NURS142: HEALTH ASSESSMENT IN NURSING



Bugosh, McAlicher, and Zaharchuk
Harrisburg Area Community College

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This *Health Assessment in Nursing* textbook is an open educational resource with a CC BY-SA 4.0 license developed for entry-level undergraduate nursing students. It is aligned with the Harrisburg Area Community College's nursing curriculum for the Physical Assessment course NURS142 that describes techniques for obtaining a complete health history and performing a basic physical assessment using a body systems approach.

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About the Authors

Editor

- Valerie J. Bugosh, MSN, RN, CNE

About the Contributing Authors

Developing authors remixed existing open education resources and developed new content based on evidence-based resources.

Valerie J. Bugosh, MSN, RN, CNE

- Valerie Bugosh graduated from Harrisburg Area Community College with her Associate of Arts degree in Nursing. She worked in a long-term care facility, taught CNA classes, and was the staff development nurse. She also worked as a staff and charge nurse on a cardiac telemetry unit, and then became a home health nurse. Val returned to school and earned her BSN and MSN in Nursing Education at Millersville University. She has taught health assessment, nursing fundamentals, and med-surg acute care clinicals at HACC for 15 years. Val has also co-led cultural immersion learning experiences for nursing students to Kenya, Haiti, and Guatemala.

Leisa E. McAlicher, MSN, RN, CRNP

- Leisa McAlicher graduated from Messiah College with a Bachelor of Science in Nursing and then earned her MSN and completed her CRNP at Widener University. She has been teaching at HACC for the past 22 years.

Katherine Zaharchuk, MSN, RN, CNE

- Kathy Zaharchuk graduated from Reading Area Community College with an Associate in Arts in Nursing and practiced in the fields of long-term care, medical/surgical, IV therapy, medical oncology, and cancer clinical trials. She earned a BA and BSN from Kutztown University and MSN at Walden University. She has taught for practical nursing, medical assisting, and RN to BSN programs. She is in the dissertation phase of her Ph.D. in Nursing Education and has been teaching at HACC for 4 1/2 years.

CHAPTER OVERVIEW

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1.1: Introduction

Systematic health assessments are performed regularly in nearly every health care setting. For example:

- A health history is taken when a patient is admitted and whenever additional subjective information is required to inform care.
- Comprehensive head-to-toe assessments are done when a patient is admitted, at the beginning of each shift, and when it is determined to be necessary by the patient's hemodynamic status and context.
- Brief physical assessments are done as necessary and to identify changes in a patient's status and for comparison with the previous assessment.
- Focused assessments are done in response to a specific problem recognized by the assessor as needing further assessment of a body system.
- Emergency assessments are done in emergency situations.

A routine physical assessment reveals information to supplement a patient's database. The assessment is documented according to agency policy, and unusual findings are reported to appropriate members of the health care team. Ongoing, objective, and comprehensive assessments promote continuity in health care.

The ability to think critically and interpret patient behaviours and physiologic changes is essential. The skills of physical assessment are powerful tools for detecting both subtle and obvious changes in a patient's health. The assessment skills outlined in this chapter are meant to provide a framework to develop assessment competencies applicable and salient to everyday practice as recommended by Anderson, Nix, Norman, and McPike (2014).

Learning Objectives

Physical assessment objectives include being able to:

- Describe the purposes of physical assessment
- Discuss nursing scope of practice and standards of care
- Describe the different types of assessment and when they should be used to inform care
- Discuss techniques to promote a patient's physical and psychological comfort during an examination
- Make environmental preparations before an assessment
- Identify data to collect from the nursing history before an examination
- Incorporate health promotion and health teaching into an assessment
- Use physical assessment techniques and skills during routine nursing care
- Document assessment findings according to agency policy
- Communicate abnormal findings to appropriate members of the health care team

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1.2: The Nursing Process

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 section will explain how to use the **nursing process** as standards of professional nursing practice to provide safe, patient-centered care.

Introduction to the Nursing Process

Before discussing the components of a nursing health assessment, it is important to understand how assessment fits under the standards for professional nursing practice established by the American Nurses Association (ANA). These standards are the foundation of the nursing profession and include duties that all registered nurses, regardless of role or specialty, are expected to perform competently.[2] There are six components of the nursing process: Assessment, Diagnosis, Outcomes Identification, Planning, Implementation, and Evaluation. See Figure 1.2.1[3] for an illustration of the nursing process. The nursing process is a continuous, cyclic process that is constantly adapting to the patient's current health status. This textbook contains several chapters pertaining to techniques used during the assessment phase of the nursing process.

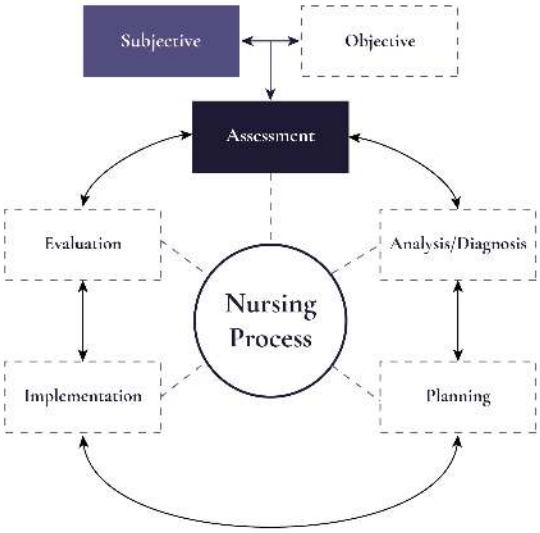


Figure 1.2.1 The Nursing Process

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1.3: Critical Thinking and Clinical Reasoning

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." 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]

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

Assessment

Assessment is the first step of the nursing process. The American Nurses Association (ANA) "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." 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]

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. 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.

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.

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." 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.

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]

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.

Implementation

The "Implementation" Standard of Practice is defined as, "The nurse implements the identified plan." 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.

Evaluation

The "Evaluation" Standard of Practice is defined as, "The registered nurse evaluates progress toward attainment of goals and outcomes." 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.

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."

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."

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.

Caring and the Nursing Process

The American Nurses Association (ANA) states, "The act of caring is foundational to the practice of nursing." 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. 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.

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1. Klenke-Borgmann, L., Cantrell, M. A., & Mariani, B. (2020). Nurse educator's guide to clinical judgment: A review of conceptualization, measurement, and development. *Nursing Education Perspectives*, *41*(4), 215-221. ↵
2. Klenke-Borgmann, L., Cantrell, M. A., & Mariani, B. (2020). Nurse educator's guide to clinical judgment: A review of conceptualization, measurement, and development. *Nursing Education Perspectives*, *41*(4), 215-221. ↵
3. Powers, L., Pagel, J., & Herron, E. (2020). Nurse preceptors and new graduate success. *American Nurse Journal*, *15*(7), 37-39. ↵
4. "The Detective" by paurian is licensed under CC BY 2.0↵
5. "In the Quiet Zone…" by C.O.D. Library is licensed under CC BY-NC-SA 2.0↵
6. NCSBN. (n.d.). *NCSBN clinical judgment model*. https://www.ncsbn.org/14798.htm↵
7. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
8. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
9. "The Nursing Process" by Kim Ernstmeyer at Chippewa Valley Technical College is licensed under CC BY 4.0↵
10. "Patient Image in LTC.JPG" by ARISE project is licensed under CC BY 4.0↵
11. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
12. American Nurses Association. (n.d.). *The nursing process.*https://www.nursingworld.org/practice-policy/workforce/what-is-nursing/the-nursing-process/↵
13. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
14. American Nurses Association. (n.d.). *The nursing process*. https://www.nursingworld.org/practice-policy/workforce/what-is-nursing/the-nursing-process/↵
15. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
16. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
17. American Nurses Association. (n.d.). *The nursing process.*https://www.nursingworld.org/practice-policy/workforce/what-is-nursing/the-nursing-process/↵
18. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (3rd ed.). American Nurses Association. ↵
19. American Nurses Association. (n.d.) *The nursing process.*https://www.nursingworld.org/practice-policy/workforce/what-is-nursing/the-nursing-process/ ↵
20. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
21. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
22. American Nurses Association. (n.d.). *The nursing process.*https://www.nursingworld.org/practice-policy/workforce/what-is-nursing/the-nursing-process/ ↵
23. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
24. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵

25. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
26. Walivaara, B., Savenstedt, S., & Axelsson, K. (2013). Caring relationships in home-based nursing care - registered nurses' experiences. *The Open Journal of Nursing*, *7*, 89-95. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3722540/pdf/TONURSJ-7-89.pdf↵
27. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
28. "hospice-1793998_1280.jpg" by truthseeker08 is licensed under CC0↵
29. Watson Caring Science Institute. (n.d.). Watson Caring Science Institute. *Jean Watson, PHD, RN, AHN-BC, FAAN, (LL-AAN)*. https://www.watsoncaringscience.org/jean-bio/↵

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1.4: Regulations and Standards

Nurses must also follow legal standards in when providing nursing care. 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, and federal regulators. These standards assure safe, competent care is provided to the public.

Scope of Practice

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?

ANA 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 a later semester of this nursing program. The *Nursing: Scope and Standards of Practice* describes a professional nurse's scope of practice and defines the who, when, where, why, and how of nursing. It also sets 12 additional standards of professional practice that all registered nurses are expected to perform competently.

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**.

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. 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 outlines 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.

Use the hyperlink provided below to read more about The Pennsylvania State Board of Nursing Practice Act.

Note http://www.pacodeandbulletin.gov/Display/.../chapter21/subchapAtoc.html&d=reduce

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 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.

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." [3]

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.

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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 ↵
3. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association ↵
4. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association ↵
5. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
6. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
7. American Nurses Association. (2021). *Nursing: Scope and standards of practice* (4th ed.). American Nurses Association. ↵
8. Bostain, L. (2020, June 25). Nursing professionalism begins with you. *American Nurse*. https://www.myamericannurse.com/nursing-professionalism-begins-with-you/↵
9. http://www.pacodeandbulletin.gov/Dis....html&d=reduce
10. The Joint Commission. (n.d.). https://www.jointcommission.org/ ↵
11. The Joint Commission. (n.d.). *National patient safety goals*. https://www.jointcommission.org/standards/national-patient-safety-goals/↵
12. Joint Commission Center for Transforming Healthcare. (n.d.). *Creating a safety culture*. https://www.centerfortransforminghealthcare.org/why-work-with-us/video-resources/creating-a-safety-culture↵
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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

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.

The NCLEX-RN is an online, adaptive test 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.

The NCLEX-RN is a variable length test that adapts 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.

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" 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]

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] 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.

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.

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↵

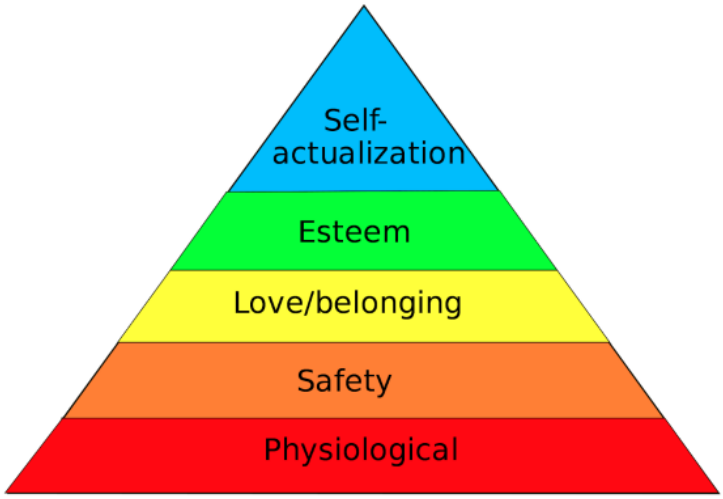
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1.6: Maslow's Hierarchy of Needs

Maslow's Hierarchy of Needs

- Nurses must continually organize patient data to be recorded, either written or electronically. One model for organizing and prioritizing patient care needs is Maslow's Hierarchy of Needs.
- Maslow's hierarchy of needs is often portrayed in the shape of a pyramid, with the greatest and most fundamental levels of needs at the bottom, and the need for self-actualization at the top.
- Human needs, listed in order of importance by Maslow, are Physiological; Safety; Love and Belonging; Esteem; and Self-actualization.
- Maslow acknowledged that different levels are likely to be present at the same time. The hierarchy identifies the order of progression when needs are met.



Physiological Needs

Physiological needs are required for survival. If physiological are not met, the body cannot continue to function. The basic physiological needs are:

- Air
- Water
- Food
- Clothing
- Shelter

Safety Needs

Once physiological needs are met, individual safety takes precedence. Safety and Security needs include:

- Personal and family safety
- Financial security
- Health and well-being

Love/belonging Needs

After physiological and safety needs are fulfilled, the third layer of human needs are interpersonal. This involves feelings of belonging. Deficiencies in interpersonal needs, due to neglect, shunning, ostracism, etc., can impact an individual's ability to form and maintain emotionally significant relationships in general, such as:

- Friendship
- Intimacy
- Family

Humans need to feel a sense of belonging and acceptance, whether it comes from larger community affiliations or simply a few close friends. Without these connections, many people become susceptible to loneliness, social anxiety, and clinical depression. This need for belonging can sometimes overcome physiological and security needs. For example, a person with anorexia may ignore the need to eat and the security of health for a feeling of control and belonging.

Esteem

Esteem represents the normal human desire to be accepted and valued by others. People need to engage themselves to gain recognition and have an activity or activities that give the person a sense of contribution, to feel self-valued, be it in a profession or hobby. Imbalances at this level can result in low self-esteem or an inferiority complex. Many people with low self-esteem will not be able to improve their view of themselves simply by receiving fame, respect, and glory externally, but must first accept themselves internally. Psychological imbalances, such as depression, can prevent one from obtaining self-esteem on both levels.

Self-actualization

This level of need refers to what a person's full potential is and the realization of that potential. Maslow describes this level as the desire to accomplish everything that one can, to become the most that one can be. Individuals may perceive or focus on this need very specifically. For example, one individual may have the strong desire to become an ideal parent. In another, the desire may be expressed athletically. For others, it may be expressed in paintings, pictures, or inventions. Maslow believed that to acquire this level of need, the person must adequately achieve the previous needs.

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1.7: Initial and Emergency Assessment

The ABCCS assessment (airway, breathing, circulation, consciousness, safety) is the first assessment you will do when you meet your patient. This assessment is repeated whenever you suspect or recognize that your patient's status has become, or is becoming, unstable.

For example, if you assess that your patient is short of breath (dyspneic) with an increased respiration rate (tachypneic), then you should proceed with an ABCCS assessment and a focused respiratory assessment with appropriate interventions.

The ABCCS assessment includes the steps in the Initial and Emergency Assessment.

Checklist: Initial and Emergency Assessment

Disclaimer: Always review and follow your hospital policy regarding this specific skill.

Steps	Additional Information
A – Airway • Is the patient's airway compromised?	Does the patient's position need to be changed? If patient is choking on thick secretions, consider oral suctioning (check suction equipment).
B – Breathing • Assess rate and ease of breathing. • Assess the effectiveness of the oxygen delivery.	Is the oxygen flow connection intact? Is the rate, flow, and percentage as ordered? Based on your assessment, consider the need for potential oxygen supplementation.
C – Circulation • Assess for the presence of a radial pulse. • Assess skin color, moisture, and temperature for signs of decreased tissue perfusion (pale, dusky, cool, or clammy skin).	Note whether the pulse is too fast, too slow, or absent. If a radial pulse is not detectable, check for a carotid pulse. If no pulse is present, call for help and start CPR.
C – Consciousness • Check the patient's level of consciousness (LOC).	Is the patient alert, drowsy, disoriented, restless, agitated, unconscious? Note if there is a change from the patient's normal or previously noted LOC.
S – Safety • Ensure the patient is safe and free from risk of harm or injury at all times.	Check for name band and allergy band. Check oxygen saturation level. Check that suction is working. Check brakes on the bed, bedrail position (up, if required), bed is at the appropriate level, and call bell is within reach. Are there any fall risk indicators? Are there any dysphagia (difficulty swallowing) guidelines, or should there be some requested?
Report and document assessment findings and related health problems according to agency policy.	
Data source: Assessment Skill Checklists, 2014	

Critical Thinking Exercises

1. Initial assessment of your patient reveals that the patient is having trouble speaking. What would be your next steps?
2. What is included in the safety check on your unit? Is there anything that is not listed here?

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1.8: Focused Assessments

Registered nurses do focused assessments in response to a specific patient health problem recognized by the nurse as needing further assessment of a body system or systems.

Focused Respiratory System Assessment

The respiratory system is responsible for the exchange of gases in the body. A focused respiratory system assessment includes collecting subjective data about the patient's history of smoking, collecting the patient's and patient's family's history of pulmonary disease, and asking the patient about any signs and symptoms of pulmonary disease, such as cough and shortness of breath. Objective data is also assessed.

Focused Cardiovascular and Peripheral Vascular System Assessment

The cardiovascular and peripheral vascular system affects the entire body. A cardiovascular and peripheral vascular system assessment includes collecting subjective data about the patient's diet, nutrition, exercise, and stress levels; collecting the patient's and the patient's family's history of cardiovascular disease; and asking the patient about any signs and symptoms of cardiovascular and peripheral vascular disease, such as peripheral edema, shortness of breath (dyspnea), and irregular pulse rate. Objective data is also assessed.

Focused Gastrointestinal and Genitourinary Assessment

The gastrointestinal and genitourinary system is responsible for the ingestion of food, the absorption of nutrients, and the elimination of waste products. A focused gastrointestinal and genitourinary assessment includes collecting subjective data about the patient's diet and exercise levels, collecting the patient's and the patient's family's history of gastrointestinal and genitourinary disease, and asking the patient about any signs and symptoms of gastrointestinal and genitourinary disease, such as abdominal pain, nausea, vomiting, bloating, constipation, diarrhea, and characteristics of urine and feces. Objective data is also assessed.

Focused Musculoskeletal System Assessment

The musculoskeletal system provides structure and function for the human body. A focused musculoskeletal assessment includes collecting subjective data about the patient's mobility and exercise level, collecting the patient's and the patient's family's history of musculoskeletal conditions, and asking the patient about any signs and symptoms of musculoskeletal injury or conditions. Objective data is also assessed.

Focused Neurological System Assessment

The neurological system is responsible for all human function. It exerts unconscious control over basic body functions, and it also enables complex interactions with others and the environment (Stephen et al., 2012). A focused neurological assessment includes collecting subjective data about the patient's history of head injury or dysfunction, collecting the patient's and the patient's family's history of neurological disease, and asking the patient about signs and symptoms of neurological conditions, such as seizures, memory loss (amnesia), and visual disturbances. Objective data is also assessed.

Critical Thinking Exercises

1. Your patient complains of stomach pain during your head-to-toe assessment. What would be your next steps?
2. You notice that your patient seems lethargic during your head-to-toe assessment. What would be your next steps?

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1.9: Summary

The nursing health and physical assessments are the foundation of the nurse-patient relationship. From the first interaction with a patient, the nurse must understand all components of assessments in establishing the therapeutic and trusting relationship with all patients.

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CHAPTER OVERVIEW

2: The General Survey Assessment

2.1: General Survey Assessment Introduction
2.2: Initiating Patient Interaction
2.3: Basic Concepts
2.4: Expected Versus Unexpected Findings
2.5: Sample Documentation
2.6: Checklist for General Survey
2.7: Learning Activity
2.8: II Glossary
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2.1: General Survey Assessment Introduction

Learning Objectives

- Perform a general survey assessment, including ability to communicate, appropriateness of behaviors and responses, general mobility, and basic nutritional and fluid status
- Modify assessment techniques to reflect variations across the life span, cultural values and beliefs, and gender expression
- Document actions and observations
- Recognize and report significant deviations from norms

"Learn to see, learn to hear, learn to feel, learn to smell, and know that by practice alone can you become expert."[1]

This quote provides a good description of learning how to perform a general survey assessment. A **general survey assessment** is a component of a patient assessment that observes the entire patient as a whole. General surveys begin with the initial patient contact and continue throughout the helping relationship. In this instance, the nurse uses all senses to gather cues, including what is seen, heard or smelled during the initial patient contact. Nurses begin assessing patients from the moment they meet them, noting their appearance, posture, gait, verbal communication, nonverbal communication, and behaviors. Cues obtained during a general survey assessment are used to guide additional focused assessments in areas of concern.

Assessment

According to the ANA, assessment includes collecting "pertinent data, including but not limited to, demographics, social determinants of health, health disparities, and physical, functional, psychosocial, emotional, cognitive, sexual, cultural, age-related, environmental, spiritual/transpersonal, and economic assessments in a systematic, ongoing process with compassion and respect for the inherent dignity, worth, and unique attributes of every person."[4]

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, it should be in quotation marks and start with verbiage such as, "The patient reports…" or "The patient's wife states…" 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.

Example. An example of documented subjective data obtained from a patient assessment is, *"The patient reports pain severity of 2 on a 0-10 scale."* Additionally, if you create an inference, then that data is considered subjective. For example, documenting an inference, such as *"The patient appears anxious,"* is subjective data.

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, medical chart, or other sources is known as **secondary data**. Family members can provide important information, especially for infants and children or when the patient is unable to speak for themselves.

Objective Assessment Data

Objective data is anything that you can observe through your senses of hearing, sight, smell, and touch while assessing the patient. Objective data is measurable and reproducible, meaning another person can easily obtain the same data. Examples of objective data are vital signs, physical examination findings, and laboratory results.

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

Sources of Assessment Data

Assessment data is collected in three ways: during a focused interview, during physical examination, or while reviewing laboratory and 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 eliminates redundancy in the interview process and allows the nurse to focus 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.

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 are embarrasses or 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 with having difficult conversations or asking personal questions because of generational or other 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.

Physical Examination

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 where body parts are tapped with fingers to determine their size and if fluid is present. See Figure 2.1.2[5] for an image of a nurse performing a physical examination.



Figure 2.1.2: Physical Examination

Registered Nurses (RNs) complete a physical examination and use critical thinking to analyze the findings as part of the nursing process. Collection of 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 Unlicensed Assistive Personnel (UAP) when it is appropriate to do so. However, the RN remains responsible for analyzing the findings.

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 is an important component of the assessment phase of the nursing process and 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 prescriptions.

1. Dallas Hall, W. (1990). Chapter 209: An overview of the general examination. In Walker, H. K., Hall, W. D., Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed.). Butterworths. www.ncbi.nlm.nih.gov/books/NBK706/↵
2. American Nurses Association. (2015). *Nursing: Scope and standards of practice* (3rd ed.). American Nurses Association. ↵
3. "The Nursing Process" by Kim Ernstmeyer at Chippewa Valley Technical College is licensed under CC BY 4.0.↵
4. American Nurses Association. (2015). *Nursing: Scope and standards of practice* (3rd ed.). American Nurses Association. ↵
5. "13394660711603.jpg" by CDC/ Amanda Mills is in the Public Domain. ↵

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2.2: Initiating Patient Interaction

Before every patient interaction, the nurse must perform hand hygiene and consider the use of additional personal protective equipment, introduce themselves, and identify the patient using two different identifiers. It is also important to provide a culturally safe space for interaction and to consider the developmental stage of the patient.

Hand Hygiene and Infection Prevention

Before initiating care with a patient, hand hygiene is required and a risk assessment should be performed to determine the need for personal protective equipment (PPE). This is important for protection of both patient and nurse.

Hand Hygiene

Using hand hygiene is a simple but effective way to prevent infection when performed correctly and at the appropriate times when providing patient care. See Figure 2.2.1.[1] for an image about hand hygiene from the Centers for Disease Control (CDC).[2] Use the hyperlinks provided below to read more information and watch a video about effective handwashing.

Key points from the CDC about hand hygiene include the following:[3]

- In general, hand sanitizers are as effective as washing with soap and water and are less drying to the skin. When using hand sanitizer, use enough gel to cover both hands and rub for approximately 20 seconds, coating all surfaces of both hands until your hands feel dry. Go directly to the patient without putting your hands into pockets or touching anything else.[4]
- Be sure to wash with soap and water if your hands are visibly soiled or the patient has diarrhea from suspected or confirmed C. Difficile (C-diff).
- Clean all areas of the hands including the front and back, the fingertips, the thumbs, and between fingers.
- Gloves are not a substitute for cleaning your hands. Wash your hands after removing gloves.
- Hand hygiene should be performed at these times:
  - Immediately before touching a patient
  - Before performing an aseptic task (e.g., placing an indwelling device) or handling invasive medical devices
  - Before moving from working on a soiled body site to a clean body site on the same patient
  - After contact with blood, body fluids, or contaminated surfaces
  - Immediately after glove removal
  - When leaving the area after touching a patient or their immediate environment



Figure 2.2.1: Hand Hygiene

Checklists for performing handwashing and using hand sanitizer are located in Appendix A.

Note

Visit the Center for Disease Control and Prevention's website to read more about Hand Hygiene in Healthcare Settings

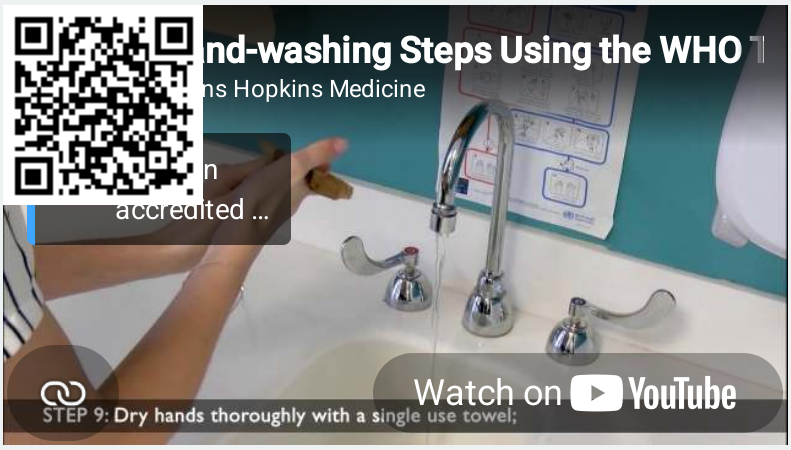
Download a factsheet from the Center for Disease Control and Prevention called Clean Hands Count

Video Reviews of Hand Hygiene:

Clean Hands Count[5]



Hand Washing Technique[6]



Hand Sanitizing Technique[7]



Check your knowledge with this learning activity.

Personal Protective Equipment (PPE)

Medical asepsis is a term used to describe measures to prevent the spread of infection in health care agencies. Performing hand hygiene at appropriate times during patient care and applying gloves when there is potential risk to body fluids are examples of using medical asepsis. Additional precautions are implemented by health care team members when a patient has, or is suspected of having, an infectious disease. These additional precautions are called **personal protective equipment (PPE)** and are based on how an infection is transmitted, such as by contact, droplet, or airborne routes. Personal protective equipment (PPE) includes gowns, eyewear, face shields, and masks. PPE is used along with environmental controls, such as surface cleaning and disinfecting to prevent the transmission of infection.[8] See Figure 2.2.2[9] for an image of health care team members applying PPE. These precautions are further discussed in the "Aseptic Technique" chapter. For the purpose of this chapter, be sure to perform a general risk assessment before entering a patient's room and apply the appropriate PPE as needed. This risk assessment include:

- Is there signage posted on the patient's door that contact, droplet, or airborne precautions are in place? If so, follow the instructions provided.
- Does this patient have a confirmed or suspected infection or communicable disease?
- Will your face, hands, skin, mucous membranes, or clothing be potentially exposed to blood or body fluids by spray, coughing, or sneezing?



Figure 2.2.2: Application of Personal Protective Equipment

Introducing Oneself

When initiating care with patients, it is essential to first provide privacy, and then introduce yourself and explain what will be occurring. Providing privacy means taking actions such as talking with the patient privately in a room with the door shut. A common framework used for introductions during patient care is **AIDET**, a mnemonic for Acknowledge, Introduce, Duration, Explanation, and Thank You.[10]

- **Acknowledge:** Greet the patient by the name documented in their medical record. Make eye contact, smile, and acknowledge any family or friends in the room. Ask the patient their preferred way of being addressed (for example, "Mr. Doe," "Jonathon," or "Johnny") and their preferred pronouns (i.e., he/him, she/her or they/them), as appropriate.
- **Introduce:** Introduce yourself by your name and role. For example, "I'm John Doe and I am a nursing student working with your nurse to take care of you today."
- **Duration:** Estimate a time line for how long it will take to complete the task you are doing. For example, "I am here to obtain your blood pressure, heart rate, and oxygen saturation levels. This should take about 5 minutes."

- **Explanation:** Explain step by step what to expect next and answer questions. For example, “I will be putting this blood pressure cuff on your arm and inflating it. It will feel as if it is squeezing your arm for a few moments.”
- **Thank You:** At the end of the encounter, thank the patient and ask if anything is needed before you leave. In an acute or long-term care setting, ensure the call light is within reach and the patient knows how to use it. If family members are present, thank them for being there to support the patient as appropriate. For example, “Thank you for taking time to talk with me today. Is there anything I can get for you before I leave the room? Here is the call light (Place within reach). Press the red button if you would like to call the nurse.”

> **Note**
>
> For more information about AIDET, visit AIDET Patient Communication.

Patient Identification

Before performing assessments, obtaining vital signs, or providing care, patients must be properly identified using two identifiers.

First identifier:

- Ask the patient to state their name and date of birth. If they have an armband, compare the information they are stating to the information on the armband and verify they match. See Figure 2.2.3[11] for an image of an armband.
- If the patient doesn’t have an armband confirm the information they are stating to information provided in the chart.
- If the patient is unable to state their name and date of birth, scan their armband or ask another staff member or family member to identify them.

Confirm first identifier with a different second identifier:

- Scan the wristband.
- Compare the name and date of birth to the patient’s chart.
- Ask staff to verify the patient in a long-term care setting.
- Compare the picture on the medication administration record (MAR) to the patient.
- If present, ask a family member to confirm the patient’s name.



Figure 2.2.3: Patient Identification Armband

Cultural Safety

When initiating patient interaction, it is important to establish cultural safety. **Cultural safety** refers to the creation of safe spaces for patients to interact with health professionals without judgment or discrimination. See Figure 2.2.4[12] for an image representing cultural safety. Recognizing that you and all patients bring a cultural context to interactions in a health care setting is helpful when creating cultural safe spaces. If you discover you need more information about a patient’s cultural beliefs to tailor your care, use an

open-ended question that allows the patient to share what they believe to be important. For example, you may ask, “I am interested in your cultural background as it relates to your health. Can you share with me what is important about your cultural background that will help me care for you?”[13]

> **Note**
>
> For more information about caring for diverse patients, visit the “Diverse Patients” chapter in the Open RN *Nursing Fundamentals* textbook.



Figure 2.2.4: Cultural Safety Creates Safe Spaces for Everyone

Adapting to Variations Across the Life Span

It is important to adapt your interactions with patients in accordance their **developmental stage**. Developmentalists break the life span into nine stages[14]:

- Prenatal Development
- Infancy and Toddlerhood
- Early Childhood
- Middle Childhood
- Adolescence
- Early Adulthood
- Middle Adulthood
- Late Adulthood
- Death and Dying

A brief overview of the characteristics of each stage of human development is provided in Table 2.2.1 When caring for infants, toddlers, children, and adolescents, parents or guardians are an important source of information, and family dynamics should be

included as part of the general survey assessment. When caring for older adults or those who are dying, other family members may be important to include in the general survey assessment. See Figure 2.2.5[15] for an image representing patients in various developmental stages of life.



Figure 2.2.5: Developmental Stages Across the Life Span

Note

Visit the Human Development Life Span e-book at LibreTexts to read additional information about human development across the life span.

Table 2.2.1: Variations Across the Life Span

Stage of Development	Common Characteristics
Prenatal Development	Conception occurs and development begins. All major structures of the body are forming and the health of the mother is of primary concern. Understanding nutrition, teratogens (environmental factors that can lead to birth defects), and labor and delivery are primary concerns for the mother.
Infancy and Toddlerhood	The first year and a half to two years of life are ones of dramatic growth and change. A newborn with a keen sense of hearing but very poor vision is transformed into a walking, talking toddler within a relatively short period of time. Caregivers are also transformed from someone who manages feeding and sleep schedules to a constantly moving guide and safety inspector for a mobile, energetic child.

