
Muslim	Believe in an afterlife and that the body must be quickly buried so that the soul may be freed.	Embalming and cremation are not permitted. Autopsy is permitted for legal or medical reasons only. After death, the	Burial takes place as soon as possible. Women and men sit separately at the funeral. Flowers and excessive

		body should face Mecca or the East. The body should be prepared by a person of the same gender.	mourning are discouraged. The body is usually buried in a shroud and is buried with the head pointing toward Mecca.

Note

Read more about funeral traditions around the globe at the following link: Death is not the end: Fascinating funeral traditions from around the globe.

A Good Death

Death is a physical, psychological, social, and spiritual event. Family members who witness the last weeks, days, hours, and minutes of their loved one's life will remember the death for all their lives. Although death is often perceived negatively in the American culture, research has found several themes that define a "good death" when nurses and the interdisciplinary team are caring for dying patients and their families:[43]

- Patient preferences are met, including preferences for the dying process (i.e., where and with whom) and preparation for death (i.e., advanced directives, funeral arrangements).
- The patient is pain-free with emotional well-being.
- The family is prepared for death and supportive of patient's preferences.
- Dignity and respect are demonstrated for the patient.
- The patient has a sense of life completion (i.e., saying goodbye and feeling life was well-lived).
- Spirituality and religious comfort are provided.
- Quality of life was maintained (i.e., maintaining hope, pleasure, gratitude)
- There is a feeling of trust/support/comfort from the nurse and interdisciplinary team.[44]

Nurses are often present during these final days and moments with patients during this difficult and sacred time.[45] Read more about nursing care performed during this time in the "Care During the Final Hours" section. See Figure 17.11[46] for an image of a statue named "Dignity Rainbow."

Figure 17.11 Dignity

Bereavement

Bereavement includes grief (the inner feelings) and mourning (the outward reactions) after a loved one has died. A bereavement period is the time it takes for the mourner to feel the pain of the loss, mourn, grieve, and adjust to the world without the presence of the deceased. Bereavement can take a physical toll on a survivor. It is associated with an increased risk of myocardial infarction and cardiomyopathy for survivors, and widows and widowers have an increased chance of dying after their spouses die.[47] See Figure 17.12[48] for an image depicting bereavement by family members.

Figure 17.12 Bereavement

A bereaved person should be encouraged to talk about the death and understand their feelings are normal. They should allow for sufficient time for expression of grief and should postpone significant decisions such as changing jobs or moving. It is also important to encourage them to focus on their spirituality to enhance coping during this difficult time.[49] See Figure 17.13[50] for an image depicting spirituality demonstrated by a bereaved family member.

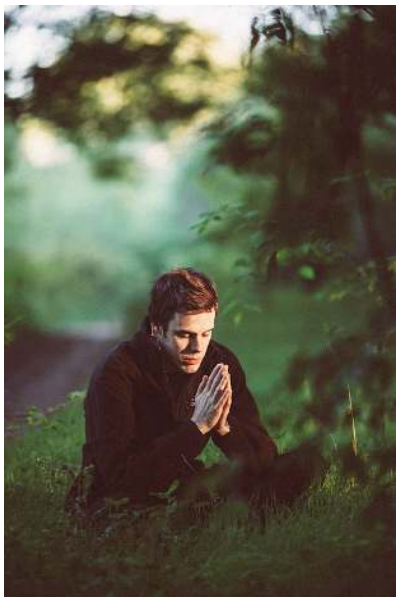

Figure 17.13 Spirituality

Americans often deny the need to express grief or feel the pain that accompanies a loss. However, although painful, both are beneficial to healing. As part of the interdisciplinary health team, nurses are often at the front line of helping patients and family members cope with their feelings of loss and grief. The nursing role during the bereavement period includes the following:

- Enhancing coping
- Assessing and facilitating spirituality

- Facilitating the grieving process by supporting the patient and survivors to feel the loss, express the loss, and move through the tasks of grief
- Communicating assessments and interventions with the interdisciplinary team[51]

Children

Children who have experienced the loss of a parent, sibling, grandparent, or friend experience grief based on their developmental stage. It can be normal grief or complicated grief. Children may be limited in their ability to verbalize and describe their feelings and grief. See Figure 17.14[52] for an image of a grieving child.

Figure 17.14 Grieving Child

Symptoms of grief in younger children include nervousness, uncontrollable rages, frequent sickness or accidents, rebellious behavior, hyperactivity, nightmares, depression, compulsive behavior, memories fading in and out, excessive anger, overdependence on the remaining parent, denial, and/or disguised anger. Children may not understand that death is permanent until they are in preschool or older. It is important to use the word “death” and not euphemisms like “gone to sleep” or “gone away.”[53]

Symptoms of grief in older children include difficulty concentrating, forgetfulness, decreased academic performance, insomnia or sleeping too much, compulsiveness, social withdrawal, antisocial behavior, resentment of authority, overdependence, regression, resistance to discipline, suicidal thoughts or actions, nightmares, symbolic dreams, frequent sickness, accident proneness, overeating or undereating, truancy, experimentation with alcohol or drugs, depression, secretiveness, sexual promiscuity, or running away from home.[54]

Play is the universal language of children, so nurses should use it therapeutically when possible. Encouraging children that their grief is “normal” gives them comfort. Refer children, parents, and families to grief specialists as indicated. Make sure families are aware of local support groups.[55]

Parents and Grandparents

For parents, the death of a child can be devastating with a great need for bereavement support. For grandparents, the grief can be twofold as they experience their own grief, in addition to witnessing the grief of their child (the parent). Studies have shown that grandparents’ grief is seldom acknowledged.[56] See Figure 17.15[57] for an image of a sculpture depicting mourning for a child.

Figure 17.15 Mourning for a Child

> **Note**
>
> For more information on support for parents experiencing infant loss, go to http://nationalshare.org/

Spouses

The death of a husband or wife is well recognized as an emotionally devastating event, being ranked on life event scales as the most stressful of all possible losses. The intensity and persistence of the pain associated with this type of bereavement is thought to be due to the emotional marital bonds linking husbands and wives to each other. Spouses are co-managers of home and family, companions, sexual partners, and fellow members of larger social units.

Therapeutic Communication Tips

When communicating with the bereaved, it is more important to listen and be present rather than say the "right words." It is also helpful to simply encourage silence. However, these phrases should be avoided because they can create barriers in therapeutic communication:

- Avoid statements like, "I know/can imagine/understand how you feel." Even if you have been through a similar situation, you don't know how the survivor feels. Instead say, "I'm sorry you have to go through this…" or "I know this is hard…"
- Don't minimize the individual's grief reaction with a statement like, "You should be over this by now." Instead, say, "This process takes time, so don't feel as if you need to rush through it."
- Avoid statements that minimize the significance of the loss, such as, "At least you had a good life with them." Instead, focus on exploring their feelings related to the loss, such as, "Tell me what your relationship was like."[58]

Completion of the Grieving Process

Grief work is never completely finished because there will always be times when a memory, object, song, or anniversary of the death will cause feelings of loss for the survivor. However, healing occurs and is characterized by the following:

- The pain of the loss is lessened.

- The survivor has adapted to life without the deceased.
- The survivor has physically, psychologically, and socially “let go.”[59]

Letting go is a difficult process. One can let go and still find love and true meaning in the relationship they had with their loved one. Letting go does not mean cutting oneself off from the memories, but adapting to the loss and the continued bonds with the deceased.[60] See Figure 17.16[61] for a depiction of letting go by lighting a candle in memory of the deceased.

Figure 17.16 Letting Go

Self-Care

It is important for nurses to recognize that providing end-of-life care can have a significant impact on them. A nurse’s grief might be exacerbated when patient loss is unexpected or is the result of a traumatic experience. For example, an emergency room nurse who provides care for a child who died as a result of a motor vehicle accident may find it difficult to cope with the loss and resume their normal work duties.

Grief can also be compounded when loss occurs repeatedly in one’s work setting or after providing care for a patient for a long period of time. In some health care settings, especially during the COVID-19 pandemic, nurses do not have time to resolve grief from a loss before another loss occurs. Compassion fatigue and burnout occur frequently with nurses and other health care professionals who experience cumulative losses that are not addressed therapeutically.

Compassion fatigue is a state of chronic and continuous self-sacrifice and/or prolonged exposure to difficult situations that affect a health care professional’s physical, emotional, and spiritual well-being. This can lead to a person being unable to care for or empathize with someone’s suffering. **Burnout** can be manifested physically and psychologically with a loss of motivation. It can be triggered by workplace demands, lack of resources to do work professionally and safely, interpersonal relationship stressors, or work policies that can lead to diminished caring and cynicism.[62] See Figure 17.17[63] for an image depicting a nurse at home experiencing burnout due to exposure to multiple competing demands of work, school, and family responsibilities.

Figure 17.17 Burnout

Self-care is important to prevent compassion fatigue and burnout. It is important for nurses to recognize the need to take time off, seek out individual healthy coping mechanisms, or voice concerns within their workplace. Prayer, meditation, exercise, art, and music are examples of healthy coping mechanisms that nurses can use to progress through their individual grief experience. Additionally, many organizations sponsor employee assistance programs that provide counseling services. These programs can be of great value and benefit in allowing individuals to voice their individual challenges with patient loss. In times of traumatic patient loss, many organizations hold debriefing sessions to allow individuals who participated in the care to come together to verbalize their feelings. These sessions are often held with the support of chaplains to facilitate individual coping and verbalization of feelings. (Read more about the role of chaplains in the "Spirituality" chapter.)

Throughout your nursing career, there will be times to stop and pay attention to warning signs of compassion fatigue and burnout. Here are some questions to consider:

- Has my behavior changed?
- Do I communicate differently with others?
- What destructive habits tempt me?
- Do I project my inner pain onto others?[64]

By becoming self-aware, you can implement self-care strategies to prevent compassion fatigue and burnout. Use the following "A's" to assist in building resilience, connection, and compassion:

- **Attention:** Become aware of your physical, psychological, social, and spiritual health. What are you grateful for? What are your areas of improvement? This protects you from drifting through life on autopilot.
- **Acknowledgement:** Honestly look at all you have witnessed as a health care professional. What insight have you experienced? Acknowledging the pain of loss you have witnessed protects you from invalidating the experiences.
- **Affection:** Choose to look at yourself with kindness and warmth. Affection prevents you from becoming bitter and "being too hard" on yourself.
- **Acceptance:** Choose to be at peace and welcome all aspects of yourself. By accepting both your talents and imperfections, you can protect yourself from impatience, victim mentality, and blame.[65]

In addition to self-care strategies, it is helpful for nurses to obtain additional education in end-of-life care. See the following hyperlink for more information about obtaining a palliative care certificate for your portfolio.

> **Note**
>
> Read more about online end-of-life curriculum available on the American Association of Colleges of Nursing's End-of-Life-Care Curriculum web page.

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16.3: Applying the Nursing Process to Grief

Grieving a loss is a normal process that has implications for both patient and family well-being. NANDA formally recognizes the dimensions of grief with the nursing diagnoses of *Grieving* and *Complicated Grieving*. Recall that grief can be experienced due to many types of loss, in addition to death. For example, when patients receive a diagnosis of breast cancer, they may demonstrate signs of various stages of grief, such as denial, anger, bargaining, depression, and acceptance. When undergoing mastectomy and chemotherapy, the patient may grieve over the loss of prior body image.

Communities can also experience grief. For example, when a town experiences a significant tragedy, such as a devastating flood or a tornado, there can be widespread community grief as families grieve the loss of life, property, or a previous way of life. In these situations, nurses are cognizant of the multiple factors that may impact an individual's health and grieving process. Identifying these factors can help ensure that appropriate resources are mobilized to facilitate coping and progression through the grief process.

Assessment

Grief assessment includes the patient, family members, and significant others. It begins when a patient is diagnosed with an acute, chronic, or terminal illness and/or when the patient is admitted to a hospital, nursing facility, or assisted living facility. It continues throughout the course of a terminal illness for the patient, family members, and significant others and then continues through the bereavement period for the survivors. During the bereavement period, the nurse monitors for symptoms of complicated grief.[1]

Grief can be manifested by physical, emotional, and cognitive symptoms. Physical symptoms can occur, such as feeling ill, headaches, tremors, muscle aches, exhaustion, insomnia, loss of appetite, or weight loss or gain. Cognitive symptoms may occur, such as lack of concentration, confusion, and hallucinations. Emotional symptoms, such as anxiety, guilt, anger, fear, sadness, helplessness, or feelings of relief may occur. These symptoms of grief and loss can be manifested in many different ways and can vary from day to day. Manifestations of grief are unique to the individual and may be influenced by one's age, culture, resources, and previous experiences with loss. Additionally, as patients cope with grief and loss, it is important for the nurse to recognize that support is often needed by their family members.[2]

Any behavior that may endanger the patient or family should be reported to the health care provider, such as symptoms of depression, suicidal ideation, or symptoms lasting greater than six months.

Diagnoses

Consult a nursing care planning resource when selecting nursing diagnoses for patients and their family members experiencing grief. See Table 17.3 for definitions and selected defining characteristics of the NANDA-I diagnoses *Grieving* and *Complicated Grieving* while also keeping in mind the previous discussion in this chapter regarding stages and tasks of normal grief.

Table 17.3 NANDA-I Nursing Diagnoses Related to Grieving[3]

NANDA-I Diagnosis	Definition	Selected Defining Characteristics
Grieving	A normal, complex process that includes emotional, physical, spiritual, social, and intellectual responses and behaviors by which individuals, families, and communities incorporate an actual, anticipated, or perceived loss into their daily lives.	• Alteration in activity level • Alteration in sleep pattern • Alteration in dream pattern • Blaming • Despair • Detachment • Disorganization • Finding meaning in a loss • Guilt about feeling relieved • Maintaining a connection to the deceased
Complicated Grieving	A disorder that occurs after the death of a significant other, in which the experience of distress accompanying bereavement fails to follow normative expectations and manifests in functional impairment.	• Anger • Anxiety • Avoidance of grieving • Decrease in functioning in life roles • Depression • Disbelief • Feeling detached from others • Feeling of emptiness • Feeling of shock • Low levels of intimacy • Mistrust • Preoccupation with thoughts about deceased person • Self-blame • Traumatic distress

Examples

See the following for examples of PES statements related to *Grieving* and *Complicated Grieving:*

- A patient diagnosed with metastatic cancer is advised they have less than six months to live. They begin to move through the stages of grief as they assimilate this information. A sample NANDA-I diagnosis in current PES format is: *"Grieving related to anticipatory loss as evidenced by detachment, disorganization, and alteration in activity level."* The nurse would plan and implement interventions to enhance coping for this patient.
- A patient's husband died two years ago, and she continues to be preoccupied with thoughts about her husband. Her grown children live several hours away, and she becomes isolated and unable to complete daily activities, such as cleaning the house and grocery shopping. A sample PES statement is: *"Complicated Grieving related to insufficient social support as evidenced by avoidance of decreased functioning and preoccupation with thoughts about her deceased husband."* The nurse would plan interventions to facilitate grief work while also arranging for assistance with ADLs and IADLs in the patient's home.

Outcome Identification

Goal setting and outcome identification for patients and family members experiencing grief are customized to the specific situation and focus on grief resolution. Grief resolution is evidenced by the following indicators:

- Resolves feelings about the loss
- Verbalizes reality and acceptance of loss
- Maintains living environment
- Seeks social support[4]

For the nursing diagnosis of *Grieving* and *Complicated Grieving*, a sample goal is, "The p*atient will experience grief resolution.*"

A sample SMART outcome is, "*The patient will discuss the meaning of the loss to their life in the next 2 weeks*."[5]

Planning and Implementing Interventions

Nurses are in the ideal position to assist patients with identifying and expressing their feelings related to loss. The most important intervention that nurses can provide is active listening and offering a supportive presence. Actively listening to the bereaved helps them express their feelings and relate the emotions and feelings related to the loss. Interventions to facilitate grief resolution focus on coping enhancement, anticipatory grieving interventions, and grief work facilitation.

Coping Enhancement

Interventions to enhance coping can be implemented for patients and families experiencing any type of actual, anticipated, or perceived loss. Sample interventions include the following:[6]

- Assist the patient in identifying short- and long-term goals.
- Assist the patient in examining available resources to meet the goals.
- Assist the patient in breaking down complex steps into small, manageable steps.
- Encourage relationships with others who have common interests and goals.
- Assist the patient to solve problems in a constructive manner.
- Appraise the effect of a patient's life situation on roles and relationships.
- Appraise and discuss alternative responses to the situation.
- Use a calm, reassuring approach.
- Provide an atmosphere of acceptance.
- Help the patient identify information they are most interested in obtaining.
- Provide factual information regarding medical diagnosis, treatment, and prognosis.
- Provide the patient with realistic choices about certain aspects of care.
- Encourage an attitude of realistic hope as a way of dealing with hopelessness.
- Seek to understand the patient's perspective of a stressful situation.
- Discourage decision-making when the patient is under severe stress.
- Acknowledge the patient's cultural and spiritual background and encourage use of spiritual resources, if desired.
- Encourage verbalization of feelings, perceptions, and fears.
- Encourage family involvement, as appropriate.
- Assist the patient to identify positive strategies to deal with limitations and manage needed lifestyle or role changes.
- Instruct the patient on the use of relaxation techniques.

See Figure 17.18[7] for an image of a nurse enhancing a patient's ability to cope with their illness through active listening and touch.

Figure 17.18 Coping Enhancement

Anticipatory Grieving Interventions

Anticipatory grieving refers to a grief reaction that occurs in anticipation of an impending loss. Recall that anticipatory grieving can be related to impending death of oneself or a loved one, but it can also occur in anticipation of other losses, such as the loss of a body part due to scheduled surgery or the loss of one's home due to a move to a long-term care facility. Interventions to facilitate resolution of anticipatory grieving include the following:[8]

- Develop a trusting relationship with the patient and family members by using presence and other therapeutic communication techniques.
- Keep the patient and family members apprised of the patient's ongoing condition as much as possible.
- Keep the family informed of the patient's needs for physical care and support in symptom control, and inform them about health care options at the end of life, including palliative care, hospice care, and home care.
- Actively listen as the patient grieves for their own death or loss. Normalize the patient's expressions of grief.
- Discuss the patient's preferred place of death and document their wishes.
- Ask family members about having adequate resources to care for themselves and the critically ill family member.
- Recognize caregiver role strain in family members providing long-term care at home.
- Listen to the family member's story.
- Encourage family members to show their caring feelings and talk with the family members.
- Recognize and respect different feelings and wishes from the patient and their family members.
- Refer the patient and family members to counselors or chaplains for spiritual care as appropriate.