Early Childhood	Early childhood is also referred to as the preschool years, consisting of the years that follow toddlerhood and precede formal schooling. As a three- to five-year-old, the child is busy learning language, gaining a sense of self and greater independence, and beginning to learn the workings of the physical world. This knowledge does not come quickly however, and preschoolers may have initially interesting conceptions of size, time, space, and distance, such as fearing that they may go down the drain if they sit at the front of the bathtub. A toddler's fierce determination to do something may give way to a four-year-old's sense of guilt for doing something that brings the disapproval of others.
Middle Childhood	The ages of six through eleven comprise middle childhood, and much of what children experience at this age is connected to their involvement in the early grades of school. Their world becomes filled with learning and testing new academic skills, assessing one's abilities and accomplishments, and making comparisons between self and others. Schools compare students and make these comparisons public through team sports, test scores, and other forms of recognition. Growth rates slow down and children are able to refine their motor skills at this point in life. Children begin to learn about social relationships beyond the family through interaction with friends and fellow students.
Adolescence	The World Health Organization defines adolescence as a person between the age of 10 and 19. Adolescence is a period of dramatic physical change marked by an overall physical growth spurt and sexual maturation, known as puberty. It is also a time of cognitive change as the adolescent begins to think of new possibilities and to consider abstract concepts such as love, fear, and freedom. Adolescents have a sense of invincibility that puts them at greater risk of injury from high-risk behaviors such as car accidents, drug and alcohol abuse, or contracting sexually transmitted infections that can have lifelong consequences or result in death.
Early Adulthood	The twenties and thirties are often thought of as early adulthood. It is a time of physiological peak but also highest risk for involvement in violent crimes and substance abuse. It is a time of focusing on the future and putting a lot of energy into making choices that will help one earn the status of a full adult in the eyes of others. Love and work are primary concerns at this stage of life.
Middle Adulthood	The late thirties through the mid-sixties is referred to as middle adulthood. This is a period in which aging processes that began earlier become more noticeable but also a time when many people are at their peak of productivity in love and work. It can also be a time of becoming more realistic about possibilities in life previously considered and of recognizing the difference between what is possible and what is likely to be achieved in their lifetime.

Late Adulthood	This period of the life span has increased over the last 100 years. For nurses, patients in this period are referred to as "**older adults.**" The term "young old" is used to describe people between 65 and 79, and the term "old old" is used for those who are 80 and older. One of the primary differences between these groups is that the young old are very similar to midlife adults because they are still working, still relatively healthy, and still interested in being productive and active. The "old old" may remain productive, active, and independent, but risks of the heart disease, lung disease, cancer, and cerebral vascular disease (i.e., strokes) increase substantially for this age group. Issues of housing, health care, and extending active life expectancy are only a few of the topics of concern for this age group. A better way to appreciate the diversity of people in late adulthood is to go beyond chronological age and examine whether a person is experiencing optimal aging (when they are in very good health for their age and continue to have an active, stimulating life), normal aging (when the changes in health are similar to most of those of the same age), or impaired aging (when more physical challenges and diseases occur compared to others of the same age).
Death and Dying	Death is the final stage of life. Dying with dignity allows an individual to make choices about treatment, say goodbyes, and take care of final arrangements. When caring for patients who are actively dying, nurses can advocate for care that allows that person to die with dignity according to their wishes.

1. "Animated-Logo-Clean-Hands-Count" by Centers for Disease Control and Prevention is licensed under CC0. Access for free at https://www.cdc.gov/handhygiene/campaign/index.html↵
2. Centers for Disease Control and Prevention. (2019, April 29). *Hand hygiene.*https://www.cdc.gov/handhygiene/index.html↵
3. Centers for Disease Control and Prevention. (2019, April 29). *Hand hygiene*. https://www.cdc.gov/handhygiene/index.html↵
4. Centers for Disease Control and Prevention. (2019, April 29). *Hand hygiene.*https://www.cdc.gov/handhygiene/index.html↵
5. Centers for Disease Control and Prevention. (2017, May 5). *Clean hands count*. [Video]. YouTube. All rights reserved. https://youtu.be/MzkNSzqmUSY↵
6. Johns Hopkins Medicine. (2019, March 26). *Hand-washing steps using the WHO technique.* [Video]. YouTube. All rights reserved. https://youtu.be/IisgnbMfKvI↵
7. Johns Hopkins Medicine. (2019, May 8). *Hand rubbing steps using the WHO technique.* [Video]. YouTube. All rights reserved. https://youtu.be/B3eq5fLzAOo↵
8. This work is a derivative of Clinical Procedures for Safer Patient Care by British Columbia Institute of Technology licensed under CC BY 4.0↵
9. "Pennsylvania_National_Guard_(49923831732).jpg" by The National Guard is in the Public Domain. ↵
10. Huron. (n.d.). *AIDET patient communication.*https://www.studergroup.com/aidet↵
11. "barcode_clinic_fist_hand_healthcare_hospital_identification_identity-1517387.jpg" by rawpixel.com is licensed under CC0↵
12. "MODEL OF MULTINATIONAL UNITY" by Margherita Marchetti is licensed under CC0↵
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2.3: Basic Concepts

When performing a general survey assessment, nurses use all of their senses to carefully observe the patient. They look at a patient and ask themselves, what are they seeing? They listen to a patient and ask themselves, what are they hearing, both verbally and nonverbally? They smell a patient's odors and ask themselves, is there anything unusual we need to further assess? They observe a patient's behaviors and make notes about their functioning and ability to complete daily activities according to their developmental level.

Before performing a general survey assessment, it is important to first ensure the patient is medically stable by completing a brief primary survey. After ensuring the patient is medically stable, a general survey assessment is an overall observation of a patient's general appearance, behavior, mobility, communication, nutritional, and fluid status. A general survey assessment also includes analyzing height, weight, and vital signs for values that are out of range and require additional follow-up.

Primary Survey

At the beginning of every shift or patient visit, nurses perform a brief **primary survey** to ensure their patient is medically stable. If any signs indicate patient distress, the provider is notified and emergency care is initiated. For example, changes in level of consciousness or abnormal vital signs often provide early warning signs that a patient's condition is deteriorating and prompt medical treatment is needed.[1] Mental status, airway, breathing, and circulation are also quickly assessed and emergency actions taken as needed.[2]

In a clinic setting, the patient is observed from the time they are called from the waiting room. Nurses observe a patient's gait and balance as they walk to the exam room and assess their verbal and nonverbal communication while interacting. If signs of distress are occurring, the nurse follows agency policy and either immediately calls a provider into the room or initiates emergency assistance.

Mental Status

When assessing a patient's overall mental status, it is important to compare findings to their known baseline if this information is known or available. Initially determine if a patient is responsive or unresponsive. Can you awaken them and are they responding to your questions? Are they oriented to person, place, and time, meaning can they tell you their name, location, and the day of the week? If you are concerned about a sudden change in a patient's mental status, obtain emergency assistance according to agency policy.

Airway and Breathing

Determine if the patient's airway is open and if they are breathing adequately. Institute emergency care for respiratory distress as needed. See Figure 2.3.1 [3] for an illustration of checking a patient's airway, breathing, and circulation (ABCs).



Figure 2.3.1: Checking a Patient's ABCs

Circulation

If a patient is not responsive, try to awaken them using a sternal rub. A sternal rub is performed by firmly rubbing one's knuckles on a patient's sternum to try to elicit a response. If they do not respond, check the carotid pulse and obtain emergency assistance as needed. Briefly observe the color and moisture of their skin. Abnormal findings such as cool, moist, pale, or bluish skin can indicate signs of shock that require emergency care.

General Appearance

After ensuring your patient is medically stable by completing a primary survey, a general survey consists of using your senses to observe a patient's general appearance, behavior, mobility, and communication. Items to consider when assessing general appearance include the following:

- **Signs of pain or distress:** Patients may exhibit signs of pain or distress that should be reported to the provider such as grimacing, moaning, or increased anxiety. Set the priorities for your focused assessments based on any signs of distress demonstrated by your patient.
- **Age:** Observe if the patient appears their stated age. Chronic disease can cause a patient to appear older than their age. Factors can occur with older adults that may influence how well the patient can participate in the assessment, such as hearing, vision, or mobility impairments.
- **Body type:** No patient is exactly the same; some patients are in good physical shape and others are not. Body type can reflect nutritional status and lifestyle choices.
- **Hygiene, grooming, and dress:** Observe the overall cleanliness of the patient's hair, face, and nails and note any odors. Odors can indicate poor hygiene or various disease states. Validate odors by performing additional focused assessments as needed. Note the appearance of the patient's clothing; is it clean and appropriate for the season? If not, findings can reflect on a patient's cognitive abilities, emotional state, and ability to complete daily activities.

Behavior

While observing the patient, note their behaviors during your interaction. Consider the following items:

- **Affect and mood:** People express their mood through facial expressions, eye contact, what they do, and what they say. Eye contact is commonly used to judge a person's mood because people who are feeling down or depressed commonly avoid eye contact. However, be aware that cultural beliefs may also affect the use of eye contact. **Affect** refers to the outward display of one's emotional state. For example, a patient with a "flat affect" refers to very few facial expressions being displayed to indicate emotion, which is often associated with depression. If the patient's mood or behavior seems inappropriate for their current situation, make a note of that as well. For example, a patient in an usually elated mood in a situation when most people would be seriously concerned can be a symptom of mental illness.
- **Family dynamics:** If other family members are accompanying the patient, note the characteristics of their interactions. **Family dynamics** are the patterns of interactions between family members that influence family structure, hierarchy, roles, values, and behaviors. Family dynamics have a strong impact on the way children see themselves, others, and their world. They can also impact the lifestyles of older adults who rely on their children for assistance in activities of daily living and health care.
- **Signs of patient abuse:** Abuse occurs in many different forms such as physical, emotional, mental, verbal, sexual, economic, or financial. Most states mandate nurses and other health care professionals to report suspected child and elder abuse to the proper authorities. Observe if your patient seems fearful, excessively quiet, or has physical signs of abuse, such as bruising or burn marks. If you suspect abuse, attempt to interview the patient alone. Promptly report your concerns according to agency policy and state mandates.
- **Substance use disorder:** Approach your patient in a caring and nonjudgmental way, but be aware that unusual signs or behaviors can be indicators of substance use disorder. For example, if a patient's pupils are unusually dilated or constricted, this can be a sign of substance use disorder. Contact the provider with concerns about substance use disorder.

See Figure 2.3.2[4] of an image of a man with poor hygiene and nonverbal behavior requiring further assessment, such as disease management, medication management, and ability to complete activities of daily living.



Figure 2.3.2: Man Requiring Additional Assessment Based on Appearance and Behavior

Mobility

Observe your patient's body movements, noting posture, gait, and range of motion.

- **Posture:** Patients with normal sitting and standing posture are upright and have a parallel alignment from the shoulders to the hips. Note if the patient is hunched, slumped, contracted, or rigid. See Figure 2.3.3[5] for an image of a patient with a type of slumped posture called kyphosis.



Figure 2.3.3: Patient with Slumped Posture

- **Gait and balance:** Observe how the patient walks or stands. Are the movements organized, coordinated, or uncoordinated? Are they able to maintain balance while standing without leaning on or touching anything? Healthy people walk with a smooth gait and arms moving freely at their sides and are able to stand unassisted. A change in gait or balance often signifies underlying health conditions and increases the risk of falling. See Figure 2.3.4[6] of a patient learning how to use an assistive device for an altered gait.



Figure 2.3.4: Altered Gait with Assistive Device

Range of motion and mobility: Observe the patient moving their extremities. Do extremities on the right and left sides move equally? Note any tremors or movements that are not purposeful. Are the patient's abilities appropriate for their age? Is the patient moving normally or do they have specific limitations? Does the patient use any assistive devices such as a cane or walker? Mobility is an important component in being able to care for oneself independently, so note any potential concerns for adults that may impact their ability to complete activities of daily living.

Communication

- **Speech:** Observe how your patient is speaking during your interaction. Are they speaking in an understandable tone and even pace, or is it garbled or difficult to understand? Neurological disorders can cause speech to be slow, slurred, and hard to understand. Is there an emotional component to their words? Is there a language barrier requiring an interpreter?
- **Response to commands:** Does the patient follow instructions you are providing during your assessment, or do they have difficulty in understanding or cooperating?

Nutritional Status

Visually observing the patient's overall nutritional status can provide cues for additional focused assessments related to appetite, diet, food intake, or exercise. Many factors can influence a patient's nutritional status such as financial or transportation issues,

swallowing difficulties, missing teeth, or poorly fitting dentures.

Fluid Status

Observe overall fluid status. Dehydration can be indicated by dry skin, dry mucous membranes, or sunken eyes. Conversely, patients with excess fluid often have swelling or edema in their extremities and may exhibit signs of difficulty breathing.

Height, Weight, and BMI

Height and weight can be used as a guide to reflect the patient's general health. Weight is routinely assessed during all health care visits. Infants and children are measured to assess their growth and development. Hospitalized patients often have daily weights assessed to monitor for changes in their medical condition. Document findings based on agency policy. For example, in some agencies, height is documented in centimeters and weight is documented in kilograms. Recall that one inch is equivalent to 2.5 centimeters and 1 kilogram is equivalent to 2.2 pounds.

Body Mass Index (BMI) is a standardized reference range that is used to analyze a patient's weight status and provides a representation of body fat. However, it is important to note that BMI may not be accurate for athletes with increased muscle mass, people with edema or dehydration, or older adults who have lost a significant amount of muscle mass. See a BMI table in Table 2.3.1 .[7] To use the BMI table, find the height in inches in the left column, move across the row to closest weight, and then read the BMI where the column and row intersect. For example, a person who is 5′ 9″ tall is 69 inches. If the patient weighs 155 pounds, the BMI is 23. BMI indicating a healthy weight is between 18.5 to 24.9.

BMI can also be calculated using the formula of BMI = kg/m^2 (weight in kilograms divided by height in meters squared).

The following classifications are used based on a person's BMI:

Underweight: Below 18.5 kg/m2

Healthy weight: 18.6 to 24.9 kg/m2

Overweight: 25 to 29.9 kg/m2

Obesity: Over 30 kg/m2 to 34.9 kg/m2

Extreme obesity: Over 35 kg/m2

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

Source: Chart derived from the U.S. National Institute of Health's National Heart, Lung, and Blood Institute (NHLBI)

Table 2.3.1: Body Mass Index



Establish a trusting, nonjudgmental relationship with your patient. Use a calm voice and do not appear rushed. Provide them with your undivided attention, and use all of your senses when interacting to pick up on important cues related to their current health status.

Life Span Considerations During a General Survey Assessment

Children

When performing a general survey on a child, be aware of their developmental stages to establish expectations for normal findings. Use a calm and gentle tone to establish trust. Demonstrations on dolls or stuffed animals before performing procedures are often helpful. Be aware that the parents of toddlers and school-aged children will likely provide most of the information during an assessment.

Adolescents

Adolescents may refrain from sharing important information related to their care in front of their parents, especially regarding high-risk behaviors such as smoking, alcohol or drug use, sexual activity, or suicidal thoughts. It is often helpful to allow time to interview the adolescent privately, in addition to gathering information when the parent is present.

Older Adults

Recognize normal changes associated with aging when performing a general survey. If your patient wears glasses or hearing aids, be sure they are in place before asking questions. You may need to allow for extra time for your assessment, depending on the abilities of your patient. If an older adult is unable to communicate effectively, nurses may also consult a variety of sources such as family members and electronic medical records for more information.

Cultural Adaptations During a General Survey Assessment

Adapt your communication during a general survey assessment to your patient's cultural beliefs and values. For example, some individuals believe that direct eye contact with authorities is considered disrespectful and avoid eye contact. Other individuals may nod to indicate they are listening but this does not mean they are in agreement with what you are saying. Some patients prefer that a same sex individual perform care.

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1. This work is a derivative of StatPearls by Toney-Butler and Unison-Pace licensed under CC BY 4.0↵
2. Chemical Hazards Emergency Medical Management. (2020, April 17). *Primary and secondary survey.* National Institutes of Health. https://chemm.nlm.nih.gov/appendix8.htm↵
3. "Checking respiratory.png" by User:Rama licensed under CC BY-SA 3.0 FR↵
4. "Homeless man in Los Angeles(7618018076).jpg" by Alex Proimos licensed under CC BY 2.0↵
5. "Posturalkyphosis" by Lab Science Career licensed under CC BY-NC-SA 2.0↵
6. "US_Navy_071015-N-5086M-202_Retired_Marine_Corps_Cpl._Timothy_Jeffers_walks_on_his_prosthetic_legs_while_using_the_hands-free_harness_walking_gait_training_device_during_a_therapy_session_in_the_new_Comprehensive_Combat_and_Com.jpg" by U.S. Navy photo by Mass Communication Specialist 2nd Class Greg Mitchell is in the Public Domain↵
7. This work is a derivative of U.S. National Institutes of Health's National Heart, Lung, and Blood Institute (NHLBI), https://www.wikidoc.org/index.php/File:BMIReferenceChart.jpg licensed under CC BY-SA 3.0↵

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2.4: Expected Versus Unexpected Findings

Table 2.4.1a compares expected and unexpected findings when performing a general survey assessment. These findings are included in documentation regarding the general survey assessment.

Table 2.4.1a: Expected Versus Unexpected Findings on General Survey Assessment

Assessment	Expected Findings	Unexpected Findings (notify provider if a new finding*)
Signs of distress	No signs of distress	Unresponsive, difficulty breathing, confused, moaning, or grimacing
Mood and appearance	Calm and cooperative Responds appropriately to questions Appears stated age	Mood is depressed, anxious, or agitated Signs of suspected substance use disorder are present, such as the scent of alcohol
Orientation	Alert and oriented to person, place, and time	Unable to provide name, location, or day
Hygiene	Well groomed. Clothing is appropriate for weather	Unkempt appearance or inappropriate clothing according to the weather
Family dynamics	Family members demonstrate mutual respect, trust, and caring	Family members communicate in an unfriendly, disrespectful, or hostile manner Signs of suspected abuse are present
Speech and communication	Speech is clear and understandable; patient follows instructions appropriately	Speech is garbled or difficult to understand; unable to respond appropriately to questions or follow commands
Range of motion	Moves all extremities equally bilaterally with good posture	New facial drooping or altered/unequal movement of extremities
Mobility	Gait is smooth and even and can maintain balance without assistance. If present, assistive devices are used appropriately and this is documented	Gait is shuffling, staggering, or limping. Balance is impaired; assistive devices like a cane or walker are not used appropriately
Nutrition	BMI within normal range	BMI out of range. Unexplained weight loss or gain has occurred
Fluid status	Moist mucous membranes	Dry skin and dry mucous membranes; sunken eyes in adults; sunken fontanel in infants
CRITICAL CONDITIONS to report immediately:		Newly unresponsive or altered mental status; difficulty breathing; vital signs out of range; skin is cool, clammy, or cyanotic

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2.5: Sample Documentation

Sample Documentation of Expected Findings

Mrs. Smith is a 65-year-old patient who appears her stated age. She is calm, cooperative, alert, and oriented x 3. She is well-groomed and her clothing is clean and appropriate for the weather. Her speech is clear and understandable, and she follows instructions appropriately.

Mrs. Smith moves all extremities equally bilaterally with good posture. Her gait is smooth and she maintains balance without assistance. Her skin is warm and her mucous membranes are moist. She is 5'4" and she weighs 143 with a BMI of 24 in the normal weight category. Her vital signs were BP 120/70, pulse 74 and regular, respiratory rate 14, temperature 36.8 Celsius, and pulse oximetry was 98% on room air.

Sample Documentation of Unexpected Findings

Mrs. Smith is a 65-year-old patient who appears older than her stated age. She appears slightly agitated during the interview. She is oriented to person only and denies pain. She is wearing a heavy winter coat on a warm summer day and has an unclean body odor. She is slow to respond to questions and does not follow commands. She seems to neglect the use of her right arm. Her gait is shuffled with stooped posture but has no assistive devices. She is 5'4" and weighs 102 pounds with a BMI of 17.5 in the underweight category. Her vital signs were 186/55, pulse 102 and irregular, respiratory rate 22, temperature 38.1 Celsius, and pulse oximetry was 88%.

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2.6: Checklist for General Survey

Use this checklist to perform a “General Survey.” Checklists for hand washing, using hand sanitizer, and obtaining vital signs are included in Appendix A.

Steps

Disclaimer: Always review and follow agency policy regarding this specific skill.

1. Knock, enter the room, greet the patient, and provide for privacy.
2. Introduce yourself, your role, the purpose of your visit, and an estimate of the time it will take.
3. Perform hand hygiene.
4. Ask the patient their legal name and date of birth for the first identifier. Verify information provided in their chart or wristband, if present. Use one of the following for the second identifier:
    - Scan wristband
    - Compare name/DOB to MAR
    - Ask staff to verify patient (in settings where wristbands are not worn)
    - Compare picture on MAR to patient
5. Address patient needs (pain, toileting, glasses/hearing aids) prior to starting assessment. Note if the patient has signs of distress such as difficulty breathing or chest pain. If signs are present, defer general survey and obtain emergency assistance per agency policy.
6. Explain the procedure to the patient; ask if he/she has any questions. Obtain an interpreter as needed if English is not the patient’s primary language.
7. Pause and explain to the instructor what you would purposefully observe and assess during a general survey assessment.
8. Upon completion of the survey, thank the patient and ask if anything is needed.
9. Ensure five safety measures before leaving the room:
    - CALL LIGHT: Within reach
    - BED: Low and locked (in lowest position and brakes on)
    - SIDE RAILS: Secured
    - TABLE: Within reach
    - ROOM: Risk-free for falls (scan room and clear any obstacles)
10. Perform hand hygiene and clean stethoscope.
11. Follow agency policy for reporting findings outside of normal range.
12. Document the assessment.

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2.7: Learning Activity

Learning Activity

Maria is working on a medical surgical unit and receives a direct admission from the internal medicine clinic. She arrives at the patient's room to complete the initial admission assessment. All of the following conditions are found.

Of these conditions, which of the following should be reported immediately to the health care provider.

a. Patient ambulates with assistance of wheeled walker.
b. Patient's BMI is outside of the normal range.
c. Patient appears unkempt and has strong body odor.
d. Patient is experiencing increased difficulty breathing.

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2.8: II Glossary

Affect: Outward display of one's emotional state. A "flat" affect with little display of emotion is associated with depression.

AIDET: Mnemonic for introducing oneself in health care that includes Acknowledge, Introduce, Duration, Explanation, and Thank You.[1]

BMI: A standardized reference range to gauge a patient's weight status.

Cultural safety: The creation of safe spaces for patients to interact with health professionals without judgment, racial reductionism, racialization, or discrimination.

Developmental stages: A person's life span can be classified into nine categories of development, including Prenatal Development, Infancy and Toddlerhood, Early Childhood, Middle Childhood, Adolescence, Early Adulthood, Middle Adulthood, Late Adulthood, and Death and Dying.

Family dynamics: Patterns of interactions between family members that influence family structure, hierarchy, roles, values, and behaviors.

General survey assessment: A component of a patient assessment that observes the entire patient as a whole. Observation includes using all five senses to gather cues that provide a guideline for additional focused assessments in areas of concern.

Medical asepsis: Measures to prevent the spread of infection in health care agencies.

Older adults: People over the age of 65.

Personal Protective Equipment (PPE): Includes gowns, eyewear, face shields, and masks, along with environmental controls, to prevent the transmission of infection for patients who are diagnosed or suspected of having an infectious disease.

Primary survey: A brief observation at the start of a shift or visit to verify the patient is stable by assessing mental status, airway, breathing, and circulation.

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1. Huron. (n.d.). *AIDET patient communication*. https://www.studergroup.com/aidet↵

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2.9: New Page

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CHAPTER OVERVIEW

3: The Health History

3.1: Health History Introduction
3.2: Health History Basic Concepts
3.3: Components of a Health History
3.4: Demographic and Biological Data
3.5: Reason for Seeking Health Care
3.6: Current and Past Medical History
3.7: Family Health History
3.8: Functional Health and Activities of Daily Living
3.9: Review of Body Systems
3.10: Sample Documentation
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3.12: Learning Activities
3.13: III Glossary
3.14: Chapter Resources A- Sample Health History Form

Thumbnail: Medical History Form. (CC BY 2.0; Marco Verch via Flickr)

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3.1: Health History Introduction

Learning Objectives

- Establish a therapeutic nurse-patient relationship
- Use effective verbal and nonverbal communication techniques
- Collect health history data
- Modify assessment techniques to reflect variations across the life span and cultural variations
- Document actions and observations
- Recognize and report significant deviations from norms

"'Sickness' is what is happening to the patient. Listen to them."[1]

The profession of **nursing** is defined by the American Nurses Association as "the protection, promotion, and optimization of health and abilities, prevention of illness and injury, facilitation of healing, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, groups, communities, and populations."[2] Simply put, nurses treat human responses to health problems and/or life processes. Nurses look at each person holistically, including emotional, spiritual, psychosocial, and physical health needs. They also consider problems and issues that the person experiences as a part of a family and a community. To collect detailed information about a patient's human response to illness and life processes, nurses perform a health history. A **health history** is part of the Assessment phase of the nursing process. It consists of using directed, focused interview questions and open-ended questions to obtain symptoms and perceptions from the patient about their illnesses, functioning, and life processes. While obtaining a health history, the nurse is also simultaneously performing a general survey. Visit the "General Survey Assessment" chapter more information.

1. Weed, L. L. (1975). *Your health care and how to manage it*. University of Vermont. ↵
2. American Nurses Association. (2015). *Nursing: Scope and standards of practice* (3rd ed.). American Nurses Association. ↵

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3.2: Health History Basic Concepts

During a health history, the nurse collects subjective data from the patient, their caregivers, and/or family members using focused and open-ended questions. Before discussing the components of a health history, let's review some important concepts related to assessment and communicating effectively with patients.

Subjective Versus Objective Data

Obtaining a patient's health history is a component of the Assessment phase of the nursing process. Information obtained while performing a health history is called subjective data. **Subjective data** is information obtained from the patient and/or family members and can provide important cues about functioning and unmet needs requiring assistance. Subjective data is considered a **symptom** because it is something the patient reports. When documenting subjective data in a progress note, it should be included in quotation marks and start with verbiage such as, "The patient reports…" or "The patient's wife states…" An example of subjective data is when the patient reports, "I feel dizzy."

A patient is considered the **primary source** of subjective data. **Secondary sources** of data include information from the patient's chart, family members, or other health care team members. Patients are often accompanied by their care partners. **Care partners** are family and friends who are involved in helping to care for the patient. For example, parents are care partners for children; spouses are often care partners for each other, and adult children are often care partners for their aging parents. When obtaining a health history, care partners may contribute important information related to the health and needs of the patient. If data is gathered from someone other than the patient, the nurse should document where the information is obtained.

Objective data is information observed through your senses of hearing, sight, smell, and touch while assessing the patient. Objective data is obtained during the physical examination component of the assessment process. Examples of objective data are vital signs, physical examination findings, and laboratory results. An example of objective data is recording a blood pressure reading of 140/86. Subjective data and objective data are often recorded together during an assessment. For example, the symptom the patient reports, "I feel itchy all over," is documented in association with the **sign** of an observed raised red rash located on the upper back and chest.

Addressing Barriers and Adapting Communication

It is vital to establish rapport with a patient before asking questions about sensitive topics to obtain accurate data regarding the mental, emotional, and spiritual aspects of a patient's condition. When interviewing a patient, also consider the patient's developmental status and level of understanding. Ask one question at a time and allow adequate time for the patient to respond. If the patient does not provide an answer even with additional time, try rephrasing the question in a different way for improved understanding.

If any barriers to communication exist, adapt your communication to that patient's specific needs.

Cultural Safety

It is important to conduct a health history in a culturally safe manner. **Cultural safety** refers to the creation of safe spaces for patients to interact with health professionals without judgment or discrimination. Focus on factors related to a person's cultural background that may influence their health status. It is helpful to use an open-ended question to allow the patient to share what they believe to be important. For example, ask "I am interested in your cultural background as it relates to your health. Can you share with me what is important to know about your cultural background as part of your health care?"

If a patient's primary language is not English, it is important to obtain a medical translator, as needed, prior to initiating the health history. The patient's family member or care partner should not interpret for the patient. The patient may not want their care partner to be aware of their health problems or their care partner may not be familiar with correct medical terminology that can result in miscommunication.

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3.3: Components of a Health History

The purpose of obtaining a health history is to gather subjective data from the patient and/or their care partners to collaboratively create a nursing care plan that will promote health and maximize functioning. A comprehensive health history is completed by a registered nurse and may not be delegated. It is typically done on admission to a health care agency or during the initial visit to a health care provider, and information is reviewed for accuracy and currency at subsequent admissions or visits.

A comprehensive health history investigates several areas:

- Demographic and biological data
- Reason for seeking health care
- Current and past medical history
- Family health history
- Functional health and activities of daily living
- Review of body systems

Each of these areas is further described in the following sections.



The “History and Physical” documentation in a patient’s electronic medical record is completed by a health care provider on admission to a health care agency. It is very similar to the health history obtained by a nurse and is helpful to read when caring for a patient for an overview of their treatment plan.

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3.4: Demographic and Biological Data

Demographic and biographic data includes basic characteristics about the patient, such as their name, contact information, birthdate, age, gender and preferred pronouns, allergies, languages spoken and preferred language, relationship status, occupation, and resuscitation status.[1] See Table 3.4.1 for sample focused questions used to gather demographic and biological data.

Table 3.4.1: Demographic and Biological Data

Data	Focused Interview Questions
Name **Contact Information** **Emergency Contact Information**	What is your full name? What do you prefer to be called? What is your address? What is your phone number? Whom can we contact in an emergency? What is their relationship to you? At what number can we contact them?
Birthdate **Age**	What is your birthdate? What is your current age?
Gender	What is your biological gender? With what gender do you identify? What are your preferred pronouns (he/him/his, she/her/hers, them/they/theirs, etc.)?
Allergies	Do you have any allergies? How do you react to each allergen?
Preferred Language	What is your primary language that you prefer to speak? Note: If English is not their primary language, offer to obtain a medical interpreter as needed.
Relationship Status	Tell me about your relationship status. *Avoid questions that imply expected behaviors, such as: • Are you married? • Do you have a boyfriend? • Do you have wife?
Occupation and Education	What is your occupation? Where do you work or go to school? What is the highest level of education you have completed?
Resuscitation Status	Have you considered preferences for resuscitation if your heart stops or you stop breathing, also called CPR? Do you have any advance directives on file with a hospital or provider, such as a “Living Will” or “Power of Attorney for Health Care”? Would you like more information about advance directives?

See Table 3.4.2 for a sample demographic form used during a complete health history.

Table 3.4.2: Sample Demographic Form[2]

Demographic Information Form

Interview Date:
Patient Name:
Address:
Emergency Contact Name:
Relationship:
Date of Birth:
Age:
Sex: Male / Female / Another Option
Gender You Self-Identify With:
Preferred Pronouns:
Allergies:
Primary Language:
Interpreter needed: Yes No
Relationship Status:
Occupation/Education:
Resuscitation Status:
Information from: Patient / Other
Patient Accompanied: Yes / No
Details:

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3.5: Reason for Seeking Health Care

It is helpful to begin the health history by obtaining the reason why the patient is seeking health care in their own words. During a visit to a clinic or emergency department or on admission to a health care agency, the patient's reasons for seeking care are referred to as the **chief complaint**. After a patient has been admitted, the term **main health needs** is used to classify what the patient feels is most important at that time. Whichever term is used, it recognizes that patients are complex beings, with potentially multiple coexisting health needs, but there is often a pressing issue that requires most immediate care. This is not to suggest that other issues be ignored, but rather it allows health care team members to prioritize care and address more urgent needs first.[1] See Table 3.5.1 for suggested focused interview questions to use to investigate the reason a patient is seeking care based on the health care setting.

The nurse is always aware of critical assessment findings requiring immediate notification of a health care provider or the initiation of emergency care according to agency policy. For example, if a patient reports chest pain, difficulty breathing, sudden changes in vision or the ability to speak, sudden weakness or paralysis, uncontrolled bleeding, or thoughts of self-harm, the provider should immediately be notified with possible initiation of emergency care.

Table 3.5.1: Focused Questions for Reasons for Seeking Health Care by Setting[2]

Setting	Focused Assessment Questions	Sample Responses (Subjective Data)
Clinic Visit	Please tell me what brought you in today.	"I have a headache that will not go away." "I have had this headache since yesterday morning when I woke up." "I am not able to see clearly, and I feel sick to my stomach so I was not able to go to work."
Hospital Admission	Please tell me what brought you in today. Can you tell me how long this has been going on? Have you taken anything to improve the symptoms you are reporting?	"I am having chest pain and my arm hurts." "The chest pain started after I finished shoveling my driveway about an hour ago." "I took an aspirin like the commercials always say to do."
Inpatient Follow-Up	Tell me what your main concerns are today since your admission. Have you noticed any improvements since you were admitted? Do you have any symptoms currently?	"I am wondering how long I am going to be admitted. I need to get back to work." "I feel huge improvements. I do not feel at all like I did yesterday." "I do not have any chest pain and I do not have any arm pain anymore."

Chief Complaint

After identifying the reason why the patient is seeking health care, additional focused questions are used to obtain detailed information about this concern. The mnemonic OLD CART & ICE is often used to ask the patient questions in an organized fashion. See Figure 3.5.1[3] for an image of OLD CARE & ICE.

Figure 3.5.1: 1 OLD CART & ICE Mnemonic

OLD CART & ICE MNEMONIC

O = Onset

L = Location

D = Duration

C = Characteristics

A = Aggravating Factors

R = Relieving Factors

T = Treatments

&

I = Impact on ADL's

C = Coping Strategies

E = Emotional Response

The OLD CART & ICE mnemonic is often used to assess pain, but it can also be used to assess many other symptoms. See Table 3.5.2 for suggested focus questions for pain and other symptoms using the OLD CART & ICE mnemonic.[4]

Table 3.5.2 Sample OLD CART & ICE Focused Questions for Pain and Other Symptoms

OLD CART & ICE	Questions Related to Pain	Questions Related to Other Symptoms
Onset:	When did your pain start?	What do you think is causing your pain?

While interviewing a patient about their chief complaint, use open-ended questions to allow the patient to elaborate on information that further improves your understanding of their health 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 OLD CART & ICE framework. For example, 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 will help the nurse customize interventions for effective treatment.

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3.6: Current and Past Medical History

After exploring a patient's chief complaint, their current and past medical histories are reviewed to obtain a full understanding of their "human response" to medical conditions and life processes. While obtaining this information, it is also helpful to determine their understanding of the condition and its associated treatment. If a patient has a prior medical diagnosis, but is unaware of what it means or does not understand the recommended treatment, they may not be following instructions intended. For example, a patient diagnosed with "high blood pressure" may erroneously think they only need to take their medications when they feel as if their blood pressure is high, instead of daily at the recommended doses.

Categories included in past medical history include current health, medications, childhood illnesses, chronic illnesses, acute illnesses, accidents, injuries, and obstetrical health for females. **Medication reconciliation** is a comparison of a list of current medications with a previous list and is completed at every hospitalization and clinic visit. Not all categories of current and past health histories apply to every patient, so only ask questions that are relevant to the patient you are interviewing. See Table 3.6.1[1] for suggested focused interview questions related to current and past medical history.

Table 3.6.1: Sample Focused Questions for Current and Past Health History

Category	Focused Questions
Current health	What are your current goals for your health? Are there any other issues affecting your current health or the ability to complete your daily activities? Tell me more.
Medications	What are your current medications, including prescriptions, over-the-counter medications, vitamins, and herbal supplements and why are you taking them (to establish the patient's understanding of their medications)? Do you take your medications as prescribed? Note: If the response is "no" or "sometimes," follow up with an open-ended question such as, "Tell me more about the reasons for not taking the medications as prescribed."
Allergies	Do you have any allergies to medications, food, latex, or other items? If yes, what is your reaction?
Childhood illnesses	Tell me about any significant childhood illnesses that you had. Do you recall what childhood vaccines you received? When did they occur? Were you hospitalized? Did you experience any complications?
Chronic illnesses	Tell me about any chronic illnesses you currently have or have experienced (such as cancer, cardiac or respiratory issues, diabetes, or arthritis). When were you diagnosed? Do you see a specialist for this chronic illness? If so, what is their name and location? How is this condition currently being treated? How has the chronic illness affected you? How do you cope with the illness? Have you experienced any complications or disability from this chronic illness?
Acute illnesses, surgeries, accidents, or injuries	Tell me about any acute illnesses or surgeries that you have experienced. Have you had any accidents or injuries? Did you experience any complications?

Reproductive health	For Females: When was your last menstrual period? Have you ever been pregnant? Are you pregnant now or is there any chance of being pregnant now? Tell me about your pregnancies. Were there any issues or complications?
Immunizations	If a patient's vaccination record is not included in their record: • Can you tell me what immunizations you have received and if you had any significant reactions? • When was your last flu vaccine?

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3.7: Family Health History

Many diseases have a genetic component. It is important to understand the risk and likelihood of a patient developing illnesses based on their family health. Ask about the health status, age, and, if applicable, cause of death of immediate blood relatives (parents, grandparents, and siblings). Questions to ask include the following:

- Tell me about the health of your blood relatives. Does anyone have diseases like cancer, heart problems, or respiratory problems?
- Have any of your blood relatives died? If so, do you know the cause of death? What age did they die?

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3.8: Functional Health and Activities of Daily Living

Functional health assessment collects data related to the patient's functioning and their physical and mental capacity to participate in **Activities of Daily Living (ADLs)**and Instrumental Activities of Daily Living (IADLs). Activities of Daily Living (ADLs) are daily basic tasks that are fundamental to everyday functioning (e.g., hygiene, elimination, dressing, eating, ambulating/moving). See Figure 3.8.1[1] for an illustration of ADLs.

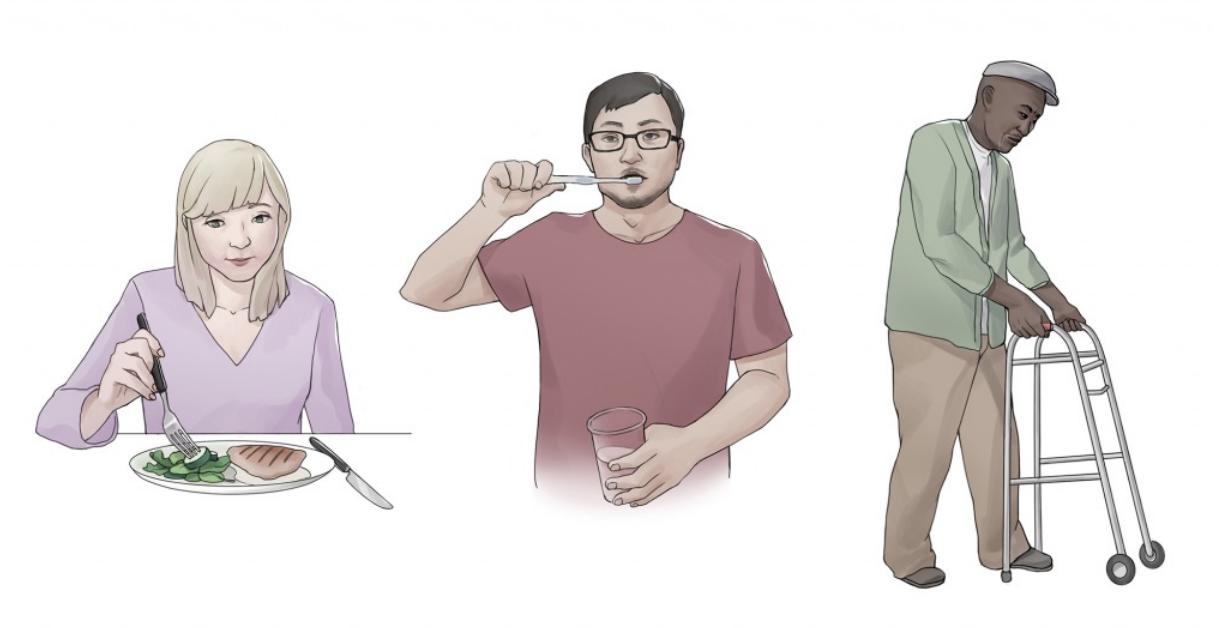


Figure 3.8.1: Activities of Daily Living (ADLs)

Instrumental Activities of Daily Living (IADL) are more complex daily tasks that allow patients to function independently such as managing finances, paying bills, purchasing and preparing meals, managing one's household, taking medications, and facilitating transportation. See Figure 3.8.2[2] for an illustration of IADLs. Assessment of IADLs is particularly important to inquire about with young adults who have just moved into their first place, as well as with older patients with multiple medical conditions and/or disabilities.



Figure 3.8.2: Instrumental Activities of Daily Living (IADLs)

Information obtained when assessing functional health provides the nurse a holistic view of a patient's human response to illness and life conditions. It is helpful to use an assessment framework, such as Gordon's Functional Health Patterns,[3] to organize interview questions according to evidence-based patterns of human responses. Using this framework provides the patient and their family members an opportunity to identify health-related concerns to the nurse that may require further in-depth assessment. It also verifies patient understanding of conditions so that misperceptions can be clarified. This framework includes the following categories:

- **Nutritional-Metabolic:** Food and fluid consumption relative to metabolic need
- **Elimination:** Excretion including bowel and bladder
- **Activity-Exercise:** Exercise and activity
- **Sleep-Rest:** Sleep and rest
- **Cognitive-Perceptual:** Perception and cognition
- **Role-Relationship:** Roles and relationships
- **Sexuality-Reproductive:** Reproduction and sexuality
- **Coping-Stress Tolerance:** Coping and effectiveness of managing stress
- **Value-Belief:** Values, beliefs, and goals that guide choices and decisions
- **Self-Perception and Self-Concept:** Self-concept and mood state[4]
- **Health Perception-Health Management:** A patient's perception of their health and well-being and how it is managed. This is an umbrella category of all the categories above and underlies performing a health history.

The functional health section can be started by saying, "I would like to ask you some questions about factors that affect your ability to function in your day-to-day life. Feel free to share any health concerns that come to mind during this discussion." Focused interview questions for each category are included in Table 3.8.2. Each category is further described below.

Nutrition

The nutritional category includes, but is not limited to, food and fluid intake, usual diet, financial ability to purchase food, time and knowledge to prepare meals, and appetite. This is also an opportune time to engage in health promotion discussions about healthy eating. Be aware of signs for malnutrition and obesity, especially if rapid and excessive weight loss or weight gain have occurred.

Nutrition and Health

"Tell me what you eat, and I will tell you what you are" wrote the French lawyer and politician, Antheime Brillat-Savarin in his book, *Physiologie du Gout, ou Meditations de Gastronomie Transcendante*, in 1826. Almost one hundred years later, nutritionist Victor Lindlahr wrote in an ad in 1923, "Ninety percent of the diseases known to man are caused by cheap foodstuffs. You are what you eat." Today, we know this phrase simply as, "You are what you eat."



Figure 3.8.3: Nutrition provides the body with the nutrients it needs to perform all activities, from taking a breath to strenuous athletic activity. © Dreamstime

Good nutrition equates to receiving enough (but not too much) of the macronutrients (proteins, carbohydrates, fats, and water) and micronutrients (vitamins and minerals) so that the body can stay healthy, grow properly, and work effectively. The phrase "you are what you eat" refers to the fact that your body will respond to the food it receives, either good or bad. Processed, sugary, high-fat, and excessively salted foods leave the body tired and unable to perform effectively. By contrast, eating fresh, natural whole foods fuels the body by providing what it needs to produce energy, promote metabolic activity, prevent micronutrient deficiencies, ward off chronic disease, and to promote a sense of overall health and well-being.

Table 3.8.1: Why Nutrition Is Important to Health

Protein	Necessary for tissue formation, cell reparation, and hormone and enzyme production. It is essential for building strong muscles and a healthy immune system.
Carbohydrates	Provide a ready source of energy for the body and provide structural constituents for the formation of cells.
Fat	Provides stored energy for the body, functions as structural components of cells and also as signaling molecules for proper cellular communication. It provides insulation to vital organs and works to maintain body temperature.
Vitamins	Regulate body processes and promote normal body-system functions.
Minerals	Regulate body processes, are necessary for proper cellular function, and comprise body tissue.
Water	Transports essential nutrients to all body parts, transports waste products for disposal, and aids with body temperature maintenance.

Undernutrition, Overnutrition, and Malnutrition

For many, the word "malnutrition" produces an image of a child in a third-world country with a bloated belly, and skinny arms and legs. However, this image alone is not an accurate representation of the state of malnutrition. For example, someone who is 150 pounds overweight can also be malnourished. Malnutrition refers to one not receiving proper nutrition and does not distinguish between the consequences of too many nutrients or the lack of nutrients, both of which impair overall health. Undernutrition is characterized by a lack of nutrients and insufficient energy supply, whereas overnutrition is characterized by excessive nutrient and

energy intake. Overnutrition can result in obesity, a growing global health threat. Obesity is defined as a metabolic disorder that leads to an overaccumulation of fat tissue.

Although not as prevalent in America as it is in developing countries, undernutrition is not uncommon and affects many subpopulations, including the elderly, those with certain diseases, and those in poverty. Many people who live with diseases either have no appetite or may not be able to digest food properly. Some medical causes of malnutrition include cancer, inflammatory bowel syndrome, AIDS, Alzheimer's disease, illnesses or conditions that cause chronic pain, psychiatric illnesses, such as anorexia nervosa, or as a result of side effects from medications. Overnutrition is an epidemic in the United States and is known to be a risk factor for many diseases, including Type 2 diabetes, cardiovascular disease, inflammatory disorders (such as rheumatoid arthritis), and cancer.

The Healing Process

With all wounds, from a paper cut to major surgery, the body must heal itself. Healing is facilitated through proper nutrition, (MacKay, D., ND, and A. L. Miller, ND. "Nutritional Support for Wound Healing." *Alternative Medicine Review* 8, no. 4 (2003): 359–77) while malnutrition inhibits and complicates this vital process. The following nutrients are important for proper healing:

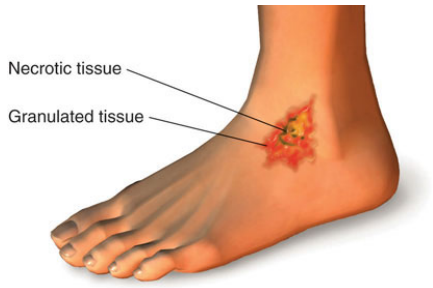


Figure 3.8.4: Healing, a critical function of a healthy body, is facilitated by adequate nutrition.

- **Vitamin A.** Helps to enable the epithelial tissue (the thin outer layer of the body and the lining that protects your organs) and bone cells form.
- **Vitamin C.** Helps form collagen, an important protein in many body tissues.
- **Protein.** Facilitates tissue formation.
- **Fats.** Play a key role in the formation and function of cell membranes.
- **Carbohydrates.** Fuel cellular activity, supplying needed energy to support the inflammatory response that promotes healing.

Life Span Considerations

Growth and Development

From birth to adulthood, nutrients fuel proper growth and function of all body cells, tissue, and systems. Without proper amounts of nutrients, growth and development are stunted. Some nutrient deficiencies manifest right away, but sometimes the effects of undernutrition aren't seen until later in life. For example, if children do not consume proper amounts of calcium and vitamin D, peak bone mass will be reduced compared to what it would be had adequate amounts of these nutrients been consumed. When adults enter old age without adequate bone mass, they are more susceptible to osteoporosis, putting them at risk for bone fractures. Therefore, it is vital to build bone strength through proper nutrition during youth because it cannot be done in later life.MedicineNet.com. "Nutrients for the Growing Years." Last reviewed August 13, 2003. http://www.medicinenet.com/script/main/art.asp?articlekey=10054.

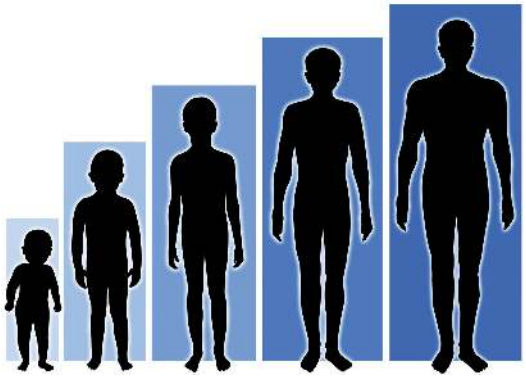


Figure 3.8.5: Proper growth throughout the life stages depends upon proper nutrition. © Dreamstime

When assessing nutritional status, the types of questions asked and the level of detail depend on the developmental age and health of the patient. Family members may also provide important information.

- **Infants:** Ask parents about using breast milk or formula, amount, frequency, supplements, problems, and introductions of new foods.
- **Pregnant women:** Include questions about the presence of nausea and vomiting and intake of folic acid, iron, omega-3 fatty acids, vitamin D, and calcium.
- **Older adults or patients with disabling illnesses:** Inquire about the ability to purchase and cook their food, decreased sense of taste, ability to chew or swallow foods, loss of appetite, and enough fiber and nutrients.[5]

Elimination

Elimination refers to the removal of waste products through the urine and stool. Health care professionals refer to urinating as **voiding** and stool elimination as having a bowel movement. Familiar terminology may need to be used with patients, such as “pee” and “poop.” Constipation commonly occurs in hospitalized patients, so it is important to assess the date of their last bowel movement and monitor the frequency, color, and consistency of their stool. Assess urine concentration, frequency, and odor, especially if concerned about urinary tract infection, incontinence, or infection. Findings that require further investigation include **dysuria** (pain or difficulty upon urination), blood in the stool, **melena** (black, tarry stool), constipation, diarrhea, or excessive laxative use.[6]

Life Span Considerations

When assessing elimination, the types of questions asked and the level of detail depends on the developmental age and health of the patient.

Toddlers: Ask parents or guardians about toilet training. Toilet training takes several months, occurs in several stages, and varies from child to child. It is influenced by culture and depends on physical and emotional readiness, but most children are toilet trained between 18 months and three years.

Older Adults: Constipation and incontinence are common symptoms associated with aging. Additional focused questions may be required to further assess these issues.[7]

Mobility, Activity, and Exercise

Mobility refers to a patient’s ability to move around (e.g., sit up, sit down, stand up, walk). Activity and exercise refer to informal and/or formal activity (e.g., walking, swimming, yoga, strength training). In addition to assessing the amount of exercise, it is also important to assess activity because some people may not engage in exercise but have an active lifestyle (e.g., walk to school or work in a physically demanding job).

Findings that require further investigation include insufficient aerobic exercise and identified risks for falls.[8]

Life Span Considerations

Mobility and activity depend on developmental age and a patient’s health and illness status. With infants, it is important to assess their ability to meet specific developmental milestones at each well-baby visit. Mobility can become problematic for patients who

are ill or are aging and can result in self-care deficits. Thus, it is important to assess how a patient's mobility is affecting their ability to perform ADLs and IADLs.[9]

Sleep and Rest

The sleep and rest category refers to a patient's pattern of rest and sleep and any associated routines or sleeping medications used. Although it varies for different people and their life circumstances, obtaining eight hours of sleep every night is a general guideline. Findings that require further investigation include disruptive sleep patterns and reliance on sleeping pills or other sedative medications.[10]

Life Span Considerations

Older Adults: Disruption in sleep patterns can be especially troublesome for older adults. Assessing sleep patterns and routines will contribute to collaborative interventions for improved rest.[11]

Cognitive and Perceptual

The cognitive and perceptual category focuses on a person's ability to collect information from the environment and use it in reasoning and other thought processes. This category includes the following:

- Adequacy of vision, hearing, taste, touch, feeling, and smell
- Any assistive devices used
- Pain level and pain management
- Cognitive functional abilities, such as orientation, memory, reasoning, judgment, and decision-making[12]

If a patient is experiencing pain, it is important to perform an in-depth assessment using the OLD CART & ICE method described in the "Reason for Seeking Health Care" section of this chapter. It is also helpful to use evidence-based assessment tools when assessing pain, especially for patients who are unable to verbally describe the severity of their pain. See Figure 3.8.6[13] for an image of the Wong-Baker FACES tool that is commonly used in health care.



Figure 3.8.6: The Wong-Baker FACES Pain Rating Scale. Used with permission from www.WongBakerFACES.org.

Life Span Considerations

Older Adults: Older adults are especially at risk for problems in the cognitive and perceptual category. Be alert for cues that suggest deficits are occurring that have not been previously diagnosed.

Roles – Relationships

Quality of life is greatly influenced by the roles and relationships established with family, friends, and the broader community. Roles often define our identity. For example, a patient may describe themselves as a "mother of an 8 year old." This category focuses on roles and relationships that may be influenced by health-related factors or may offer support during illness.[14] Findings that require further investigation include indications that a patient does not have any meaningful relationships or has "negative" or abusive relationships in their lives.

Life Span Considerations

Be sensitive to cues when assessing individuals with any of the following characteristics: isolation from family and friends during crisis, language barriers, loss of a significant person or pet, loss of job, significant home care needs, prolonged caregiving, history of abuse, history of substance abuse, or homelessness.[15]

Sexuality – Reproduction

Sexuality and sexual relations are an aspect of health that can be affected by illness, aging, and medication. This category includes a person's gender identity and **sexual orientation**, as well as reproductive issues. It involves a combination of emotional connection, physical companionship (holding hands, hugging, kissing) and sexual activity that impact one's feeling of health.[16]

The Joint Commission has defined terms to use when caring for diverse patients. **Gender identity** is a person's basic sense of being male, female, or other gender.[17] **Gender expression** are characteristics in appearance, personality, and behavior that are culturally defined as masculine or feminine.[18] **Sexual orientation** is the preferred term used when referring to an individual's physical and/or emotional attraction to the same and/or opposite gender.[19] **LGBT** is an acronym standing for the lesbian, gay, bisexual, and transgender population. It is an umbrella term that generally refers to a group of people who are diverse in gender identity and sexual orientation. It is important to provide a safe environment to discuss health issues because the LGBT population experiences higher rates of smoking, alcohol use, substance abuse, HIV and other STD infections, anxiety, depression, suicidal ideation and attempts, and eating disorders as a result of stigma and marginalization.[20]

Life Span Considerations

Although sexuality is frequently portrayed in the media, individuals often consider these topics as private subjects. Use sensitivity when discussing these topics with different age groups across cultural beliefs while maintaining professional boundaries.

For more information, read the Joint Commission's PDF Field Guide called
Advancing Effective Communication, Cultural Competence, and Patient- and Family-Centered Care for the Lesbian, Gay, Bisexual, and Transgender (LGBT) Community.

Coping-Stress Tolerance

Individuals experience stress that can lead to dysfunction if not managed in a healthy manner. Throughout life, healthy and unhealthy coping strategies are learned. Coping strategies are behaviors used to manage anxiety. Effective strategies control anxiety and lead to problem solving but ineffective strategies can lead to abuse of food, tobacco, alcohol, or drugs.[21] Nurses teach and reinforce effective coping strategies.

Substance Use and Abuse

Alcohol, tobacco products, marijuana, and drugs are often used as ineffective coping strategies. It is important to use a nonjudgmental approach when assessing a patient's use of substances so they do not feel stigmatized. Substance abuse can affect people of all ages. Make a distinction between use and abuse as you assess frequency of use and patterns of behavior. Substance abuse often causes disruption in everyday function (e.g., loss of employment, deterioration of relationships, or precarious living circumstances) because of dependence on a substance. Action is needed if patients indicate that they have a problem with substance use or show signs of dependence, addiction, or binge drinking.[22]

Life Span Considerations

Some individuals are at increased risk for problems with coping strategies and stress management. Be sensitive to cues when assessing individuals with characteristics such as uncertainty in medical diagnosis or prognosis, financial problems, marital problems, poor job fit, or few close friends and family members.[23]

Value-Belief

This category includes values and beliefs that guide decisions about health care and can also provide strength and comfort to individuals. It is common for a person's spirituality and values to be influenced by religious faith. A **value** is an accepted principle or standard of an individual or group. A **belief** is something accepted as true with a sense of certainty. **Spirituality** is a way of living that comes from a set of values and beliefs that are important to a person. The Joint Commission asks health care professionals to respect patients' cultural and personal values, beliefs, and preferences and accommodate patients' rights to religious and other spiritual services.[24] When performing an assessment, use open-ended questions to allow the patient to share

values and beliefs they believe are important. For example, ask, “I am interested in your spiritual and religious beliefs and how they relate to your health. Can you share with me any spiritual beliefs or religious practices that are important to you during your stay?”

Self-Perception and Self-Concept

The focus of this category is on the subjective thoughts, feelings, and attitudes of a patient about themself. **Self-concept** refers to all the knowledge a person has about themself that makes up who they are (i.e., their identity). **Self-esteem** refers to a person’s self-evaluation of these items as being worthy or unworthy. **Body image** is a mental picture of one’s body related to appearance and function. It is best to assess these items toward the end of the interview because you will have already collected data that contributes to an understanding of the patient’s self-concept. Factors that influence a patient’s self-concept vary from person to person and include elements of life they value, such as talents, education, accomplishments, family, friends, career, financial status, spirituality, and religion.[25] The self-perception and self-concept category also focuses on feelings and mood states such as happiness, anxiety, hope, power, anger, fear, depression, and control.[26]

Life Span Considerations

Some individuals are at risk for problems with self-perception and self-concept. Be sensitive to cues when assessing individuals with characteristics such as uncertainty regarding a medical diagnosis or surgery, significant personal loss, history of abuse or neglect, loss of body part or function, or history of substance abuse.[27]

Violence and Trauma

There are many types of violence that a person may experience, including neglect or physical, emotional, mental, sexual, or financial abuse. You are legally mandated to report suspected cases of child abuse or neglect, as well as suspected cases of elder abuse. At any time, if you or the patient is in immediate danger, follow agency policy and procedure.

Trauma results from violence or other distressing events in a life. Collaborative intervention with the patient is required when violence and trauma are identified. People respond in different ways to trauma. It is important to use a trauma-informed approach when caring for patients who have experienced trauma. For example, a patient may respond to the traumatic situation in a way that seems unfitting (such as with laughter, ambivalence, or denial). This does not mean the patient is lying but can be a symptom of trauma. To reduce the effects of trauma, it is important to implement collaborative interventions to support patients who have experienced trauma.[28]

Loss of Body Part

A person can have negative feelings or perceptions about the characteristics, function, or limits of a body part as a result of a medical condition, surgery, trauma, or mental condition. Pay attention to cues, such as neglect of a body part or negative comments about a body part, and use open-ended questions to obtain additional information.

Mental Health

Mental health is frequently underscreened and unaddressed in health care. The mental health of all patients should be assessed, even if they appear well or state they have no mental health concerns so that any changes in condition are quickly noticed and treatment implemented. Mental health includes emotional and psychological symptoms that can affect a patient’s day-to-day ability to function. The World Health Organization (2014) defines **mental health** as “a state of well-being in which every individual realizes their own potential, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to their community.”[29] Mental illness includes conditions diagnosed by a health care provider, such as depression, anxiety, addiction, schizophrenia, post-traumatic stress disorder, and others. Mental illness can disrupt everyday functioning and affect a person’s employment, education, and relationships.

It is helpful to begin this component of a mental health assessment with a statement such as, “Mental health is an important part of our lives, so I ask all patients about their mental health and any concerns or questions they may have.”[30] Be attentive of critical findings that require intervention. For example, if a patient talks about feeling hopeless or depressed, it is important to screen for suicidal thinking. Begin with an open-ended question, such as, “Have you ever felt like hurting yourself?” If the patient responds with a “Yes,” then progress with specific questions that assess the immediacy and the intensity of the feelings. For example, you may say, “Tell me more about that feeling. Have you been thinking about hurting yourself today? Have you put together a plan to hurt yourself?” When assessing for suicidal thinking, be aware that a patient most at risk is someone who has a specific plan about self-harm and can specify how and when they will do it. They are particularly at risk if planning self-harm within the next 48 hours.

The age of the patient is not a factor in this determination of risk. If you believe the patient is at high risk, do not leave the patient alone. Collaborate with them regarding an immediate plan for emergency care.[31]

Health Perception-Health Management

Health perception-health management is an umbrella term encompassing all of the categories described above, as well as environmental health.

Environmental Health

Environmental health refers to the safety of a patient's physical environment, also called a social determinant of health. Examples of environmental health include, but are not limited to, exposure to violence in the home or community; air pollution; and availability of grocery stores, health care providers, and public transportation. Findings that require further investigation include a patient living in unsafe environments.[32]

See Table 3.8.2 for sample focused questions for all categories related to functional health.[33]

Table 3.8.2: Focused Interview Questions for Functional Health Categories[34]

Begin this section by saying, "I would like to ask you some questions about factors that affect your ability to function in your day-to-day life. Feel free to share any health concerns that come to mind during this discussion."

Category	Focused Questions
Nutrition	Tell me about your diet. What foods do you usually eat? What fluids do you usually drink every day? What have you eaten in the last 24 hours? Is this typical of your usual eating pattern? Tell me about your appetite. Have you had any changes in your appetite? Do you have any goals related to your nutrition? Do you have any financial concerns about purchasing food? Are you able to prepare the meals you want to eat?
Elimination	When was your last bowel movement? Do you have any problems with constipation, diarrhea, or incontinence? Do you take laxatives or stool softeners? Do you have any problems urinating, such as frequent urination or burning on urination? Do you ever experience leaking or dribbling of urine?
Mobility, Activity, and Exercise	Tell me about your ability to move around. Do you have any problems sitting up, standing up, or walking? Do you use any mobility aids (e.g., cane, walker, wheelchair)? Tell me about the activity and/or exercise in which you engage. What type? How frequent? For how long?
Sleep and Rest	Tell me about your sleep routine. How many hours of sleep do you usually get? Do you feel rested when you awaken? Do you do anything to wind down before you go to bed (e.g., watch TV, read)? Do you take any sleeping medication? Do you take any naps during the day?

Cognitive and Perceptual	Are you having any pain? Note: If present, use the OLD CART & ICE method to further assess pain. Are you having any issues with seeing, hearing, smelling, tasting, or feeling things? Have you noticed any changes in memory or problems concentrating? Have you noticed any changes in the ability to make decisions? What is the easiest way for you to learn (e.g., written materials, explanations, or learning-by-doing)?
Roles and Relationships	Tell me about the most influential relationships in your life with family and friends. How do these relationships influence your day-to-day life, health, and illness? Who are the people with whom you talk to when you require support or are struggling in your life? Do you have family or others dependent on you? Have you had any recent losses of someone important to you, a pet, or a job? Do you feel safe in your current relationship?
Sexuality-Reproduction	The expression of love and caring in a sexual relationship and creation of family are often important aspects in a person's life. Do you have any concerns about your sexual health? Tell me about the ways that you ensure your safety when engaging in intimate and sexual practices.
Coping-Stress	Tell me about the stress in your life. Have you experienced a recent loss in your life that has impacted you? How do you cope with stress?
Values-Belief	I am interested in your spiritual and religious beliefs and how they relate to your health. Can you share with me any spiritual beliefs or religious practices that are important to you?

Self-Perception and Self-Concept	Tell me what makes you who you are. How would you describe yourself? Have you noticed any changes in how you view your body or the things you can do? Are these a problem for you? Have you found yourself feeling sad, angry, fearful, or anxious? What helps you to feel better when this happens? Have you ever used any tobacco products (e.g., cigarettes, pipes, vaporizers, hookah)? If so, how much? How much alcohol do you drink every week? Have you used cannabis products? If so, how often do you use them? Have you ever used drugs or prescription drugs that were not prescribed for you? If so, what type? Have you ever felt you had a problem with any of these substances because they affected your daily life? If so, tell me more. Do you want to quit any of these substances? Many patients have experienced violence or trauma in their lives. Have you experienced any violence or trauma in your life? How has it affected you? Would you like to talk with someone about it?
Health Perception – Health Management	Tell me about how you take care of yourself and manage your home. Have you had any falls in the past six months? Do you have enough finances to pay your bills and purchase food, medications, and other needed items? Do you have any current or future concerns about being able to function independently? Tell me about where you live. Do you have any concerns about safety in your home or neighborhood? Tell me about any factors in your environment that may affect your health. Do you have any concerns about how your environment is affecting your health?