Grief Work Facilitation

Grief work facilitation assists patients and family members in resolution of a significant loss. Sample interventions include the following:[9]

- Identify the loss.
- Assist the patient to identify the initial reaction to the loss.

- Listen to expressions of grief.
- Encourage discussion of previous loss experiences.
- Encourage the verbalization of memories of the loss.
- Make empathetic statements about grief.
- Encourage identification of greatest fears concerning the loss.
- Educate about stages and tasks of the grieving process, as appropriate.
- Support progression through personal grieving stages.
- Assist in identifying personal coping strategies.
- Encourage implementation of cultural, religious, and social customs associated with the loss.
- Answer children's questions about the loss and encourage discussion of feelings.
- Identify sources of community support.
- Reinforce progress made in the grieving process.
- Assist in identifying modifications needed in lifestyle.

Community Resources

Bereavement follow-up with families is a component of hospice programs and includes formal activities and events to promote closure and acceptance. Many hospices have nondenominational memorial services to honor patients. Family members and staff are invited to participate, which can be effective at helping individuals find closure. Other formal types of support can include organized support groups to facilitate discussion and coping. Individual, group counseling, or psychotherapy are other methods that can assist the bereaved in coping with their loss. See additional resources for family members in the following box.

Additional Resources for Grief and Loss

- AARP
- National Hospice and Palliative Care Organization's CaringInfo program
- National Association for Home Care & Hospice
- Hospice Foundation of America
- International Association for Hospice & Palliative Care

Note

Patients and family members experiencing depression or anxiety related to the grieving process may be prescribed antianxiety medications or antidepressants. See the "Central Nervous System" chapter in Open RN *Nursing Pharmacology* for additional information about these medications.

Evaluation

It is always important to evaluate the effectiveness of interventions implemented. Nurses assess the effectiveness of interventions in helping individuals cope and work through the grief process based on the customized outcome criteria established for their situation.

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16.4: Palliative Care Management

Now that we have discussed basic concepts and the nursing process related to the grieving process, let's discuss more details regarding providing palliative care. Nurses provide palliative care whenever caring for patients with chronic disease. As the disease progresses and becomes end-stage, the palliative care they provide becomes even more important. As previously discussed, palliative care is "patient and family-centered care that optimizes quality of life by anticipating, preventing, and treating suffering. Palliative care occurs throughout the continuum of care and involves the interdisciplinary team collaboratively addressing physical, intellectual, emotional, social, and spiritual needs and facilitating patient autonomy, access to information, and choice."[1]

Providing care at the end of life is similar for patients with a broad variety of medical diagnoses. It addresses multiple dimensions of care, including physical, psychological, social, and spiritual aspects:

- **Physical:** Functional ability, strength/fatigue, sleep/rest, nausea, appetite, constipation, and pain
- **Psychological:** Anxiety, depression, enjoyment/leisure, pain, distress, happiness, fear, and cognition/attention
- **Social:** Financial burden, caregiver burden, roles/relationships, affection, and appearance
- **Spiritual:** Hope, suffering, the meaning of pain, religiosity, and transcendence[2]

The interdisciplinary team manages pain and other symptoms, assists with difficult medical decisions, and provides additional support to patients, family members, and caregivers. Nurses have the opportunity to maintain hope for patients and family members by providing excellent physical, psychosocial, and spiritual palliative care. Nursing interventions begin immediately after the initial medical diagnosis and continue throughout the continuum of care until the end of life. As a patient approaches end-of-life care, nursing interventions include the following:

- Eliciting the patient's goals for care
- Listening to the patient and their family members
- Communicating with members of the interdisciplinary team and advocating for the patient's wishes
- Managing end-of-life symptoms
- Encouraging reminiscing
- Facilitating participating in religious rituals and spiritual practices
- Making referrals to chaplains, clergy, and other spiritual support[3]

While providing palliative care, it is important to remain aware that some things cannot be "fixed":

- We cannot change the inevitability of death.
- We cannot change the anguish felt when a loved one dies.
- We must all face the fact that we, too, will die.
- The perfect words or interventions rarely exist, so providing presence is vital.[4]

Note

The Palliative Care Network of Wisconsin contain excellent resources for nurses providing care for seriously ill patients.

View the "Fast Facts" page for extensive information about palliative care and end of life topics.

Management of Common Symptoms

Many patients with serious, life-limiting illnesses have common symptoms that the nurse can assess, prevent, and manage to optimize their quality of life. These symptoms include pain, dyspnea, cough, anorexia and cachexia, constipation, diarrhea, nausea and vomiting, depression, anxiety, cognitive changes, fatigue, pressure injuries, seizures, and sleep disturbances. Good symptom management improves quality of life and functioning at all states of chronic illness. Nurses play a critical role in recognizing these symptoms and communicating them to the interdisciplinary team for optimal management. The plan of care should always be based on the patient's goals and their definition of quality of life.[5] These common symptoms are discussed in the following subsections.

Pain

Pain is frequently defined as “whatever the experiencing person says it is, existing whenever he says it does.”[6] When a patient is unable to verbally report their pain, it is important to assess nonverbal and behavioral indicators of pain. The goal is to balance the patient’s desire for pain relief, along with their desire to manage side effects and oversedation. There are many options available for analgesics. Reassure a patient that reaching their goal of satisfactory pain relief is achievable. Read more about pain management in the “Comfort” chapter. See Figure 17.19[7] for an image illustrating a patient experiencing pain.

Figure 17.19 Pain

Dyspnea

Dyspnea is a subjective experience of breathing discomfort and is the most reported symptom by patients with life-limiting illness. Dyspnea can be extremely frightening. Assessing dyspnea can be challenging because the patient’s respiratory rate and oxygenation status do not always correlate with the symptom of breathlessness.[8] See Figure 17.20[9] for an image of a patient experiencing dyspnea.

Figure 17.20 Dyspnea

When assessing dyspnea, include the following components:

- Ask the patient to rate the severity of their breathlessness on a scale of 0-10
- Assess their ability to speak in sentences, phrases, or words
- Assess the patient's anxiety
- Observe respiratory rate and effort
- Measure oxygenation status (i.e., pulse oximetry or ABG)
- Auscultate lung sounds
- Assess for the presence of chest pain or other pain
- Assess factors that improve or worsen breathlessness
- Evaluate the impact of dyspnea on functional status and quality of life[10]

If you suspect that new dyspnea is caused by an acute condition, report assessment findings immediately to a health care provider. However, in end-stage disease, dyspnea can be a chronic condition that is treated with pharmacological and nonpharmacological management. Relatively small doses of opioids can be used to improve dyspnea while having little impact on their respiratory status or a patient's life expectancy. The dosage should be titrated to the patient's desired goals for relief of dyspnea without over sedation.

Nonpharmacological interventions for dyspnea include pursed-lip breathing, energy conservation techniques, fans and open windows to circulate air, elevation of the patient bed, placing the patient in a tripod position, and relaxation techniques such as music and a calm, cool environment. Patient education can also reduce anxiety.[11] Read more about nonpharmacological interventions for dyspnea in the "Oxygenation" chapter.

Cough

A cough can be frustrating and debilitating for a patient, causing pain, fatigue, vomiting, and insomnia. See Figure 17.21[12] for an image of a patient with a chronic cough. Coughing is frequently present in advanced diseases such as chronic obstructive pulmonary disease (COPD), heart failure (HF), cancer, and AIDS. There are several potential causes of a cough. Medications that

can be used to control a cough are opioids, dextromethorphan, and benzonatate. Guaifenesin can be used to thin thick secretions, and anticholinergics (such as scopolamine) can be used for high-volume secretions.

Figure 17.21 Cough

Anorexia and Cachexia

Anorexia (loss of appetite or loss of desire to eat) and **cachexia** (wasting of muscle and adipose tissue due to lack of nutrition) are commonly found in advanced disease. See Figure 17.22[13] for an image of a patient with cachexia. Weight loss is present in both conditions and is associated with decreased survival. Unfortunately, aggressive nutritional treatment does not improve survival or quality of life and can actually create more discomfort for the patient.[14]

Figure 17.22 Cachexia

Assessment of anorexia and cachexia focuses on understanding the patient's experience and concerns, as well as determining potentially reversible causes. Referral to a dietician may be needed. Read more about nutritional assessment in the "Nutrition" chapter.

Interventions for anorexia and cachexia should be individualized for each patient with the goal being eating for pleasure for those at the end of life. Patients should be encouraged to eat their favorite foods, as well as select foods that are high in calories and easy to chew. Small, frequent meals with pleasing food presentation are important. Family members should be aware that odors associated with cooking can inhibit eating. The patient may need to be moved away from the kitchen or cooking times separated from eating times.[15]

Medication may be prescribed to increase intake, such as mirtazapine or olanzapine. Prokinetics such as metoclopramide may be helpful in increasing gastric emptying. Medical marijuana or dronabinol may also be useful. In some cases, enteral nutrition is helpful for patients who continue to have an appetite but cannot swallow.[16]

Patient and family member education about anorexia at the end of life is important. Nurses should be aware that many family members perceive eating as a way to "get better" and are distressed to see their loved one not eat. After listening respectfully to their concerns, explain that the patient may feel more discomfort when forcing themselves to eat.

Constipation

Constipation is a frequent symptom in many patients at the end of life for many factors, such as low intake of food and fluids, use of opioids, chemotherapy, and impaired mobility. Constipation is defined as having less than three bowel movements per week. The patient may experience associated symptoms such as rectal pressure, abdominal cramps, bloating, distension, and straining. See Figure 17.23[17] for an image of a patient experiencing constipation.

Figure 17.23 Constipation

The goal is to establish what is considered normal for each patient and to have a bowel movement at least every 72 hours regardless of intake. Treatment includes a bowel regimen such as oral stool softeners (i.e., docusate) and a stimulant (i.e., sennosides). Rectal suppositories (i.e., bisacodyl) or enemas should be considered when oral medications are not effective or the patient can no longer tolerate oral medications.[18]

Read more about managing constipation in the "Elimination" chapter.

Diarrhea

Diarrhea is defined as having more than three unformed stools in 24 hours. Diarrhea can be especially problematic for patients receiving chemotherapy, pelvic radiation, or treatment for AIDS. It can cause dehydration, skin breakdown, and electrolyte imbalances and dramatically affect a person's quality of life. It can also be a huge burden for caregivers.[19]

Early treatment of diarrhea includes promoting hydration with water or fluids that improve electrolyte status (i.e., sports drinks). Intravenous fluids may be required based on the patient's disease stage and goals for care. Medications such as loperamide, psyllium, and anticholinergic agents may also be prescribed.

Read more about managing diarrhea in the "Elimination" chapter.

Nausea and Vomiting

Nausea is common in advanced disease and is a dreaded side effect of many treatments for cancer. Assessment of nausea and vomiting should include the patient's history, effectiveness of previous treatment, medication history, frequency and intensity of episodes of nausea and vomiting, and activities that precipitate or alleviate nausea and vomiting.[20]

Nonpharmacological interventions for nausea include eating meals and fluids at room temperature, avoiding strong odors, avoiding high-bulk meals, using relaxation techniques, and listening to music therapy.[21] Antiemetic medications, such as prochlorperazine and ondansetron, may be prescribed.

Read more information about managing nausea in the "Antiemetics" section of the Gastrointestinal chapter in Open RN *Nursing Pharmacology*.

Depression

Patients who have a serious life-threatening illness will normally experience sadness, grief, and loss, but there is usually some capacity for pleasure. Persistent feelings of helplessness, hopelessness, and suicidal ideation are not considered a normal part of the grief process and should be treated. Undertreated depression can cause a decreased immune response, decreased quality of life, and decreased survival time. Evaluation of depression requires interdisciplinary assessment and referrals to social work and psychiatry may be needed.[22]

Antidepressants such as serotonin selective reuptake inhibitors (i.e., fluoxetine, paroxetine, sertraline, or citalopram) are generally prescribed as first-line treatment of depression. Other medication may be prescribed if these medications are not effective.

Nonpharmacological interventions for depression may include the following:

- Promoting and facilitating as much autonomy and control as possible
- Encouraging patient and family participation in care, thus promoting a sense of control and reducing feelings of helplessness
- Reminiscing and life review to focus on life accomplishments and to promote closure and resolution of life events. See Figure 17.24[23] for an image of reminiscing with pictures.
- Grief counseling to assist patients and families in dealing with loss
- Maximizing symptom management
- Referring to counseling for those experiencing inability to cope
- Assisting the patient to draw on previous sources of strength, such as faith, religious rituals, and spirituality
- Referring for cognitive behavioral techniques to assist with reframing negative thoughts into positive thoughts
- Teaching relaxation techniques
- Providing ongoing emotional support and “being present”
- Reducing isolation
- Facilitating spiritual support[24]

Figure 17.24 Reminiscing with Pictures

A suicide assessment is critical for a patient with depression. It is important for nurses to ask questions, such as these:

- Do you have interest or pleasure in doing things?
- Have you had thoughts of harming yourself?
- If yes, do you have a plan for doing so?

To destigmatize the questions, it is helpful to phrase them in the following way, “It wouldn’t be unusual for someone in your circumstances to have thoughts of harming themselves. Have you had thoughts like that?” Patients with immediate, precise suicide plans and resources to carry out this plan should be immediately evaluated by psychiatric professionals.[25]

Anxiety

Anxiety is a subjective feeling of apprehension, tension, insecurity, and uneasiness, usually without a known specific cause. It may be anticipatory. It is assessed along a continuum as mild, moderate, or severe. Patients with life-limiting illness will experience various degrees of anxiety due to various issues such as their prognosis, mortality, financial concerns, uncontrolled pain and other symptoms, and feelings of loss of control.[26]

Physical symptoms of anxiety include sweating, tachycardia, restlessness, agitation, trembling, chest pain, hyperventilation, tension, and insomnia. Cognitive symptoms include recurrent and persistent thoughts and difficulty concentrating. See Figure 17.25[27] for an illustration of anxiety.

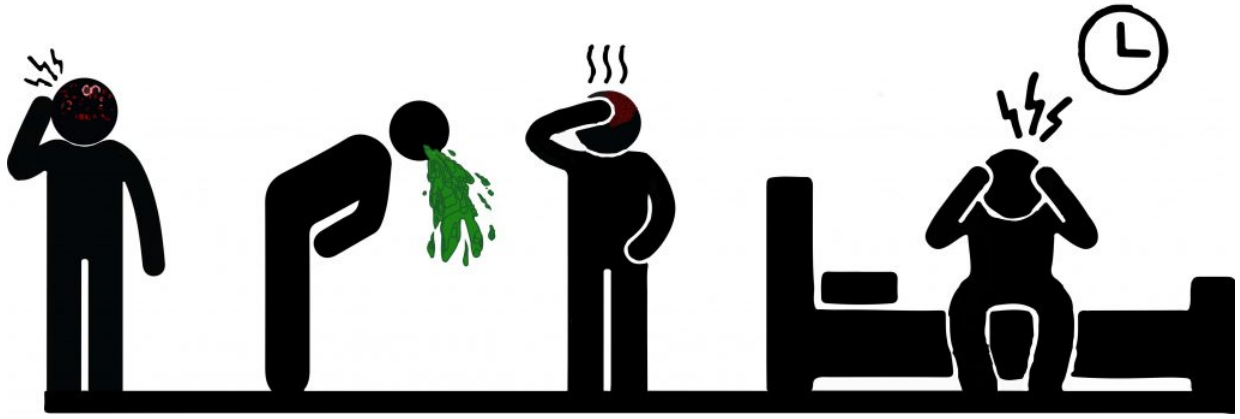

Figure 17.25 Anxiety

Benzodiazepines (i.e., lorazepam), may be prescribed to treat anxiety. However, the nurse should assess for adverse effects such as oversedation, falls, and delirium, especially in the frail elderly.

Nonpharmacological interventions are crucial and include the following:

- Maximizing symptom management to decrease stressors
- Promoting the use of relaxation and guided imagery techniques, such as breathing exercises, progressive muscle relaxation, and the use of audiotapes
- Referring for psychiatric counseling for those unable to cope with the experience of their illness
- Facilitating spiritual support by contacting chaplains and clergy
- Acknowledging patient fears and using open-ended questions and active listening with therapeutic communication
- Identifying effective coping strategies the patient has used in the past, as well as teaching new coping skills such as as relaxation and guided imagery techniques
- Providing concrete information to eliminate fear of the unknown
- Encouraging the use of a stress diary that helps the patient understand the relationship between situations, thoughts, and feelings[28]

Cognitive Changes

Delirium is a common cognitive disorder in hospitals and palliative care settings. Delirium is an acute change in cognition and requires urgent management in inpatient care. Up to 90% of patients at the end of life will develop delirium in their final days and hours of life. Early detection of delirium can cause resolution if the cause is reversible.[29]

Symptoms of delirium include agitation, confusion, hallucinations, or inappropriate behavior. It is important to obtain information from the caregiver to establish a mental status baseline. The most common cause of delirium at end of life is medication, followed by metabolic insufficiency due to organ failure.[30]

Medications such as neuroleptics (i.e., haloperidol and chlorpromazine) or benzodiazepines may be prescribed. It is also important to remember that delirium can be related to opioid toxicity. It may be helpful to request the presence of family to reorient the patient, as well as provide nonpharmacological interventions such as massage, distraction, and relaxation techniques.[31]

Read more about delirium in the "Cognitive Impairments" chapter.

Fatigue

Fatigue has been cited as the most disabling condition for patients receiving a variety of treatments in palliative care. Fatigue is defined as a distressing, persistent, subjective sense of physical, emotional, and/or cognitive tiredness or exhaustion that is not proportional to activity and interferes with usual functioning.[32] See Figure 17.26[33] for an image of an older patient experiencing fatigue.

Figure 17.26 Fatigue

The primary cause of fatigue is metabolic alteration related to chronic disease, but it can also be caused by anemia, infection, poor sleep quality, chronic pain, and medication side effects. Nonpharmacological interventions include energy conservation techniques.

Pressure Injuries

Patients at end of life are at risk for quickly developing pressure injuries, formerly referred to as pressure ulcers. Prevention is key and requires interventions such as promoting mobility, reducing moisture, and encouraging nutrition as appropriate.

The Kennedy Terminal Ulcer is a type of pressure injury that some patients develop shortly before death resulting from multiorgan failure. It usually starts on the sacrum and is shaped like a pear, butterfly, or horseshoe. It is red, yellow, black, or purple in color with irregular borders and progresses quickly. For example, the injury may be identified by a nurse at the end of a shift who says, "That injury was not present when I assessed the patient this morning."[34]

Read more about assessing, preventing, and treating pressure injuries in the "Integumentary" chapter.

Seizures

Seizures are sudden, abnormal, excessive electrical impulses in the brain that alter neurological functions such as motor, autonomic, behavioral, and cognitive function. A seizure can be caused by infection, trauma, brain injury, brain tumors, side effects of medications, metabolic imbalances, drug toxicities, and withdrawal from medications.[35]

Seizures can have gradual or acute onset and include symptoms such as mental status changes, motor movement changes, and sensory changes. Treatment is focused on prevention and limiting trauma that occur during the seizure. Medications may be prescribed such as phenytoin, phenobarbital, benzodiazepines, or levetiracetam.[36]

Sleep Disturbances

Sleep disturbances affect quality of life and can cause much suffering. It can be caused by poor pain and symptom management, as well as environmental disturbances. Nurses can promote improved sleep for inpatients by creating a quiet, calm environment, promoting sleep routines, and advocating for periods of uninterrupted rest without disruptions by the health care team.

Read more about promoting good sleep in the “Sleep and Rest” chapter.

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16.5: Nursing Care During the Final Hours of Life

Recognizing approaching death allows the patient, family members, and interdisciplinary team to prepare for the actively dying phase. The nurse has two primary responsibilities at this time: providing symptom management and preparing the family for what to expect as death is approaching. Nurses also have additional responsibilities regarding organ donation, postmortem care, and facilitating arrangements.

It is essential for nurses to ensure that patients and their family members have access to the interdisciplinary team in the final days before death. Developmentally appropriate education should be provided to the patient, family, and/or other caregivers about what to expect during the final hours of life, as well as immediately following the patient's death. Early access to hospice support should be facilitated whenever possible to optimize care outcomes for the patient and the family.[1]

Nurses have a responsibility to carry out and respect the patient's wishes to the extent they can. Each individual patient is different, and what works best for one patient might not work well for another. Dying is a multifaceted process that is unique to every patient. Providing a "good death" for patients means respecting their preferences and offering support for them and their family.

The nurse assumes multiple roles of advocate, professional caregiver, educator, and supporter and is frequently the one to facilitate a dignified death no matter the setting where death occurs. Nurses must be comfortable in "providing presence" and "bearing witness" with dying patients and their families. Rhythms of care (i.e., vital signs and routine assessments) often change during these final hours; be aware if these actions provide comfort or are burdens causing discomfort.[2]

Avoid overwhelming the family with too much medical jargon. Provide simple answers in accordance with the patient's and family's understanding and readiness for responses. Family members may be tired, emotional, and have difficulty concentrating. Because they may be in crisis and unable to retain much information, you may need to answer the same questions or provide the same information repeatedly.[3] It is helpful to provide family members written resources about what to expect. A commonly used resource in hospice care that can be very comforting for family members is *Gone From My Sight: The Dying Experience*. It is an inexpensive resource available to order online if it is not available at your facility.

There is no typical death. Each person dies in their own way, at their own time, with their own beliefs and values, and with unique relationships with family, friends, and significant others. Many people experience similar psychological and emotional responses during this time, such as fear of the dying process, fear of abandonment, fear of the unknown, nearing death awareness, and withdrawal. The nurse is essential in addressing patient's fears and managing their symptoms according to their preferences.

Managing Common Symptoms During the Dying Process

Most patients experience the dying process as a natural slowing down of physical and mental processes. Two roads to death have often been described. One road involves sedation and lethargy leading to a comatose state and death. Another road involves confusion, restlessness, muscle jerks, seizures, and death.[4]

Pain and Dyspnea

During the final hours of life, changes in level of consciousness can make assessment and management of pain challenging. Consider behavioral cues such as grimacing and posturing, as well as previous pain issues. Some patients also demonstrate signs of increased dyspnea, commonly referred to as "air hunger," with labored and increased work of breathing.

Pain pumps may be used to relieve severe pain, especially cancer-related pain. Medication can also be administered orally, even up to the last hours of life, for pain and dyspnea.[5] For example, Roxanol is a highly concentrated solution of morphine sulfate that can be administered sublingually for pain and/or air hunger. The typical dosage is 20 mg/mL. Morphine not only relieves pain, but also is used to relax respiratory muscles and improve air exchange to relieve air hunger. However, the nurse should always balance providing analgesia with the patient's goal for maintaining alertness.

Principle of Double Effect

Nurses and family members may be hesitant to administer morphine in the last few hours of life, fearing that it may hasten death, yet also not wanting to see the patient suffer. The American Nurses Association and the Palliative Care Nurses Association support the nurse in this dilemma that is often referred to as the **Rule of Double Effect**. If the intent is good (i.e., relief of pain and suffering), then the act is morally justifiable even if it causes an unintended result of hastening death. Thus, the nurse should

provide pain relief, without fear of sedation or respiratory depression that typically limits the administration of opioids, in the final days and hours of a patient's life.[6]

Terminal Secretions

Terminal secretions, commonly known as the "death rattle," can be a distressing and frightening symptom for family members and those involved in the patient's care. Terminal secretions are usually observed 3-23 hours before death. Anticholinergic medications, such as atropine or scopolamine, can be used to dry the secretions. It is also helpful to reposition the patient on their side, if feasible. Suctioning is not recommended because it is not typically effective for these types of secretions and can cause increased agitation and distress in the patient. Family members caring for patients at home under hospice care should be warned about this phenomenon and instructed about potential treatment.[7]

Note

View a supplementary video (11 minutes) on Lessons from a hospice nurse: Alia Indrawan at TEDxUbud.[8]

Phases of Dying

There are typically four phases that a person progresses through when dying. These phases include actively dying, transitioning, imminent death, and death.

Actively Dying

A patient in this phase will experience symptoms such as pain, dyspnea, fatigue, cough, incontinence, nausea and vomiting, depression, anxiety, and seizures. Treatments during this phase are focused on symptom management and emotional support to both the patient and the family. Read more about symptom management in the "Palliative Care Management" section of this chapter.

Educating the family and patient on what to expect is essential. Include written materials and progressive education as the patient's condition changes. It is often helpful to provide guidance to the family in anticipation of upcoming phases of dying.

Transitioning

This is the phase between actively dying and imminent death where the patient withdraws physically. The patient begins to demonstrate decreased interest in activities of life with less frequent interactions with others and often has hallucinations. Other signs of this phase include hypoxia and acidosis. It is important for the nurse to keep the patient's environment as comfortable as possible, such as keeping lights low and minimizing alarms and other noises.

Imminent

Death will occur at any point during the imminent phase due to multisystem organ failure. This phase usually occurs within 24 hours before death with common, recognizable signs. See Table 17.5 for typical signs that occur during this stage and indicate that death is imminent.

Table 17.5 Typical Signs as Death Becomes Imminent

System	Signs
Cardiovascular	Cool, clammy skin; mottled extremities; rapid or irregular pulse
Musculoskeletal	Inability to ambulate, move, or turn in bed
Neurological	Confusion, restlessness, increased lethargy, hallucinations
Respiratory	Increased respiratory rate, inability to clear secretions, Cheyenne-Stokes respirations, noisy breathing (i.e., terminal secretions)
Urinary	Decreased or dark urine output

During this stage, the family often requires additional support from the nurse as death becomes more of a reality. Vital signs are usually no longer assessed because they do not provide a benefit for the patient. The nurse should offer support by encouraging reminiscence, calming music, touch, light massage, presence, and prayer (according to family preferences) as the patient begins their transition.

The dying process is variable for each individual. Families often ask for a definitive time frame when death will occur. Although these signs that indicate progression within 24 hours, a specific time line cannot be predicted. Some patients seem to instinctively know when death will occur.

Be aware of religious practices and beliefs that are sacred to the patient and/or their family members at this time. Provide spiritual comfort through presence and prayer (based on patient preferences and the nurse's comfort level). Call the agency chaplain and/or the patient's clergy as indicted. (Read more about chaplains in the "Spirituality" chapter.) Encourage family members to bring in favorite hymns, scriptures, or symbols (i.e., a rosary) so the patient can experience these spiritual comforts through different senses (hearing, seeing, touching).[9]

Consider coaching family members about the five tasks that may serve as parting words with their loved one:

- To ask forgiveness
- To forgive
- To say "Thank you"
- To say "I love you"
- To say "Goodbye"

> **Note**
>
> Read more about parting tasks in the book by Ira Byock, M.D. titled *The Four Things That Matter Most.*[10]

Death Vigil by Family Members

Family members have historically desired to be at the patient's bedside during the days to hours before death. See Figure 17.27[11] for artwork depicting the death vigil by family members when George Washington died.

Figure 17.27 Death Vigil

Family members have common fears, such as the following:

- The patient being alone when they die
- Not knowing how to react or what to do
- Watching the patient suffer
- Not knowing if the patient has died
- Giving the “last dose” of medication at home and inadvertently causing death

It is important for the nurse to address family members’ fears proactively and provide education and support.

Death and Postmortem Care

Clinical death occurs when blood circulation ceases, the heart stops beating, and respirations stop. Within 4-6 minutes of clinical death, CPR can be performed to attempt resuscitation. However, because most patients receiving palliative or hospice care have Do Not Resuscitate (DNR) orders in place, CPR is not performed. After this time window, brain cells die from lack of oxygen, followed by death of cells in other organs. This is called biological death. Rigor mortis, stiffening of muscles, will begin to set in several hours following death and be at its peak 12-18 hours following death. Rigor mortis disappears 48 hours following death. The nurse should listen to the apical heartbeat for one full minute to ensure and document that death has occurred.

When a resident or patient passes away, the nurse should perform and document a final nursing assessment that includes the following:

- Date and time of the assessment
- Patient name
- Time of physician contact

- Individuals present at time of death (i.e., family members, friends)
- Lack of response to stimuli
- Absence of apical pulse
- Arrangement for transport to the morgue or funeral home

Care following a patient's death requires sensitivity for the dignity of the deceased, as well as time for the care of family members. Following the death pronouncement, family members may feel numb and confused about what to do next. In a quiet and private place, explain the process for care of the body immediately following death.[12]

Following death, medical supplies and equipment tubes should be removed unless a coroner must approve of such measures. The goal is to provide a more personal closure experience for the family, leaving them memories of the deceased as a loved one rather than as a patient. Bathing, dressing, and positioning the body show respect and provide dignity for the patient and family. Position the body in proper alignment and place dentures in the mouth. Place dressings on leaking wounds and apply incontinence products as needed. Remember to honor cultural practices regarding care of the body after death and who should provide that care.[13]

The nurse should continue to provide support for the family and offer assistance as needed, such as contacting other family members to inform them of the death. Some family members may want to take pictures, comb their loved one's hair, wash their face, hold their hand, kiss them, or crawl into bed and hold them. Support families in their various ways of saying goodbye.

Ask if the family completed preplanning for burial or cremation, but do not rush their final visit. In some cases, families will not have had time for making prearrangements. If they have made prearrangements, contact the funeral home. Be aware of county and agency policies that require notification of the local coroner prior to calling the funeral home.[14] When burial is chosen, the body will be embalmed, which is removing blood from the body and replacing it with an embalming solution that contains formaldehyde and other chemicals. The embalming process temporarily preserves the body to be shown at a funeral or memorial service. Cremation is the process of using heat to reduce the body to ashes that can be placed in a container called an urn. In some cultures, cremation is an ancient tradition. Depending on the family's cultural beliefs and preferences, the ashes may be buried, placed in a mausoleum, or kept at home in an urn. See Figure 17.28[15] for an image of a burial in a memorial garden.

Figure 17.28 Burial in a Memorial Garden

In hospital settings, there may be a sense of urgency to get the room cleared as soon as possible so that another patient can be admitted. However, the nurse should advocate for the patient and make arrangements so the family does not feel rushed.[16] After the family has said their goodbyes and left the room, it is the nurses responsibility to ensure identification tags are applied to the body and the patient is moved to the morgue.

Organ Donation

If the patient is an organ or tissue donor, follow procedures as planned and in accordance with state and care setting guidelines, policies, and procedures. The patient's drivers license may have information about their organ donation wishes. Federal law and Medicare regulations mandate that hospitals give surviving family members the chance to authorize donation of their loved one's organs and tissues. Many family members feel consolation in helping others through organ donation despite their own loss. There is no cost for organ or tissue donation.

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16.6: Applying the Nursing Process at End of Life

This section will summarize the steps of the nursing process when caring for a patient who is actively dying and their family members.

Assessment

Assessments are generally limited for those patients at the end of life with the overall treatment goal of providing comfort. The goal in any performed assessment is to help ease the patient's discomfort as the body begins to fail and facilitate a peaceful transition. If end-of-life care is occurring within the hospital setting, the nurse may need to remind members of the care team that "normal" care routines are not required. This may include collection of vital signs, intake and outputs, laboratory blood draws, and full physical assessment. It can feel challenging to switch modes of care in the inpatient setting where so many of our actions are focused on intervention and restoring a patient to health. However it is important to remember that our interventions take a different, but no less important, form. Providing comfort care at the end of life is one of the most important interventions a nurse can do to help ease patient and family suffering.

Subjective Assessment

Many individuals at the end of life may be nonverbal. Some may experience times of reminiscence as they progress toward death. It is important for the nurse to inform the family that communication can be quite variable as the patient progresses toward death, but the sense of hearing may still be intact. Family members and friends should be encouraged to share their thoughts and feelings with the patient, taking time to relate stories of comfort and feelings to the patient. This can be a therapeutic exchange for both the patient and the family.

Objective Assessment

Physical assessments should be limited and focused on providing patient comfort and creating a supportive environment for a therapeutic transition. Signs of pain such as grimacing, moaning, furrowing brow, and physical guarding should be noted and addressed. Many patients may experience increased respirations, labored breathing, and increased secretions that produce an audible respiratory "rattle." The patient typically has a significant decline in circulation as they progress towards death, evidenced by cool and clammy skin, mottled extremities, and diminished pulses. The nurse should continue to monitor for signs of skin breakdown and urinary retention.

Notify the provider of unexpected findings on assessment, such as severe pain not relieved by pain management protocol, acute labored breathing, terminal secretions, or urinary retention resulting in bladder distention.

Diagnosis

As the patient progresses toward death, diagnosis statements are focused on provision of comfort for the patient. Identification of acute pain and ineffective breathing are areas that typically become priority as patients near their final transition. Additionally, attention to family coping and caregiver role strain remain areas of focus as the nurse assists family members in coping with the dying process.

When planning care, review a nursing care planning source for current NANDA-I approved nursing diagnoses and evidence-based nursing interventions. See Table 17.6 for the definition and defining characteristics regarding the NANDA-I diagnosis *Death Anxiety*.[1]

Table 17.6 NANDA-I Nursing Diagnoses Death Anxiety[2]

NANDA-I Diagnosis	Definition	Defining Characteristics
Death Anxiety	Vague, uneasy feeling of discomfort or dread generated by perceptions of a real or imagined threat to one's existence.	• Concern about strain on the caregiver • Deep sadness • Fear of loss of mental abilities when dying • Fear of pain related to dying • Fear of prolonged dying process • Fear of suffering related to dying • Negative thoughts related to death and dying • Powerlessness • Worried about the impact of one's death on significant other

Outcomes

An overall goal for a patient who is actively dying is, *The patient will experience dignified life closure as evidenced by*:

- *Expression of readiness for death*
- *Resolution of important issues*
- *Sharing of feelings about dying*
- *Discussion regarding spiritual concerns* [3]

An example of a SMART outcome for a patient actively dying is, "*The patient will express their fears associated with dying by the end of the shift.*"[4]

Nursing goals for care focus on the provision of comfort. For example, a common nursing goal is, "*The patient will experience adequate pain management based on their expressed goals for pain relief and alertness.*"

Planning and Implementing Interventions

Many patients require pain medications to assist with a therapeutic transition as they near death. These medications often include morphine and lorazepam to help ease pain, dyspnea, and anxiety. It is important for the nurse to be conscientious of the appropriateness of the medication's route of administration, recognizing that patient condition can change rapidly. Concentrated oral solutions are absorbed through the buccal membranes, but if pain management needs are high, it may be necessary to contact the provider regarding a subcutaneous pump. Many patients in the imminent phase have terminal secretions so anticholinergic medications such as atropine or scopolamine may be administered. See the following box for a summary of other nursing interventions in the last days and hours of a patient's life.

Interventions in the Last Days and Hours of Life [5]

- Honor the patient's preferences for end-of-life care.
- Be respectful of the environment. Physical assessment and cares should be provided with the utmost respect and attention to comfort. Shielding the patient from harsh light or loud voices is encouraged to help provide a respectful environment.
- Reinforce the steps of the dying process so that family remains cognizant of what to expect. Although this can feel redundant, this conversation and anticipatory planning are very helpful due to the emotional nature of the situation and challenges that they may experience with information retention.
- Be present and attentive. Use active empathetic listening.
- Encourage the family to create a quiet and comfortable environment.
- Assess the patient for pain and provide pain relief measures based on their preferences.
- Assess the patient for fears related to death.
- Assist the patient with life review and reminiscence.
- Provide music of the patient's choosing.
- Provide social support for families and guide them through end-of-life issues.

- Recognize the spiritual needs of the patient and their family members. Support religious beliefs, rituals, and prayer.
- Encourage family members to be physically close to their loved one and give them permission to touch them.
- When death occurs, allow appropriate time for closure. Provide information regarding the next steps of physical care and transporting the patient.

Evaluation

It is always important to evaluate the effectiveness of interventions based on the outcome criteria established for each patient. The nurse should closely monitor for escalating signs of patient discomfort that is not managed by the current treatment plan. It is helpful to educate the family regarding whom to contact if additional concerns arise.

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16.7: Putting It All Together

Patient Scenario

Mr. Yun is a 34-year-old man presenting to his physician's office for a follow-up visit. The patient recently experienced the loss of his wife in a motor vehicle accident and reports, "I have problems concentrating and I can't sleep at night." The patient chart indicates he has lost 15 pounds since his previous visit last month. He reports, "I have a hard time getting out of bed in the morning." On further questioning, he admits drinking 5-6 alcoholic beverages every night to "numb myself."