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2. "iADL-1024x494.jpg" by unknown is licensed under CC BY-SA 4.0. Access for free at https://ecampusontario.pressbooks.pub/healthassessment/chapter/functional-health/↵
3. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice.* F. A. Davis Company. ↵
4. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice.* F.A. Davis Company ↵
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12. Gordon, M. (2008). Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice. F.A. Davis Company. ↵
13. Wong-Baker FACES Foundation (2020). Wong-Baker FACES® Pain Rating Scale. ↵
14. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice.* F. A. Davis Company. ↵
15. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice.* F. A. Davis Company. ↵
16. This work is a derivative of The Complete Subjective Health Assessment by Lapum, St-Amant, Hughes, Petrie, Morrell, and Mistry licensed under CC BY-SA 4.0↵
17. The Joint Commission. (2011). *Advancing effective communication, cultural competence, and patient- and family-centered care for the lesbian, gay, bisexual, and transgender (LGBT) community: A field guide.*https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/health-equity/lgbtfieldguide_web_linked_verpdf.pdf downloaded from https://www.jointcommission.org/resources/patient-safety-topics/health-equity/#t=_Tab_StandardsFAQs&sort=relevancy↵
18. The Joint Commission. (2011). *Advancing effective communication, cultural competence, and patient- and family-centered care for the lesbian, gay, bisexual, and transgender (LGBT) community: A field guide.*https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/health-equity/lgbtfieldguide_web_linked_verpdf.pdf downloaded from https://www.jointcommission.org/resources/patient-safety-topics/health-equity/#t=_Tab_StandardsFAQs&sort=relevancy↵
19. The Joint Commission. (2011). *Advancing effective communication, cultural competence, and patient- and family-centered care for the lesbian, gay, bisexual, and transgender (LGBT) community: A field guide.*https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/health-equity/lgbtfieldguide_web_linked_verpdf.pdf downloaded from https://www.jointcommission.org/resources/patient-safety-topics/health-equity/#t=_Tab_StandardsFAQs&sort=relevancy↵
20. The Joint Commission. (2011). *Advancing effective communication, cultural competence, and patient- and family-centered care for the lesbian, gay, bisexual, and transgender (LGBT) community: A field guide.*https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/health-equity/lgbtfieldguide_web_linked_verpdf.pdf downloaded from https://www.jointcommission.org/resources/patient-safety-topics/health-equity/#t=_Tab_StandardsFAQs&sort=relevancy↵
21. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice.* F. A. Davis Company. ↵
22. This work is a derivative of The Complete Subjective Health Assessment by Lapum, St-Amant, Hughes, Petrie, Morrell, and Mistry licensed under CC BY-SA 4.0↵
23. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice*. F. A. Davis Company. ↵
24. The Joint Commission. (2018). *The source*, *16*(1). store.jcrinc.com/assets/1/14/ts_16_2018_01.pdf↵
25. This work is a derivative of The Complete Subjective Health Assessment by Lapum, St-Amant, Hughes, Petrie, Morrell, and Mistry licensed under CC BY-SA 4.0↵
26. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice.* F. A. Davis Company. ↵
27. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice.* F. A. Davis Company. ↵
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3.9: Review of Body Systems

A body system review asks focused questions related to overall health status and body systems such as cardiac, respiratory, neurological, gastrointestinal, urinary, and musculoskeletal systems. See “Chapter Resources A” for a sample health history form that contains brief questions according to body systems. Nurses often incorporate review of system questions into the physical examination of each system. For example, while listening to bowel sounds in the abdomen, a nurse often inquires about the patient’s bowel pattern. Additional focused assessment questions related to each body system are found in each assessment chapter of this book.

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3.10: Sample Documentation

Information obtained during a health history interview is typically documented on agency-specific forms. See "Chapter Resources A" for a sample health history form used for documentation purposes. Examples of documentation for each system assessed is found in each system chapter in this textbook. Additional information collected that is not included on the form should be documented in an associated nurse's note.

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3.11: Checklist for Obtaining a Health History

Use the checklist below to review the steps for completion of “Obtaining a Health History.”

Steps

Disclaimer: Always review and follow agency policy regarding this specific skill.

1. Gather supplies: health history agency form.
2. Knock, enter the room, greet the patient, and provide for privacy.
3. Perform safety steps:
    - Perform hand hygiene.
    - Check the room for transmission-based precautions.
    - Introduce yourself, your role, the purpose of your visit, and an estimate of the time it will take.
    - Confirm patient ID using two patient identifiers (e.g., name and date of birth).
    - Explain the process to the patient and ask if they have any questions.
    - Be organized and systematic.
    - Use appropriate listening and questioning skills.
    - Listen and attend to patient cues.
    - Ensure the patient’s privacy and dignity.
    - Assess ABCs.
4. Address patient needs (pain, toileting, glasses/hearing aids) prior to starting. Note if the patient has signs of distress such as difficulty breathing or chest pain. If signs are present, defer the health history and obtain emergency assistance per agency policy.
5. Complete a health history interview, including the following components per your instructor’s instructions:
    - Demographic and Biological Data
    - Reason for Seeking Health Care
    - Current and Past Medical History
    - Family History
    - Functional Health
    - Review of Body Systems
6. Ensure five safety measures before leaving the room:
    - CALL LIGHT: Within reach
    - BED: Low and locked (in lowest position and brakes on)
    - SIDE RAILS: Secured
    - TABLE: Within reach
    - ROOM: Risk-free for falls (scan room and clear any obstacles)
7. Document the health history findings and report any concerns according to agency policy.

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3.12: Learning Activities

Learning Activities

You are admitting a patient with a new diagnosis of type 2 diabetes. During the admission assessment, you note that the patient identifies as Muslim. **How could you explore the patient's cultural background to better understand how the patient's culture might influence the patient's health status and decisions?**

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3.13: III Glossary

Activities of daily living: Daily basic tasks fundamental to everyday functioning (e.g., hygiene, elimination, dressing, eating, ambulating/moving).

Belief: Something accepted as true with a sense of certainty.[1]

Body image: A mental picture of one's body related to appearance and function.[2]

Care partners: Family and friends who are involved in helping to care for the patient.

Chief complaint: The reason a patient is seeking health care during a visit to a clinic or on admission to a health care facility.

Cultural safety: The creation of safe spaces for patients to interact with health professionals without judgment or discrimination.

Dysuria: Discomfort or pain on urinating.

Elimination: Refers to the removal of waste products through the urine and stool.

Functional health: The patient's physical and mental capacity to participate in activities of daily living (ADLs) and instrumental activities of daily living (IADLs).

Gender expression: Characteristics in appearance, personality, and behavior, culturally defined as masculine or feminine.[3]

Gender identity: One's basic sense of being male, female, or other gender.[4]

Health history: The process of using directed interview questions to obtain symptoms and perceptions about a patient's illness or life condition. The purpose of obtaining a health history is to gather subjective data from the patient and/or the patient's family so that the health care team and the patient can collaboratively create a plan that will promote health, address acute health problems, and minimize chronic health conditions.

Instrumental activities of daily living: Complex daily tasks that allow patients to function independently such as managing finances, paying bills, purchasing and preparing meals, managing one's household, taking medications, and facilitating transportation.

LGBT: An acronym standing for lesbian, gay, bisexual, and transgender and is an umbrella term that generally refers to a group of people who are diverse with regard to their gender identity and sexual orientation. There are expanded versions of this acronym.[5]

Main health care needs: Term used to classify what needs the patient feels are most important to address after admission to a health care agency.

Medication reconciliation: A comparison of a list of current medications with a previous list and is completed at every hospitalization and clinic visit.

Melena: Dark, tarry-looking stool due to the presence of digested blood.

Mental health: A state of well-being in which every individual realizes their own potential, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to their community.[6]

Mobility: A patient's ability to move around (e.g., sit up, sit down, stand up, walk).

Nursing: The protection, promotion, and optimization of health and abilities, prevention of illness and injury, facilitation of healing, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, groups, communities, and population.[7]

Objective data: Information observed through your sense of hearing, sight, smell, and touch while assessing the patient.

Primary source of data: Information obtained directly from the patient.

Secondary source of data: Information from the patient's chart, family members, or other health care team members.

Self-concept: Knowledge a person has about themselves that makes up who they are (i.e., their identity).

Self-esteem: A person's self-evaluation of their self-concept as being worthy or unworthy.

Sexual orientation: The preferred term used when referring to an individual's physical and/or emotional attraction to the same and/or opposite gender.[8]

Sign: Objective data found by the nurse or health care provider when assessing a patient.

Spirituality: A way of living that comes from a set of meanings, values, and beliefs that are important to a person.[9]

Subjective data: Information obtained from the patient and/or family members that offers important cues from their perspectives.

Symptom: Subjective data that the patient reports, such as “I feel dizzy.”

Value: An accepted principle or standard of an individual or group.[10]

Voiding: Medical terminology used for urinating.

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1. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice.* F. A. Davis Company. ↵
2. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice.* F. A. Davis Company. ↵
3. The Joint Commission. (2011). *Advancing effective communication, cultural competence, and patient- and family-centered care for the lesbian, gay, bisexual, and transgender (LGBT) community: A field guide.* https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/health-equity/lgbtfieldguide_web_linked_verpdf.pdf downloaded from https://www.jointcommission.org/resources/patient-safety-topics/health-equity/#t=_Tab_StandardsFAQs&sort=relevancy↵
4. The Joint Commission. (2011). A*dvancing effective communication, cultural competence, and patient- and family-centered care for the lesbian, gay, bisexual, and transgender (LGBT) community: A field guide.* https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/health-equity/lgbtfieldguide_web_linked_verpdf.pdf downloaded from https://www.jointcommission.org/resources/patient-safety-topics/health-equity/#t=_Tab_StandardsFAQs&sort=relevancy↵
5. The Joint Commission. (2011). *Advancing effective communication, cultural competence, and patient- and family-centered care for the lesbian, gay, bisexual, and transgender (LGBT) community: A field guide.* https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/health-equity/lgbtfieldguide_web_linked_verpdf.pdf downloaded from https://www.jointcommission.org/resources/patient-safety-topics/health-equity/#t=_Tab_StandardsFAQs&sort=relevancy↵
6. This work is a derivative of The Complete Subjective Health Assessment by Lapum, St-Amant, Hughes, Petrie, Morrell, and Mistry licensed under CC BY-SA 4.0. ↵
7. American Nurses Association. (2015). N*ursing: Scope and standards of practice* (3rd ed.). American Nurses Association. ↵
8. The Joint Commission. (2011). *Advancing effective communication, cultural competence, and patient- and family-centered care for the lesbian, gay, bisexual, and transgender (LGBT) community: A field guide.* https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/health-equity/lgbtfieldguide_web_linked_verpdf.pdf downloaded from https://www.jointcommission.org/resources/patient-safety-topics/health-equity/#t=_Tab_StandardsFAQs&sort=relevancy↵
9. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice.* F. A. Davis Company. ↵
10. Gordon, M. (2008). *Assess notes nursing: Nursing assessment and diagnostic reasoning for clinical practice.* F. A. Davis Company. ↵

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3.14: Chapter Resources A- Sample Health History Form

Note

Please view a Sample Health History Form.

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CHAPTER OVERVIEW

4: Integumentary Assessment

4.1: Integumentary Assessment Introduction
4.2: Basic Integumentary Concepts
4.3: Common Integumentary Conditions
4.4: Integumentary Assessment
4.5: Sample Documentation
4.6: Checklist for Integumentary Assessment
4.7: Learning Activity
4.8: IV Glossary

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4.1: Integumentary Assessment Introduction

Learning Objectives

- Perform an integumentary assessment including the skin, hair, and nails
- Modify assessment techniques to reflect variations across the life span and ethnic and cultural variations
- Document actions and observations
- Recognize and report significant deviations from norms

Assessing the skin, hair, and nails is part of a routine head-to-toe assessment completed by registered nurses. During inpatient care, a comprehensive skin assessment on admission establishes a baseline for the condition of a patient's skin and is essential for developing a care plan for the prevention and treatment of skin injuries.[1] Before discussing the components of a routine skin assessment, let's review the anatomy of the skin and some common skin and hair conditions.

1. Medline Industries, Inc. (n.d.). *Are you doing comprehensive skin assessments correctly? Get the whole picture*. https://www.medline.com/skin-health/comprehensive-skin-assessments-correctly-get-whole-picture/#:~:text=A%20comprehensive%20skin%20assessment%20entails,actually%20more%20than%20skin%20deep. ↵

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4.2: Basic Integumentary Concepts

The integumentary system includes the skin, hair, and nails. The skin is an organ that performs a variety of essential functions, such as protecting the body from invasion by microorganisms, chemicals, and other environmental factors; preventing dehydration; acting as a sensory organ; modulating body temperature and electrolyte balance; and synthesizing vitamin D.[1]

Skin

The skin is made of multiple layers of cells and tissues, which are held to underlying structures by connective tissue. See Figure 4.2.1[2] for an image of the layers of the skin. The skin is composed of two main layers: the uppermost thin layer called the **epidermis** made of closely packed epithelial cells, and the inner thick layer called the **dermis** that houses blood vessels, hair follicles, sweat glands, and nerve fibers. Beneath the dermis lies the **hypodermis** that contains connective tissue and adipose tissue (stored fat) to connect the skin to the underlying bones and muscles. The skin acts as a sense organ because the epidermis, dermis, and hypodermis contain specialized sensory nerve structures that detect touch, surface temperature, and pain.[3]

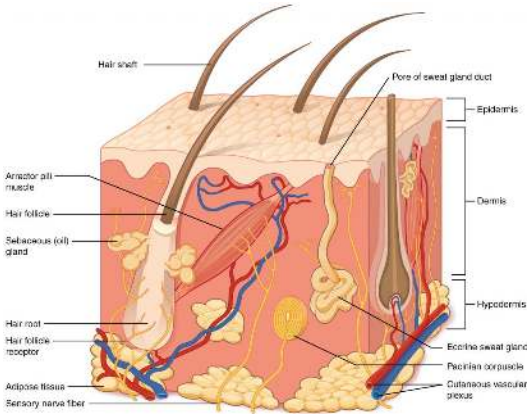


Figure 4.2.1: Layers of the Skin

The color of skin is created by pigments, including melanin, carotene, and hemoglobin. **Melanin** is produced by cells called melanocytes that are scattered throughout the epidermis. See Figure 4.2.2[4] for an illustration of melanin and melanocytes. When there is an irregular accumulation of melanocytes in the skin, freckles appear. Dark-skinned individuals produce more melanin than those with pale skin. Exposure to the UV rays of the sun or a tanning bed causes additional melanin to be manufactured and built up, resulting in the darkening of the skin referred to as a tan. Increased melanin accumulation protects the DNA of epidermal cells from UV ray damage, but it requires about ten days after initial sun exposure for melanin synthesis to peak. This is why pale-skinned individuals often suffer sunburns during initial exposure to the sun. Darker-skinned individuals can also get sunburns, but they are more protected from their existing melanin than pale-skinned individuals.[5]

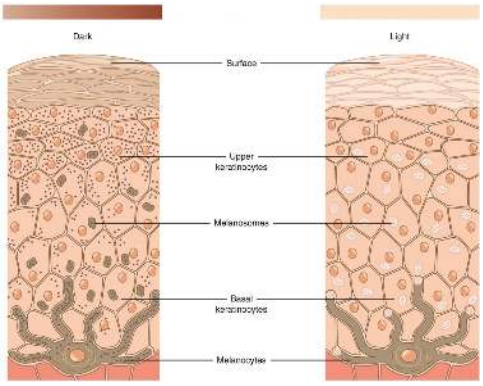


Figure 4.2.2: Pigmentation of the Skin

Too much sun exposure can eventually lead to wrinkling due to the destruction of the cellular structure of the skin, and in severe cases, can cause DNA damage resulting in skin cancer. Moles are larger masses of melanocytes, and although most are benign, they should be monitored for changes that indicate the presence of skin cancer. See Figure 4.2.3[6] for an image of moles.



Figure 4.2.3: Moles

Patients are encouraged to use the **ABCDE** mnemonic to watch for signs of early-stage melanoma developing in moles. Consult a health care provider if you find these signs of melanoma when assessing a patient's skin:

- **A**symmetrical: The sides of the moles are not symmetrical
- **B**orders: The edges of the mole are irregular in shape
- **C**olor: The color of the mole has various shades of brown or black
- **D**iameter: The mole is larger than 6 mm. (0.24 in.)
- **E**volving: The shape of the mole has changed

Hair

Hair is made of dead, keratinized cells that originate in the hair follicle in the dermis. For these reasons, there is no sensation in hair. See Figure 4.2.4[7] for an image of a hair follicle. Hair serves a variety of functions, including protection, sensory input, thermoregulation, and communication. For example, hair on the head protects the skull from the sun. Hair in the nose, ears, and around the eyes (eyelashes) defends the body by trapping any dust particles that may contain allergens and microbes. Hair of the eyebrows prevents sweat and other particles from dripping into the eyes.

Hair also has a sensory function due to sensory innervation by a hair root plexus surrounding the base of each hair follicle. Hair is extremely sensitive to air movement or other disturbances in the environment, even more so than the skin surface. This feature is also useful for the detection of the presence of insects or other potentially damaging substances on the skin surface. Each hair root is also connected to a smooth muscle called the arrector pili that contracts in response to nerve signals from the sympathetic nervous system, making the external hair shaft "stand up." This movement is commonly referred to as goose bumps. The primary purpose for this movement is to trap a layer of air to add insulation.[8]

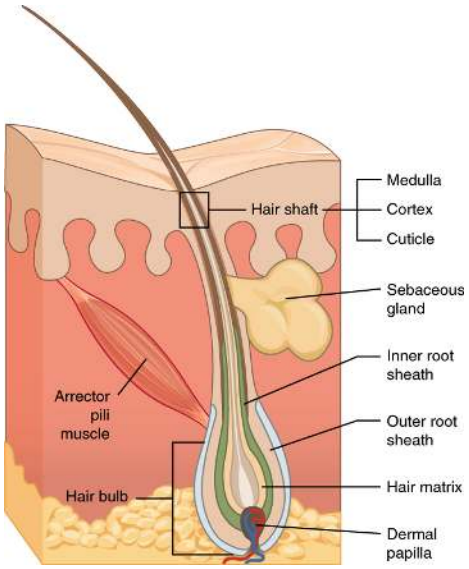


Figure 4.2.4: Hair Follicle

Nails

The nail bed is a specialized structure of the epidermis that is found at the tips of our fingers and toes. See Figure 4.2.5[9] for an illustration of a fingernail. The nail body is formed on the nail bed and protects the tips of our fingers and toes as they experience mechanical stress while being used. In addition, the nail body forms a back-support for picking up small objects with the fingers.[10]

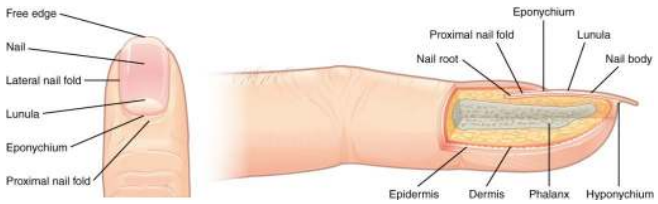


Figure 4.2.5: Nails

Sweat Glands

When the body becomes warm, sweat glands produce sweat to cool the body. There are two types of sweat glands that secrete slightly different products. An **eccrine sweat gland** produces hypotonic sweat for thermoregulation. See Figure 4.2.6[11] for an illustration of an eccrine sweat gland. These glands are found all over the skin's surface, but are especially abundant on the palms of the hand, the soles of the feet, and the forehead. They are coiled glands lying deep in the dermis, with the duct rising up to a pore on the skin surface where the sweat is released. This type of sweat is composed mostly of water and some salt, antibodies, traces of metabolic waste, and dermicidin, an antimicrobial peptide. Eccrine glands are a primary component of thermoregulation and help to maintain homeostasis.[12]

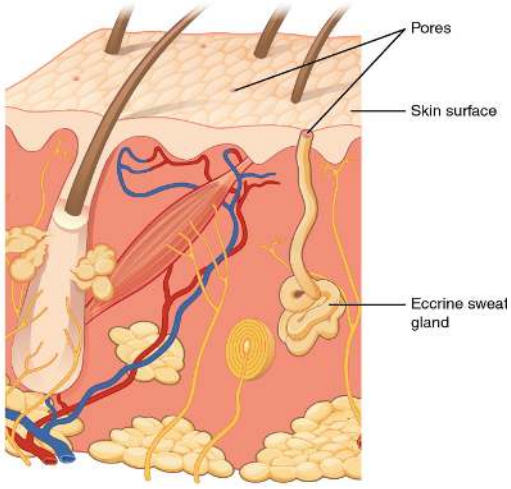


Figure 4.2.6: Eccrine Sweat Gland

Apocrine sweat glands are mostly found in hair follicles in densely hairy areas, such as the armpits and genital regions. In addition to secreting water and salt, apocrine sweat includes organic compounds that make the sweat thicker and subject to bacterial decomposition and subsequent odor. The release of this sweat is controlled by the nervous system and hormones and plays a role in the human pheromone response. Most commercial antiperspirants use an aluminum-based compound as their primary active ingredient to stop sweat. When the antiperspirant enters the sweat gland duct, the aluminum-based compounds form a physical block in the duct, which prevents sweat from coming out of the pore.[13]

Skin Lesions

A **lesion** is an area of abnormal tissue. There are many terms for common skin lesions that may be described in a patient's chart. These terms are defined in Table 4.2.1. See Figure 4.2.7[14] for illustrations of common skin lesions.

Table 4.2.1 Medical Terms Associated with Skin Lesions and Rashes[15]

Medical Term	Definition
abscess	localized collection of pus
bulla (pl., bullae)	fluid-filled blister no more than 5 mm in diameter
carbuncle	deep, pus-filled abscess generally formed from multiple furuncles
crust	dried fluids from a lesion on the surface of the skin
cyst	encapsulated sac filled with fluid, semi-solid matter, or gas, typically located just below the upper layers of skin
folliculitis	a localized rash due to inflammation of hair follicles
furuncle (boil)	pus-filled abscess due to infection of a hair follicle
macules	smooth spots of discoloration on the skin
papules	small raised bumps on the skin, such as a mosquito bite
pseudocyst	lesion that resembles a cyst but with a less-defined boundary
purulent	pus-producing; also called suppurative
pustules	fluid- or pus-filled bumps on the skin, such as acne
pyoderma	any suppurative (pus-producing) infection of the skin
suppurative	producing pus; purulent
ulcer	break in the skin or open sore such as a venous ulcer
vesicle	small, fluid-filled lesion, such as a herpes blister

wheal	swollen, inflamed skin that itches or burns, often from an allergic reaction

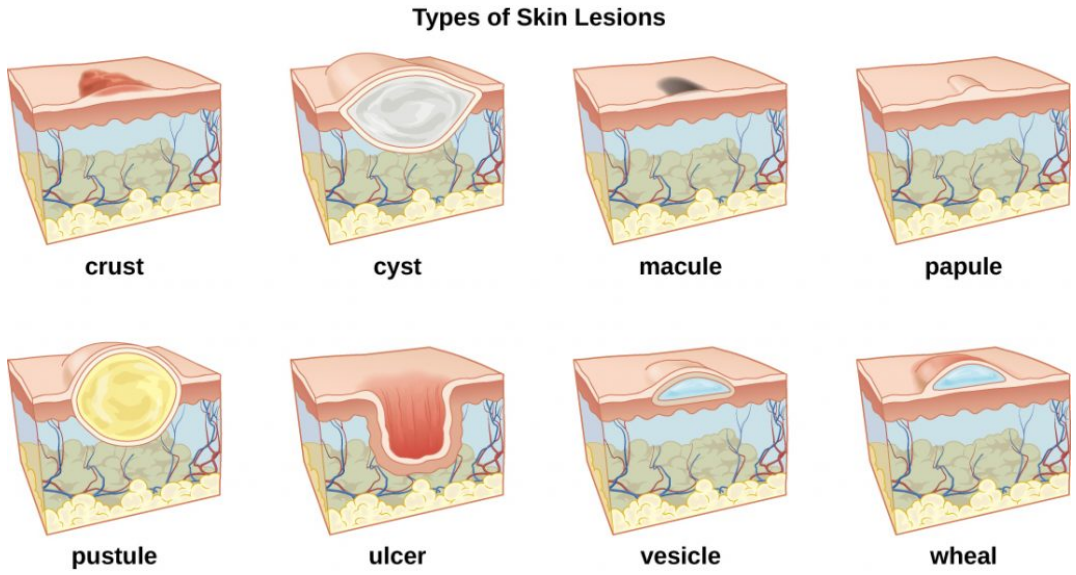


Figure 4.2.7: Common Types of Skin Lesions

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5. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Skin turgor; [updated 2020, Sep 16; cited 2020, Sep 18]. https://medlineplus.gov/ency/article/003281.htm#:~:text=To%20check%20for%20skin%20turgor,back%20to%20its%20normal%20position. ↵
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4.3: Common Integumentary Conditions

Now that we have reviewed the anatomy of the integumentary system, let's review common conditions that you may find during a routine integumentary assessment.

Acne

Acne is a skin disturbance that typically occurs on areas of the skin that are rich in sebaceous glands, such as the face and back. It is most common during puberty due to associated hormonal changes that stimulate the release of sebum. An overproduction and accumulation of sebum, along with keratin, can block hair follicles. Acne results from infection by acne-causing bacteria and can lead to potential scarring.[1] See Figure 4.3.1 [2] for an image of acne.



Figure 4.3.1: Acne

Lice and Nits

Head lice are tiny insects that live on a person's head. Adult lice are about the size of a sesame seed, but the eggs, called nits, are smaller and can appear like a dandruff flake. See Figure 4.3.2 [3] for an image of very small white nits in a person's hair. Children ages 3-11 often get head lice at school and day care because they have head-to-head contact while playing together. Lice move by crawling and spread by close person-to-person contact. Rarely, they can spread by sharing personal belongings such as hats or hair brushes. Contrary to popular belief, personal hygiene and cleanliness have nothing to do with getting head lice. Symptoms of head lice include the following:

- Tickling feeling in the hair
- Frequent itching, which is caused by an allergic reaction to the bites
- Sores from scratching, which can become infected with bacteria
- Trouble sleeping due to head lice being most active in the dark

A diagnosis of head lice usually comes from observing a louse or nit on a person's head. Because they are very small and move quickly, a magnifying lens and a fine-toothed comb may be needed to find lice or nits. Treatments for head lice include over-the-counter and prescription shampoos, creams, and lotions such as permethrin lotion.[4]



Figure 4.3.2: Nits

Burns

A burn results when the skin is damaged by intense heat, radiation, electricity, or chemicals. The damage results in the death of skin cells, which can lead to a massive loss of fluid due to loss of the skin's protection. Burned skin is also extremely susceptible to infection due to the loss of protection by intact layers of skin.

Burns are classified by the degree of their severity. A **first-degree burn**, also referred to as a superficial burn, only affects the epidermis. Although the skin may be painful and swollen, these burns typically heal on their own within a few days. Mild sunburn fits into the category of a first-degree burn. A **second-degree burn**, also referred to as a partial thickness burn, affects both the epidermis and a portion of the dermis. These burns result in swelling and a painful blistering of the skin. It is important to keep the burn site clean to prevent infection. With good care, a second degree burn will heal within several weeks. A **third-degree** burn, also referred to as a full thickness burn, extends fully into the epidermis and dermis, destroying the tissue and affecting the nerve endings and sensory function. These are serious burns that require immediate medical attention. A **fourth-degree burn**, also referred to as a deep full thickness burn, is even more severe, affecting the underlying muscle and bone. Third- and fourth-degree burns are usually not as painful as second degree burns because the nerve endings are damaged. Full thickness burns require debridement (removal of dead skin) followed by grafting of the skin from an unaffected part of the body or from skin grown in tissue culture.[5] See Figure 4.3.3[6] for an image of a patient recovering from a second-degree burn on the hand.



Figure 4.3.3: Recovering Second-Degree Burn

Severe burns are quickly measured in emergency departments using a tool called the "**rule of nines**," which associates specific anatomical locations with a percentage that is a factor of nine. Rapid estimate of the burned surface area is used to estimate intravenous fluid replacement because patients will have massive fluid losses due to the removal of the skin barrier.[7] See Figure 4.3.4[8] for an illustration of the rule of nines. The head is 9% (4.5% on each side), the upper limbs are 9% each (4.5% on each side), the lower limbs are 18% each (9% on each side), and the trunk is 36% (18% on each side).

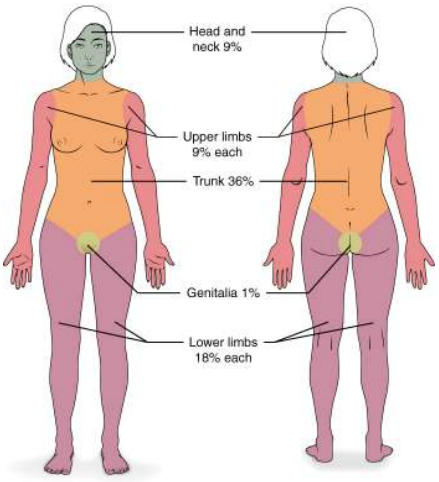


Figure 4.3.4: Rule of Nines

Scars

Most cuts and wounds cause scar formation. A scar is collagen-rich skin formed after the process of wound healing. Sometimes there is an overproduction of scar tissue because the process of collagen formation does not stop when the wound is healed, resulting in the formation of a raised scar called a **keloid**.[9] Keloids are more common in patients with darker skin color. See Figure 4.3.5 [10] for an image of a keloid that has developed from a scar on a patient's chest wall.



Figure 4.3.5: Keloid

Skin Cancer

Skin cancer is common, with one in five Americans experiencing some type of skin cancer in their lifetime. Basal cell carcinoma is the most common of all cancers that occur in the United States and is frequently found on areas most susceptible to long-term sun exposure such as the head, neck, arms, and back. Basal cell carcinomas start in the epidermis and become an uneven patch, bump, growth, or scar on the skin surface. Treatment options include surgery, freezing (cryosurgery), and topical ointments.[11]

Squamous cell carcinoma presents as lesions commonly found on the scalp, ears, and hands. If not removed, squamous cell carcinomas can metastasize to other parts of the body. Surgery and radiation are used to cure squamous cell carcinoma. See Figure 4.3.6 [12] for an image of squamous cell carcinoma.[13]



Figure 4.3.6: Squamous Cell Carcinoma

Melanoma is a cancer characterized by the uncontrolled growth of melanocytes, the pigment-producing cells in the epidermis. A melanoma commonly develops from an existing mole. See Figure 4.3.7 [14] for an image of a melanoma. Melanoma is the most fatal of all skin cancers because it is highly metastatic and can be difficult to detect before it has spread to other organs. Melanomas usually appear as asymmetrical brown and black patches with uneven borders and a raised surface. Treatment includes surgical excision and immunotherapy.[15]



Figure 4.3.7: Melanoma

Fungal (Tinea) Infections

Tinea is the name of a group of skin diseases caused by a fungus. Types of tinea include ringworm, athlete's foot, and jock itch. These infections are usually not serious, but they can be uncomfortable because of the symptoms of itching and burning. They can be transmitted by touching infected people, damp surfaces such as shower floors, or even from pets.[16] Ringworm (tinea corporis) is a type of rash that forms on the body that typically looks like a red ring with a clear center, although a worm doesn't cause it. Scalp ringworm (tinea capitals) causes itchy, red patches on the head that can leave bald spots. Athlete's foot (tinea pedis) causes itching, burning, and cracked skin between the toes. Jock itch (tinea cruris) causes an itchy, burning rash in the groin area. Fungal infections are often treated successfully with over-the-counter creams and powders, but some require prescription medicine such as nystatin. See Figure 4.3.8 [17] for an image of a tinea in a patient's groin.[18]

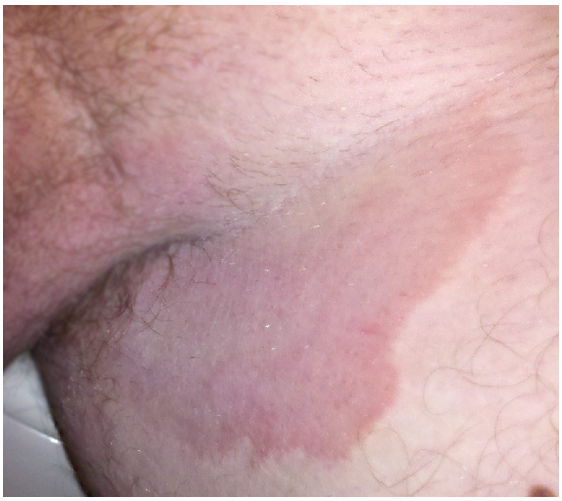


Figure 4.3.8: Fungal Infection in the Groin

Impetigo

Impetigo is a common skin infection caused by bacteria in children between the ages two and six. It is commonly caused by *Staphylococcus* (staph) or *Streptococcus* (strep) bacteria. See Figure 4.3.9 [19] for an image of impetigo. Impetigo often starts when bacteria enter a break in the skin, such as a cut, scratch, or insect bite. Symptoms start with red or pimple-like sores surrounded by red skin. The sores fill with pus and then break open after a few days and form a thick crust. They are often itchy, but scratching them can spread the sores. Impetigo can spread by contact with sores or nasal discharge from an infected person and is treated with antibiotics.



Figure 4.3.9: Impetigo

Edema

Edema is caused by fluid accumulation within the tissues often caused by underlying cardiovascular or renal disease. Read more about edema in the "Basic Concepts" section of the "Cardiovascular Assessment" chapter.

Lymphedema

Lymphedema is the medical term for a type of swelling that occurs when lymph fluid builds up in the body's soft tissues due to damage to the lymph system. It often occurs unilaterally in the arms or legs after surgery has been performed that injured the regional lymph nodes. See Figure 4.3.10 [20] for an image of lower extremity edema. Causes of lymphedema include infection, cancer, scar tissue from radiation therapy, surgical removal of lymph nodes, or inherited conditions. There is no cure for lymphedema, but elevation of the affected extremity is vital. Compression devices and massage can help to manage the symptoms. See Figure 4.3.11 [21] for an image of a specialized compression dressing used for lymphedema. It is also important to remember to avoid taking blood pressure on a patient's extremity with lymphedema.[22]



Figure 4.3.10: Lymphedema



Figure 4.3.11: Compression Dressing for Lymphedema

Jaundice

Jaundice causes skin and sclera (whites of the eyes) to turn yellow. See Figure 4.3.12 [23] for an image of a patient with jaundice visible in the sclera and the skin. Jaundice is caused by too much bilirubin in the body. Bilirubin is a yellow chemical in hemoglobin, the substance that carries oxygen in red blood cells. As red blood cells break down, the old ones are processed by the liver. If the liver can't keep up due to large amounts of red blood cell breakdown or liver damage, bilirubin builds up and causes the skin and sclera to appear yellow. New onset of jaundice should always be reported to the health care provider.

Many healthy babies experience mild jaundice during the first week of life that usually resolves on its own, but some babies require additional treatment such as light therapy. Jaundice can happen at any age for many reasons, such as liver disease, blood disease, infections, or side effects of some medications.[24]



Figure 4.3.12: Jaundice

Pressure Injuries

Pressure injuries also called bedsores, form when a patient's skin and soft tissue press against a hard surface, such as a chair or bed, for a prolonged period of time. The pressure against a hard surface reduces blood supply to that area, causing the skin tissue to become damaged and become an ulcer. Patients are at high risk of developing a pressure injury if they spend a lot of time in one position, have decreased sensation, or have bladder or bowel leakage.[25] See Figure 4.3.13 [26] for an image of a pressure ulcer injury on a bed-bound patient's back.

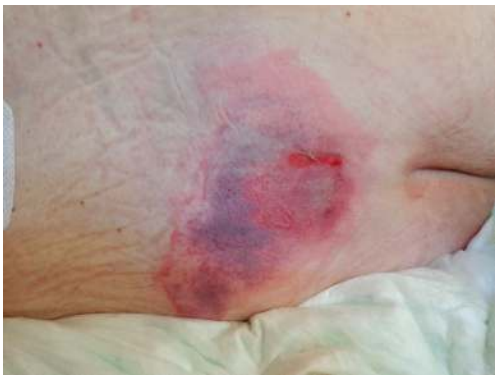


Figure 4.3.13: Pressure Ulcer Injury

Petechiae

Petechiae are tiny red dots caused by bleeding under the skin that may appear like a rash. Large petechiae are called purpura. An easy method used to assess for petechiae is to apply pressure to the rash with a gloved finger. A rash will blanch (i.e., whiten with pressure) but petechiae and purpura do not blanch. See Figure 4.3.14 [27] for an image of petechiae and purpura. New onset of petechiae should be immediately reported to the health care provider because it can indicate a serious underlying medical condition.[28]

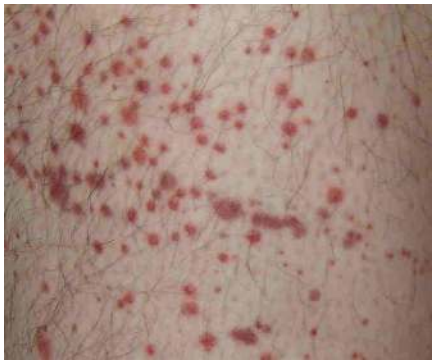


Figure 4.3.14: Petechiae and Purpura

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16. MedlinePlus [Internet]. Bethesda (MD): National Library of Medicine (US); [updated 2020, Aug 17]. Tinea infections; [reviewed 2016, Apr 4; cited 2020, Sep 18]. https://medlineplus.gov/tineainfections.html#:~:text=Tinea%20is%20the%20name%20of,or%20even%20from%20a%20pet↵
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18. MedlinePlus [Internet]. Bethesda (MD): National Library of Medicine (US); [updated 2020, Aug 17]. Tinea infections; [reviewed 2016, Apr 4; cited 2020, Sep 18]. https://medlineplus.gov/tineainfections.html#:~:text=Tinea%20is%20the%20name%20of,or%20even%20from%20a%20pet↵
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23. “Cholangitis Jaundice.jpg” by Bobjgalindo is licensed under CC BY-SA 4.0↵
24. MedlinePlus [Internet]. Bethesda (MD): National Library of Medicine (US); [updated 2019, Oct 22]. Jaundice; [reviewed 2016, Aug 31; cited 2020, Sep 18]. https://medlineplus.gov/jaundice.html↵
25. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Preventing pressure ulcers; [updated 2020, Sep 16; cited 2020, Sep 18]. https://medlineplus.gov/ency/patientinstructions/000147.htm↵
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28. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Bleeding into the skin; [updated 2020, Sep 16; cited 2020, Sep 18]. https://medlineplus.gov/ency/article/003235.htm↵

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4.4: Integumentary Assessment

Now that we have reviewed the anatomy of the integumentary system and common integumentary conditions, let's review the components of an integumentary assessment. The standard for documentation of skin assessment is within 24 hours of admission to inpatient care. Skin assessment should also be ongoing in inpatient and long-term care.[1]

A routine integumentary assessment by a registered nurse in an inpatient care setting typically includes inspecting overall skin color, inspecting for skin lesions and wounds, and palpating extremities for edema, temperature, and capillary refill.[2]

Subjective Assessment

Begin the assessment by asking focused interview questions regarding the integumentary system. Itching is the most frequent complaint related to the integumentary system. See Table 4.4.1 for sample interview questions.

Table 4.4.1 Focused Interview Questions for the Integumentary System

Questions	Follow-up
Are you currently experiencing any skin symptoms such as itching, rashes, or an unusual mole, lump, bump, or nodule?[3]	Please describe your concern today. **Onset:** When did this start? **Location:** Can you point to this symptom? **Duration:** How long have you had this? **Characteristics:** Can you describe how this feels? **Aggravating Factors:** Does anything make this symptom worse? **Relieving Factors:** What helps this symptom feel better? **Treatment:** Have you used any medication or other remedies for this symptom? **Impact on ADL's:** Does this have any impact on your ability to function normally? **Coping Strategies:** What do you do to cope with this symptom? **Emotional Response:** Emotionally, how does this make you feel?
Have you ever been diagnosed with a condition such as acne, eczema, skin cancer, pressure injuries, jaundice, edema, or lymphedema?	Please describe.
Are you currently using any prescription or over-the-counter medications, creams, vitamins, or supplements to treat a skin, hair, or nail condition?	Please describe.

Objective Assessment

There are five key areas to note during a focused integumentary assessment: color, skin temperature, moisture level, skin turgor, and any lesions or skin breakdown. Certain body areas require particular observation because they are more prone to pressure injuries, such as bony prominences, skin folds, perineum, between digits of the hands and feet, and under any medical device that can be removed during routine daily care.[4]

Inspection

Color

Inspect the color of the patient's skin and compare findings to what is expected for their skin tone. Note a change in color such as **pallor** (paleness), **cyanosis** (blueness), **jaundice** (yellowness), or **erythema** (redness). Note if there is any bruising (**ecchymosis**) present.

Scalp

If the patient reports itching of the scalp, inspect the scalp for lice and/or nits.

Lesions and Skin Breakdown

Note any lesions, skin breakdown, or unusual findings, such as rashes, petechiae, unusual moles, or burns. Be aware that unusual patterns of bruising or burns can be signs of abuse that warrant further investigation and reporting according to agency policy and state regulations.

Auscultation

Auscultation does not occur during a focused integumentary exam.

Palpation

Palpation of the skin includes assessing temperature, moisture, texture, skin turgor, capillary refill, and edema. If erythema or rashes are present, it is helpful to apply pressure with a gloved finger to further assess for **blanching** (whitening with pressure).

Temperature, Moisture, and Texture

Fever, decreased perfusion of the extremities, and local inflammation in tissues can cause changes in skin temperature. For example, a fever can cause a patient's skin to feel warm and sweaty (diaphoretic). Decreased perfusion of the extremities can cause the patient's hands and feet to feel cool, whereas local tissue infection or inflammation can make the localized area feel warmer than the surrounding skin. Research has shown that experienced practitioners can palpate skin temperature accurately and detect differences as small as 1 to 2 degrees Celsius. For accurate palpation of skin temperature, do not hold anything warm or cold in your hands for several minutes prior to palpation. Use the palmar surface of your dominant hand to assess temperature.[5] While assessing skin temperature, also assess if the skin feels dry or moist and the texture of the skin. Skin that appears or feels sweaty is referred to as being **diaphoretic.**

Capillary Refill

The capillary refill test is a test done on the nail beds to monitor perfusion, the amount of blood flow to tissue. Pressure is applied to a fingernail or toenail until it turns white, indicating that the blood has been forced from the tissue under the nail. This whiteness is called blanching. Once the tissue has blanched, remove pressure. Capillary refill is defined as the time it takes for color to return to the tissue after pressure has been removed that caused blanching. If there is sufficient blood flow to the area, a pink color should return within 2 seconds after the pressure is removed. [6]

View the following video demonstrating Capillary Refill[7]:

Cardiovascular Assessment Part Two | Capillary Refill Test

Skin Turgor

Skin turgor may be included when assessing a patient's hydration status, but research has shown it may not be a good indicator, especially in older adults. **Skin turgor** is the skin's elasticity. Its ability to change shape and return to normal may be decreased when the patient is dehydrated. To check for skin turgor, gently grasp skin on the patient's lower arm or back of the hand between two fingers so that it is tented upwards, and then release. Skin with normal turgor snaps rapidly back to its normal position, but skin with poor turgor takes additional time to return to its normal position.[8] Skin turgor is not a reliable method to assess for dehydration in older adults because they have decreased skin elasticity, so other assessments for dehydration should be included.[9]

Edema

If edema is present on inspection, palpate the area to determine if the edema is pitting or nonpitting. Press on the skin to assess for indentation, ideally over a bony structure, such as the tibia. If no indentation occurs, it is referred to as nonpitting edema. If indentation occurs, it is referred to as pitting edema. See Figure 4.22[10] for an image demonstrating pitting edema. If pitting edema is present, document the depth of the indention and how long it takes for the skin to rebound back to its original position. The indentation and time required to rebound to the original position are graded on a scale from 1 to 4, where 1+ indicates a barely detectable depression with immediate rebound, and 4+ indicates a deep depression with a time lapse of over 20 seconds required to rebound. See Figure 4.4.1 [11] for an illustration of grading edema.



Figure 4.4.1: Assessing Lower Extremity Edema

Grade 1	0–2 mm indentation; rebounds immediately.
Grade 2	3–4 mm indentation; rebounds in < 15 seconds.
Grade 3	5–6 mm indentation; up to 30 seconds to rebound.
Grade 4	8 mm indentation; > 20 seconds to rebound.

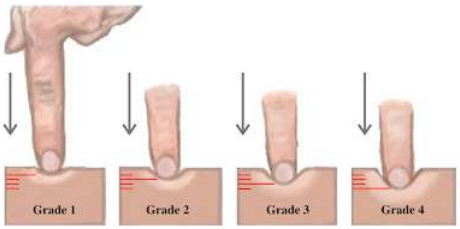


Figure 4.4.2: Grading of Edema

Life Span Considerations

Older Adults

Older adults have several changes associated with aging that are apparent during assessment of the integumentary system. They often have cardiac and circulatory system conditions that cause decreased perfusion, resulting in cool hands and feet. They have decreased elasticity and fragile skin that often tears more easily. The blood vessels of the dermis become more fragile, leading to bruising and bleeding under the skin. The subcutaneous fat layer thins, so it has less insulation and padding and reduced ability to maintain body temperature. Growths such as skin tags, rough patches (keratoses), skin cancers, and other lesions are more common. Older adults may also be less able to sense touch, pressure, vibration, heat, and cold.[12]

When completing an integumentary assessment it is important to distinguish between expected and unexpected assessment findings. Please review Table 4.4.2 to review common expected and unexpected integumentary findings.

Table 4.4.2 Expected Versus Unexpected Findings on integumentary Assessment

Assessment	Expected Findings	Unexpected Findings (Document and notify provider if it is a new finding*)

Inspection	Skin is expected color for ethnicity without lesions or rashes.	**Jaundice** Erythema **Pallor** Cyanosis Irregular-looking mole Bruising (ecchymosis) Rashes Petechiae Skin breakdown Burns
Auscultation	Not applicable	
Palpation	Skin is warm and dry with no edema. Capillary refill is less than 3 seconds. Skin has elastic turgor with no tenting.	Diaphoretic or clammy Cool extremity Edema Lymphedema Capillary refill greater than 3 seconds Tenting
***CRITICAL CONDITIONS to report immediately**		Cool and clammy Diaphoretic Petechiae Jaundice Cyanosis Redness, warmth, and tenderness indicating a possible infection

1. Medline Industries, Inc. (n.d.). *Are you doing comprehensive skin assessments correctly? Get the whole picture*. https://www.medline.com/skin-health/comprehensive-skin-assessments-correctly-get-whole-picture/#:~:text=A%20comprehensive%20skin%20assessment%20entails,actually%20more%20than%20skin%20deep. ↵
2. Giddens, J. F. (2007). A survey of physical examination techniques performed by RNs: Lessons for nursing education. *Journal of Nursing Education*, *46*(2), 83-87. https://doi.org/10.3928/01484834-20070201-09↵
3. McKay, M. (1990). The dermatologic history. In Walker, H. K., Hall, W. D., Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed.). www.ncbi.nlm.nih.gov/books/NBK207/↵
4. Medline Industries, Inc. (n.d.). *Are you doing comprehensive skin assessments correctly? Get the whole picture*.https://www.medline.com/skin-health/comprehensive-skin-assessments-correctly-get-whole-picture/#:~:text=A%20comprehensive%20skin%20assessment%20entails,actually%20more%20than%20skin%20deep.↵
5. Levine, D., Walker, J. R., Marcellin-Little, D. J., Goulet, R., & Ru, H. (2018). Detection of skin temperature differences using palpation by manual physical therapists and lay individuals. *The Journal of Manual & Manipulative Therapy*, *26*(2), 97-101. dx.doi.org/10.1080%2F10669817.2018.1427908↵
6. Johannsen, L.L. (2005). Skin assessment. *Dermatology Nursing*, *17*(2), 165-66. ↵
7. Nurse Saria. (2018, September 18). *Cardiovascular assessment part two | Capillary refill test.* [Video}. YouTube. All rights reserved. https://youtu.be/A6htMxo4Cks↵
8. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Skin turgor; [updated 2020, Sep 16; cited 2020, Sep 18]. https://medlineplus.gov/ency/article/003281.htm#:~:text=To%20check%20for%20skin%20turgor,back%20to%20its%20normal%20position.↵
9. Nursing Times. (2015, August 3). *Detecting dehydration in older people*. https://www.nursingtimes.net/roles/older-people-nurses-roles/detecting-dehydration-in-older-people-useful-tests-03-08-2015/↵
10. "Combinpedal.jpg" by James Heilman, MD is licensed under CC BY-SA 3.0↵
11. "Grading of Edema" by Meredith Pomietlo for Chippewa Valley Technical College is licensed under CC BY 4.0↵

12. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Aging changes in skin; [updated 2020, Sep 16; cited 2020, Sep 18]. https://medlineplus.gov/ency/article/004014.htm#:~:text=The%20remaining%20melanocytes%20increase%20in,the%20skin's%20strength%20and%20elasticity↵

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4.5: Sample Documentation

Sample Documentation of Expected Findings

Skin is expected color for ethnicity without lesions or rashes. Skin is warm and dry with no edema. Capillary refill is less than 3 seconds. Elastic skin turgor with no tenting.

Sample Documentation of Unexpected Findings

Mother brought the child into the clinic for evaluation of an "itchy rash around the mouth" that started about three days ago. Red crusted pustules are present around the patient's mouth. Dr. Smith evaluated the patient and a prescription for antibiotics was provided. Mother and child were educated to use good hand hygiene practices to prevent the spread of infection.

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4.6: Checklist for Integumentary Assessment

Use this checklist to review the steps for completion of an “Integumentary Assessment.”

Steps

Disclaimer: Always review and follow agency policy regarding this specific skill.

1. Gather supplies: penlight, nonsterile gloves, magnifying glass (optional), and wound measuring tool (optional).
2. Perform safety steps:
   - Perform hand hygiene.
   - Check the room for transmission-based precautions.
   - Introduce yourself, your role, the purpose of your visit, and an estimate of the time it will take.
   - Confirm patient ID using two patient identifiers (e.g., name and date of birth).
   - Explain the process to the patient and ask if they have any questions.
   - Be organized and systematic.
   - Use appropriate listening and questioning skills.
   - Listen and attend to patient cues.
   - Ensure the patient’s privacy and dignity.
   - Assess ABCs.
3. Ask the patient if they have any known skin conditions or concerns.
4. Inspect the general color of the skin and look for any discolorations. Inspect the skin for lesions, bruising, edema, or rashes.
5. Verbalize the ABCE format for evaluating skin lesions.
6. Inspect the scalp for lesions and hair for lice or nits.
7. Inspect the nail beds for color and palpate for capillary refill.
8. Palpate the skin to assess for temperature, moisture, and turgor. Apply gloves prior to palpation as indicated.
9. Assess pressure points for skin breakdown: back of head, ears, elbows, sacrum, and heels.
10. Palpate for edema on lower extremities bilaterally. If edema is present, determine the grade of edema.
11. Assist the patient to a comfortable position, ask if they have any questions, and thank them for their time.
12. Ensure safety measures when leaving the room:
    - CALL LIGHT: Within reach
    - BED: Low and locked (in lowest position and brakes on)
    - SIDE RAILS: Secured
    - TABLE: Within reach
    - ROOM: Risk-free for falls (scan room and clear any obstacles)
13. Perform hand hygiene.
14. Document the assessment findings. Report any concerns according to agency policy.

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4.7: Learning Activity

Learning Activity

Mr. Curtis is a 47-year-old patient admitted with a one-week history of progressive fatigue and ongoing diarrhea. You are completing his admission assessment. **Based upon his presenting condition, what integumentary assessments might be important?**

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4.8: IV Glossary

ABCDE: A mnemonic for assessing for melanoma developing in moles: Asymmetrical, Borders are irregular in shape, Color is various shades of brown or black, Diameter is larger than 6 mm., and the shape of the mole is Evolving.

Apocrine sweat gland: Sweat glands associated with hair follicles in densely hairy areas that release organic compounds subject to bacterial decomposition causing odor.

Blanching: To make white or pale by applying pressure.

Cyanosis: A bluish discoloration caused by lack of oxygenation of the tissue.

Dermis: The inner layer of skin with connective tissue, blood vessels, sweat glands, nerves, hair follicles, and other structures.

Diaphoretic: Excessive, abnormal sweating.

Ecchymosis: Bruising.

Eccrine sweat gland: Sweat gland that produces hypotonic sweat for thermoregulation.

Epidermis: The thin, uppermost layer of skin.

Erythema: A red color of the skin.

First-degree burn: A superficial burn that affects only the epidermis.

Fourth-degree burn: Severe burn damaging the dermis and the underlying muscle and bone.

Hypodermis: The layer of skin beneath the dermis composed of connective tissue and used for fat storage.

Jaundice: A yellowing of the skin or sclera caused by underlying medical conditions.

Keloid: A raised scar caused by overproduction of scar tissue.

Lesion: An area of abnormal tissue.

Lymphedema: A type of swelling that occurs when lymph fluid builds up in the body's soft tissues due to damage to the lymph system.

Melanin: Skin pigment produced by melanocytes scattered throughout the epidermis.

Melanoma: Skin cancer characterized by the uncontrolled growth of melanocytes that commonly develops from a mole. Melanoma is the most fatal of all skin cancers because it is highly metastatic. Melanomas usually appear as asymmetrical brown and black patches with uneven borders and a raised surface.

Petechiae: Tiny red dots caused by bleeding under the skin.

Pressure injury: Skin breakdown caused when a patient's skin and soft tissue press against a hard surface for a prolonged period of time, causing reduced blood supply and resulting in damaged tissue.

Rule of Nines: A tool used in the emergency department to assess the total body surface area burned to quickly estimate intravenous fluid requirements.

Second-degree burn: Burn affecting both the epidermis and a portion of the dermis, resulting in swelling and a painful blistering of the skin.

Skin turgor: The skin's elasticity and its ability to change shape and return to normal when gently grasped between two fingers.

Third-degree burn: Severe burn that fully extends into the epidermis and dermis, destroying the tissue and affecting the nerve endings and sensory function.

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CHAPTER OVERVIEW

5: Head and Neck Assessment

5.1: Head and Neck Assessment Introduction
5.2: Head and Neck Basic Concepts
5.3: Common Conditions of the Head and Neck
5.4: Head and Neck Assessment
5.5: Sample Documentation
5.6: Checklist for Head and Neck Assessment
5.7: Supplementary Videos on Head and Neck Assessment
5.8: Learning Activity
5.9: V Glossary

Thumbnail :A diagram of the forces on the brain in concussion. (CC BY 2.5; Patrick J. Lynch via Wikipedia)

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5.1: Head and Neck Assessment Introduction

Learning Objectives

- Perform a head and neck assessment, including the skull, face, nose, oral cavity, and neck
- Modify assessment techniques to reflect variations across the life span
- Recognize and report significant deviations from norms
- Document actions and observations

Inspection of a patient's head, neck, and oral cavity is part of the routine daily assessment performed by a registered nurse (RN) during inpatient care.[1] There are also several head and neck conditions that the RN may be the first to notice after a patient is admitted that require notification of the health care provider. Let's get started by reviewing the basic anatomy and physiology of the head and neck and common medical conditions.

1. Giddens, J. F. (2007). A survey of physical examination techniques performed by RNs: Lessons for nursing education. *Journal of Nursing Education, 46*(2), 83-87. doi.org/10.3928/01484834-20070201-09 ↵

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5.2: Head and Neck Basic Concepts

To perform and document an accurate assessment of the head and neck, it is important to understand basic anatomy and physiology.

Anatomy

Skull

The anterior skull consists of facial bones that provide the bony support for the eyes and structures of the face. This anterior view of the skull is dominated by the openings of the orbits, the nasal cavity, and the upper and lower jaws. See Figure 5.2.1[1] for an illustration of the skull. The **orbit** is the bony socket that houses the eyeball and the muscles that move the eyeball. Inside the nasal area of the skull, the nasal cavity is divided into halves by the **nasal septum** that consists of both bone and cartilage components. The **mandible** forms the lower jaw and is the only movable bone in the skull. The **maxilla** forms the upper jaw and supports the upper teeth.[2]

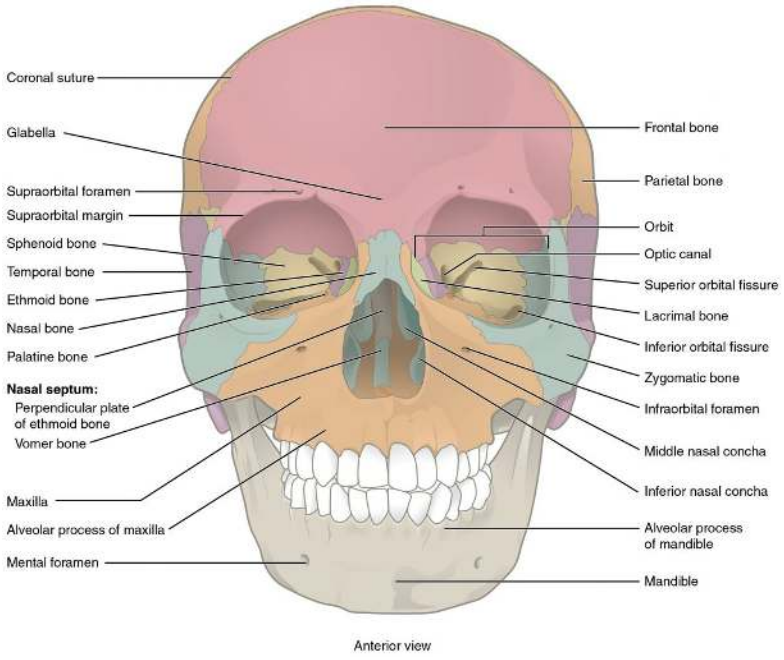


Figure 5.2.1: Skull

The **brain case** surrounds and protects the brain that occupies the cranial cavity. See Figure 5.2.2 [3] for an image of the brain within the cranial cavity. The brain case consists of eight bones, including the paired parietal and temporal bones plus the unpaired frontal, occipital, sphenoid, and ethmoid bones.[4]

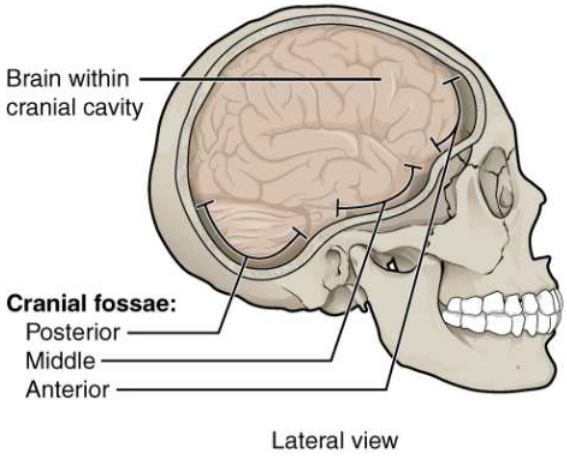


Figure 5.2.2: Cranial Cavity

A **suture** is an interlocking joint between adjacent bones of the skull and is filled with dense, fibrous connective tissue that unites the bones. In a newborn infant, the pressure from vaginal delivery compresses the head and causes the bony plates to overlap at the sutures, creating a small ridge. Over the next few days, the head expands, the overlapping disappears, and the edges of the bony plates meet edge to edge. This is the normal position for the remainder of the life span and the sutures become immobile.

See Figure 5.2.3[5] for an illustration of two of the sutures, the coronal and squamous sutures, on the lateral view of the head. The coronal suture is seen on the top of the skull. It runs from side to side across the skull and joins the frontal bone to the right and left parietal bones. The squamous suture is located on the lateral side of the skull. It unites the squamous portion of the temporal bone with the parietal bone. At the intersection of the coronal and squamous sutures is the pterion, a small, capital H-shaped suture line region that unites the frontal bone, parietal bone, temporal bone, and greater wing of the sphenoid bone. The pterion is an important clinical landmark because located immediately under it, inside the skull, is a major branch of an artery that supplies the brain. A strong blow to this region can fracture the bones around the pterion. If the underlying artery is damaged, bleeding can cause the formation of a collection of blood, called a **hematoma**, between the brain and interior of the skull, which can be life-threatening.[6]

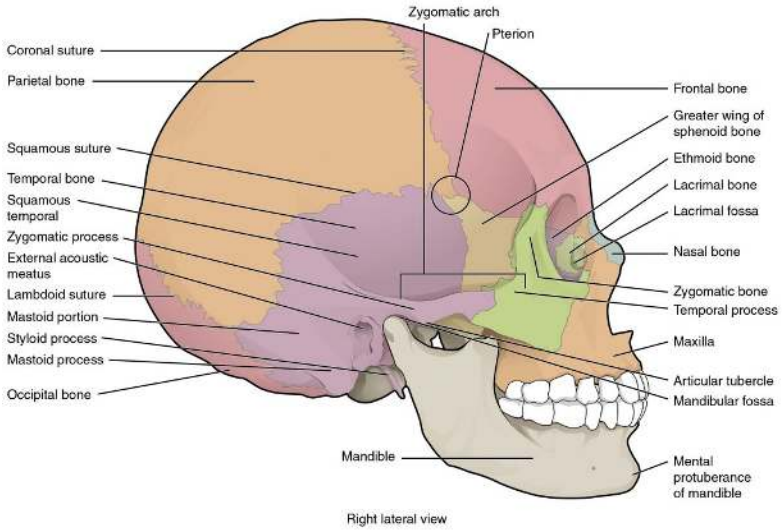


Figure 5.2.3: Coronal Sutures in Lateral View of Skull

Paranasal Sinuses

The paranasal sinuses are hollow, air-filled spaces located within the skull. See Figure 5.2.4[7] for an illustration of the sinuses. The sinuses connect with the nasal cavity and are lined with nasal mucosa. They reduce bone mass, lightening the skull, and also add resonance to the voice. When a person has a cold or sinus congestion, the mucosa swells and produces excess mucus that often obstructs the narrow passageways between the sinuses and the nasal cavity. The resulting pressure produces pain and discomfort.[8]

Each of the paranasal sinuses is named for the skull bone that it occupies. The frontal sinus is located just above the eyebrows within the frontal bone. The largest sinus, the maxillary sinus, is paired and located within the right and left maxillary bones just below the orbits. The maxillary sinuses are most commonly involved during sinus infections. The sphenoid sinus is a single, midline sinus located within the body of the sphenoid bone. The lateral aspects of the ethmoid bone contain multiple small spaces separated by very thin, bony walls. Each of these spaces is called an ethmoid air cell.