Applying the Nursing Process

Assessment: The nurse notes that Mr. Yun is experiencing difficulty concentrating, difficulty sleeping, and unintentional weight loss of greater than 15 pounds since his wife passed away. He self-reports drinking 5-6 alcoholic beverages every night to "numb myself."

Based on the assessment information that has been gathered, the following nursing care plan is created for Mr. Yun:

Nursing Diagnosis: *Ineffective Coping related to inability to deal with a situation as manifested by unintended weight loss, difficulty concentrating, difficulty sleeping, and drinking 5-6 alcoholic beverages daily to "numb myself."*

Overall Goal: *The patient will demonstrate improved coping.*

SMART Expected Outcome: *Mr. Yun will verbalize three positive coping behaviors by the end of the teaching session.*

Planning and Implementing Nursing Interventions:

The nurse will identify the patient's personal resources and relationships. The nurse will use empathetic communication to establish a relationship with the patient. The nurse will encourage the patient to participate in activities that bring personal satisfaction to the patient. The nurse will provide education regarding the value of exercise, meditation, prayer, etc., to enhance individual coping. The nurse will provide the patient with education regarding the support resources available within the patient's community.

Sample Documentation

Mr. Yun exhibits signs of ineffective coping in relation to his inability to deal with the loss of his wife. He reports difficulty concentrating, difficulty sleeping, and drinking 5-6 alcoholic beverages nightly to "numb myself." He has had unintended weight loss of 15 pounds in the past month. Patient education was provided regarding positive coping skills. Mr. Yun verbalized three positive coping behaviors he plans to implement this month.

Evaluation

At the end of the teaching session, the nurse asks Mr. Yun what healthy coping strategies he plans to implement. Mr. Yun states he plans to go for daily walks, limit his alcohol intake to two servings a day, and listen to a meditation app that he enjoys every evening before bed. He plans to contact a local church to attend a support group for widowers. The SMART outcome was "met."

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16.8: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

Scenario A

You are a nurse providing care for Mrs. Lyn, a 47-year-old patient admitted with metastatic lung cancer receiving hospice care. The patient’s condition has declined significantly over the past week; she is actively dying. Over the last 24 hours, Mrs. Lyn has declined rapidly and is now unresponsive but appears to be resting comfortably. You enter the patient’s room and find Mr. Lyn weeping at the patient’s bedside.

1. What actions would you take to comfort Mr. Lyn?
2. Mrs. Lyn develops labored breathing. What medication is helpful to administer to treat dyspnea at end of life?
3. Mrs. Lyn’s breathing becomes less labored with medication, but her respiratory rate becomes irregular. Mr. Lyn tells the nurse, “My daughter lives six hours away and would like to be here when the time comes. How much longer does she have to live?” What is the nurse’s best response?
4. The daughter arrives and seems hesitant to talk to or touch her mother. What tasks can the nurse coach family members to do at the end of a patient’s life?
5. Mrs. Lyn dies the following evening. What postmortem care should the nurse provide?

Scenario B

Terry, 42 year-old male patient, was recently diagnosed with advanced colon cancer and underwent a colon resection a few days ago. While changing his colostomy bag, he comments to the nurse, “I still can’t believe this is happening to me.”

1. According to Kubler-Ross’ theory of grief/loss, what stage of grief is Terry currently experiencing?
2. The nurse responds, “This is a difficult time for you.” Terry replies, “Yes it is. My parents want me to do every kind of experimental treatment possible, but I just want to live my life until the time comes.” The nurse asks, “You have some tough decisions to make. Has anyone talked to you about palliative care yet?” Terry asks, “I’ve never heard of palliative care. What is it?” How would you explain palliative care to him?
3. Terry states, “I don’t want my parents telling my doctor what to do. It is my decision.” The nurse asks, “Do you have any advance directives in place?” Terry responds, “What are advance directives?” How would you explain advance directives to Terry?
4. The nurse identifies “Grieving related to anticipatory loss as evidenced by disbelief and feeling of shock” as a nursing diagnosis for Terry. Identify a SMART outcome.
5. The nurse plans interventions to enhance Terry’s coping. List sample nursing interventions that may help Terry to cope with this new diagnosis.

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16.9: XVII Glossary

Acute grief: Grief that begins immediately after the death of a loved one and includes the separation response and response to stress.

Advance directives: Legal documents that direct care when the patient can no longer speak from themselves, including the living will and the health care power of attorney.

Anorexia: Loss of appetite or loss of desire to eat.

Anticipatory grief: Grief before a loss, associated with diagnosis of an acute, chronic, and/or terminal illness experienced by the patient, family, and caregivers. Examples of anticipatory grief include actual or fear of potential loss or health, independence, body part, financial stability, choice, or mental function.

Bereavement period: The time it takes for the mourner to feel the pain of the loss, mourn, grieve, and adjust to the world without the presence of the deceased.

Burnout: A caregiver's diminished caring and cynicism that can be triggered by workplace demands, lack of resources to do work professionally and safely, interpersonal relationship stressors, or work policies that can lead to diminished caring and cynicism. Burnout may be manifested physically and psychologically with a loss of motivation.

Cachexia: Wasting of muscle and adipose tissue due to lack of nutrition.

Cardiopulmonary resuscitation (CPR): Emergency treatment initiated when a patient's breathing stops or their heart stops beating. It may involve chest compressions and mouth-to-mouth breathing, electric shocks to restart the heart, breathing tubes to open the airway, or cardiac medications.

Comfort care: Care that occurs when the patient's and medical team's goals shift from curative interventions to symptom control, pain relief, and quality of life.

Compassion fatigue: A state of chronic and continuous self-sacrifice and/or prolonged exposure to difficult situations that affect a health care professional's physical, emotional, and spiritual well-being.

Complicated grief: Chronic grief, delayed grief, exaggerated grief, and masked grief are types of complicated grief.

Disenfranchised grief: Any loss that is not validated or recognized.

Do-not-resuscitate (DNR) order: A medical order that instructs health care professionals not to perform cardiopulmonary resuscitation (CPR) if a patient's breathing stops or if the patient's heart stops beating.

Fading away: A transition that families make when they realize their seriously ill family member is dying.

Grief: The emotional response to a loss, defined as the individualized and personalized feelings and responses that an individual makes to real, perceived, or anticipated loss.

Health care power of attorney: A legal document that identifies a trusted individual to serve as a decision maker for health issues when the patient is no longer able to speak for themselves.

Hospice care: A type of palliative care that addresses care for patients who are terminally ill when a health care provider has determined they are expected to live six months or less.

Living will: A legal document that describes the patient's wishes if they are no longer able to speak for themselves due to injury, illness, or a persistent vegetative state. The living will addresses issues like ventilator support, feeding tube placement, cardiopulmonary resuscitation, and intubation.

Loss: The absence of a possession or future possession with the response of grief and the expression of mourning.

Mourning: The outward, social expression of loss. Individuals outwardly express loss based on their cultural norms, customs, and practices, including rituals and traditions.

Normal grief: The common feelings, behaviors, and reactions to loss.

Palliative care: Patient and family-centered care that optimizes quality of life by anticipating, preventing, and treating suffering. Palliative care occurs throughout the continuum of care and involves the interdisciplinary team collaboratively addressing physical, intellectual, emotional, social, and spiritual needs and facilitating patient autonomy, access to information, and choice.

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CHAPTER OVERVIEW

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17.1: Spirituality Introduction

Learning Objectives

- Demonstrate principles of holistic care by incorporating cultural, religious, and spiritual influences on patient health
- Explain the interconnection between spirituality and religious concepts as they relate to health and spiritually sensitive nursing care
- Describe methods to assess the spiritual and religious preferences, strengths, concerns, or distress of clients and plan appropriate nursing care

Spirituality includes a sense of connection to something bigger than oneself and typically involves a search for meaning and purpose in life. People may describe a spiritual experience as sacred or transcendent or simply feel a deep sense of aliveness and interconnectedness. Some people's spiritual life is linked to a religious association with a church, temple, mosque, or synagogue, whereas others pray and find comfort in a personal relationship with God or a higher power and still others find meaning through their connections to nature or art. A person's definition of spirituality and sense of purpose often change throughout one's lifetime as it evolves based on personal experiences and relationships.[1]

Over the past decade, research has demonstrated the importance of spirituality in health care. Spiritual distress is very common in patients and their family members experiencing serious illness, injury, or death, and nurses are on the front lines as they assist these individuals to cope. Addressing a patient's spirituality and providing spiritual care have been shown to improve patients' health and quality of life, including how they experience pain, cope with stress and suffering associated with serious illness, and approach end of life.[2],[3]

Consensus-driven recommendations define a spiritual care model where all clinicians address spiritual issues and work with trained chaplains who are spiritual care specialists.[4],[5] By therapeutically using presence, unconditional acceptance, and compassion, nurses often provide spiritual care and help patients find hope and meaning in their life experiences.[6] The Interprofessional Spiritual Care Education Curriculum (ISPEC), developed by George Washington University for health care professionals, is an education initiative to improve spiritual care for seriously ill patients in the United States and internationally. This chapter will introduce concepts included in the ISPEC curriculum, review religious beliefs and practices of various world religions, and discuss therapeutic interventions that nurses can use to promote patients' and their own spiritual well-being.

Note

Read more about professional development opportunities regarding spiritual health using the Interprofessional Spiritual Care Education Curriculum (ISPEC) offered by George Washington University Institute for Spirituality and Health.

Explore more information about spirituality using free online resources provided by the University of Minnesota's Earl E. Bakken Center for Spirituality and Healing.

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17.2: Basic Concepts

Spiritual Distress

When patients are initially diagnosed with an illness or experience a serious injury, they often grapple with the existential question, “Why is this happening to me?” This question is often a sign of spiritual distress. **Spiritual distress** is defined by NANDA-I as, “A state of suffering related to the inability to experience meaning in life through connections with self, others, the world, or a superior being.”[1] Nurses can help relieve this suffering by therapeutically responding to patients’ signs of spiritual distress and advocating for their spiritual needs throughout their health care experience.

Spirituality

Provision 1 of the ANA Code of Ethics states, “The nurse practices with compassion and respect for the inherent dignity, worth, and unique attributes of every person” and “optimal nursing care enables the patient to live with as much physical, emotional, social, and religious or spiritual well-being as possible and reflects the patient’s own values.”[2]

Spiritual well-being is a pattern of experiencing and integrating meaning and purpose in life through connectedness with self, others, art, music, literature, nature, and/or a power greater than oneself.[3] **Spirituality** is defined by the Interprofessional Spiritual Care Education Curriculum (ISPEC) as, “A dynamic and intrinsic aspect of humanity through which persons seek ultimate meaning, purpose, and transcendence and experience relationship to self, family, others, community, society, nature, and the significant or sacred.”[4] Spiritual needs and spirituality are often mistakenly equated with religion, but spirituality is a broader concept. Elements of spirituality include faith, meaning, love, belonging, forgiveness, and connectedness.[5] Spirituality and spiritual values in the context of nursing are closely intertwined with the concept of caring.[6] See Figure 18.1[7] for an illustration of spirituality.

Figure 18.1 Spirituality

An integrative review of nursing research and resources was completed in 2014 to describe the impact of spirituality and spiritual support in nursing.[8] See the following box for discussion of findings from this integrative review.

Integrative Review of Spirituality in Nursing [9]

An integrative review of nursing literature selected 26 articles published between 1999 and 2013 to describe the experiences of spirituality and the positive impact of spiritual support in nursing literature.[10] Spirituality was described as the integration of body, mind, and spirit into a harmonious whole (often referred to as holistic care). Spirituality was associated with the development of inner strength, looking into one's own soul, believing there is more to life than worldly affairs, and trying to understand who we are and why we are on this earth.

Transcendence was described as an understanding of being part of a greater picture or of something greater than oneself, such as the awe one can experience when walking in nature. It was also expressed as a search for the sacred through subjective feelings, thoughts, and behaviors. Spirituality was found to have a positive effect on patients' health and promoted recovery by viewing life from different perspectives and looking beyond one's own anxiety to develop an understanding of illness and change.

Relationships and connectedness were also found to be powerful spiritual interventions that contributed to an individual's spirituality. This included embracing, crying together, gift giving, having coffee together, and visiting each other. Laughter, happy thoughts, and the smiles of others were considered comforting. Being with others was described as a primary spiritual need, and conversation was unnecessary. Spirituality brought about the realization that the relationship with family and friends is important and involves finding a healthy balance in relationships among friends, family, society, and a higher power. Presence was the most influential element in positively influencing recovery. The presence of family and friends was a calming experience that brought forth comfort, peace, happiness, joy, acceptance, and hope.

Nurses facilitate their patients' search for meaning by enabling them to express personal beliefs, as well as by supporting them in taking part in their religious and cultural practices. Furthermore, nurses assess and meet their patients' spiritual needs by using active listening when talking, asking questions, and picking up patient cues. Active listening requires nurses to be fully present, especially when patients appear depressed or upset.

Nurses were found to use their own spirituality when helping patients achieve spiritual well-being. A desire to help others in need is an important part of spirituality, which is also described as discovering meaning and purpose in life and offering the gift of self to others. Helping others also brings a sense of self-worth, personal fulfilment, and satisfaction.

Spiritual Assessment

The Joint Commission requires that health care organizations provide a spiritual assessment when patients are admitted to a hospital. Spiritual assessment can include questions such as the following:

- Who or what provides you with strength or hope?
- How do you express your spirituality?
- What spiritual needs can we advocate for you during this health care experience?

In addition to performing a routine spiritual assessment on admission, nurses often notice other cues related to a patient's spiritual distress or desire to enhance their spiritual well-being. When these cues are identified, spiritual care should be provided to relieve suffering and promote spiritual health. There are several nursing interventions that can be implemented, in addition to contacting the health care agency's chaplain or the patient's clergy member. See the "Applying the Nursing Process" section for a discussion of spiritual assessment tools and nursing interventions related to spiritual care.

Many hospitals, nursing homes, assisted living facilities, and hospices employ professionally trained chaplains to assist with the spiritual, religious, and emotional needs of patients, family members, and staff. In these settings, **chaplains** support and encourage people of all religious faiths and cultures and customize their approach to each individual's background, age, and medical condition. Chaplains can meet with any individual regardless of their belief, or lack of belief, in a higher power and can be very helpful in reducing anxiety and distress. A nurse can make a referral for a chaplain without a provider order. See Figure 18.2[11] for an image of a hospital chaplain offering support to a patient.

Figure 18.2 Hospital Chaplain

A chaplain assists patients and their family members to develop a spiritual view of their serious illness, injury, or death, which promotes coping and healing. A spiritual view of life and death includes elements such as the following:

- **Suffering** occurs at physical, mental, emotional, and spiritual levels. Sociocultural factors, religious beliefs, family values and dynamics, and other environmental factors affect a person's response to suffering.
- **Hope** is a desire or goal for a particular event or outcome. For example, some people may view dying as "hopeless" whereas a spiritual view can define hope as a "good death" when the patient dies peacefully according to the end-of-life preferences they previously expressed. Read more about the concept of a "good death" in the "Grief and Loss" chapter.
- **Mystery** is knowing there is truth beyond understanding and explanation.
- **Peacemaking** is the creation of a space for nurturing and healing.
- **Forgiveness** is an internal process releasing intense emotions attached to past incidents. Self-forgiveness is essential to spiritual growth and healing.
- **Prayer** is an expression of one's spirituality through a personalized interaction or organized form of petitioning and worship.

Note

View these videos about spiritual care provided by chaplains[12],[13],[14],[15]:

- Spiritual Health and Chaplains
- A Day in the Life of a Chaplain
- Spiritual Health
- Chaplains and the Role of Spiritual Care in Health Care

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2. American Nurses Association. (2015). *Code of ethics for nurses with interpretive statements*. American Nurses Association. https://www.nursingworld.org/practice-policy/nursing-excellence/ethics/code-of-ethics-for-nurses/coe-view-only/↵
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6. Rudolfsson, G., Berggren, I., & da Silva, A. B. (2014). Experiences of spirituality and spiritual values in the context of nursing - An integrative review. T*he Open Nursing Journal, 8*, 64–70. https://doi.org/10.2174/1874434601408010064↵
7. "960_720.jpg" by Activedia is licensed under CC0↵
8. Rudolfsson, G., Berggren, I., & da Silva, A. B. (2014). Experiences of spirituality and spiritual values in the context of nursing - An integrative review. *The Open Nursing Journal, 8*, 64–70. https://dx.doi.org/10.2174%2F1874434601408010064↵
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10. Rudolfsson, G., Berggren, I., & da Silva, A. B. (2014). Experiences of spirituality and spiritual values in the context of nursing - An integrative review. T*he Open Nursing Journal, 8*, 64–70. https://doi.org/10.2174/1874434601408010064↵
11. "Pastoral_Care.jpg" by WikiDavidUser is licensed under CC BY-SA 3.0↵
12. Religion & Ethics NewsWeekly. (2016, September 16). *Spiritual healthcare*. [Video]. YouTube. All rights reserved. https://youtu.be/97d1JMKTuk4↵
13. Northwell Health. (2015, December 14). *A Day in the life of a chaplain*. [Video]. YouTube. All rights reserved. https://youtu.be/0mERMJikQkg↵
14. Harvard T. H. Chan School of Public Health. (2017, August 29). *Focus on the spiritual health can benefit patients--and doctors.* [Video]. YouTube. https://youtu.be/mDfkhILODtE↵
15. Intermountain Healthcare. (2017, February 21). *Chaplains and the role of spiritual care in healthcare*. [Video]. YouTube. All rights reserved. https://youtu.be/l6n6chrQX0A↵

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17.3: Common Religions and Spiritual Practices

It can be helpful for nurses to learn basic knowledge about common religions and religious practices as they support their patients' beliefs. This section will review basic elements of common religions and religious practices.

Religious Classifications

For centuries, humankind has sought to understand and explain the "meaning of life." Many philosophers believe this contemplation and the desire to understand our place in the universe are what differentiate humankind from other species. Religion, in one form or another, has been found in all human societies since human societies first appeared.[1]

Religion is a unified system of beliefs, values, and practices that a person holds sacred or considers to be spiritually significant. Spiritual practices often unite a moral community called a church. Some people associate religion with a place of worship (e.g., a synagogue or church), a practice (e.g., attending religious services, being baptized, or receiving communion), or a concept that guides one's daily life (e.g., sin or kharma).[2] See Figure 18.3[3] for an illustration of symbols from many worldwide religions.

Figure 18.3 Religions

The symbols are arranged in clockwise order starting at the 12:00 position: Judaism, Christianity, Islam, Bahá'í faith, Hinduism, Taoism, Buddhism, Sikhism, Rodnoveril, Celtic paganism, Heathenism, Semitic paganism, Wicca, Kemetism, Hellenic paganism, and Roman paganism.

Religions

Religions have been classified based on what or whom people worship (if anything). See Table 18.3 for a list of religious classifications.[4]

Table 18.3 Religious Classifications[5]

Religious Classification	What/Who Is Divine	Example
Polytheism	Multiple gods	Belief systems of the ancient Greeks and Romans
Monotheism	Single god	Judaism, Christianity, Islam
Atheism	Nothing	Atheism
Animism	Nonhuman beings (animals, plants, natural world)	Indigenous nature worship
Totemism	Human-natural being connection	Native American beliefs

Every culture has atheists who do not believe in a divine being or entity and agnostics who hold that ultimate reality (such as God) is unknowable. However, being a nonbeliever in a divine being does not mean the individual has no morality. For example, many Nobel Peace Prize winners have classified themselves as atheists or agnostics.[6]

Monotheism includes the religions of Judaism, Christianity, and Islam. People who practice Judaism are called Jews, people who practice Christianity are called Christians, and people who practice Islam are called Muslims. Jews, Christians, and Muslims believe in many of the same historical sacred stories, referred to by Christians as the "Old Testament." In these shared sacred stories, it is believed that the son of God (a messiah) will return to save God's followers. While Christians believe that the messiah has already appeared in the person of Jesus Christ, Jews and Muslims believe the messiah has yet to appear.[7]

The following subsections describe the general beliefs of five worldwide religions. However, as with all cultural beliefs, nurses should recognize an individual's specific spiritual values, beliefs, and practices and not assume they believe in these elements based on the religion they profess.

Judaism

After their exodus from slavery in Egypt in the thirteenth century B.C., Jews became a nomadic society worshipping only one God. The Jewish covenant, a promise of a special relationship with Yahweh (God), is an important element of Judaism. The sacred text of Judaism is the Torah, which contains the same sacred stories in the first five books of the Christian's Bible. Talmud is a collection of additional sacred Jewish oral interpretations of the Torah. Jews emphasize moral behavior and action in life.[8] Jewish religious services are held in a synagogue. See Figure 18.4[9] for an image of the Torah and the Star of David, a traditional symbol of Judaism.

Figure 18.4 The Torah and Star of David

Christianity

Christianity began over 2,000 years ago in Palestine with the birth of a Jew named Jesus Christ. Jesus was a charismatic leader and believed by Christians to be the son of God, who taught his followers to treat others as one would like to be treated. The sacred text for Christians is the Bible that includes the “Old Testament” and the “New Testament.” The New Testament describes the life and teachings of Jesus.[10] Christians attend religious services in a church or cathedral. See Figure 18.5[11] for an image of a sculpture depicting Jesus Christ crucified on a cross, a common symbol of Christianity.

Figure 18.5 Sculpture of Jesus Christ on a Cross

Christianity is broadly split into three branches: Catholic, Protestant, and Orthodox. The Catholic branch is governed by the Pope and many bishops around the world. There are many different denominations of Protestant faiths, such as Lutherans, Baptists, Presbyterians, Methodists, Seventh-Day Adventists, Pentecostals, and Mormons. Although all Christians believe the Bible is a sacred text, different denominations have variations in their sacred texts. For example, The Church of Jesus Christ of Latter-day Saints uses the Book of Mormon that they believe details other parts of Christian doctrine and Jesus' life that aren't included in the Bible. Similarly, the Catholic Bible includes a collection of stories that were part of the King James translation created in 1611 but are no longer included in Protestant versions of the Bible.[12]

Although monotheistic, Christians often describe God through three manifestations called the Holy Trinity: the father (God), the son (Jesus), and the Holy Spirit, similar to how water can be in different forms of ice, water, and gas. Another foundation to Christian faith is the Ten Commandments, a set of rules that includes acts considered sinful, such as theft, murder, and adultery.[13]

Islam

Islam is monotheistic religion that follows the teaching of the prophet Muhammad, born in Mecca, Saudi Arabia, in 570 C.E. Muhammad is viewed as a prophet and a messenger of Allah (God), who is divine. The followers of Islam are called Muslims who attend religious services in mosques.[14] See Figure 18.6[15] for an image of a mosque.

Figure 18.6 Mosque

Islam means "peace" and "submission." The sacred text for Muslims is the Qur'an (or Koran).

Muslims are guided by five beliefs and practices, often called pillars of their faith, including believing that Allah is the only god and Muhammad is his prophet, participating in daily prayer, helping those in poverty, fasting as a spiritual practice, and participating in pilgrimage to the holy center of Mecca.[16]

Hinduism

Hinduism originated in the Indus River Valley about 4,500 years ago in what is now modern-day northwest India and Pakistan. Hindus believe in a divine power that can manifest as different entities. Three main incarnations, Brahma, Vishnu, and Shiva, are sometimes compared to the Christian belief in the Holy Trinity.[17]

Multiple sacred texts, collectively called the Vedas, contain hymns and rituals from ancient India and are mostly written in Sanskrit. Hindus believe in a set of principles called dharma that refer to one's duty in the world and correspond with "right" actions. Hindus

also believe in karma, the notion that spiritual ramifications of one's actions are balanced cyclically in this life or a future life (referred to as reincarnation).[18] Most Hindus observe religious rituals at home. The rituals vary greatly among regions, villages, and individuals. See Figure 18.7[19] for a statue of Shiva in a yogic meditation. Yoga is a Hindu discipline that trains the body, mind, and consciousness for health, tranquility, and spiritual insight.

Figure 18.7 Statue of Shiva in Yogic Meditation

Buddhism

Buddhism is a philosophy founded by Siddhartha Gautama around 500 B.C.E. Siddhartha is believed to have given up a comfortable, upper-class life to follow one of poverty and spiritual devotion. At the age of thirty-five, he famously meditated under a sacred fig tree and vowed not to rise before he achieved enlightenment, called bodhi. After this experience, he became known as Buddha or "enlightened one." Followers were drawn to Buddha's teachings and the practice of meditation, and he later established a monastic order.[20]

Buddha's teachings encourage Buddhists to lead a moral life by accepting the four Noble Truths: life is suffering, suffering arises from attachment to desires, suffering ceases when attachment to desires ceases, and freedom from suffering is possible by following the "middle way." The concept of the "middle way" is central to Buddhist thinking and encourages people to live in the present, practice acceptance of others, and accept personal responsibility.[21] See Figure 18.8[22] for a statue of the enlightenment of Buddha.

Figure 18.8 Statue of Enlightenment of Buddha

Common Religious Beliefs and Practices

Now that we have reviewed the basic beliefs of various world religions, this section describes common religious beliefs and practices that may impact nursing care. As always, customize nursing interventions according to each patient's specific values, practices, and beliefs.

Buddhist Patients

- Buddhism places strong emphasis on "mindfulness," so patients may request peace and quiet for the purpose of meditation, especially during crises.
- Some Buddhists may express strong, culturally-based concerns about modesty (for instance, regarding treatment by someone of the opposite sex).
- Some Buddhists are strictly vegetarian and refuse to consume any meat or animal by-product. For such patients, even medications that are produced using animals are likely to be problematic. See Figure 18.9[23] for an image of a vegetarian meal in a Buddhist temple.
- The importance of mindful awareness of all of life's experience may affect patients' or family members' decisions about pain medications out of worry that analgesics may unduly cloud awareness. Nonpharmacological pain management options are often attractive.
- Patients or families may pray or chant out loud repetitiously. This is often done quietly, and any noise concerns in a hospital can usually be negotiated easily. Families sometimes wish to place a picture of the Buddha in the patient's room.
- In end-of-life care, Buddhists may be very concerned about safeguarding their awareness/consciousness. Clarification of the patient's wishes about the use of analgesics in the days and hours before death is strategically important for developing an ethical pain management plan.

- As a patient approaches death, medical and nursing staff should minimize actions that might disturb their concentration or meditation in preparation for dying. Near the time of death, a Buddhist patient's family may appear quite emotionally reserved and even keep their physical distance from the patient's bed. This can be a custom for the purpose of supporting the patient's desire to concentrate without distraction on the experience of dying.
- After the patient has died, staff should try to keep the body as still as possible and avoid jostling during transport. Buddhism teaches that the body is not immediately devoid of the person's spirit after death, so there is continued concern about disturbing the body. Such belief may also be an impediment to discussion of organ donation.
- Families may request that after a patient has died the patient's body be kept available to them for a number of hours for the purpose of religious rites. All such requests should be negotiated carefully, maximizing the opportunity for accommodation in recognition of the religious significance.[24]

Figure 18.9 Vegetarian Meal in a Buddhist Temple

Catholic Patients

- Sacraments and blessings by a Catholic priest can be viewed as highly important, especially before surgery or as a perceived risk of death.
- If a patient is near death, there may be an urgent request for a Catholic priest to offer "Sacrament of the Sick" (which some Catholics may call "Last Rites"). Even if the sacrament has already been offered, there may still be a request for a priest to offer prayers and bless the patient.
- All requests for the sacrament of baptism should be relayed to a Catholic priest. However, if an infant is likely to die before a priest can arrive, the infant may be baptized by any person with proper intent. The person would say, "[name of infant], I baptize you in the name of the Father, and of the Son, and of the Holy Spirit," pouring a small amount of water over the infant's head three times. Emergency baptisms are reported to the local Catholic parish priest.
- Patients may request Holy Communion (Eucharist) prior to surgery. While a Catholic priest or Eucharistic Minister would typically offer such a patient only a tiny portion of a wafer, patients who are NPO (to have nothing by mouth) should have this request approved by the care team as medically safe.
- Some patients may keep religious objects with them, such as a rosary (a loop of beads with a crucifix used for prayer), a scapula (a small cloth devotional pendant), or a religious medal. See Figure 18.10[25] for an image of a rosary. If patients request that such an object remain with them during medical procedures, discuss the option of placing the object in a sealed bag that can be kept on or near the patient. If an object is metal and the patient is having a radiological procedure or test (like an MRI scan), ask the patient or family if they can bring in a nonmetal substitute.
- Interruption of religious practices, such as regular attendance at Mass or special observance of special holy days, may be highly stressful to Catholic patients. Discuss contacting clergy and/or a hospital chaplain.
- Patients may have moral questions about treatment decisions such as the withholding/withdrawing of life-sustaining treatment. A priest can offer authoritative guidance in specific situations.

- Patients may request non-meat diets, especially during the time of Lent (the 40 days before the festival of Easter).[26]

Figure 18.10 Rosary

Hindu Patients

- Hindu patients may express strong, culturally-based concerns about modesty, especially regarding treatment by someone of the opposite sex. Genital and urinary issues are often not discussed with a spouse present.
- Hindus are often strictly vegetarian and do not consume meat or animal by-products. For such patients, even medications that are produced using animals are likely to be problematic. Some Hindus may also refrain from eating certain vegetables, like onions or garlic.
- Fasting is a common practice in Hinduism, and patients may wish to discuss the implications in light of the medical/dietary care plan.
- The act of washing is generally conceived as requiring running water, either from a tap or (poured) from a pitcher. A patient may have a strong desire to wash their hands after meals. See Figure 18.11[27] for an image of a Hindu worshipping with water.
- For many Hindu patients, there is a cultural norm to use the right hand for “clean” tasks like eating (often without utensils) and their left hand for “unclean” tasks like toileting. Medical and nursing staff should consider this right-left significance before hindering a patient’s hand or arm movement in any way. Discuss these preferences with the patient.
- Patients may wear jewelry or adornments that have strong cultural and religious meaning, and staff should not remove these without discussing the matter with the patient or family.
- Hinduism teaches that death is a crucial “transition” with karmic implications. There may be a strong desire that death occurs in the home rather than in the hospital. Family may wish to perform a number of pre-death rituals (for example, tying a thread around the person’s neck or wrist). After death, family members may request to wash the patient’s body (by family members of the same sex as the patient).
- Family may request constant attendance of the deceased’s body. A family member or representative may wish to accompany the body to the morgue (where the person may sit outside any restricted area yet relatively near the body).[28]

Figure 18.11 Worship with Water

Jehovah's Witness Patients

- The most defining tenant for Jehovah's Witnesses in health care is the strict prohibition against receiving blood (i.e., red blood cells, white blood cells, platelets, or plasma) by transfusion (even the transfusion of a patient's stored blood), in medication using blood products, or in food. Some blood fractions (such as albumin, immunoglobulin, and hemophiliac preparations) are allowed, but patients are guided by their own conscience.
- Organ donation and transplantation are allowed, but patients are guided by their own conscience.
- Jehovah's Witnesses are usually well-prepared to work with health care providers to seek all possible options for treatment that do not conflict with religious concerns. It is very common for adults to carry a card at all times stating religiously-based directives for treatment without blood.
- Contrary to popular misconceptions, faith-healing is not a part of Jehovah's Witness tradition. Prayers are often said for comfort and endurance.
- Tradition of Jehovah's Witnesses does not teach that those who die experience an immediate afterlife. It would be inappropriate to say to the family of a deceased patient, "He's in a better place now."
- Jehovah's Witnesses do not celebrate birthdays or Christian "holidays."[29]

Jewish Patients

- Some Jewish patients may strictly observe a rule not to "work" on the Sabbath (from sundown on Friday until sundown on Saturday) or on religious holidays. If so, this religious injunction against "work," including prohibitions against using certain tools or engaging in tasks that initiate use of electricity, can prevent tasks like writing, flipping a light switch, pushing buttons to call a nurse, adjusting a motorized bed, or operating a patient controlled analgesia (PCA) pump. The tearing of paper can be considered "work," so roll toilet paper may need to be replaced with an opened box of individual sheets. Medical procedures should not be scheduled during the Sabbath or religious holidays (unless they are life-saving) nor should hospital discharges be planned during such times without the consent of the patient. While these restrictions on "work" are generally associated with Orthodox Judaism, they may be important for any Jewish patient.
- Jewish holidays are usually highly significant for patients, especially Passover in the spring and Rosh Hashanah and Yom Kippur in the fall. These holidays may affect the scheduling of medical procedures and may involve dietary changes (related to a need for special food or to a desire to fast). All Jewish holidays run from sundown-to-sundown.

- Jewish patients often request a special Kosher diet in accordance with religious laws that govern the preparation of certain foods (e.g., beef), the prohibition of certain foods (e.g., pork and gelatin), or the combination of some food (e.g., beef served with dairy products). During the holiday of Passover, an important distinction is made between food that is merely "Kosher" and that which is specifically "Kosher for Passover." Hand washing before eating may have a religious significance.
- Some Jewish patients may have culturally-based concerns about modesty, especially regarding treatment by someone of the opposite sex. However, because Jewish tradition holds the expertise of medical practitioners in high regard, this may reduce concerns about treatment by the opposite sex.
- Questions about the withholding or withdrawing of life-sustaining therapy are deeply debated within Judaism, and some Jews are strongly opposed to the idea. Family members often wish to consult with a rabbi about the specific circumstances and decisions regarding end-of-life care.
- After a patient has died, Jewish tradition directs that burial happen quickly and that there be no autopsy (unless the autopsy is deemed necessary by a mandate from the Medical Examiner). Also, the family may request that a family member or representative constantly accompany the body in the hospital or even to the morgue (where the person may sit outside any restricted area yet relatively near the body) to say prayers and read psalms.
- There may be a request that amputated limbs be made available for burial. Details should be arranged through the patient's/family's funeral home.
- Jewish religious laws pose a complex set of restrictions that can affect medical decisions, and patients or family members may request to speak with a rabbi to determine the moral propriety of any particular decision. Exceptions are often made when an action is understood in terms of "saving a life," such as emergency surgery or organ donation during the Sabbath. The value of "saving a life" is held in extremely high regard in Jewish tradition.
- It is common for male Jewish patients to wear a yarmulke or kippah (skull cap) during prayer, and some Jews may wish to keep them on at all times. Patients or family members may wear prayer shawls and use phylacteries (two small boxes containing scriptural verses and having leather straps, worn on the forehead and forearm during prayer). There may be a request that at least ten people (called a minyan) be allowed in the patient's room for prayer. See Figure 18.12[30] for an image of a skull cap worn during prayer.
- A Jewish person need not be religious to identify culturally as "Jewish" and may observe Jewish religious traditions for cultural reasons.
- The word "Jew" is commonly used within Jewish culture, but non-Jews should be mindful of its complex historical connotations that can sometimes be perceived as disrespectful when spoken by non-Jews.[31]

Figure 18.12 Skull Caps (Kippa)

Muslim Patients

- Muslim patients may express strong concerns about modesty, especially regarding treatment by someone of the opposite sex. A Muslim woman may need to cover her body completely and should always be given time and opportunity to do so before anyone enters her room. Women may also request that a family member be present during an exam and may desire to remain clothed during an exam if at all possible. Muslim men may find examination by a woman to be extremely challenging. Nudity is emphatically discouraged. There should be no casual physical contact by non-family members of the opposite sex (such as shaking hands). Some Muslims may avoid eye contact as a function of modesty.
- Muslims may specifically request a diet in accordance with religious laws for “Halal” food, though many Muslims opt for a vegetarian diet as a simple way to avoid religious prohibitions against such things as pork products or gelatin. Forbidden foods are referred to as “Haraam.”
- Muslim dietary regulation can affect patients’ use of medications, especially drugs that have pork origins or that contain gelatin or alcohol. The dietary prohibition against alcohol has occasionally raised questions about Muslims’ use of alcohol-based hand rubs in the hospital. Because hand rubs do not have an intoxicating effect and are used for life-saving hygiene, any concern should be addressed thoroughly and sensitively and perhaps with the input of an imam. An imam is a person who leads prayers in a mosque.
- The act of washing may require running water, either from a tap or poured from a pitcher. As a result, Muslim patients typically do not feel truly cleaned by a sponge bath. Many Muslims wash with running water before and after meals and also before prayers.
- Muslim prayers are conducted five times a day. Patients may desire to pray by kneeling and bending to the floor, but Islamic tradition recognizes circumstances when this is not medically advisable. If patients are disturbed by their inability to pray on the floor, advice should be encouraged from an imam. See Figure 18.13[32] for an image of Muslim men prostrate in prayer.
- Muslim patients may react to suffering with emotional reserve and may hesitate to express the need for pain management. Some may even refuse pain medication if they understand the experience of their pain to be spiritually enriching.
- There may be a request that amputated limbs be made available for burial. Details should be arranged through the patient’s/family’s funeral home.