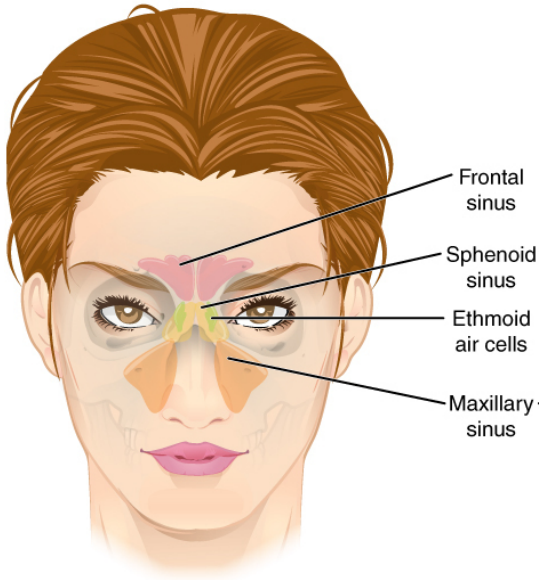


Figure 5.2.4: Sinuses

Anatomy of Nose, Pharynx, and Mouth

See Figure 5.2.5[9] to review the anatomy of the head and neck. The major entrance and exit for the respiratory system is through the nose. The bridge of the nose consists of bone, but the protruding portion of the nose is composed of cartilage. The **nares** are the nostril openings that open into the nasal cavity and are separated into left and right sections by the **nasal septum**. The floor of the nasal cavity is composed of the palate. The hard palate is located at the anterior region of the nasal cavity and is composed of bone. The soft palate is located at the posterior portion of the nasal cavity and consists of muscle tissue. The **uvula** is a small, teardrop-shaped structure located at the apex of the soft palate. Both the uvula and soft palate move like a pendulum during swallowing, swinging upward to close off the nasopharynx and prevent ingested materials from entering the nasal cavity.[10]

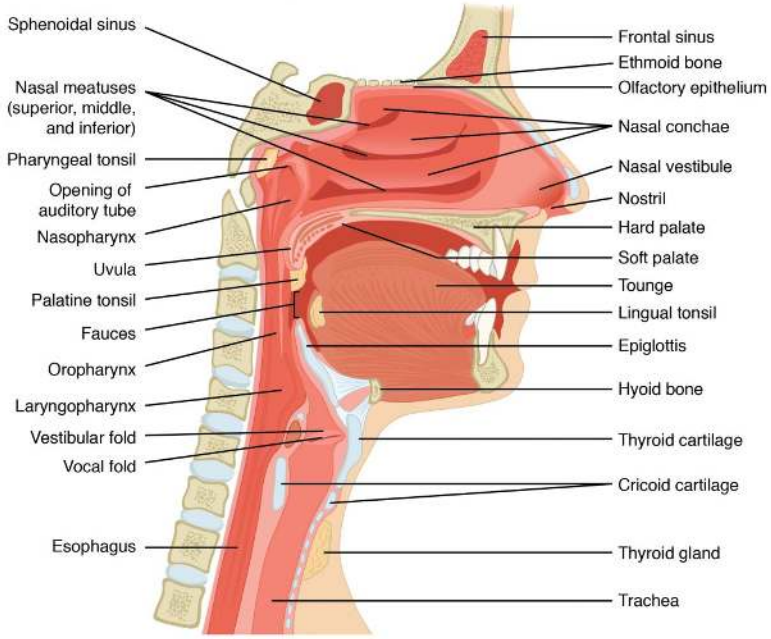
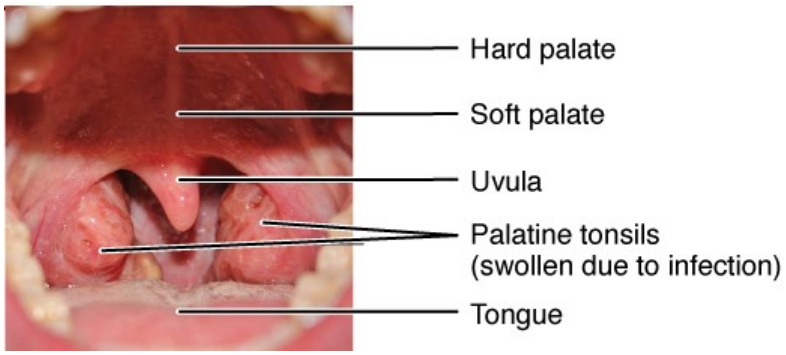


Figure 5.2.5: Anatomy of the Head and Neck

As air is inhaled through the nose, the paranasal sinuses warm and humidify the incoming air as it moves into the pharynx. The **pharynx** is a tube-lined mucous membrane that begins at the nasal cavity and is divided into three major regions: the nasopharynx, the oropharynx, and the laryngopharynx.[11]

The **nasopharynx** serves only as an airway. At the top of the nasopharynx is the pharyngeal tonsil, commonly referred to as the adenoids. Adenoids are lymphoid tissue that trap and destroy invading pathogens that enter during inhalation. They are large in children but tend to regress with age and may even disappear.[12]

The **oropharynx** is a passageway for both air and food. The oropharynx is bordered superiorly by the nasopharynx and anteriorly by the oral cavity. The oropharynx contains two sets of tonsils, the palatine and lingual tonsils. The palatine tonsil is located laterally in the oropharynx, and the lingual tonsil is located at the base of the tongue. Similar to the pharyngeal tonsil, the palatine and lingual tonsils are composed of lymphoid tissue and trap and destroy pathogens entering the body through the oral or nasal cavities. See Figure 5.2.6[13] for an image of the oral cavity and oropharynx with enlarged palatine tonsils.



5.2.6: Oral Cavity and Oropharynx

The **laryngopharynx** is inferior to the oropharynx and posterior to the larynx. It continues the route for ingested material and air until its inferior end where the digestive and respiratory systems diverge. Anteriorly, the laryngopharynx opens into the larynx and posteriorly, it enters the esophagus that leads to the stomach. The **larynx** connects the pharynx to the trachea and helps regulate the volume of air that enters and leaves the lungs. It also contains the vocal cords that vibrate as air passes over them to produce the sound of a person's voice. The **trachea** extends from the larynx to the lungs. The **epiglottis** is a flexible piece of cartilage that covers the opening of the trachea during swallowing to prevent ingested material from entering the trachea.[14]

Muscles and Nerves of the Head and Neck

Facial Muscles

Several nerves innervate the facial muscles to create facial expressions. See Figure 5.2.7[15] for an illustration of nerves innervating facial muscles. These nerves and muscles are tested during a cranial nerve exam. See more information about performing a cranial nerve exam in the "Neurological Assessment" chapter.

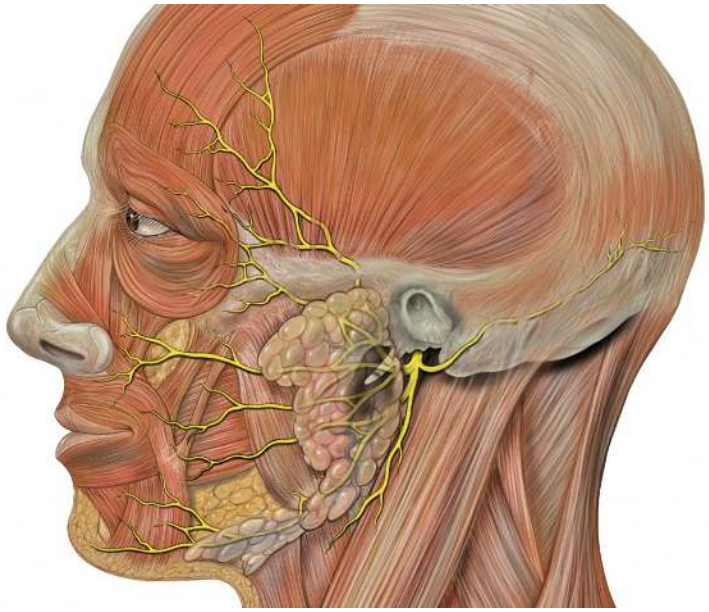


Figure 5.2.7: Nerve Branches Innervating Facial Muscles

When a patient is experiencing a cerebrovascular accident (i.e., stroke), it is common for facial drooping to occur. **Facial drooping** is an asymmetrical facial expression that occurs due to damage of the nerve innervating a specific part of the face. See Figure 5.2.8[16] for an image of facial drooping occurring on the patient's right side of their face.

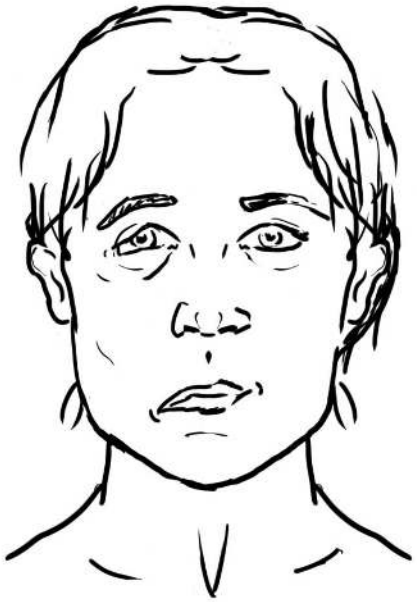


Figure 5.2.8 Facial Drooping

Neck Muscles

The muscles of the anterior neck assist in swallowing and speech by controlling the positions of the larynx and the hyoid bone, a horseshoe-shaped bone that functions as a solid foundation on which the tongue can move. The head, attached to the top of the vertebral column, is balanced, moved, and rotated by the neck muscles. When these muscles act unilaterally, the head rotates. When they contract bilaterally, the head flexes or extends. The major muscle that laterally flexes and rotates the head is the **sternocleidomastoid**. The **trapezius** muscle elevates the shoulders (shrugging), pulls the shoulder blades together, and tilts the head backwards. See Figure 5.2.9[17] for an illustration of the sternocleidomastoid and trapezius muscles.[18] Both of these muscles are tested during a cranial nerve assessment. See more information about cranial nerve assessment in the "Neurological Assessment" chapter.

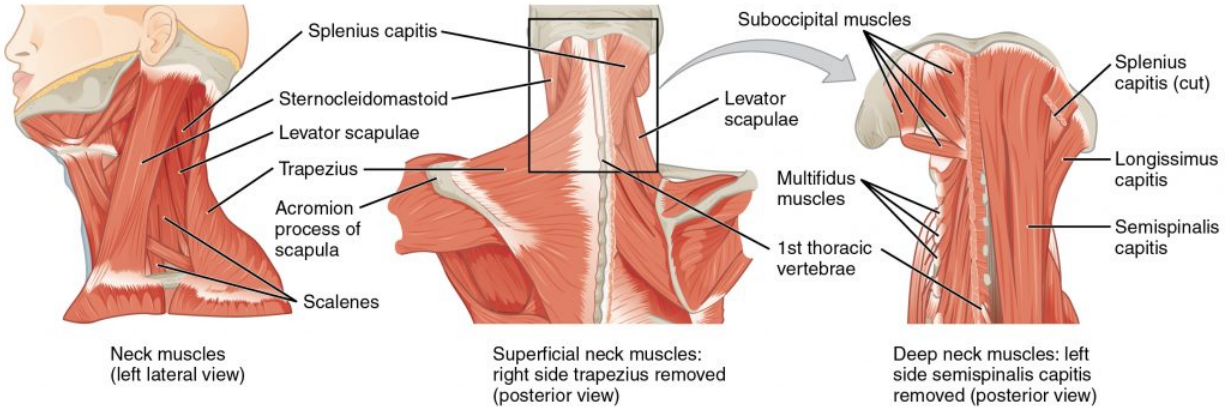


Figure 5.2.9 Neck Muscles

Jaw Muscles

The **masseter** muscle is the main muscle used for chewing because it elevates the mandible (lower jaw) to close the mouth. It is assisted by the temporalis muscle that retracts the mandible. The **temporalis** muscle can be felt moving by placing fingers on the patient's temple as they chew. See Figure 5.2.10[19] for an illustration of the masseter and temporalis muscles.[20]

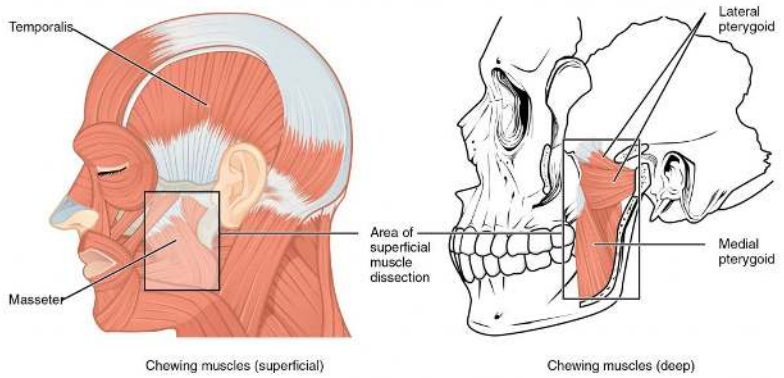


Figure 5.2.10: Masseter and Temporalis Muscles

Tongue Muscles

Muscles of the tongue are necessary for chewing, swallowing, and speech. Because it is so moveable, the tongue facilitates complex speech patterns and sounds.[21]

Airway and Unconsciousness

When a patient becomes unconscious and is lying supine, the tongue often moves backwards and blocks the airway. This is why it is important to open the airway when performing CPR by using a chin-thrust maneuver. See Figure 5.2.11[22] for an image of the tongue blocking the airway. In a similar manner, when a patient is administered general anesthesia during surgery, the tongue relaxes and can block the airway. For this reason, endotracheal intubation is performed during surgery with general anesthesia by placing a tube into the trachea to maintain an open airway to the lungs. After surgery, patients often report a sore or scratchy throat for a few days due to the endotracheal intubation.[23]



Figure 5.2.11: Airway Blocked by Tongue

Swallowing

Swallowing is a complex process that uses 50 pairs of muscles and many nerves to receive food in the mouth, prepare it, and move it from the mouth to the stomach. Swallowing occurs in three stages. During the first stage, called the oral phase, the tongue collects the food or liquid and makes it ready for swallowing. The tongue and jaw move solid food around in the mouth so it can be

chewed and made the right size and texture to swallow by mixing food with saliva. The second stage begins when the tongue pushes the food or liquid to the back of the mouth. This triggers a swallowing response that passes the food through the pharynx. During this phase, called the pharyngeal phase, the epiglottis closes off the larynx and breathing stops to prevent food or liquid from entering the airway and lungs. The third stage begins when food or liquid enters the esophagus and it is carried to the stomach. The passage through the esophagus, called the esophageal phase, usually occurs in about three seconds.[24]

View the following video from Medline Plus on the Swallowing Process:

Swallowing [25]

Dysphagia is the medical term for swallowing difficulties that occur when there is a problem with the nerves or structures involved in the swallowing process.[26] Nurses are often the first to notice signs of dysphagia in their patients that can occur due to a multitude of medical conditions such as a stroke, head injury, or dementia. For more information about the symptoms, screening, and treatment for dysphagia, go to the "Common Conditions of the Head and Neck" section.

Lymphatic System

The lymphatic system is the system of vessels, cells, and organs that carries excess interstitial fluid to the bloodstream and filters pathogens from the blood through **lymph nodes** found near the neck, armpits, chest, abdomen, and groin. See Figure 5.2.12[27] and Figure 5.2.13[28] for an illustration of the lymph nodes found in the head and neck regions. When a person is fighting off an infection, the lymph nodes in that region become enlarged, indicating an active immune response to infection.[29]

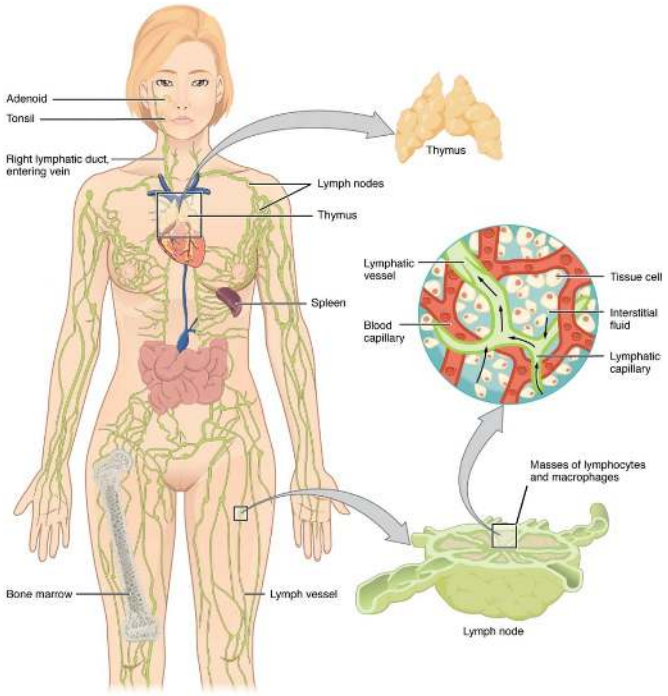


Figure 5.2.12: Lymphatic System

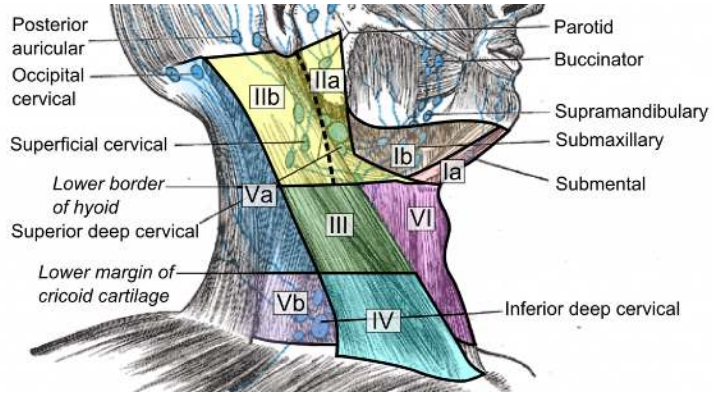


Figure 5.2.13: Lymph Nodes in Head and Neck

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24. National Institute on Deafness and Other Communication Disorders. (2017, March 6). *Dysphagia*. https://www.nidcd.nih.gov/health/dysphagia↵
25. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M. Inc.; c1997-2021. Swallowing; [Video]. [updated 2019, July 11]. https://medlineplus.gov/ency/anatomyvideos/000126.htm↵
26. National Institute on Deafness and Other Communication Disorders. (2017, March 6). *Dysphagia*.https://www.nidcd.nih.gov/health/dysphagia↵
27. "2201 Anatomy of the Lymphatic System.jpg" by OpenStax College is licensed under CC BY 3.0. Access for free at https://openstax.org/books/anatomy-and-physiology/pages/21-1-anatomy-of-the-lymphatic-and-immune-systems↵

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5.3: Common Conditions of the Head and Neck

Headache

A headache is a common type of pain that patients experience in everyday life and a major reason for missed time at work or school. Headaches range greatly in severity of pain and frequency of occurrence. For example, some patients experience mild headaches once or twice a year, whereas others experience disabling migraine headaches more than 15 days a month. Severe headaches such as migraines may be accompanied by symptoms of nausea or increased sensitivity to noise or light. Primary headaches occur independently and are not caused by another medical condition. Migraine, cluster, and tension-type headaches are types of primary headaches. Secondary headaches are symptoms of another health disorder that causes pain-sensitive nerve endings to be pressed on or pulled out of place. They may result from underlying conditions including fever, infection, medication overuse, stress or emotional conflict, high blood pressure, psychiatric disorders, head injury or trauma, stroke, tumors, and nerve disorders such as trigeminal neuralgia, a chronic pain condition that typically affects the trigeminal nerve on one side of the cheek.[1]

Not all headaches require medical attention, but some types of headaches can signify a serious disorder and require prompt medical care. Symptoms of headaches that require immediate medical attention include a sudden, severe headache unlike any the patient has ever had; a sudden headache associated with a stiff neck; a headache associated with convulsions, confusion, or loss of consciousness; a headache following a blow to the head; or a persistent headache in a person who was previously headache free.[2]

Concussion

A **concussion** is a type of traumatic brain injury caused by a blow to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. This sudden movement causes the brain to bounce around in the skull, creating chemical changes in the brain and sometimes damaging brain cells.[3] See Figure 5.3.1[4] for an illustration of a concussion.

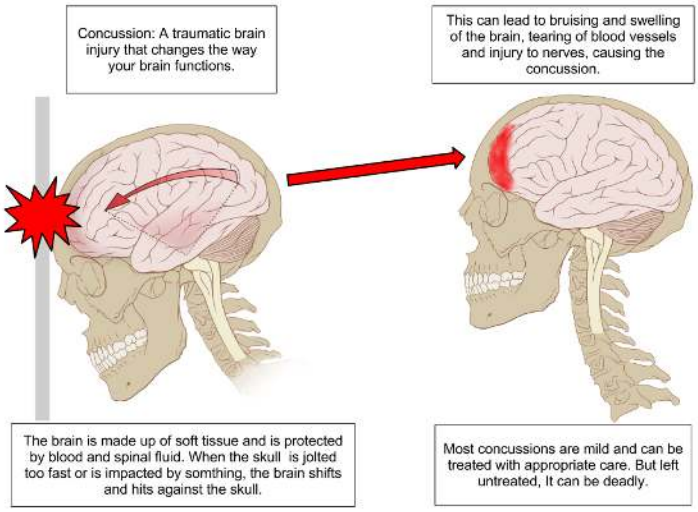


Figure 5.3.1: Concussion

Video Review of Concussions[5]



A person who has experienced a concussion may report the following symptoms:

- Headache or “pressure” in head
- Nausea or vomiting
- Balance problems or dizziness or double or blurry vision
- Light or noise sensitivity
- Feeling sluggish, hazy, foggy, or groggy
- Confusion, concentration, or memory problems
- Just not “feeling right” or “feeling down”[6]

The following signs may be observed in someone who has experienced a concussion:

- Can’t recall events prior to or after a hit or fall
- Appears dazed or stunned
- Forgets an instruction, is confused about an assignment or position, or is unsure of the game, score, or opponent
- Moves clumsily
- Answers questions slowly
- Loses consciousness (even briefly)
- Shows mood, behavior, or personality changes[7]

Anyone suspected of experiencing a concussion should immediately be seen by a health care provider or go to the emergency department for further testing.

Read more about concussions at the following CDC webpage: Concussion Signs and Symptoms

Head Injury

Head and traumatic brain injuries are major causes of immediate death and disability. Falls are the most common cause of head injuries in young children (ages 0–4 years), adolescents (15–19 years), and the elderly (over 65 years). Strong blows to the brain case of the skull can produce fractures resulting in bleeding inside the skull. A blow to the lateral side of the head may fracture the bones of the pterion. If the underlying artery is damaged, bleeding can cause the formation of a hematoma (collection of blood) between the brain and interior of the skull. As blood accumulates, it will put pressure on the brain. Symptoms associated with a hematoma may not be apparent immediately following the injury, but if untreated, blood accumulation will continue to exert increasing pressure on the brain and can result in death within a few hours.[8]

See Figure 5.3.2[9] for an image of an epidural hematoma indicated by a red arrow associated with a skull fracture.

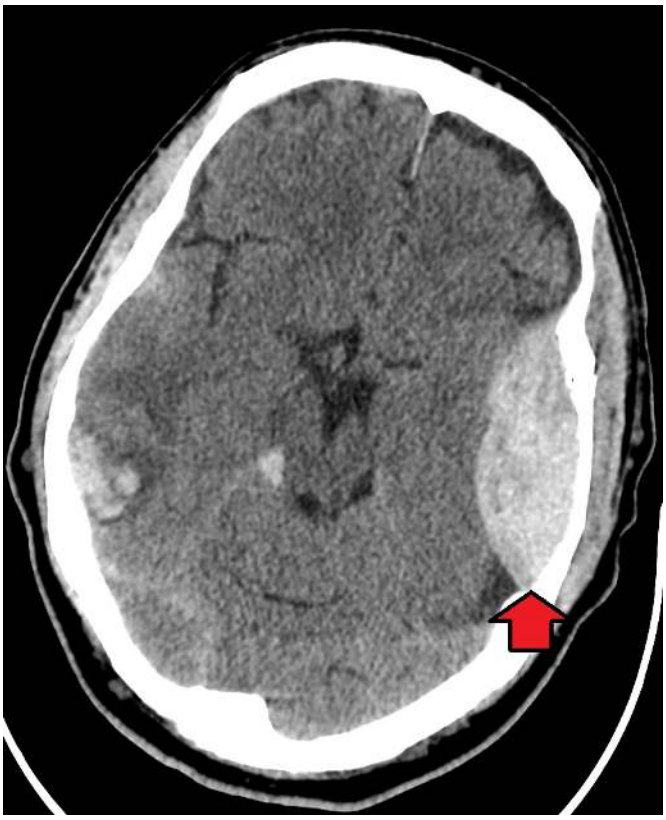


Figure 5.3.2 Skull Fracture and Hematoma

Sinusitis

Sinusitis is the medical diagnosis for inflamed sinuses that can be caused by a viral or bacterial infection. When the nasal membranes become swollen, the drainage of mucous is blocked and causes pain.

There are several types of sinusitis, including these types:

- Acute Sinusitis: Infection lasting up to 4 weeks
- Chronic Sinusitis: Infection lasting more than 12 weeks
- Recurrent Sinusitis: Several episodes of sinusitis within a year

Symptoms of sinusitis can include fever, weakness, fatigue, cough, and congestion. There may also be mucus drainage in the back of the throat, called postnasal drip. Health care providers diagnose sinusitis based on symptoms and an examination of the nose and face. Treatments include antibiotics, decongestants, and pain relievers.[10]

Pharyngitis

Pharyngitis is the medical term used for infection and/or inflammation in the back of the throat (pharynx). Common causes of pharyngitis are the cold viruses, influenza, strep throat caused by group A *streptococcus*, and mononucleosis. Strep throat typically causes white patches on the tonsils with a fever and enlarged lymph nodes. It must be treated with antibiotics to prevent potential complications in the heart and kidneys. See Figure 5.3.3[11] for an image of strep throat in a child.



Figure 5.3.3: Strep Throat

If not diagnosed as strep throat, most cases of pharyngitis are caused by viruses, and the treatment is aimed at managing the symptoms. Nurses can teach patients the following ways to decrease the discomfort of a sore throat:

- Drink soothing liquids such as lemon tea with honey or ice water.
- Gargle several times a day with warm salt water made of 1/2 tsp. of salt in 1 cup of water.
- Suck on hard candies or throat lozenges.
- Use a cool-mist vaporizer or humidifier to moisten the air.
- Try over-the-counter pain medicines, such as acetaminophen.[12]

Epistaxis

Epistaxis, the medical term for a nose bleed, is a common problem affecting up to 60 million Americans each year. Although most cases of epistaxis are minor and manageable with conservative measures, severe cases can become life-threatening if the bleeding cannot be stopped.[13] See Figure 5.3.4[14] for an image of a severe case of epistaxis.



Figure 5.3.4: Serious Epistaxis

The most common cause of epistaxis is dry nasal membranes in winter months due to low temperatures and low humidity. Other common causes are picking inside the nose with fingers, trauma, anatomical deformity, high blood pressure, and clotting disorders. Medications associated with epistaxis are aspirin, clopidogrel, nonsteroidal anti-inflammatory drugs, and anticoagulants.[15]

To treat a nose bleed, have the victim lean forward at the waist and pinch the lateral sides of the nose with the thumb and index finger for up to 15 minutes while breathing through the mouth.[16] Continued bleeding despite this intervention requires urgent medical intervention such as nasal packing.

Cleft Lip and Palate

During embryonic development, the right and left maxilla bones come together at the midline to form the upper jaw. At the same time, the muscle and skin overlying these bones join together to form the upper lip. Inside the mouth, the palatine processes of the maxilla bones, along with the horizontal plates of the right and left palatine bones, join together to form the hard palate. If an error occurs in these developmental processes, a birth defect of cleft lip or cleft palate may result.

Cleft lip is a common developmental defect that affects approximately 1:1,000 births, most of which are male. This defect involves a partial or complete failure of the right and left portions of the upper lip to fuse together, leaving a cleft (gap). See Figure 5.5.3.5[17] for an image of an infant with a cleft lip.



Figure 5.3.5 Cleft Lip

A more severe developmental defect is a cleft palate that affects the hard palate, the bony structure that separates the nasal cavity from the oral cavity. See Figure 5.3.6[18] for an illustration of a cleft palate. **Cleft palate** affects approximately 1:2,500 births and is more common in females. It results from a failure of the two halves of the hard palate to completely come together and fuse at the midline, thus leaving a gap between the nasal and oral cavities. In severe cases, the bony gap continues into the anterior upper jaw where the alveolar processes of the maxilla bones also do not properly join together above the front teeth. If this occurs, a cleft lip will also be seen. Because of the communication between the oral and nasal cavities, a cleft palate makes it very difficult for an infant to generate the suckling needed for nursing, thus creating risk for malnutrition. Surgical repair is required to correct a cleft palate.[19]

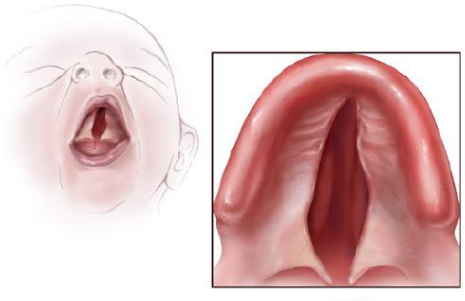


Figure 5.3.6 Cleft Palate

Poor Oral Health

Despite major improvements in oral health for the population as a whole, oral health disparities continue to exist for many racial, ethnic, and socioeconomic groups in the United States. Healthy People 2020, a nationwide initiative geared to improve the health of Americans, identified improved oral health as a health care goal. A growing body of evidence has also shown that periodontal disease is associated with negative systemic health consequences. Periodontal diseases are infections and inflammation of the gums and bone that surround and support the teeth. Red, swollen, and bleeding gums are signs of periodontal disease. Other symptoms of periodontal disease include bad breath, loose teeth, and painful chewing.[20] In 2020, the Centers for Disease Control and Prevention (CDC) reported that 42% of U.S. adults have some form of periodontitis, and almost 60% of adults aged 65 and older have periodontitis. See Figure 5.3.7[21] for an image of a patient with periodontal disease. Nurses may encounter patients who complain of bleeding gums, or they may discover other signs of periodontal disease during a physical assessment.



Figure 5.3.7 Periodontal Disease

Because many Americans lack access to oral care, it is important for nurses to perform routine oral assessment and identify needs for follow-up. If signs and/or symptoms indicate potential periodontal disease, the patient should be referred to a dental health professional for a more thorough evaluation.[22]

Thrush/Candidiasis

Candidiasis is a fungal infection caused by *Candida*. *Candida* normally lives on the skin and inside the body without causing any problems, but it can multiply and cause an infection if the environment inside the mouth, throat, or esophagus changes in a way that encourages fungal growth.[23] See Figure 5.5.3.8[24] for an image of candidiasis.



Figure 5.3.8: Candidiasis

Candidiasis in the mouth and throat can have many symptoms, including the following:

- White patches on the inner cheeks, tongue, roof of the mouth, and throat
- Redness or soreness
- Cotton-like feeling in the mouth
- Loss of taste
- Pain while eating or swallowing
- Cracking and redness at the corners of the mouth[25]

Candidiasis in the mouth or throat is common in babies but is uncommon in healthy adults. Risk factors for getting candidiasis as an adult include the following:

- Wearing dentures
- Diabetes
- Cancer
- HIV/AIDS
- Taking antibiotics or corticosteroids including inhaled corticosteroids for conditions like asthma
- Taking medications that cause dry mouth or have medical conditions that cause dry mouth

- Smoking

The treatment for mild to moderate cases of candidiasis infections in the mouth or throat is typically an antifungal medicine applied to the inside of the mouth for 7 to 14 days, such as clotrimazole, miconazole, or nystatin.

"Meth Mouth"

The use of methamphetamine (i.e., meth), a strong stimulant drug, has become an alarming public health issue in the United States. A common sign of meth abuse is extreme tooth and gum decay often referred to as "Meth Mouth." See Figure 5.3.9[26] for an image of Meth Mouth.



Figure 5.3.9 Meth Mouth

Signs of Meth Mouth include the following:

- Dry Mouth. Methamphetamines dry out the salivary glands, and the acid content in the mouth will start to destroy the enamel on the teeth. Eventually this will lead to cavities.
- Cracked Teeth. Methamphetamine can make the user feel anxious, hyper, or nervous, so they clench or grind their teeth. You may see severe wear patterns on their teeth.
- Tooth Decay. Meth users crave beverages high in sugar while they are "high." The bacteria that feed on the sugars in the mouth will secrete acid, which can lead to more tooth destruction. With meth users, tooth decay will start at the gum line and eventually spread throughout the tooth. The front teeth are usually destroyed first.
- Gum Disease. Methamphetamine users do not seek out regular dental treatment. Lack of oral health care can contribute to periodontal disease. Methamphetamines also cause the blood vessels that supply the oral tissues to shrink in size, reducing blood flow, causing the tissues to break down.
- Lesions. Users who smoke meth present with lesions and/or burns on their lips or gingival inside the cheeks or on the hard palate. Users who snort may present burns in the back of their throats.[27]

Nurses who notice possible signs of Meth Mouth should report their concerns to the health care provider, not only for a referral for dental care, but also for treatment of suspected substance abuse.

Dysphagia

Dysphagia is the medical term for difficulty swallowing that can be caused by many medical conditions. Nurses are often the first health care professionals to notice a patient's difficulty swallowing as they administer medications or monitor food intake. Early identification of dysphagia, especially after a patient has experienced a cerebrovascular accident (i.e., stroke) or other head injury, helps to prevent aspiration pneumonia.[28] **Aspiration pneumonia** is a type of lung infection caused by material from the stomach or mouth entering the lungs and can be life-threatening.

Signs of dysphagia include the following:

- Coughing during or right after eating or drinking
- Wet or gurgly sounding voice during or after eating or drinking
- Extra effort or time required to chew or swallow
- Food or liquid leaking from mouth

- Food getting stuck in the mouth
- Difficulty breathing after meals[29]

The Barnes-Jewish Hospital-Stroke Dysphagia Screen (BJH-SDS) is an example of a simple, evidence-based bedside screening tool that can be used by nursing staff to efficiently identify swallowing impairments in patients who have experienced a stroke. See internet resource below for an image of the dysphagia screening tool. The result of the screening test is recorded as a "fail" if any of the five items tested are abnormal (Glasgow Coma Scale < 13, facial/tongue/palatal asymmetry or weakness, or signs of aspiration on the 3-ounce water test) or "pass" if all five items tested were normal. Patients with a failed screening result are placed on nothing-by-mouth (NPO) status until further evaluation is completed by a speech therapist. For more information about using the Glasgow Coma Scale, see the "Assessing Mental Status" subsection in the "Neurological Assessment" chapter.

View a PDF sample of a Nursing Bedside Swallow Screen.

Enlarged Lymph Nodes

Lymphadenopathy is the medical term for swollen lymph nodes. In a child, a node is considered enlarged if it is more than 1 centimeter (0.4 inch) wide. See Figure 5.3.10[30] for an image of an enlarged cervical lymph node.