- Muslim tradition generally discourages the withholding or withdrawing of life-sustaining therapy. However, because decisions on this subject involve the particular circumstances of the patient and the complexities of medical treatments, family members who are morally conflicted may wish to bring an experienced imam into their discussion with physicians.
- A family member may request to be present with a dying person, so as to be able to whisper a proclamation of faith in the patient's ear right before death. (Similarly, a husband may request to be present at a birth to whisper a proclamation of faith in the ear of the newborn.)
- After a death, the family may request to wash the patient and to position their bed to face Mecca. The patient's head should rest on a pillow.
- Burial is usually accomplished as soon as possible. Muslim families rarely allow for autopsy unless there is an order by a Medical Examiner. Some Muslims may consider organ donation, but the subject is open to great differences of opinion within Islamic circles.
- During the thirty-day month of Ramadan, Muslims refrain from food and drink from dawn until sundown. Physicians should explore with patients whether it is medically appropriate to fast while in the hospital. If so, investigate options for predawn meals, for providing patients with dates and spring water in the late afternoon (a traditional way to break the daily fast), and for delaying dinner until after sunset. While anyone who is ill is not obligated to fast, the Ramadan observance can be powerfully meaningful to patients if they can participate. The month of Ramadan shifts according to a lunar calendar, and when it occurs during the summertime, longer days can make the fast more physically stressful.[33]

Figure 18.13 Muslim Men Prostrate in Prayer

Pentecostal Patients

- Pentecostal patients may pray exuberantly. Noise concerns in a hospital can sometimes present a problem in this regard, but simply shutting the door to the patient's room can usually provide an adequate solution.
- Pentecostals may pray by "speaking in tongues," expression of words that seem unintelligible to an individual hearer but holds very deep religious significance for worshippers.
- Patients or families may request that relatively large numbers of people be allowed in the patient's room for prayer.
- Patients or families may express strong belief in miraculous healing.[34]

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17.4: Applying the Nursing Process

Now that we have reviewed the concepts related to spirituality and discussed beliefs and practices of common world religions, let's apply the nursing process to promoting spiritual health.

Assessment

Subjective Assessment

Agencies often provide a standardized spiritual assessment tool to complete when a patient is admitted. If a standardized assessment tool is not available, the FICA model can be used.[1] The FICA model contains open-ended questions to ask patients about their personal spiritual beliefs in a way that is open and nonjudgmental.

- **F–Faith or beliefs:** What are your spiritual beliefs? Do you consider yourself spiritual? What things do you believe in that give meaning to life?
- **I–Importance and influence:** Is faith/spirituality important to you? How has your illness and/or hospitalization affected your personal practices /beliefs?
- **C–Community:** Are you connected with a faith center in the community? Does it provide support/comfort for you during times of stress? Is there a person/group/leader who supports/assists you in your spirituality?
- **A–Address:** What support can we provide to support your spiritual beliefs/practices?[2]

The HOPE tool is also helpful for incorporating spiritual assessment questions into a medical interview. HOPE stands for:

H: Sources of hope, meaning, comfort, strength, peace, love and connection

O: Organized religion

P: Personal spirituality and practices

E: Effects of spirituality on medical care and end-of-life issues

The first part of the mnemonic, **H**, pertains to a patient's basic spiritual resources, such as sources of hope, without immediately focusing on religion or spirituality. This approach allows for meaningful conversation with a variety of patients, including those whose spirituality lies outside the boundaries of traditional religion or those who have been alienated in some way from their religion. It also allows those for whom religion, God, or prayer is important to volunteer this information. The second and third letters, **O** and **P**, refer to areas of inquiry about the importance of organized religion in patients' lives and the specific aspects of their personal spirituality and practices that are most helpful. A useful way to introduce these questions is a normalizing statement such as: "For some people, their religious or spiritual beliefs act as a source of comfort and strength in dealing with life's ups and downs. Is this true for you?"[3]

> **Note**
>
> Read more information about using the HOPE tool.

Objective Assessment

In addition to asking open-ended questions, it is important for the nurse to observe patients for cues indicating difficulties in finding meaning, purpose, or hope in life. It is also important to monitor for supportive relationships.[4]

Patients experiencing chronic or serious illness may make statements indicating spiritual distress that should cue the nurse that spiritual care is needed. Examples of these statements/concepts are as follows:

- Lack of Meaning: "I am not the person I used to be."
- Hope: "I have nothing left to hope for."
- Mystery: "Why me?"
- Isolation: "All my family and friends are gone."
- Helplessness: "I have no control over my life anymore."[5]

Diagnoses

See Table 18.4 for common NANDA-I diagnoses associated with spiritual health.[6]

Table 18.4 Common NANDA-I Nursing Diagnoses Related to Spiritual Health[7]

NANDA-I Diagnosis	Definition	Defining Characteristics

Readiness for Enhanced Spiritual Well-Being	A pattern of experiencing and integrating meaning and purpose in life through connectedness with self, others, art, music, literature, nature, and/or a power greater than oneself, which can be strengthened	Connections to Self
		• Connections with Others
		  ◦ Connections with Art, Music, Literature, and Nature
		  ▪ Connections with Power Greater than Self
		  ▪ Expresses desire to enhance participation in religious activity
		  ▪ Expresses desire to enhance prayerfulness

Impaired Religiosity	Impaired ability to exercise reliance on beliefs and/or participate in rituals of a particular faith tradition	• Desires to reconnect with previous belief pattern • Has difficulty adhering to prescribed religious beliefs and/or rituals • Distresses about separation from the faith community
Spiritual Distress	A state of suffering related to the impaired ability to experience meaning in life through connections with self, others, the world, or a superior being	• Anxiety • Crying • Fatigue • Fear • Insomnia • Questioning identity • Questioning meaning of life • Questioning meaning of suffering

Sample Nursing Diagnosis Statements

Readiness for Enhanced Spiritual Well-Being

Many people experienced feelings of isolation as they sheltered at home during the COVID-19 pandemic. A sample PES statement for this shared experience is, *Readiness for Enhanced Spiritual Well-Being as evidenced by expressed desire to enhance time outdoors*. The nurse could encourage patients to visit local parks and walk outdoors while wearing a mask and maintaining social distancing.

Recall that when a PES statement is created for a health promotion diagnosis, the defining characteristics are provided as evidence of the desire of the patient to improve their current health status.[8]

Impaired Religiosity

Hospitalized patients may be unable to attend religious services they are accustomed to attending. A sample PES statement is, "*Impaired Religiosity related to environmental barriers to practicing religion as evidenced by difficulty adhering to prescribed religious beliefs.*" The nurse could contact the patient's pastor to arrange a visit or determine if services can be viewed online.

Spiritual Distress

Events that place patient populations at risk for developing spiritual distress include birth of a child, death of a significant other, exposure to death, a significant life transition, severe illness or injury, exposure to natural disaster, racial conflict, or an unexpected life event.[9] Associated conditions that place a person at risk for developing spiritual distress include actively dying, chronic illness, illness, loss of a body part, loss of function of a body part, or a treatment regimen.[10]

For example, a patient diagnosed with life-threatening medical diagnoses like cancer may experience spiritual distress as they move through the typical stages of loss. A sample PES statement is, "*Spiritual Distress related to anxiety associated with illness as evidenced by crying, insomnia, and questioning the meaning of suffering.*" A nurse would implement interventions to enhance coping.

Outcome Identification

Goals and SMART outcomes should be customized to each patient and their situation.

When a patient has the nursing diagnosis *Readiness for Enhanced Spiritual Well-Being*, a sample goal statement is, "*The patient will demonstrate hope as evidenced by the following indicators: expressed expectation of a positive future, faith, optimism, belief in self, sense of meaning in life, belief in others, and inner peace.*"[11] An example of a related SMART outcome is, "*The patient will express a sense of meaning and purpose in life by discharge.*"[12]

When a patient has the nursing diagnosis *Spiritual Distress*, a sample goal statement is, "*The patient will demonstrate improved spiritual health as evidenced by one of the following indicators: feelings of faith, hope, meaning, and purpose in life with connectedness with self and others to share thoughts, feelings, and beliefs.*"[13] A sample SMART outcome is, "*The patient will express a purpose in life by discharge.*"[14]

Planning Interventions

Providing Spiritual Care

When providing spiritual care, the RN must not impose their religious or spiritual beliefs on the patient. There are several guidelines for therapeutically implementing nursing interventions to support patients' spiritually:

- **Take cues from the patient:** When bringing up spiritual health with patients, understand this may be a difficult topic for them to discuss. Let them lead the conversation and do not press further than they want to share. Also, be aware of the patient's nonverbal cues. They may be saying one thing but their body language is saying something different. Gently point out the contradiction and seek clarification. For example, a patient may state that they don't blame God for their illness, but begin to tear up as they say it. By responding, "I noticed you became tearful when you said that…what is causing the tears," the door is opened for them to share more of their thoughts and feelings.
- **Ask the patient how you can support them spiritually:** An important way to assist a patient with their spiritual health is to ask them what they need to feel supported in their faith and then try to accommodate their requests, if possible. For example, perhaps they would like to speak to their clergy, spend some quiet time in meditation or prayer without interruption, or go to the onsite chapel. Explain that spiritual health helps the healing process. Many agencies have chaplains onsite that can be offered to patients as a spiritual resource.
- **Support patients within their own faith tradition:** Because patients can sometimes feel as if they are a captive audience, it is not appropriate for the nurse to take this opportunity to attempt to persuade a patient towards a preferred religion or belief system. The role of the nurse is to respect and support the patient's values and beliefs, not promote the nurse's values and beliefs.
- **Listen to a patient's fears and concerns without adding your own stories:** In an effort to empathize with a patient who is telling their story, it is easy for the nurse to start adding personal examples from their own life. Although this may seem helpful, it is usually only distracting and shifts the focus from the patient to the nurse. Focus on the patient's fears and concerns. Name and validate the emotions that are heard when possible. Sometimes patients don't realize what they are feeling until it is pointed out to them.
- **Pray with a patient if requested (or provide someone who will):** Some nurses may feel reluctant to pray with patients when they are asked for various reasons. They may feel underprepared, uncomfortable, or unsure if they are "allowed to." Nurses are

encouraged to pray with their patients to support their spiritual health, as long as the focus is on the patient's preferences and beliefs, not the nurse's. See Figure 18.14[15] for an image of a nurse praying with a patient. Having a short, simple prayer ready, that is appropriate for any faith, may help in this situation. If a nurse does not feel comfortable praying, the chaplain should be requested to participate in prayer with the patient.

- **Share an encouraging thought or word:** Similar to the preceding prayer suggestion, a scripture verse (based on the patient preferences) or an inspirational poem may be helpful to share during difficult times. Having a few verses or thoughts readily available can be very helpful during critical moments.[16]
- **Use presence and touch:** Sometimes the mere presence of a nurse is spiritually comforting for patients. Words are not always needed. It can be very comforting to know that someone will be sitting quietly next to them as they fall asleep or are in pain. Touch can also be a very powerful therapeutic tool to provide comfort (after asking permission of the patient).[17]

Figure 18.14 Nurse Praying with a Patient

See the following box for a summary of therapeutic interventions that nurses can implement to provide spiritual support. Review additional interventions for enhancing coping for patients and family members experiencing grief in the "Grief and Loss" chapter.

Therapeutic Nursing Interventions to Provide Spiritual Support[18],[19],[20]

- Use therapeutic communication to establish trust and empathetic caring.
- Be present and actively listen to the individual's feelings and express empathy.
- Be open to the individual's expressions of loneliness and powerlessness.
- Be open to the individual's feelings about illness and/or death.
- Encourage the individual to reminisce and review their past and focus on events and relationships that provided spiritual strength and support.
- Provide privacy and quiet time for spiritual activities.
- Offer opportunities for the patient to practice their religion.
- Encourage the patient to engage in spiritual, meditative, or mind-body practices to promote spiritual healing.
- Arrange visits with the chaplain, patient's pastor, or other spiritual advisor.
- Pray with the individual, as appropriate.

- Provide spiritual music, literature, radio, television, or online programs as appropriate.
- Promote hope however the individual defines it for their situation without providing false reassurance.
- Encourage forgiveness.
- Encourage participation in interactions with family members, friends, and others.
- Encourage participation in support groups

Implementing Interventions

Nurses should support patients' spiritual and religious preferences when implementing interventions to support their spiritual well-being. The nurse should respect and listen to the patient's expression of beliefs and not impose their own beliefs on the patient. Spiritual or religious practices should be accommodated if safe and feasible to do so. If a patient has a spiritual belief, value, or practice that conflicts with their treatment plan, the nurse should explain the rationale for the intervention or treatment. If the patient is not willing to complete the treatment as planned due to their spiritual or religious beliefs, the nurse should attempt to negotiate the treatment plan with the patient and/or health care provider. For example, a nurse can advocate for rescheduling a procedure after the Sabbath or modifying the dietary plan and medication administration times during Ramadan.

Evaluation

When evaluating the effectiveness of interventions in promoting a patient's spiritual health, refer to the overall goal, "*The patient will demonstrate spiritual health as evidenced by the following indicators: feelings of faith, hope, meaning, and purpose in life with connectedness with self and others.*"[21] From there, review the patient's progress toward the personalized SMART outcomes that have been customized to their situation.

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17.5: Spiritual Care of Self

Provision 5 of the American Nurses Association Code of Ethics states, “The nurse owes the same duties to self as to others, including the responsibility to promote health and safety, preserve wholeness of character and integrity, maintain competence, and continue personal and professional growth.”[1] Spiritual care is associated with better health and well-being for everyone, including nurses and nursing students. A desire to help others in need is an important part of spirituality, which has been described as a life-giving force based on faith, discovering meaning and purpose in life, and offering the gift of self to others.[2]

Spiritual resources can help nurses and nursing students overcome the emotional toil associated with caring for seriously ill and dying patients and prevent compassion fatigue and burnout. Read more about compassion fatigue and burnout in the “Grief and Loss” chapter.

Many spiritual traditions use contemplative practices to increase compassion, empathy, and quiet the mind.[3] Examples of contemplative practices and other methods to build spiritual strength include the following:

- Meditation can induce feelings of calm and clear-headedness and improve concentration and attention. Research has shown that meditation increases the brain’s gray matter density, which can reduce sensitivity to pain, enhance the immune system, help regulate difficult emotions, and relieve stress. Mindfulness meditation in particular has been proven helpful for people with depression and anxiety, cancer, fibromyalgia, chronic pain, rheumatoid arthritis, type 2 diabetes, chronic fatigue syndrome, and cardiovascular disease.[4]
- Yoga is a centuries-old spiritual practice that creates a sense of union within the practitioner through physical postures, ethical behaviors, and breath expansion. The systematic practice of yoga has been found to reduce inflammation and stress, decrease depression and anxiety, lower blood pressure, and increase feelings of well-being.[5]
- Journaling can help a person become more aware of their inner life and feel more connected to experiences. Studies show that writing during difficult times may help a person find meaning in life’s challenges and become more resilient in the face of obstacles. When journaling, it can be helpful to focus on three basic questions: What experiences give me energy? What experiences drain my energy? Were there any experiences today where I felt alive and experienced “flow”? Allow yourself to write freely, without stopping to edit or worry about spelling and grammar.[6]
- Prayer can elicit the relaxation response, along with feelings of hope, gratitude, and compassion, all of which have a positive effect on overall well-being. There are several types of prayer rooted in the belief that there is a higher power that has some level of influence over one’s life. This belief can provide a sense of comfort and support in difficult times. A recent study found that clinically depressed adults who believed their prayers were heard by a concerned presence responded much better to treatment than those who did not believe.[7]
- Find a spiritual community and friends. Join a spiritual group, such as a church, synagogue, temple, mosque, meditation center, yoga class, or other local group that meets to discuss spiritual issues. The benefits of social support are well-documented, and having a spiritual community to turn to for fellowship can provide a sense of belonging and support.[8]
- Nurture your relationships with family, significant others, and friends. Relationships aren’t static – they are living, dynamic aspects of our lives that require attention and care. To benefit from strong connections with others, you should take charge of your relationships and put in the time and energy you would any other aspect of your well-being. It can be helpful to create rituals together. With busy schedules and the presence of online social media that offer the façade of real contact, it’s very easy to drift from friends. Research has found that people who deliberately make time for gatherings or trips enjoy stronger relationships and more positive energy. An easy way to do this is to create a standing ritual that you can share and that doesn’t create more stress, such as talking on the telephone on Fridays or sharing a walk during lunch breaks.[9]
- Mindfulness has been defined as, “Awareness that arises through paying attention, on purpose, in the present moment, and nonjudgmentally.” Mindfulness has also been described as, “Non-elaborative, nonjudgmental, present-centered awareness in which each thought, feeling, sensation that arises is acknowledged and accepted as it is.” Mindfulness helps us be present in our lives and gives us some control over our reactions and repetitive thought patterns. It helps us pause, get a clearer picture of a situation, and respond more skillfully. Compare your default state to mindfulness when studying for an exam in a difficult course or preparing for a clinical experience. What do you do? Do you tell yourself, “I am not good at this” or “I am going to look stupid”? Does this distract you from paying attention to studying or preparing? How might it be different if you had an open attitude with no concern or judgment about your performance? What if you directly experienced the process as it unfolded,

including the challenges, anxieties, insights, and accomplishments, while acknowledging each thought or feeling and accepting it without needing to figure it out or explore it further? If practiced regularly, mindfulness helps a person start to see the habitual patterns that lead to automatic negative reactions that create stress. By observing these thoughts and emotions instead of reacting to them, a person can develop a broader perspective and can choose a more effective response.[10]

- Spending time in nature is cited by many individuals as a spiritual practice that contributes to their mental health.[11]

Note

Explore additional resources about developing spiritual well-being to avoid burnout at the University of Minnesota's Earl E. Bakken Center for Spirituality & Healing.

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17.6: Putting It All Together

Patient Scenario

Mr. Yun is a 34-year-old man presenting to his physician's office with complaints of difficulty concentrating, sadness, and anxiety. The patient recently experienced the loss of his wife in a motor vehicle accident and reports difficulty sleeping and weight loss of greater than 15 pounds in the previous month. He reports feeling "hopeless" and "angry at God" for the loss that he has experienced. He states he used to attend religious services with his wife, but "That was really more of 'her' thing. I really don't know what to believe anymore."

Applying the Nursing Process

Assessment: The nurse notes that the patient is experiencing difficulty concentrating, feelings of sadness and hopelessness, and reported anxiety. He self-reports feeling hopeless, feelings of anger toward God, and uncertainty in his belief system.

Based on the assessment information that has been gathered, the following nursing care plan is created for Mr. Yun:

Nursing Diagnosis: *Spiritual Distress related to loss of challenged belief system as manifested by self-reported "hopelessness," being "angry at God," and general uncertainty in beliefs.*

Overall Goal: *The patient will demonstrate improved spirituality.*

SMART Expected Outcome: *By the end of the teaching session, Mr. Yun will describe a spiritual practice that provides him comfort.*

Planning and Implementing Nursing Interventions:

The nurse will identify the factors that influence the patient's personal belief system. The nurse will provide support to the patient and allow the patient to express emotions and anger. The nurse will observe and listen empathetically in the communication experience. The nurse will encourage the use of spiritual resources and ask the patient permission to contact a chaplain.

Sample Documentation

Mr. Yun exhibits signs of spiritual distress in relation to the loss of his personal belief system as the result of his wife's recent death. He verbalizes anger, hopelessness, and uncertainty in his belief system. However, he does find comfort in spending time outdoors in nature. A chaplain has been contacted with the patient's permission to address Mr. Yun's spiritual needs.

Evaluation

At the end of the teaching session, the nurse explains that with his permission, a chaplain will call Mr. Yun at home to follow up. Mr. Yun grants permission for the referral. The nurse asks what other spiritual resources Mr. Yun plans to use at home. Mr. Yun explains that he will purposefully go for daily walks outdoors to spend time in nature. The SMART outcome was "met."

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17.7: Learning Activities

Learning Activities

(Answers to “Learning Activities” can be found in the “Answer Key” at the end of the book. Answers to interactive activity elements will be provided within the element as immediate feedback.)

1. Mr. Hernandez is a 73-year-old patient admitted with end stage congestive heart failure, COPD, and diabetes. He appears anxious and verbalizes “I think this is the end” when he is admitted to the medical surgical unit. As you complete the admission assessment, the patient asks you if you believe in God? Utilizing the FICA model, what questions might you ask to gain insight into the patient’s personal spiritual beliefs?

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17.8: XVIII Glossary

Chaplains: Trained professionals in hospitals, nursing homes, assisted living facilities, and hospices that assist with the spiritual, religious, and emotional needs of patients, families, and staff. Chaplains support and encourage people of all religious faiths and cultures and customize their approach to each individual's background, age, and medical condition.

Holism: The concept that a human is composed of a mind, body, and soul integrated into an inseparable whole.

Religion: A unified system of beliefs, values, and practices that a person holds sacred or considers to be spiritually significant. Spiritual practices often unite a moral community called a church. Some people associate religion with a place of worship (e.g., a synagogue or church), a practice (e.g., attending religious services, receiving communion, or going to confession), or a concept that guides one's daily life (e.g., sin or kharma).

Spiritual distress: A state of suffering related to the impaired ability to experience meaning in life through connections with self, others, the world, or a superior being.

Spirituality: A dynamic and intrinsic aspect of humanity through which persons seek ultimate meaning, purpose, and transcendence and experience relationships to self, family, others, community, society, nature, and the significant or sacred. Spirituality is expressed through beliefs, values, traditions, and practice.

Spiritual well-being: A pattern of experiencing and integrating meaning and purpose in life through connectedness with self, others, art, music, literature, nature, and/or a power greater than oneself.

Transcendence: An understanding of being part of a greater picture or of something greater than oneself, such as the awe one can experience when walking in nature. It can also be expressed as a search for the sacred through subjective feelings, thoughts, and behaviors.

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CHAPTER OVERVIEW

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18.1: Chapter 10 (Integumentary)

Answer Key to Chapter 10 Learning Activities

1. It would be helpful to assess the sacral area to identify the stage the pressure injury. It would also be helpful to assess Mr. Johns' albumin level to properly identify nutritional inadequacies and protein levels for wound healing.
2. Individual factors that increase vulnerability to pressure injury development include weakness, diminished sensation (related to his stroke), diminished mobility, frequent incontinence, decreased nutritional intake, etc.

Answers to interactive elements are given within the interactive element.

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18.2: Chapter 11 (Comfort)

Answer Key to Chapter 11 Learning Activities

Patient Scenario Colon Cancer & Pain Management

1. What additional assessments (subjective and objective) will you perform on Joe?

Additional assessments include a full respiratory, abdominal, and pain assessment. It is important to include Joe's subjective statements related to these systems, as well as observable findings. It would be important to collect information related to lung sounds, observed breathing effort, color of sputum, reports of shortness of breath, etc. Additionally, the patient should be assessed for guarding, grimace, self-report of pain, etc. The patient may not be getting out of bed and ambulating due to pain, but the lack of ambulation is causing additional problems for the patient. With the colon resection and lack of ambulation, it would also be important to determine the patient's bowel function. Abdominal sounds, ability to pass flatus, last bowel movement, signs of nausea, etc., are all important for determining bowel motility.

2. List the top three priority nursing diagnoses for Joe.

Potential priority diagnoses for Joe might include the following:

- Ineffective Breathing Pattern
- Acute Pain
- Impaired Mobility
- Activity Intolerance
- Constipation

3. Joe states, "I don't want to use morphine. I am afraid I will become addicted to it like my friend did after he came home from the war." How will you respond to therapeutically address his concerns, yet also teach Joe about good pain management?

It would be important to dispel myths for the patient regarding pain management and addiction. Joe should receive education that the use of opioids is appropriate for the treatment of acute surgical pain in the short-term. He should receive instruction that by omitting the use of pain medications, his pain response has led to decreased mobility, which is causing respiratory complications for him.

4. What are common side effects of opioids and how will you plan to manage these side effects for Joe?

Common side effects of opioids are decreased respiratory rate, decreased bowel motility, increased lethargy, etc. Of significant concern for Joe is the potential impact of the opioid on his bowel function. The surgical intervention and lack of mobility have already placed him at risk for constipation. It will be important for the patient to resume a sufficient bowel regimen with adequate fluids, ambulation, stool softeners, high fiber foods, and laxatives if needed.

5. Emotional issues could also be affecting Joe's perception of pain. What will you further physically assess and therapeutically address?

With Joe's diagnosis of colon cancer, there can be many personal coping challenges that the patient is experiencing. It is important to encourage Joe to verbalize his feelings related to his diagnosis and understand what resources might best help facilitate his individual coping.

6. After providing patient education about morphine and the PCA pump, you check on Joe later in the day and notice he has had five injections and 15 attempts in the past hour. What further assessments will you perform?

It will be important to assess the insertion site where the pain medication is infusing to be certain that the tubing is not kinked and that the medication is actually reaching the patient. Additionally, Joe should receive education about use of the pump and guidelines regarding self-administration to ensure he understands the administration parameters appropriately. He should also have a thorough pain assessment completed, and the nurse should collect information to report to the prescribing physician regarding the use of medication and patient response.

Answers to interactive elements are given within the interactive element.

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18.3: Chapter 12 (Sleep and Rest)

Answer Key to Chapter 12 Learning Activities

Scenario A

A nurse is caring for a patient who has been hospitalized after undergoing hip-replacement surgery. The patient complains of not sleeping well and feels very drowsy during the day.

1. The patient may be experiencing pain that is disrupting the sleep pattern. Additionally, the inpatient hospital settings may present unintended interruptions such as assessment and vital sign collection. Measures should be taken to create a quiet, therapeutic environment and minimize interruptions during sleeping hours.

2. The nurse should assess the patient's pain level, general comfort, and self-reported feeling of restfulness upon awakening. The nurse should also carefully examine the patient's rest pattern by asking questions regarding length of rest, period of wakefulness, and intervals with which these occur throughout the day.

3. The patient will have uninterrupted rest of six hours each night during their hospitalization.

4. The nurse should consider pain medication intervention and strategies to create a therapeutic and restful environment. This includes minimizing interruption overnight, clustering care and interventions, limiting noise or distractions, etc. The nurse should also consider if sleep aids are needed while being mindful of the impact of these medication aids in relation to fall risk. The nurse should also take measures to advocate for quiet periods for the patient.

5. The nurse would determine the effectiveness of interventions by monitoring the patient's level of alertness throughout the daytime hours, self-reported level of energy, and ability to participate in therapy and care activities.

Scenario B

A nurse is assigned to work rotating shifts and develops difficulty sleeping.

1. Rotating shifts impact an individual's sleep pattern because of the disruption to one's circadian rhythm.

2. Symptoms of insomnia include lying awake for a long time before falling asleep, sleeping for only short periods, waking up too early in the morning and not being able to get back to sleep, waking up feeling unrested, difficulty focusing on tasks, irritability, anxiousness, and depression.

3. Healthy sleep habits include the following:

- Sleep in a cool, quiet place. Avoid artificial light from the TV or electronic devices, as this can disrupt your sleep-wake cycle.
- Go to sleep and wake up around the same times each day, even on the weekends. If you can, avoid night shifts, irregular schedules, or other things that may disrupt your sleep schedule.
- Avoid caffeine, nicotine, and alcohol close to bedtime.
- Get regular physical activity during the daytime (at least 5 to 6 hours before going to bed).
- Avoid daytime naps, especially in the afternoon.
- Eat meals on a regular schedule and avoid late-night dinners to maintain a regular sleep-wake cycle.
- Limit how much fluid you drink close to bedtime.
- Learn new ways to manage stress.
- Avoid certain over-the-counter and prescription medicines that can disrupt sleep (for example, some cold and allergy medicines).

Answers to interactive elements are given within the interactive element.

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18.4: Chapter 13 (Mobility)

Answer Key to Chapter 13 Learning Activities

1. The nurse should perform a comprehensive pain assessment using a framework such as “PQRST” or “OLDCARTES” and treat Ms. Curtis’ pain according to assessment findings. The nurse should use therapeutic communication techniques to determine why the patient is refusing to attend physical therapy. For example, the nurse could ask, “Can you help me understand the reasons why you have not attended your previous physical therapy appointments,” keeping in mind that pain and fear of falling are common causes. It is often helpful to pre-medicate the patient with analgesics before attending physical therapy. If currently prescribed medications are not effective, the provider should be notified.
2. Ms. Curtis is at risk for complications of immobility, pneumonia, deep vein thrombosis, constipation, and skin breakdown. The nurse should assess for signs of these complications, as well as educate the patient regarding signs to report.
3. A SMART outcome (established with Ms. Curtis) could be, *“The patient will attend the next scheduled physical therapy appointment and report effective pain management during and after the session.”*
4. The nurse will monitor the patient’s pain level using a pain intensity scale one hour prior to physical therapy and administer prescribed medications according to current pain level and anticipated pain level. The nurse will use therapeutic communication to determine the patient’s causes for declining physical therapy appointments and plan interventions accordingly. The nurse will encourage rest before and after physical therapy appointments. The nurse will encourage coughing and deep breathing to prevent pneumonia and range of motion exercises while in bed or sitting to prevent deep vein thrombosis. The nurse will perform hourly rounding to encourage repositioning to prevent skin breakdown. The nurse will encourage fiber and fluids to prevent constipation.
5. The nurse will evaluate if interventions were successful by referring to the established SMART outcome and monitoring if the patient attends the next scheduled physical therapy appointment and if pain was effectively managed during the session.

Answers to interactive elements are given within the interactive element.

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18.5: Chapter 14 (Nutrition)

Answer Key to Chapter 14 Learning Activities

Scenario 1

1. It would be important to assess Mr. Jones's swallowing, bowel sounds, ability to pass flatus, abdominal distention, and any complaints of nausea.
2. When transitioning the patient from NPO status, the patient would be started on clear liquids to ensure dietary tolerance prior to progression toward solid foods.

Scenario 2

1. Mrs. Casey's BMI is 15, placing her in the "Underweight" category since it is below 18.5.
2. Mrs. Casey's hemoglobin (hgb), white blood cells (WBC), magnesium, and albumin levels are all low, which may be caused by poor intake of protein. Magnesium levels may be low due to intake or can also be caused by excessive alcohol intake.
3. The nurse should perform a general survey on Mrs. Casey, paying close attention to her energy level and mobility deficits as a result of the stroke. The nurse should ask Mrs. Casey about her typical 24-hour food intake, appetite, food allergies, and food shopping and preparation activities.
4. Imbalanced Nutrition: Less than Body Requirements related to insufficient dietary intake as evidenced by BMI 15 and albumin level 10 g/mL.
5. Mrs. Casey's BMI will increase to at least 16 in the next month with a continued upward trend.
6. The nurse will contact the provider and request a referral for a dietician. The nurse will contact the facility's social worker regarding promoting nutritional intake with Meals on Wheels and other services. The nurse will monitor food/fluid ingested daily and caloric intake in collaboration with the dietician and encourage nutritional supplements as prescribed. The nurse will encourage the patient to select or order preferred foods for mealtimes. The nurse will ensure that oral care is performed before meals and that foods are presented in an attractive, pleasing manner. The patient will be placed in a seated position before eating, the meal tray set up, and assistance provided according to the patient's needs.
7. The nurse will evaluate the effectiveness of interventions by monitoring the patient's weekly weights and assessing if her BMI is trending upward according to the previously established SMART goal.

Answers to interactive elements are given within the interactive element.

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18.6: Chapter 15 (Fluids and Electrolytes)

Answer Key to Chapter 15 Learning Activities

Scenario A Answer Key:

1. Interpret Mr. Smith's ABG result on admission. The pH is low indicating acidosis. The elevated PaCO2 indicates respiratory acidosis, and the normal HCO3 level indicates is it uncompensated respiratory acidosis.
2. Explain the likely cause of the ABG results. The exacerbation of heart failure is likely causing fluid in his alveoli, decreasing ventilation, and causing the retention of carbon dioxide and decreased oxygenation.
3. Create a nursing diagnosis for Mr. Smith's fluid status in PES format based on his admission data: *Excess Fluid Volume related to excessive fluid intake as evidenced by adventitious breath sounds, edema, and weight gain of 15 pounds over a short period of time.*
4. What is Mr. Smith's fluid balance this morning? Support your answer with data. He is demonstrating *Deficient Fluid Volume* as evidenced by the following signs and symptoms: feeling thirsty and dizzy, having low systolic blood pressure and elevated heart rate and respiratory rate, and lab work showing elevated serum sodium and BUN results.
5. What is the probably cause of his fluid balance? Excessive IV diuretics are likely causing dehydration.
6. Interpret Mr. Smith's lab results. What are the potential causes of these results? In addition to the lab results indicating fluid volume deficit explained in Answer 4, he is also demonstrating hypokalemia that is likely caused by the diuretics. His creatinine is also elevated, which could indicate kidney disease.
7. Create a nursing diagnosis statement in PES format for Mr. Smith's current fluid status: *Deficient Fluid Volume related to insufficient fluid intake as evidenced by alteration in mental status, decreased blood pressure, increased heart rate, thirst, and sudden weight loss.*
8. Create a new expected outcome in SMART format for Mr. Smith: *Mr. Smith will demonstrate fluid balance within 24 hours as evidenced by moist mucus membranes and 24-hour intake and output balance.*
9. In addition to providing intravenous fluids, what additional interventions will you implement for Mr. Smith? Additional interventions include weigh daily, monitor intake and output every four hours, provide fresh water and fluids preferred by the patient, administer oral potassium replacements as ordered, and monitor for signs of fluid volume excess while receiving IV fluids.
10. How will you evaluate if the nursing interventions are effective? As stated in the SMART outcome, the nurse will evaluate for moist mucus membranes and balanced intake and output in 24 hours.

Scenario B Answer Key:

1. What is Mr. M.'s fluid balance? Provide data supporting the imbalance. Mr. M. is exhibiting *Deficient Fluid Volume*. His blood pressure is decreased and his heart rate is tachycardic. His serum osmolarity, hematocrit, urine specific gravity, and BUN are elevated.

2. What is your interpretation of Mr. M.'s ABGs?

Step 1: pH 7.30 is below 7.35, so it is acidic and abnormal. We know this will be an acidosis.

Step 2: PaCO2 50. This is above 45, so it is acidic. The PaCO2 is moving in the opposite direction of the pH, so we know this will be respiratory in nature. This is called Respiratory Acidosis.

Step 3: HCO3 24. This is a normal HCO3 level so we know the problem is not metabolic in nature. We also know the kidneys are not trying to compensate for the lung problems.

Step 4: Compensation: The pH is abnormal, so there is not complete compensation. The HCO3 is normal, so the kidneys are not trying to compensate for the lungs. We call this uncompensated.

Interpretation: Uncompensated Respiratory Acidosis

3. What is your interpretation of Mr. M.'s electrolyte studies?

Potassium: 5.9 – elevated, most likely due to acidosis occurring

Magnesium: 1.0 – low, most likely due to alcoholism or inadequate nutrition

Calcium: 10.2 – elevated, most likely due to acidosis occurring

Sodium: 137 – normal

4. Is Mr. M. stable or unstable? Why? Mr. M. is unstable. He is hypotensive and tachycardic. Also, his respiratory rate is low and labored, and O2 saturations are quite low. His acid-base balance is quite abnormal. He is developing hypovolemic shock and could experience cardiac and respiratory arrest if not treated emergently.

5. For what complications will you monitor? Mr. M. could have a respiratory arrest due to his severe acidosis, decreased level of consciousness, and respiratory distress. The elevated potassium and decreased magnesium put Mr. M. at risk for cardiac arrhythmias. His elevated calcium level could cause nausea and vomiting, which puts him at risk for aspiration with his associated lethargy.

6. Write an SBAR communication you would have with the health care provider to notify them about Mr. M.'s condition.

S: Hi, Dr. X. This is _____, a nursing student working with Mr. M. This morning Mr. M. is lethargic and having labored respirations.

B: Mr. M. was admitted during the night with pneumonia. He has a history of alcohol abuse and coronary artery disease.

A: Mr. M.'s vital signs are the following: BP 80/45, HR 110, RR 8, O2 saturation 80% on 3 L/NC. He has coarse crackles throughout his lung fields, and he is using accessory muscles to breathe. Mr. M. is lethargic and having difficulty following commands.

R: I am concerned that Mr. M.'s respiratory status is declining. I recommend increasing his oxygen and checking arterial blood gasses and electrolyte studies. I also would like you to come see Mr. M.