Figure 5.3.10: Enlarged Cervical Lymph Node

Common infections such as a cold, pharyngitis, sinusitis, mononucleosis, strep throat, ear infection, or infected tooth often cause swollen lymph nodes. However, swollen lymph nodes can also signify more serious conditions. Notify the health care provider if the patient's lymph nodes have the following characteristics:

- Do not decrease in size after several weeks or continue to get larger
- Are red and tender
- Feel hard, irregular, or fixed in place
- Are associated with night sweats or unexplained weight loss
- Are larger than 1 centimeter in diameter

The health care provider may order blood tests, a chest X-ray, or a biopsy of the lymph node if these signs occur. [31]

Thyroid

The thyroid is a butterfly-shaped gland located at the front of the neck that controls many of the body's important functions. The thyroid gland makes hormones that affect breathing, heart rate, digestion, and body temperature. If the thyroid makes too much or not enough thyroid hormone, many body systems are affected. In hypothyroidism, the thyroid gland doesn't produce enough hormone and many body functions slow down. When the thyroid makes too much hormone, a condition called hyperthyroidism, many body systems speed up.[32]

A **goiter** is an abnormal enlargement of the thyroid gland that can occur with hypothyroidism or hyperthyroidism. If you find a goiter when assessing a patient's neck, notify the health care provider for additional testing and treatment. See Figure 5.3.11[33] for an image of a goiter.



Figure 5.3.11: Goiter

1. National Institute of Neurological Disorders and Stroke. (2019, December 31). *Headache information page*. https://www.ninds.nih.gov/Disorders/All-Disorders/Headache-Information-Page↵
2. National Institute of Neurological Disorders and Stroke. (2019, December 31). *Headache information page*. https://www.ninds.nih.gov/Disorders/All-Disorders/Headache-Information-Page↵
3. Centers for Disease Control and Prevention. (2019, February 12). *Concussion signs and symptoms*. https://www.cdc.gov/headsup/basics/concussion_symptoms.html↵
4. "Concussion Anatomy.png" by Max Andrews is licensed under CC BY-SA 3.0↵
5. Centers for Disease Control and Prevention. (2013, October 24). *What is a concussion?* [Video]. YouTube. All rights reserved. https://youtu.be/Sno_0Jd8GuA↵
6. Centers for Disease Control and Prevention. (2019, February 12). *Concussion signs and symptoms*. https://www.cdc.gov/headsup/basics/concussion_symptoms.html↵
7. Centers for Disease Control and Prevention. (2019, February 12). *Concussion signs and symptoms*. https://www.cdc.gov/headsup/basics/concussion_symptoms.html↵
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9. "EpiduralHeatoma.jpg" by James Heilman, MD is licensed under CC BY-SA 4.0↵
10. MedlinePlus [Internet]. Bethesda (MD): National Library of Medicine (US); [updated 2020, Aug 17]. Sinusitis; [updated 2020, Jun 10; reviewed 2016, Oct 26]; [cited 2020, Sep 4]; https://medlineplus.gov/sinusitis.html↵
11. "Strep throat2010.JPG" by James Heilman, MD is licensed under CC BY-SA 3.0↵
12. Centers for Disease Control and Prevention. (2020, May 1). *Disparities in oral health*. https://www.cdc.gov/OralHealth/oral_health_disparities/↵
13. Fatakia, A., Winters, R., & Amedee, R. G. (2010). Epistaxis: A common problem. *The Ochsner Journal, 10*(3), 176–178. www.ncbi.nlm.nih.gov/pmc/articles/PMC3096213/↵
14. "Epstaxis1.jpg" by Welleschik is licensed under CC BY-SA 3.0↵
15. Fatakia, A., Winters, R., & Amedee, R. G. (2010). Epistaxis: A common problem. *The Ochsner Journal, 10*(3), 176–178. www.ncbi.nlm.nih.gov/pmc/articles/PMC3096213/↵
16. American Heart Association. (2000). Part 5: New guidelines for first aid. *Circulation, 102(*supplement 1). https://www.ahajournals.org/doi/10.1161/circ.102.suppl_1.I-77↵
17. "Cleftlipandpalate.JPG" by James Heilman, MD is licensed under CC BY-SA 3.0↵
18. "Cleft palate.jpg" by Centers for Disease Control and Prevention is licensed under CC0 1.0↵
19. This work is a derivative of Anatomy & Physiology by OpenStax and is licensed under CC BY 4.0. Access for free at https://openstax.org/books/anatomy-and-physiology/pages/1-introduction↵
20. Bencosme, J. (2018). Periodontal disease: What nurses need to know. *Nursing, 48*(7), 22-27. doi.org/10.1097/01.nurse.0000534088.56615.e4↵
21. "Periodontal Disease.png" by Warren Schnider is licensed under CC BY-SA 4.0↵
22. Bencosme, J. (2018). Periodontal disease: What nurses need to know. *Nursing, 48*(7), 22-27. doi.org/10.1097/01.nurse.0000534088.56615.e4.↵
23. Centers for Disease Control and Prevention. (2020, June 15). *Candida infections of the mouth, throat, and esophagus*. https://www.cdc.gov/fungal/diseases/candidiasis/thrush/index.html↵
24. "Human tongue infected with oral candidiasis.jpg" by James Heilman, MD is licensed under CC BY-SA 3.0↵

25. Centers for Disease Control and Prevention. (2020, June 15). *Candida infections of the mouth, throat, and esophagus*. https://www.cdc.gov/fungal/diseases/candidiasis/thrush/index.html↵
26. "Suspectedmethmouth09-19-05closeup.jpg" by Dozenist is licensed under CC BY-SA 3.0↵
27. Maine Center for Disease Control and Prevention. (n.d.). *Meth mouth*. https://www.maine.gov/dhhs/mecdc/population-health/odh/documents/meth-mouth.pdf↵
28. Edmiaston, J., Connor, L. T., Steger-May, K., & Ford, A. L. (2014). A simple bedside stroke dysphagia screen, validated against videofluoroscopy, detects dysphagia and aspiration with high sensitivity. *Journal of Stroke and Cerebrovascular Diseases: The Official Journal of National Stroke Association*, *23*(4), 712–716. https://doi.org/10.1016/j.jstrokecerebrovasdis.2013.06.030↵
29. American Speech-Language-Hearing Association. (n.d.). *Swallowing disorders in adults.*https://www.asha.org/public/speech/swallowing/Swallowing-Disorders-in-Adults/↵
30. "Cervical lymphadenopathy right neck.png" by Coronation Dental Specialty Group is licensed under CC BY-SA 4.0↵
31. A.D.A.M. Medical Encyclopedia [Internet]. Johns Creek (GA): Ebix, Inc., A.D.A.M.; c1997-2020. Swollen lymph nodes; [updated 2020, Aug 25; cited 2020, Sep 4]; https://medlineplus.gov/ency/article/003097.htm↵
32. National Institutes of Health. (2015). *Thinking about your thyroid*. https://newsinhealth.nih.gov/2015/09/thinking-about-your-thyroid↵
33. "Struma 00a.jpg" by Drahreg01 is licensed under CC BY-SA 3.0↵

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5.4: Head and Neck Assessment

Subjective Assessment

Begin the head and neck assessment by asking focused interview questions to determine if the patient is currently experiencing any symptoms or has a previous medical history related to head and neck issues.

Table 5.4.1 Interview Questions for Subjective Assessment of the Head and Neck

Interview Questions	Follow-up
Have you ever been diagnosed with a medical condition related to your head such as headaches, a concussion, a stroke, or a head injury?	Please describe.
Have you ever been diagnosed with a medical condition related to your neck such a thyroid or swallowing issue?	Please describe.
Are you currently taking any medications, herbs, or supplements for headaches or for your thyroid?	Please describe.
Have you had any symptoms such as headaches, nosebleeds, nasal drainage, sinus pressure, sore throat, or swollen lymph nodes?	If yes, use the OLD CART and ICE method to gather additional information regarding each symptom.
Specific oral assessment questions:[1] • Are you having any pain, bleeding, or other problems with your teeth or gums? • Do you have any loose or sensitive teeth? • Do you experience bleeding after brushing or flossing your teeth? • Are you wearing dentures? Do they fit properly? • Are you experiencing bad breath that won't go away? • Have your eating patterns changed due to mouth pain or discomfort with chewing?	

Life Span Considerations

Infants and Children

For infants, observe head control and muscle strength. Palpate the skull and fontanelles for smoothness. Ask the parents or guardians if the child has had frequent throat infections or a history of cleft lip or cleft palate. Observe head shape, size, and symmetry.

Older Adults

Ask older adults if they have experienced any difficulties swallowing or chewing. Document if dentures are present. Muscle atrophy and loss of fat often cause neck shortening. Fat accumulation in the back of the neck causes a condition referred to as "Dowager's hump."

Objective Assessment

Use any information obtained during the subjective interview to guide your physical assessment.

Inspection

- Begin by inspecting the head for skin color and symmetry of facial movements, noting any drooping. If drooping is noted, ask the patient to smile, frown, and raise their eyebrows and observe for symmetrical movement. Note the presence of previous injuries or deformities.
- Inspect the nose for patency and note any nasal drainage.
- Inspect the oral cavity and ask the patient to open their mouth and say "Ah." Inspect the patient's mouth using a good light.
    - Note oral health of the teeth and gums.

        - If the patient wears dentures, remove them so you can assess the underlying mucosa.
        - Assess the oral mucosa for color and the presence of any abnormalities.
        - Note the color of the gums, which are normally pink. Inspect the gum margins for swelling, bleeding, or ulceration.
        - Inspect the teeth and note any missing, discolored, misshapen, or abnormally positioned teeth. Assess for loose teeth with a gloved thumb and index finger, and document halitosis (bad breath) if present.[2]
    - Assess the tongue. It should be midline and with no sores or coatings present.
    - Assess the uvula. It should be midline and should rise symmetrically when the patient says “Ah.”
    - Is the patient able to swallow their own secretions? If the patient has had a recent stroke or you have any concerns about their ability to swallow, perform a brief bedside swallow study according to agency policy before administering any food, fluids, or medication by mouth.
- Inspect the neck. The trachea should be midline, and there should not be any noticeable enlargement of lymph nodes or the thyroid gland.
- Note the patient’s speech. They should be able to speak clearly with no slurring or garbled words.

If any neurological concerns are present, a cranial nerve assessment may be performed. Read more about a cranial nerve assessment in the “Neurological Assessment” chapter.

Auscultation

Auscultation is not typically performed by registered nurses during a routine neck assessment. However, advanced practice nurses and other health care providers may auscultate the carotid arteries for the presence of a swishing sound called a bruit.

Palpation

Palpate the neck for masses and tenderness. Lymph nodes, if palpable, should be round and movable and should not be enlarged or tender. See the figure illustrating the location of lymph nodes in the head and neck in the “Head and Neck Basic Concepts” section earlier in this chapter. Advanced practice nurses and other health care providers palpate the thyroid for enlargement, further evaluate lymph nodes, and assess the presence of any masses.

See Table 5.4.2 for a comparison of expected versus unexpected findings when assessing the head and neck.

Table 5.4.2 Expected Versus Unexpected Findings on Adult Assessment of the Head and Neck

Assessment	Expected Findings	Unexpected Findings (to document and notify provider if new finding*)
Inspection	Skin tone is appropriate for ethnicity, and skin is dry. Facial movements are symmetrical. Nares are patent and no drainage is present. Uvula and tongue are midline. Teeth and gums are in good condition. Patient is able to swallow their own secretions. Trachea is midline. If dentures are present, there is a good fit, and the patient is able to appropriately chew food.	Skin is pale, cyanotic, or diaphoretic (inappropriately perspiring). New asymmetrical facial expressions or drooping is present. Nares are occluded or nasal drainage is present. Uvula and/or tongue is deviated to one side. White coating or lesions on the tongue or buccal membranes (inner cheeks) are present. Teeth are missing or decay is present that impacts the patient’s ability to chew. After swallowing, the patient coughs, drools, chokes, or speaks in a gurgly/wet voice. Trachea is deviated to one side. Dentures have poor fit and/or the patient is unable to chew food contained in a routine diet.

Palpation	No unusual findings regarding lymph nodes is present.	Cervical lymph nodes are enlarged, tender, or nonmovable. Report any concerns about lymph nodes to the health care provider.
***CRITICAL CONDITIONS to report immediately**		New asymmetry of facial expressions, tracheal deviation to one side, slurred or garbled speech, signs of impaired swallowing, coughing during or after swallowing, or a “wet” voice after swallowing.

1. Bencosme, J. (2018). Periodontal disease: What nurses need to know. *Nursing*, *48*(7), 22-27. doi.org/10.1097/01.nurse.0000534088.56615.e4↵
2. Bencosme, J. (2018). Periodontal disease: What nurses need to know. *Nursing*, *48*(7), 22-27. https://doi.org/10.1097/01.nurse.0000534088.56615.e4↵

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5.5: Sample Documentation

Sample Documentation of Expected Findings

The patient's skin tone is appropriate for ethnicity and they are not diaphoretic. Facial movements are symmetrical. Nares are patent and no drainage is present. Uvula and tongue are midline. No dental caries and gums are pink, moist, without bleeding. Patient is able to swallow without difficulty. Trachea is midline. There is no enlargement of the lymph nodes.

Sample Documentation of Unexpected Findings

The patient has a history of asthma and uses a fluticasone inhaler daily. White patches are present on the tongue and inner buccal membranes. Dr. Smith was notified at 1530 and a new order for nystatin medication was received and administered. Patient was instructed to rinse their mouth after every use of fluticasone to prevent thrush from recurring.

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5.6: Checklist for Head and Neck Assessment

Use the checklist below to review the steps for completion of a “Head and Neck Assessment.”

Steps

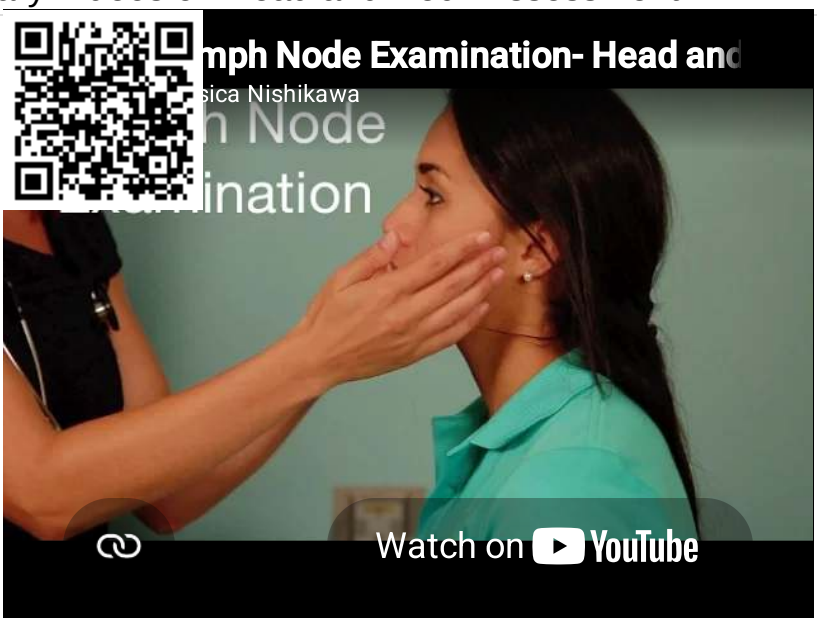
Disclaimer: Always review and follow agency policy regarding this specific skill.

1. Gather supplies: penlight, tongue blade, and nonsterile gloves.
2. Perform safety steps:
    - Perform hand hygiene.
    - Check the room for transmission-based precautions.
    - Introduce yourself, your role, the purpose of your visit, and an estimate of the time it will take.
    - Confirm patient ID using two patient identifiers (e.g., name and date of birth).
    - Explain the process to the patient and ask if they have any questions.
    - Be organized and systematic.
    - Use appropriate listening and questioning skills.
    - Listen and attend to patient cues.
    - Ensure the patient’s privacy and dignity.
    - Assess ABCs.
3. Inspect the head and facial expressions for symmetrical movement.
4. Inspect the nose with a penlight for drainage and occlusion.
5. Inspect the oral cavity for lesions, tongue position, movement of uvula, and oral health using a penlight.
6. Inspect the throat and note any enlargement of the tonsils.
7. Palpate the lymph nodes of the head and neck, including submaxillary, anterior cervical, posterior cervical, and preauricular.
8. Ask the patient to swallow their own saliva and note any signs of difficulty swallowing.
9. Assist the patient to a comfortable position, ask if they have any questions, and thank them for their time.
10. Ensure five safety measures when leaving the room:
    - CALL LIGHT: Within reach
    - BED: Low and locked (in lowest position and brakes on)
    - SIDE RAILS: Secured
    - TABLE: Within reach
    - ROOM: Risk-free for falls (scan room and clear any obstacles)
11. Perform hand hygiene.
12. Document the assessment findings and report any concerns according to agency policy.

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5.7: Supplementary Videos on Head and Neck Assessment



Assessment of lymph nodes. https://www.youtube.com/watch?v=SZkIq6P-0UQ

Video Review of Head and Neck Assessment[1]



A YouTube element has been excluded from this version of the text. You can view it online here: https://wtcs.pressbooks.pub/nursingskills/?p=1296

1. RegisteredNurseRN. (2017, November 27). *Head and neck assessment nursing | Head to toe assessment of head neck ENT lymphatic cranial nerves.* [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/MkqCjH-BlMo↵

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5.8: Learning Activity

Learning Activity

1. You are working as a triage nurse in a primary care clinic. You just received a phone call from a young woman who is complaining of significant discomfort related to newly diagnosed strep throat. **What instructions can you provide to her to aid in symptom management in order to alleviate discomfort?**

2. You are assessing a patient's head and neck and note the following findings. **Which should be reported to the health care provider?**

a. Tongue is midline
b. White patches noted on both tonsils
c. Uvula raises when patient says "Ahhh"
d. Speech is slurred
e. Thyroid enlarged

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5.9: V Glossary

Aspiration pneumonia: A type of lung infection caused by material from the stomach or mouth inadvertently entering the lungs that can be life-threatening.

Brain case: Eight bones that protect the brain in the cranial cavity.

Candidiasis: A fungal infection often referred to as “thrush” when it occurs in the oral cavity in children.

Cleft lip: A birth defect caused by a partial or complete failure of the right and left portions of the upper lip to fuse together, leaving a gap in the lip.

Cleft palate: A birth defect caused when two halves of the hard palate fail to completely come together and fuse at the midline, leaving a gap between them, and making it very difficult for an infant to generate the suckling needed for nursing.

Concussion: A type of traumatic brain injury caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and damaging brain cells.

Dysphagia: Difficulty swallowing.

Epiglottis: A flexible piece of cartilage that covers the opening of the trachea during swallowing to prevent ingested material from entering the trachea.

Epistaxis: Nosebleed.

Facial drooping: An asymmetrical facial expression that occurs due to damage of the nerve innervating a particular part of the face.

Goiter: An abnormal enlargement of the thyroid gland that can occur with hypothyroidism or hyperthyroidism.

Hematoma: Collection of blood.

Laryngopharynx: The portion of the pharynx inferior to the oropharynx and posterior to the larynx that is a passageway for ingested material and air until its inferior end where the digestive and respiratory systems diverge into the esophagus and the larynx.

Larynx: The structure connecting the pharynx to the trachea that helps regulate the volume of air that enters and leaves the lungs and contains the vocal cords.

Lymphadenopathy: Enlarged lymph nodes.

Lymph nodes: Structures in the lymphatic system that filter pathogens.

Mandible: Lower jaw bone.

Masseter: Main muscle used for chewing because it elevates the mandible to close the mouth.

Maxilla: Bone that forms the upper jaw and supports the upper teeth.

Nares: Nostril openings into the nasal cavity.

Nasal septum: Bone and cartilage that separate the nasal cavity into two compartments.

Nasopharynx: The upper region of the pharynx that connects to the nasal cavity and is a passageway for air.

Orbit: The bony socket that houses the eyeball and muscles that move the eyeball.

Oropharynx: The middle region of the pharynx bordered superiorly by the nasopharynx and anteriorly by the oral cavity that is a passageway for air and ingested material.

Pharyngitis: Infection and/or inflammation in the back of the throat (pharynx).

Pharynx: A tube lined with mucous membrane that begins at the nasal cavity and is divided into three major regions: the nasopharynx, the oropharynx, and the laryngopharynx.

Sinusitis: Inflamed sinuses caused by a viral or bacterial infection.

Sternocleidomastoid: The major muscle that laterally flexes and rotates the head.

Suture: An interlocking joint between adjacent bones of the skull.

Temporalis: Muscle that assists in chewing by retracting the mandible. The temporalis muscle can be felt moving by placing fingers on the patient's temple as they chew.

Trachea: A tube lined with mucus membrane that carries air from the larynx to the lungs.

Trapezius: The muscle that elevates the shoulders (shrugs), pulls the shoulder blades together, and tilts the head backwards.

Uvula: A small, teardrop-shaped structure located at the apex of the soft palate that swings upward during swallowing to close off the nasopharynx and prevent ingested materials from entering the nasal cavity.

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CHAPTER OVERVIEW

6: Eye and Ear Assessment

Learning Objectives

- Perform an eye and ear assessment, including visual acuity, extraocular motion, and hearing acuity
- Modify assessment techniques to reflect variations across the life span
- Document actions and observations
- Recognize and report significant deviations from norms

The ability to see, hear, and maintain balance are important functions of our eyes and ears. Let's begin by reviewing the anatomy of the eye and ear and their common disorders.

6.1: Eye and Ear Assessment Introduction
6.2: Eye and Ear Basic Concepts
6.3: Eye and Ear Assessment
6.4: Sample Documentation
6.5: Checklist for Eye and Ear Assessment
6.6: Supplementary Video on Eye Assessment
6.7: Learning Activity
6.8: VI Glossary

Thumbnail: Getting things in focus. (Unsplash License; David Travis via Unsplash)

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6.1: Eye and Ear Assessment Introduction

Learning Objectives

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6.2: Eye and Ear Basic Concepts

Anatomy of the Eye

Our sense of vision occurs due to transduction of light stimuli received through the eyes. The eyes are located within either orbit in the skull. See Figure 6.2.1 [1] for an illustration of the eye. The eyelids, with lashes at their leading edges, help to protect the eye from abrasions by blocking particles that may land on the surface of the eye. The inner surface of each lid is a thin membrane known as the **conjunctiva**. The conjunctiva extends over the white areas of the eye called the **sclera**, connecting the eyelids to the eyeball. The **iris** is the colored part of the eye. The iris is a smooth muscle that opens and closes the **pupil**, the hole at the center of the eye that allows light to enter. The iris constricts the pupil in response to bright light and dilates the pupil in response to dim light. The **cornea** is the transparent front part of the eye that covers the iris, pupil, and anterior chamber. The cornea, with the anterior chamber and **lens**, refracts light and contributes to vision. The cornea can be reshaped by surgical procedures such as LASIK. The innermost layer of the eye is the **retina** that contains the nervous tissue and specialized cells called photoreceptors for the initial processing of visual stimuli. Two types of photoreceptors within the retina are the rods and the cones. The cones are sensitive to different wavelengths of light and provide color vision. These nerve cells of the retina leave the eye and enter the brain via the **optic nerve** (cranial nerve II).[2]

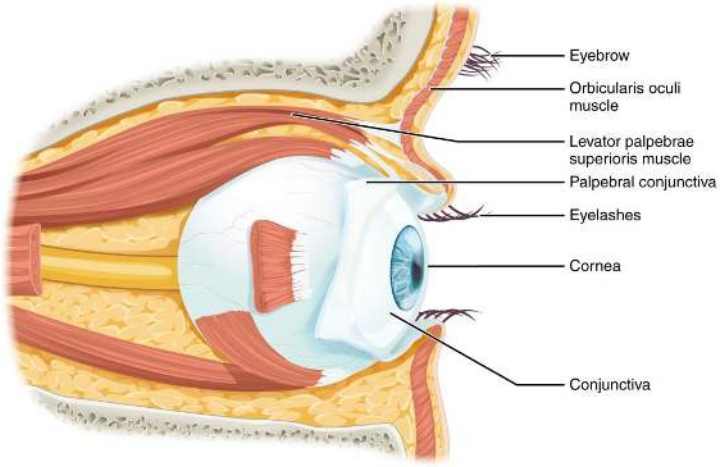


Figure 6.2.1: The Eye

Tears are produced by the lacrimal gland that is located beneath the lateral edges of the nose. Tears flow through the **lacrimal duct** to the medial corner of the eye and flow over the conjunctiva to wash away foreign particles. Movement of the eye within the orbit occurs by the contraction of six **extraocular muscles** that originate from the bones of the orbit and insert into the surface of the eyeball. The extraocular muscles are innervated by the abducens nerve, the trochlear nerve, and the oculomotor nerve (cranial nerves III, IV, and V).[3] See the illustration of the extraocular muscles in Figure 6.2.2[4]

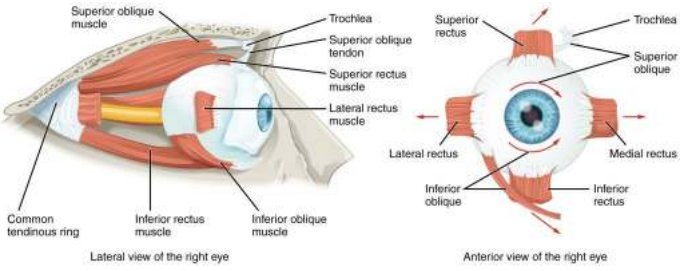
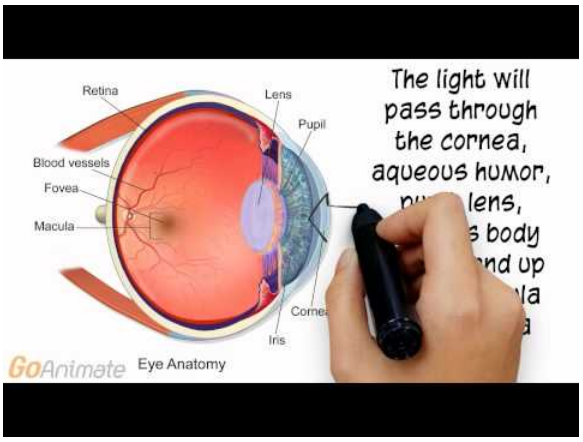


Figure 6.2.2: Extraocular Muscles

Video Review for Anatomy of the Eye[5]



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Common Disorders of the Eye

Eye disorders that nurses commonly see in practice include myopia, presbyopia, color blindness, dry eye, conjunctivitis, styes, cataracts, macular degeneration, and glaucoma.

Myopia

Myopia is impaired vision, also known as nearsightedness that makes far-away objects look blurry. It happens when the eyeball grows too long from front to back or when there are problems with the shape of the cornea or the lens. These problems make light focus in front of the retina, instead of on it, causing blurriness. See Figure 6.2.3[6] for a simulated image of a person's vision with myopia. Nearsightedness usually becomes apparent between ages 6 and 14. It is corrected with glasses, contacts, or LASIK surgery.[7]



Figure 6.2.3: Simulated Vision with Myopia

Presbyopia

Presbyopia is impaired near vision. It commonly occurs in middle-aged and older adults, making it difficult to clearly see objects up close. As people age, the lens in the eye gets harder and less flexible and stops focusing light correctly on the retina.[8]

Presbyopia can be corrected with glasses and/or contacts. See Figure 6.2.4[9] for a simulated image of a person's vision with presbyopia.



Figure 6.2.4 Simulated Vision with Presbyopia

Color Blindness

Color blindness makes it difficult to differentiate between certain colors. Color blindness can occur due to damage to the eye or to the brain. There's no cure for color blindness, but special glasses and contact lenses can help people differentiate between colors. Most people who have color blindness are able to use visual strategies related to color selection and don't have problems participating in everyday activities.[10]

Dry Eye

Dry eye is a very common eye condition that occurs when the eyes don't make enough tears to stay wet or the tears don't work correctly. Symptoms of dry eye include a scratchy feeling, stinging, and burning. Treatment includes over-the-counter and prescription eye drops, as well as lifestyle changes to decrease the dryness of the eyes.[11]

Conjunctivitis

Conjunctivitis is a viral or bacterial infection that causes swelling and redness in the conjunctiva and sclera. See Figure 6.2.5[12] for an image of conjunctivitis. The eye may feel itchy and painful with crusty yellow drainage present. Conjunctivitis is very contagious, so the nurse should educate the patient and family caregivers to wash hands frequently. Additionally, the patient should not share items like pillowcases, towels, or makeup. Bacterial conjunctivitis is treated with antibiotic eye drops.[13]



Figure 6.2.5 Conjunctivitis

Stye

A stye is a bacterial infection of an oil gland in the eyelid, causing a red, tender bump at the edge of the eyelid. See Figure 6.2.6[14] for an image of a stye. Treatment includes applying warm compresses to the eyelid and prescription eyedrops.[15]



Figure 6.2.6: Stye

Cataracts

A cataract is a cloudy area on the lens of the eye. Cataracts are very common in older adults. Over half of all Americans age 80 or older either have cataracts or have had surgery to remove cataracts. See Figure 6.2.7[16] for an image of a cataract. Cataracts develop slowly and symptoms include faded colors, blurred or double vision, halos around light, and trouble seeing at night. See Figure 6.2.8[17] for a simulated image of a person's vision with cataracts. Decreased vision due to cataracts may result in trouble reading and driving and increases the risk of falling. Patients often undergo surgery for cataracts. During cataract surgery, the doctor removes the clouded lens and replaces it with a new, artificial lens.[18]

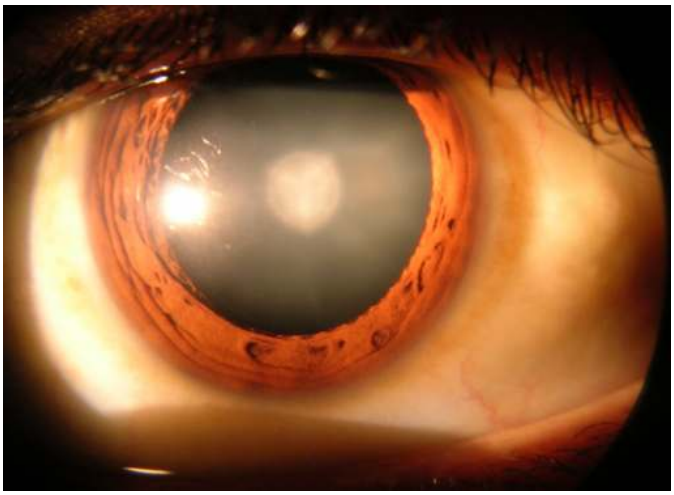


Figure 6.2.7 Cataracts



Figure 6.2.8: Simulated Vision with Cataracts

Macular Degeneration

Age-related macular degeneration is a common condition that causes blurred central vision. It is the leading cause of vision loss for people 50 and older. See Figure 6.2.9[19] for a simulated image of a person's vision with macular degeneration. There are two types of macular degeneration: dry (nonexudative) and wet (exudative). During dry macular degeneration, cellular debris called drusen accumulates and scars the retina. In the wet (exudative) form, which is more severe, blood vessels grow behind the retina that leak exudate fluid, causing hemorrhaging and scarring. There is no treatment for dry macular degeneration, but laser therapy can be used to help treat wet (exudative) macular degeneration.[20]



Figure 6.2.9: Simulated Vision with Macular Degeneration

Glaucoma

Glaucoma is a group of eye diseases that causes vision loss by damaging the optic nerve due to increased intraocular pressure. Treatment includes prescription eye drops to lower the pressure inside the eye and slow the progression of the disease. If not treated appropriately, glaucoma can cause blindness. Symptoms of glaucoma include gradual loss of peripheral vision. See Figure 6.2.10[21] for a simulated image of a person's vision with glaucoma. Because the loss of vision occurs so slowly, many people don't realize they have symptoms until the disease is well-progressed or it is discovered during an eye exam.[22]



Figure 6.2.10: Simulated Vision with Glaucoma

Screening Tools for Eye Exams

Common screening tools used during an eye exam are the Snellen chart, a near vision chart, and Ishihara plates. Nurses working in outpatient settings or school settings use these tools when screening patients for vision problems. If a vision problem is identified, the patient is referred to an optometrist for further testing. When performing a vision assessment, be sure to provide adequate lighting.