7. Create a NANDA-I diagnosis for Mr. M. in PES format. *Fluid Volume Deficit related to insufficient fluid intake as evidenced by BP 80/45, HR 110, and elevated serum osmolarity, hematocrit, BUN, and urine specific gravity results.*

8. Identify an expected outcome for Mr. M. in SMART format. *Mr. M. will demonstrate improving fluid balance as demonstrated by blood pressure and heart rate returning within normal range within 8 hours.*

9. What interventions will you plan for Mr. M.? Mr. M. will need either a BiPAP or intubation and mechanical ventilation for his respiratory status. He will need magnesium supplementation, and his calcium and potassium will need to be monitored closely. He may need insulin to help decrease his potassium. Any potassium contained in IV fluids should be stopped to prevent further potassium buildup. He will also need antibiotics for his pneumonia and IV fluids to treat his hypotension and tachycardia.

10. How will you evaluate if your interventions are effective? Based on the SMART goal established, the nurse will monitor Mr. M.'s blood pressure and heart rate and evaluate if they have returned to normal within 8 hours. Additionally, the ABGs for Mr. M. should return to closer to normal. He will show improvement with his level of consciousness. Magnesium levels will return to normal. As Mr. M.'s pH normalizes, the calcium and potassium levels should return to normal. Mr. M.'s fever should subside and his vital signs should return to normal as the infection is treated and IV fluids are given.

11. Write a nursing note about Mr. M.'s condition and your actions taken. This can be in the form of a DAR, SOAP, or summary nursing note.

01/31/20xx 0900

D: On morning assessment, pt noted to be lethargic, unable to follow commands consistently, and using accessory muscles with breathing. Coarse crackles noted throughout lung fields. VS are BP 80/45, HR 110, RR 8, O2 sat 80% on 3L per nasal cannula, and temp 38.1 C.

A: Dr. X. notified and orders rec'd to increase O2 to 10L per non-rebreather mask and to check electrolytes and ABGs.

R: O2 increased and labs drawn and resulted as follows: pH 7.30, PaCO2 50, PaO2 59, HCO3 24, SaO2 80. Potassium 5.9, Magnesium 1.0, Calcium 10.2, Sodium 137. Will continue to monitor patient closely and will update Dr. X. of changes.

_____,SN

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18.7: Chapter 16 (Elimination)

Answer Key to Chapter 16 Learning Activities

1. Mrs. Gonzalez should be offered therapeutic reassurance that although urinary incontinence can be the result of aging, there are interventions that can be helpful. These include pelvic muscle exercises, timed voiding to assist in regaining bladder control, avoidance of triggering agents such as caffeine, weight control, and avoidance of heavy lifting, etc. Additional medical intervention may include biofeedback sensors, pessaries, anticholinergic medications, or surgical intervention. The patient should also be educated on protective products that can help protect the skin from breakdown and assist with odor control.

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18.8: Chapter 17 (Grief and Loss)

Answer Key to Chapter 17 Learning Activities

Scenario A

1. What actions should the nurse take to support Mr. Lyn? The grieving process is variable for every individual. Mr. Lyn's outward expression of grief should be supported by the nurse. The nurse can assist Mr. Lyn to cope by using supportive presence and encouraging reminiscence by sharing good memories of his life with Mrs. Lyn. It is helpful to offer the services of the agency chaplain, as well as to offer prayer and spiritual support based on Mr. Lyn's beliefs and the nurse's comfort level. The nurse can also encourage Mr. Lyn to contact other family members and friends for additional social support.

2. What medication is helpful to administer to treat dyspnea at end of life? Roxanol, a highly concentrated solution of morphine, can be administered sublingually as ordered for pain and air hunger.

3. Mr. Lyn tells the nurse, "My daughter lives six hours away and would like to be here when the time comes. How much longer does she have to live?" What is the nurse's best response? Although we never know exactly when death will occur, there are recognizable signs that occur as death becomes imminent, such as noisy or irregular breathing, increased lethargy, and a type of bruising called "mottling." Mrs. Lyn is demonstrating new changes in her breathing status, so death may occur in the next few days.

4. The daughter arrives and seems hesitant to talk to or touch the patient. What tasks can the nurse coach family members to do at the end of a patient's life? Nurses can encourage family members to talk with and touch their loved one. They can encourage family members to reminisce about happy stories and say "I love you" or say "Goodbye."

5. Mrs. Lyn dies the following evening. What postmortem care should the nurse provide? After verifying the lack of an apical heartbeat for a full minute, the nurse should follow agency policy regarding notifications and postmortem care. The nurse should document the date and time of assessment, the physician contacted, the individuals present at the time of death, the lack of response to stimuli and absence of an apical pulse, and the arrangements for transport to the morgue or funeral home. Typically, the patient is bathed, dressed, and positioned to show respect and provide dignity. Cultural practices should be honored. The nurse can offer to contact other family members to inform them of the death and support families in their ways of saying goodbye.

Scenario B

1. According to Kubler-Ross' theory of grief/loss, what stage of grief is Terry currently experiencing? Terry is demonstrating the stage of denial according to Kubler-Ross' theory of grief/loss.
2. How would you explain palliative care to him? Palliative care is a way to manage your symptoms and optimize your quality of life. A team will assist you in making difficult decisions and can provide support to you and your family members
3. How would you explain advance directives to him? Advance directives are a legal way for you to establish your wishes for health care. A living will is a document that you can complete that describes your wishes if you are no longer able to speak for yourself. For example, you can decide if you would ever want a feeding tube placed if you are no longer able to eat. You can also identify a health care power of attorney who will serve as your decision maker when you can no longer speak for yourself. Would you like me to ask a social worker to visit so you can talk more about these options?
4. Identify a SMART outcome. *"Terry will discuss the meaning of the cancer diagnosis to his life before discharge."*
5. List sample nursing interventions that may help Terry to cope with this new diagnosis. Use a calm, reassuring approach. Provide an atmosphere of acceptance. Seek to understand the patient's perspective. Provide Terry realistic choices about aspects of his care when possible. Encourage verbalization of feelings, perceptions, and fears. Encourage support from family and friends.

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18.9: Chapter 18 (Spirituality)

Answer Key to Chapter 18 Learning Activities

1. These questions can be asked to gain insight into the patient's personal spiritual beliefs:

F–Faith or beliefs: What are your spiritual beliefs? Do you consider yourself spiritual? What things do you believe in that give meaning to life?

I–Importance and influence: Is faith/spirituality important to you? How has your illness and/or hospitalization affected your personal practices /beliefs?

C–Community: Are you connected with a faith center in the community? Does it provide support/comfort for you during times of stress? Is there a person/group/leader who supports/assists you in your spirituality?

A–Address: What support can we provide to support your spiritual beliefs/practices?

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18.10: Chapter 1 (Scope of Practice)

Answer Key to Chapter 1 Learning Activities

1. When given instruction to titrate medications independently, the nursing student should recognize that this is outside of their scope of practice and training. The nursing student should inform the nurse that within the student role, they are not able to complete this action because it is outside of their practice scope. The nursing student should also report this instruction promptly to their instructor so that appropriate follow-up can be taken regarding re-education and review of the principles of safe delegation.
2. It is important to acknowledge that the conversation that is occurring in the breakroom is a violation of HIPAA. If a staff member is not involved in patient care, disclosure of patient care information is a violation of patient privacy and confidential health information. It is important to voice one's concern regarding the disclosure of private health information and remind all staff of the importance of adherence to HIPAA requirements within a health care setting.

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18.11: Chapter 2 (Communication)

Answer Key to Chapter 2 Learning Activities

2. It is important to take action to limit the distractions within the environment when communicating with Mr. Curtis. Upon entry into the room and initial discussion, it would be helpful to identify a few key family members who might contribute to the admission history and excuse the others for a short period of time. Additionally, it is important prior to beginning an interaction that Mr. Curtis consent to discuss admission details in front of the family members who are present. Other factors to consider include limitation to noise distraction within the environment. For example, closing the door to the hallway and turning off the television may be helpful. If Mr. Curtis uses any assistive devices, such as hearing aids or eye glasses, these should also be encouraged. Finally, it is important that the nurse consider strategies to enhance communication. Sitting across from Mr. Curtis, making eye contact, and creating an open, approachable, nonhurried demeanor can help to facilitate the information exchange.

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18.12: Chapter 3 (Diverse Patients)

Answer Key to Chapter 3 Learning Activities

2. It is important to demonstrate professional respect for a patient's cultural beliefs, background, and practices when providing care. You can ensure appropriate actions are taken by introducing yourself with name and role, asking preference on how the individual would like to be addressed, attending to personal space of the patient, following patient and family lead for eye contact behaviors, using inclusive language, etc. It is important to note the patient's language of preference and enact interpreter services if a communication barrier is noted. Additionally, it is important to be honest regarding individual level of understanding about one's cultural beliefs. Ask polite questions and seek clarification to avoid misunderstanding.

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18.13: Chapter 4 (Nursing Process)

Answer Key to Chapter 4 Learning Activities

Box 4: Scenario C:

Subjective data:

"I am so short of breath."

"My ankles are so swollen."

"I am so tired and weak that I can't get out of the house to go grocery shopping."

"I get so dizzy."

Objective data:

Bilateral basilar crackles in the lungs

Bilateral 2+ pitting edema of the ankles and feet

Increase weight of 10 pounds

Furosemide use (a medication that eliminates excess fluid from the body)

Oxygen saturation 91% on room air

Secondary data:

Daughter reports, "We are so worried about mom living at home by herself when she is so tired all the time!"

Care Plan Activity Answers:

The client, Mark S., is a 57-year-old male who was admitted to the hospital with "severe" abdominal pain that was unable to be managed in the Emergency Department. The physician has informed Mark that he will need to undergo some diagnostic tests. The tests are scheduled for the morning.

After receiving the news about his condition and the need for diagnostic tests, Mark begins to pace the floor. He continues to pace constantly. He keeps asking the nurse the same question ("How long will the tests take?") about his tests over and over again. The patient also remarked, "I'm so uptight I will never be able to sleep tonight." The nurse observes that the client avoids eye contact during their interactions and that he continually fidgets with the call light. His eyes keep darting around the room. He appears tense and has a strained expression on his face. He states, "My mouth is so dry." The nurse observes his vital signs to be: Temperature 98 degrees F, Pulse 104, Respiratory Rate 30, Blood Pressure 180/96. The nurse notes that his skin is diaphoretic and cool to the touch.

1. Group (cluster) the objective and subjective data.

Objective Data:

- 57 years old
- Paces the floor
- Avoids eye contact
- Fidgets with call light
- Eyes dart around room
- Temp 98 degrees F
- Pulse 104
- Blood pressure 180/96
- He is diaphoretic
- Skin is cool to touch

Subjective Data:

- Male
- Severe abdominal pain
- “I’m so uptight that I will never be able to sleep tonight.”
- Appears tense
- Strained expression on his face
- “My mouth is so dry.”

*Note that “male” is subjective data in this case because the patient identifies as a male and reports that he is a male. Without a clear definition, sex is what the patient reports.

2. Create a problem-focused nursing diagnosis (hypothesis).

Anxiety related to need for diagnostic testing as manifested by increased heart rate, pacing the floor, avoiding eye contact, diaphoretic and cool to the touch skin, appearing tense, dry mouth, “I’m so uptight I will never be able to sleep tonight.”

This is an actual nursing diagnosis because the patient is experiencing and exhibiting symptoms of anxiety.

3. Develop a broad goal and identify an expected outcome in “SMART” format.

Goal: *The patient will have reduced anxiety.*

Expected Outcome in SMART format: *The patient will verbalize effective coping mechanisms to decrease his feelings of anxiety in the next two hours.*

4. Outline three interventions for the nursing diagnosis. Cite an evidence-based source.

Potential interventions include:

- Use a calm, reassuring approach.
- Explain all procedures, including sensations likely to be experienced during the procedure.
- Seek to understand the patient’s perspective of a stressful situation.
- Provide factual information concerning diagnosis, treatment, and prognosis.
- Encourage verbalization of feelings, perceptions, and fears.
- Provide diversional activities geared toward the reduction of tension.
- Control stimuli, as appropriate, for patient needs.
- Instruct the patient on the use of relaxation techniques.
- Administer prescribed medications to reduce anxiety as appropriate.

Source: Ackley, B., Ladwig, G., Makic, M. B., Martinez-Kratz, M., & Zanotti, M. (2020). *Nursing diagnosis handbook: An evidence-based guide to planning care* (12th ed.). Elsevier, pp. 144-147.

5. Imagine that you implemented the interventions you identified. Evaluate the degree to which the expected outcome was achieved.

The patient verbalized effective coping mechanisms to decrease anxiety in the next two hours. Outcome was met.

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18.14: Chapter 5 (Safety)

Answer Key to Chapter 5 Learning Activities

1. Risk factors: hip fracture, morphine pain medication, diminished eyesight and hearing, ambulates with walker, weakness, experience of recent fall.

2. Morse Fall Risk Assessment Scoring:

- History of fall – 25
- Walker – 15
- Weak Gait -10
- Total: 50 – High Risk

3. Interventions to address risk factors:

- Provide adequate lighting and night-light
- Use of half rails
- Encourage rest
- Place articles within reach at bedside
- Use elevated toilet seat in bathroom
- Use assistive devices, glasses and hearing aids
- Obtain orthostatic blood pressures
- Wear shoes or slippers with non-skid soles

4. Potential response: “Mr. Moore, your safety is most important and we need to ensure you do not fall. If you have a bowel movement, we will clean it up. Moving forward, it may be helpful for us to have a commode chair closer to your bedside so we do not need to travel so far if urgency arises.”

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18.15: Chapter 7 (Sensory Impairments)

Answer Key to Chapter 7 Learning Activities

1. Answers to “Activity 1” will be individualized based on the assessment findings that are identified in the data collection with your student peer or simulated patient.

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18.16: Chapter 8 (Oxygenation)

Answer Key to Chapter 8 Learning Activities

1. Potential interventions to improve breathing pattern and lung capacity include coughing and deep breathing, use of an incentive spirometer, use of an acapella flutter valve to mobilize secretions, increased fluids to thin secretions, frequent ambulation to mobilize secretions, etc.

Answers to interactive elements are given within the interactive element.

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18.17: Chapter 9 (Infection)

Answer Key to Chapter 9 Learning Activities

1. Based upon Ms. Jamison's current vital signs and presenting condition, one would suspect the patient is septic. Her current vital signs reflect an elevated temperature > 100.4 and a tachycardic heart rate. Additionally, based upon the patient's history, one would suspect she has an unresolved urinary tract infection.

Answers to interactive elements are given within the interactive element.

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A: Sample NANDA-I Diagnoses

Table A contains commonly used NANDA-I nursing diagnoses categorized by domain. Many of these concepts will be further discussed in various chapters of this book. Nursing students may use Gordon's Functional Health Patterns framework to cluster assessment data by domain and then select appropriate NANDA-I nursing diagnoses. For more information, refer to a nursing care planning resource.

Table A Sample NANDA-I Diagnoses by Domain[1]

Domain	Class & Nursing Diagnosis
Health Promotion	Health Awareness • Sedentary lifestyle Health Management • Frail elderly syndrome • Ineffective health maintenance
Nutrition	Ingestion • Imbalanced nutrition: less than body requirements • Readiness for enhanced nutrition • Impaired swallowing Metabolism • Risk for unstable blood glucose level Hydration • Risk for electrolyte imbalance • Deficient fluid volume • Excess fluid volume • Risk for imbalanced fluid volume
Elimination and Exchange	Urinary function • Impaired urinary elimination • Functional urinary incontinence • Overflow urinary incontinence • Reflex urinary incontinence • Stress urinary incontinence • Urge urinary incontinence • Urinary retention Gastrointestinal function • Constipation • Risk for constipation • Diarrhea • Bowel incontinence Respiratory function • Impaired gas exchange
Activity/Rest	Sleep/Rest • Insomnia

Domain	Class & Nursing Diagnosis
	• Disturbed sleep pattern Activity/Rest • Risk for disuse syndrome • Impaired bed mobility • Impaired physical mobility • Impaired wheelchair mobility • Impaired sitting • Impaired standing • Impaired transfer ability • Impaired walking Energy balance • Fatigue • Wandering Cardiovascular/Pulmonary responses • Activity intolerance • Ineffective breathing pattern • Decreased cardiac output • Ineffective peripheral tissue perfusion Self-care • Bathing self-care deficit • Dressing self-care deficit • Feeding self-care deficit • Toileting self-care deficit
Perception/Cognition	Attention • Unilateral neglect Cognition • Acute confusion • Chronic confusion • Deficient knowledge • Readiness for enhanced knowledge • Impaired memory Communication • Readiness for enhanced communication • Impaired verbal communication

Domain	Class & Nursing Diagnosis
Self-Perception	Self-concept • Hopelessness • Readiness for enhanced self-concept Self-esteem • Chronic low self-esteem Body image • Disturbed body image
Role Relationship	Caregiving roles • Caregiver role strain • Risk for caregiver role strain Family relationships • Dysfunctional family processes Role performance • Impaired social interaction
Sexuality	Sexual function • Sexual dysfunction
Coping/Stress Tolerance	Post-trauma responses • Risk for relocation stress syndrome Coping responses • Anxiety • Ineffective coping • Death anxiety • Fear • Grieving • Complicated grieving • Powerlessness Neurobehavioral stress • Risk for autonomic dysreflexia

Domain	Class & Nursing Diagnosis
Life Principles	• Readiness for enhanced spiritual well-being • Decisional conflict • Spiritual distress
Safety/Protection	Infection • Risk for infection Physical injury • Ineffective airway clearance • Risk for aspiration • Risk for bleeding • Risk for falls • Risk for injury • Impaired dentition • Risk for pressure ulcer • Impaired skin integrity • Impaired tissue integrity Violence • Risk for suicide Environmental hazards • Risk for poisoning Defensive processes • Risk for allergy response Thermoregulation • Hyperthermia • Hypothermia
Comfort	Physical comfort • Impaired comfort • Nausea • Acute pain • Chronic pain Social comfort • Risk for loneliness

Domain	Class & Nursing Diagnosis
Growth/Development	• Risk for delayed development

1. Herdman, T. H., & Kamitsuru, S. (Eds.). (2018). *Nursing diagnoses: Definitions and classification, 2018-2020*. Thieme Publishers New York. ↵

B: Template for Creating a Nursing Care Plan

Template for Creating a Nursing Care Plan

Use the following link to access the care plan template: Care Plan Template.

C: Sample Abbreviated Care Plan for Scenario C

Sample Abbreviated Care Plan for Scenario C

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