Snellen Chart

Distant vision is tested by using the **Snellen chart**. See Figure 6.2.11[23] for an image of the Snellen chart. Place the patient 20 feet away from the Snellen chart. Ask them to cover one eye and read the letters from the lowest line they can see clearly. Record the corresponding fraction in the furthermost right-hand column. Repeat with the other eye. If the patient is wearing glasses or contact lens during this assessment, document the results as “corrected vision” when wearing these assistive devices.

A person with no visual impairment is documented as having 20/20 vision. A person with impaired vision has a different lower denominator of this fraction. For example, a vision measurement of 20/30 indicates the patient can see letters clearly at 20 feet that a person with normal vision can see clearly at 30 feet.[24] Alternative charts are also available for children or adults who can’t read letters in English. See Figure 6.2.12[25] for an alternative eye chart.

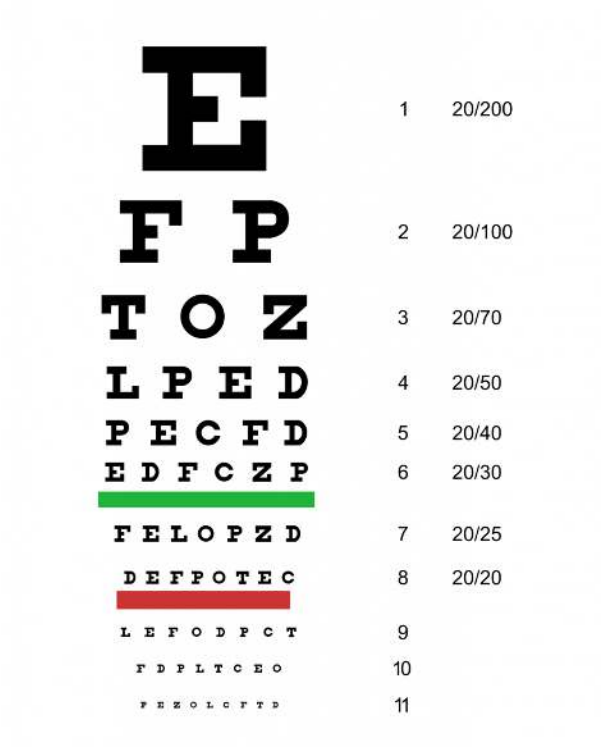


Figure 6.2.11: Snellen Chart



Figure 6.2.12: Alternative Eye Chart

Near Vision

Near vision is assessed by having a patient read from a prepared card that is held 14 inches away from the eyes. If a card is not available, the patient can be asked to read from a newspaper as an alternative quick screening tool. See Figure 6.2.14[26] for an image of a prepared card used to assess near vision.



Figure 6.2.13: Assessing Near Vision

Ishihara Plates

Ishihara plates are commonly used to assess color vision. Each of the colored dotted plates shows either a number or a path. See Figure 6.2.14[27] for an example of Ishihara plates. A person with color blindness is not able to distinguish the numbers or paths from the other colored dots on the plate.

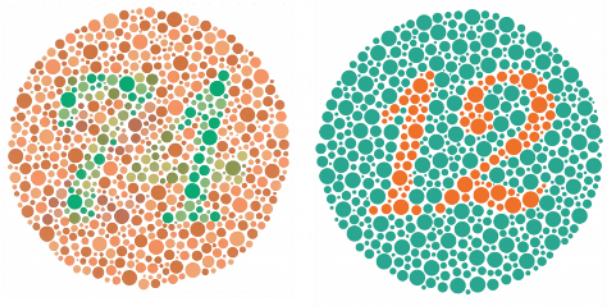


Figure 6.2.14: Ishihara Color Test Plates

Anatomy of the Ear

Hearing is the transduction of sound waves into a neural signal by the structures of the ear. See Figure 6.2.15[28] for an image of the anatomy of the ear. The large, fleshy structure on the lateral aspect of the head is known as the **auricle**. The C-shaped curves of the auricle direct sound waves toward the ear canal. At the end of the ear canal is the **tympanic membrane**, commonly referred to as the eardrum, that vibrates after it is struck by sound waves. The auricle, ear canal, and tympanic membrane are referred to as the external ear. The middle ear consists of a space with three small bones called the malleus, incus, and stapes, the Latin names that roughly translate to “hammer,” “anvil,” and “stirrup.” The malleus is attached to the tympanic membrane and articulates with the incus. The incus, in turn, articulates with the stapes. The stapes is attached to the inner ear, where the sound waves are transduced into a neural signal. The middle ear is also connected to the pharynx through the Eustachian tube that helps equilibrate air pressure across the tympanic membrane. The Eustachian tube is normally closed but will pop open when the muscles of the pharynx contract during swallowing or yawning. The inner ear is often described as a bony labyrinth because it is composed of a series of semicircular canals. The semicircular canals have two separate regions, the cochlea and the vestibule, that are responsible for hearing and balance. The neural signals from these two regions are relayed to the brain stem through separate fiber bundles. However, they travel together from the inner ear to the brain stem as the **vestibulocochlear nerve** (cranial nerve VIII).[29]

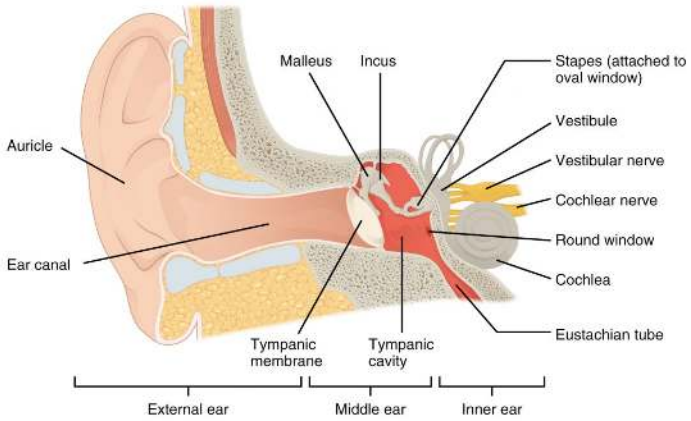


Figure 6.2.15: The Ear

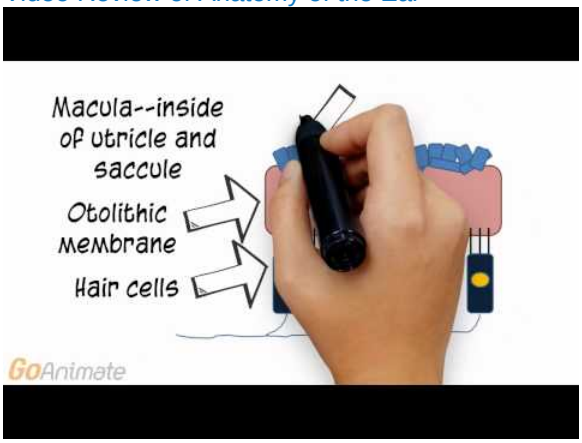
Hearing

Sound waves cause the tympanic membrane to vibrate. This vibration is amplified as it moves across the malleus, incus, and stapes and into the cochlea. Within the inner ear, the cochlear duct contains sound-transducing neurons. As the frequency of a sound changes, different hair cells within the cochlear duct are sensitive to a particular frequency. In this manner, the cochlea separates auditory stimuli by frequency and sends impulses to the brain stem via the cochlear nerve. The cochlea encodes auditory stimuli for frequencies between 20 and 20,000 Hz, the range of sound that human ears can detect.[30]

Balance

Along with hearing, the inner ear is also responsible for the sense of balance. Semicircular canals in the vestibule have three ring-like extensions. One extension is oriented in the horizontal plane, and the other two are oriented in the vertical plane. Hair cells within the vestibule sense head position, head movement, and body motion. By comparing the relative movements of both the horizontal and vertical planes, the vestibular system can detect the direction of most head movements within three-dimensional space. However, medical conditions affecting the semicircular canals cause incorrect signals to be sent to the brain, resulting in a spinning type of dizziness called vertigo.

Video Review of Anatomy of the Ear[31]



A YouTube element has been excluded from this version of the text. You can view it online here: https://wtcs.pressbooks.pub/nursingskills/?p=1011

Common Ear Disorders

Hearing Loss

Hearing loss is classified as conductive hearing loss or sensorineural hearing loss. **Conductive hearing loss** occurs when something in the external or middle ear is obstructing the transmission of sound. For example, cerumen impaction or a perforated tympanic membrane can cause conductive hearing loss. **Sensorineural hearing loss** is caused by pathology of the inner ear, cranial

nerve VIII, or auditory areas of the cerebral cortex. **Presbycusis** is sensorineural hearing loss that occurs with aging due to gradual nerve degeneration. **Ototoxic medications** can also cause sensorineural hearing loss by affecting the hair cells in the cochlea.

Acute Otitis Media

Acute otitis media is the medical diagnosis for an middle ear infection. Ear infections are a common illness in the pediatric population. Children between the ages of 6 months and 2 years are more susceptible to ear infections because of the size and shape of their Eustachian tubes. Acute otitis media typically occurs after an upper respiratory infection when the Eustachian tube becomes inflamed and the middle ear fills with fluid, causing ear pain and irritability. This fluid can become infected, causing purulent fluid and low-grade fever. Acute otitis media is diagnosed by a health care provider using an otoscope to examine the tympanic membrane for bulging and purulent fluid. If not treated, acute otitis media can potentially cause perforation of the tympanic membrane. Treating early acute otitis media with antibiotics is controversial in the United States due to the effort to prevent antibiotic resistance. However, the treatment goals are to control pain and treat infection with antibiotics if a bacterial infection is present.[32]

Some children develop recurrent ear infections that can cause hearing loss affecting their language development. For children experiencing recurring cases, a surgery called myringotomy surgery is performed by an otolaryngologist. During myringotomy surgery, a tympanostomy tube is placed in the tympanic membrane to drain fluid from the middle ear and prevent infection from developing. If a child has a tympanostomy tube in place, it is expected to see clear fluid in their ear canal as it drains out of the tube. See Figure 6.2.16[33] for an image of a tympanostomy tube in the ear.[34]

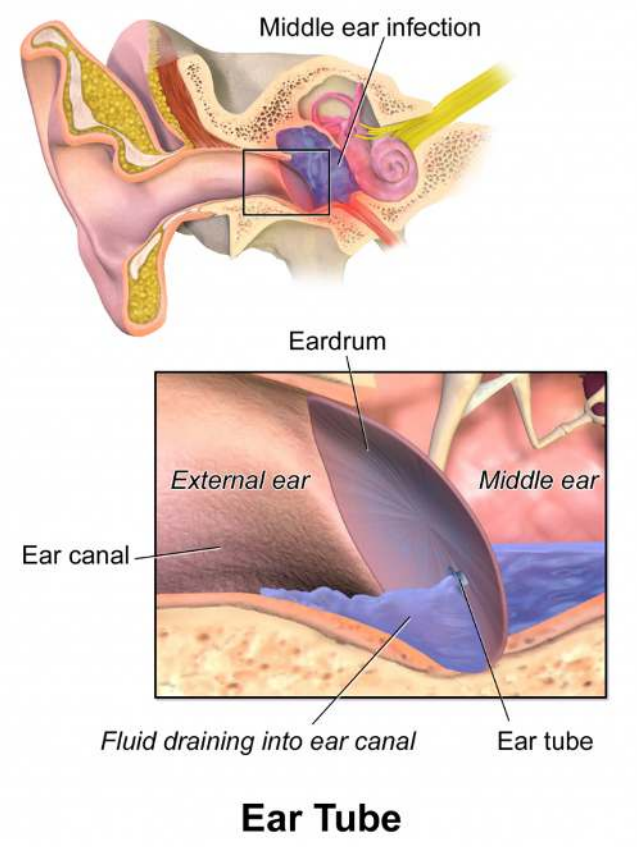


Figure 6.2.16: Tympanostomy Tube

Otitis Externa

Otitis externa is the medical diagnosis for external ear inflammation and/or infection. See Figure 6.2.17[35] for an image of otitis externa. It is commonly known as “swimmer’s ear” because it commonly occurs in swimmers, especially in summer months. Otitis externa can occur in all age groups and causes an erythematous and edematous ear canal with associated yellow, white, or grey debris. Patients often report itching in the ear canal with pain that is worsened by pulling upwards and outwards on the auricle. Otitis externa is treated with antibiotic drops placed in the ear canals.[36]



Figure 6.2.17: Otitis Externa

Cerumen Impaction

Cerumen impaction refers to a buildup of earwax causing occlusion of the ear canal. This occlusion often causes symptoms such as hearing loss, ear fullness, and itching. See Figure 6.2.18[37] for an image of cerumen impaction. Cerumen can be removed via irrigation of the ear canal, ear drops to dissolve the wax, or manual removal.[38] In outpatient settings, nurses often assist with ear irrigation to remove cerumen impaction according to agency policy. See Figure 6.2.19[39] for an image of an ear irrigation procedure.



Figure 6.2.18: Cerumen Impaction

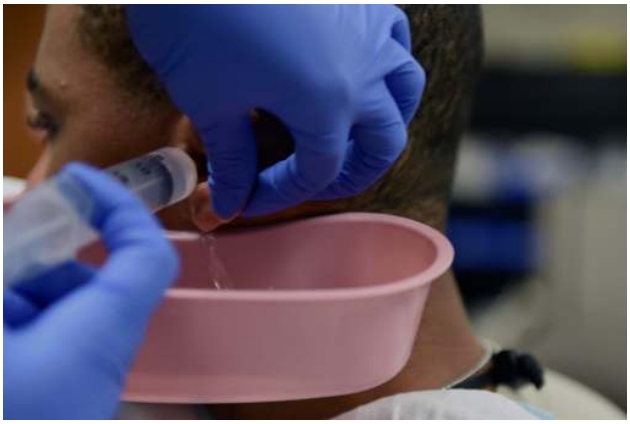


Figure 6.2.19: Ear Irrigation to Remove Cerumen Impaction

Tinnitus

Tinnitus is a ringing, buzzing, roaring, hissing, or whistling sound in the ears. The noise may be intermittent or continuous. Tinnitus can be caused by cerumen impaction, noise trauma, or ototoxic medications, such as diuretics or high doses of aspirin.

Military personnel have a high incidence of tinnitus due to noise trauma from loud explosions and gunfire. There are no medications to treat tinnitus, but patients can be referred to an otolaryngologist for treatment such as cognitive therapy or noise masking.[40]

Vertigo

Vertigo is a type of dizziness that is often described by patients as, "the room feels as if it is spinning." Benign positional vertigo (BPV) is a common condition caused by crystals becoming lodged in the semicircular canals in the vestibule of the inner ear that send false movement signals to the brain. BPV can be treated by trained professionals using a specific set of maneuvers that guide the crystals back to the chamber where they are supposed to be in the inner ear.[41]

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1. "1411 Eye in The Orbit.jpg" by OpenStax College is licensed under CC BY 3.0. Access for free at https://openstax.org/books/anatomy-and-physiology/pages/14-1-sensory-perception↵
2. Giddens, J. (2007). A survey of physical examination techniques performed by RNs: Lessons for nursing education. *Journal of Nursing Education*, *46*(2), 83-87. ↵
3. This work is a derivative of Anatomy & Physiology by OpenStax and is licensed under CC BY 4.0. Access for free at https://openstax.org/books/anatomy-and-physiology/pages/1-introduction↵
4. "1412 Extraocular Muscles.jpg" by OpenStax is licensed under CC BY 3.0. Access for free at https://openstax.org/books/anatomy-and-physiology/pages/14-1-sensory-perception↵
5. Forciea, B. (2015, May 12). *Anatomy of the eye (v2.0)*. [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/HmKGyJUcRLw↵
6. "Eye disease simulation, myopia.jpg" by National Eye Institute, National Institutes of Healthis in the Public Domain↵
7. National Eye Institute. (2019, July 9). *Types of refractive errors*. https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/refractive-errors/types-refractive-errors#section-id-6802↵
8. National Eye Institute. (2019, July 9). *Types of refractive errors*. https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/refractive-errors/types-refractive-errors#section-id-6802↵
9. "Pesto ingredients - blurred.jpg" by Colin is licensed under CC BY-SA 4.0↵
10. National Eye Institute. (2019, July 3). *Color blindness*. https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/color-blindness↵
11. National Eye Institute. (2019, July 5). *Dry eye*. https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/dry-eye↵
12. "Swollen eye with conjunctivitis.jpg" by Tanalai at English Wikipedia is licensed under CC BY 3.0↵
13. National Eye Institute. (2019, July 8). *Causes of pink eye*. https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/pink-eye/causes-pink-eye↵
14. "External hordeolum.jpg" by Inrankabirhossain is licensed under CC BY-SA 4.0↵
15. National Eye Institute. (2019, July 2). *Blepharitis*. https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/blepharitis↵
16. "Cataract in human eye.png" by Rakesh Ajuja, MD is licensed under CC BY-SA 3.0↵
17. "Eye disease simulation, cataract.jpg" by National Eye Institute, National Institutes of Healthis in the Public Domain↵
18. National Eye Institute. (2019, August 3). *Cataracts*. https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/cataracts↵
19. "Eye disease simulation, age-related macular degeneration.jpg" by National Eye Institute, National Institutes of Healthis in the Public Domain↵
20. National Eye Institute. (2020, August 17). *Age-related macular degeneration*. https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/age-related-macular-degeneration↵
21. "Eye disease simulation, glaucoma.jpg" by National Eye Institute, National Institutes of Healthis in the Public Domain↵
22. National Eye Institute. (2020, July 28). *Glaucoma*.https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/glaucoma↵
23. "Snellen chart.jpg" by Jeff Dahl is licensed under CC BY-SA 3.0↵
24. Sue, S. (2007). Test distance vision by using a Snellen chart. *Community Eye Health*, *20*(63), 52. www.ncbi.nlm.nih.gov/pmc/articles/PMC2040251/↵
25. "US Navy 070808-N-6278K-128 Hospital Corpsman 3rd Class Edward Mace, an optician attached to the Military Sealift Command (MSC) hospital ship USNS Comfort (T-AH 20), instructs a patient on how to read an eye chart.jpg" by Mass Communication Specialist 2nd Class Joan E. Kretschmer for U.S. Navy is in the Public Domain↵

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27. This work is derivative of “Ishihara 9.png” and "Ishihara_1.png" by Shinobu Ishihara are in the Public Domain↵
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31. Forciea, B. (2105, May 12). *Anatomy of the ear (v2.0)*. [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/A2ji_Vd8cuE ↵
32. This work is a derivative of StatPearls by Danishyar and Ashurst and is licensed under CC BY 4.0↵
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40. This work is a derivative of StatPearls by Grossan and Peterson and is licensed under CC BY 4.0↵
41. Woodhouse, S. (n.d.). *Benign paraoxysmal positional vertigo (BPPV)*. Vestibular Disorders Association. https://vestibular.org/article/diagnosis-treatment/types-of-vestibular-disorders/benign-paroxysmal-positional-vertigo-bppv/↵

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6.3: Eye and Ear Assessment

Now that we have reviewed the anatomy of the eyes and ears and their common disorders, let's discuss common eye and ear assessments performed by nurses.

Subjective Assessment

Nurses collect subjective information from the patient and/or family caregivers using detailed questions and pay close attention to what the patient is reporting to guide the physical exam. Focused interview questions include inquiring about current symptoms, as well as any history of eye and ear conditions. See Table 6.3.1 for suggested interview questions related to the eyes and ears.

Table 6.3.1 Suggested Interview Questions for Subjective Assessment of the Eyes and Ears

Interview Questions
Eye
Have you had any difficulty seeing or experienced blurred vision?
Do you wear glasses or contact lenses?
When was your last vision test?
Have you had any redness, swelling, watering, or discharge from the eyes?
Have you ever been diagnosed with an eye condition such as cataracts, glaucoma, or macular degeneration?
Are you currently using any medication, eye drops, or supplements for your eyes?
Ear
Have you had any trouble hearing? If so, do you wear hearing aids?
Have you had any symptoms like ringing in the ears, drainage from the ears, or ear pain?
Do you ever feel dizzy, off-balance, or like the room is spinning?
Have you ever been diagnosed with an ear condition such as an infection, tinnitus, or vertigo?
Are you currently using any medications, ear drops, or supplements for your ears?

Life Span Considerations

Pediatric

When collecting subjective data from children, information is also obtained from parents and/or legal guardians. Children aged 2-24 months commonly experience ear infections. Vision impairments may become apparent in school-aged children when they have difficulty seeing the board from their seats. Additional subjective data may be obtained by asking these questions:

- Have you or your child's teachers noticed your child experiencing any problems seeing or hearing?
- Has your child experienced frequent ear infections or had tubes placed in their ears? If so, have you noticed any effects on their language development?

Older Adults

The aging adult experiences a general slowing in nerve conduction. Vision, hearing, fine coordination, and balance may also become impaired. Older adults may experience presbyopia (decreased near vision), presbycusis (hearing loss), cataracts, macular degeneration, or glaucoma. They may also experience feelings of dizziness or feeling off-balance, which can result in falls. Read more about these conditions in the "Eye and Ear Basic Concepts" section earlier in this chapter.



Tip: Educate all patients to have yearly eye examinations.

Objective Assessment

A routine assessment of the eyes and ears by registered nurses in inpatient and outpatient settings typically includes external inspection of eyes and ears for signs of a medical condition, as well as screening for vision and hearing problems. A vision

screening test, whispered voice hearing test, and assessment of pupillary response are often included in the physical exam based on the setting.[1] Additional assessments may be performed if the patient's status warrants assessment of the cranial nerves.

Inspection

Eyes

Begin the assessment by inspecting the eyes. The sclera should be white and the conjunctiva should be pink. There should not be any drainage from the eyes. The patient should demonstrate behavioral cues indicating effective vision during the assessment.

Ears

Inspect the ears. There should not be any drainage from the ears or evidence of cerumen impaction. The patient should demonstrate behavioral cues indicating effective hearing.

Vision Tests

See more information about procedures for assessing vision in the "Eye and Ear Basic Concepts" section earlier in this chapter. Assess far vision using the Snellen eye chart. In outpatient settings, near vision may be assessed using a prepared card or a newspaper. Color vision may be assessed using a book containing Ishihara plates.

Hearing Test

Nurses perform a basic hearing assessment during conversation with the patient. For example, the following patient cues during normal conversation can indicate hearing loss:

- Lip-reads or watches your face and lips closely rather than your eyes
- Leans forward or appears to strain to hear what you are saying
- Moves head in a position to catch sounds with the better ear
- Misunderstands your questions or frequently asks you to repeat
- Uses an inappropriately loud voice
- Demonstrates garbled speech or distorted vowel sounds[2]

Whisper Test

The whispered voice test is an effective screening test used to detect hearing impairment if performed accurately. Complete the following steps to accurately perform this test:[3]

- Stand at arm's length behind the seated patient to prevent lip reading.
- Test each ear individually. The patient should be instructed to occlude the non-tested ear with their finger.
- Exhale before whispering and use as quiet a voice as possible.
- Whisper a combination of numbers and letters (for example, 4-K-2), and then ask the patient to repeat the sequence.
- If the patient responds correctly, their hearing is considered normal; if the patient responds incorrectly, the test is repeated using a different number/letter combination.
- The patient is considered to have passed the screening test if they repeat at least three out of a possible six numbers or letters correctly.
- The other ear is assessed similarly with a different combination of numbers and letters.

Pupillary Response, Extra-ocular Movement, and Cranial Nerves

When a patient is suspected of experiencing a neurological disease or injury, their pupils are assessed to ensure they are bilaterally equal, round, and responsive to light and accommodation (PERRLA). Extraocular movement and other cranial nerves may also be assessed that affect vision, hearing, and balance. For more information about how to assess PERRLA, extraocular eye movement, and other cranial nerves, go to the "Assessing Cranial Nerves" section in the "Neurological Assessment" chapter.

See Table 6.3.2 for a comparison of expected versus unexpected findings when assessing the eyes and ears.

Table 6.3.2 Expected Versus Unexpected Findings on Eyes or Ears Assessment

Assessment	Expected Findings	Unexpected New Findings (Document and notify provider)

Inspection	**Eyes** Sclera are white. Lens is clear. Conjunctiva are pink. Eyelids do not have redness, swelling, lumps, or discharge. No drainage is present from the eyes. Patient displays behavioral cues of effective vision. Eyes appear appropriately placed in orbits. **Ears** No drainage or cerumen is present in the ear canals. Conversation includes behavioral cues of effective hearing. During the whispered voice test, the patient correctly reports at least three out of a possible six numbers for both ears. Patient demonstrates good balance and a coordinated gait.	**Eyes** Yellow sclera may indicate liver dysfunction. Cloudy lens indicates cataracts. Red conjunctiva or drainage can indicate conjunctivitis. Redness or crusting on the eyelids can indicate blepharitis. A tender lump on the eye can indicate a stye. Patient displays behavioral cues indicating vision loss that is not already corrected with glasses or contacts. Sunken eyes can indicate dehydration. **Ears** Purulent drainage is present in ear canal. Cerumen impaction is present. Conversation indicates behavioral cues of uncorrected hearing loss. During the whispered voice test, the patient reports fewer than three out of a possible six numbers or letters correctly for both ears. Patient demonstrates poor balance or an uncoordinated gait.
***CRITICAL CONDITIONS to report immediately**		New and sudden problems such as vision loss, blurred vision, eye pain, red eye, ear pain, vertigo, poor balance, or gait change

1. Giddens, J. (2007). A survey of physical examination techniques performed by RNs: Lessons for nursing education. *Journal of Nursing Education*, *46*(2), 83-87. ↵
2. Jarvis, C. (2015). *Physical examination and health assessment* (7th ed.). Saunders. p. 330. ↵
3. Pirozzo, S., Papinczak, T., & Glasziou, P. (2003). Whispered voice test for screening for hearing impairment in adults and children: Systematic review. *BMJ (Clinical research ed.), 327*(7421), 967. doi.org/10.1136/bmj.327.7421.967↵

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6.4: Sample Documentation

Sample Documentation of Expected Findings

The patient reports no previous history of ear or eye conditions. Eyes have white sclera and pink conjunctiva with no drainage. Corrected vision with glasses using Snellen chart is 20/20 bilaterally. Ear canals are clear bilaterally. Whispered voice test indicates effective hearing with the patient reporting five out six numbers correctly for both ears. Patient demonstrates good balance and coordinated gait.

Sample Documentation of Unexpected Findings

The patient reports awakening with an irritated left eye and crusty drainage but no change in vision. The sclera in the left eye is pink, the conjunctiva is red, and yellow, crusty drainage is present. The patient is able to read the newspaper without visual impairment. Dr. Smith was notified and she evaluated the patient at 1400. A new order for antibiotic eye drops was received and administered. The patient and their family members were educated to wash hands frequently to avoid contagion.

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6.5: Checklist for Eye and Ear Assessment

Use the checklist below to review the steps for completing an “Eye and Ear Assessment.”

Steps

Disclaimer: Always review and follow agency policy regarding this specific skill.

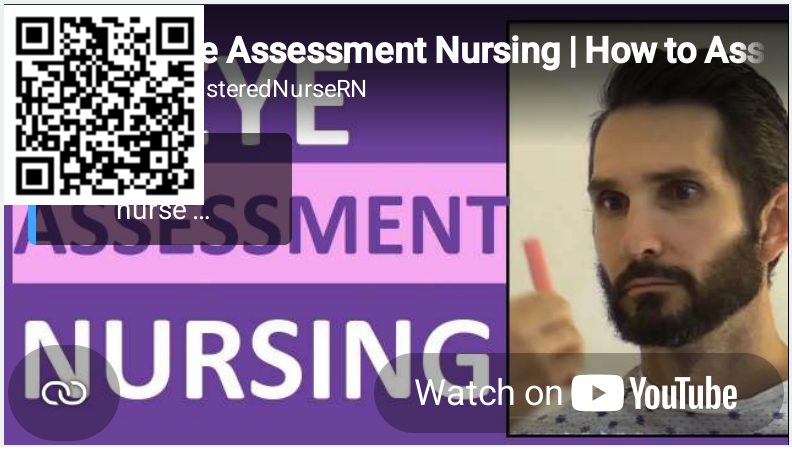
1. Gather supplies: penlight, Ishihara plates, Snellen chart, Rosenbaum card, or a newspaper to read.
2. Perform safety steps:
    - Perform hand hygiene.
    - Check the room for transmission-based precautions.
    - Introduce yourself, your role, the purpose of your visit, and an estimate of the time it will take.
    - Confirm patient ID using two patient identifiers (e.g., name and date of birth).
    - Explain the process to the patient and ask if they have any questions.
    - Be organized and systematic.
    - Use appropriate listening and questioning skills.
    - Listen and attend to patient cues.
    - Ensure the patient’s privacy and dignity.
    - Assess ABCs.
3. Use effective interview questions to collect subjective data about eye or ear eye problems.
4. Inspect the external eye. Note any unexpected findings.
5. Assess that pupils are equally round and reactive to light and accommodation (PERRLA).
6. Assess extraocular movement.
7. Inspect the external ear. Note any unexpected findings.
8. Assess distance vision acuity using the Snellen eye chart and proper technique.
9. Assess near vision acuity using a prepared card or newspaper.
10. Asses for color blindness using the Ishihara plates.
11. Assess hearing by accurately performing the whisper test.
12. Assist the patient to a comfortable position, ask if they have any questions, and thank them for their time.
13. Ensure five safety measures when leaving the room:
    - CALL LIGHT: Within reach
    - BED: Low and locked (in lowest position and brakes on)
    - SIDE RAILS: Secured
    - TABLE: Within reach
    - ROOM: Risk-free for falls (scan room and clear any obstacles)
14. Perform hand hygiene.
15. Document the assessment findings. Report any concerns according to agency policy.

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6.6: Supplementary Video on Eye Assessment

Video Review for Eye Assessment[1]



1. RegisteredNurseRN. (2017, November 16). *Eye assessment nursing | How to assess eyes for head-to-toe assessment*. [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/pgSj3l9iV6k↵

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6.7: Learning Activity

Learning Activity

When conducting the general survey and patient health history, a nurse can look for many assessment cues that may indicate that the patient has hearing difficulty. **Describe three different cues that the nurse might identify to reflect an auditory challenge.**

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6.8: VI Glossary

Acute otitis media: The medical diagnosis for a middle ear infection.

Auricle: The large, fleshy structure of the ear on the lateral aspect of the head.

Cerumen impaction: A buildup of earwax causing occlusion of the ear canal.

Conductive hearing loss: Hearing loss that occurs when something in the external or middle ear is obstructing the transmission of sound.

Conjunctiva: Inner surface of the eyelid.

Conjunctivitis: A viral or bacterial infection in the eye causing swelling and redness in the conjunctiva and sclera.

Cornea: The transparent front part of the eye that covers the iris, pupil, and anterior chamber.

Eustachian tube: The tube connecting the middle ear to the pharynx that helps equilibrate air pressure across the tympanic membrane.

Extraocular muscles: Six muscles that control the movement of the eye within the orbit. Extraocular muscles are innervated by three cranial nerves, the abducens nerve, the trochlear nerve, and the oculomotor nerve.

Iris: Colored part of the eye.

Lacrimal duct: Tears produced by the lacrimal gland flow through this duct to the medial corner of the eye.

Lens: An inner part of the eye that helps the eye focus.

Myopia: Impaired vision, also known as nearsightedness, that makes far-away objects look blurry.

Optic nerve: Cranial nerve II that conducts visual information from the retina to the brain.

Otitis externa: The medical diagnosis for external ear inflammation and/or infection.

Ototoxic medications: Medications that cause the adverse effect of sensorineural hearing loss by affecting the hair cells in the cochlea.

Presbycusis: Sensorineural hearing loss that occurs with aging due to gradual nerve degeneration.

Presbyopia: Impaired near vision that commonly occurs in middle-aged and older adults.

Pupil: The hole at the center of the eye that allows light to enter.

Retina: The nervous tissue and photoreceptors in the eye that initially process visual stimuli.

Sclera: White area of the eye.

Sensorineural hearing loss: Hearing loss caused by pathology of the inner ear, cranial nerve VIII, or auditory areas of the cerebral cortex.

Snellen chart: A chart used to test far vision.

Tinnitus: Ringing, buzzing, roaring, hissing, or whistling sound in the ears.

Tympanic membrane: The membrane at the end of the external ear canal, commonly called the eardrum, that vibrates after it is struck by sound waves.

Vertigo: A type of dizziness often described by patients as “the room feels as if it is spinning.”

Vestibulocochlear nerve: Cranial nerve VIII that transports neural signals from the cochlea and the vestibule to the brain stem regarding hearing and balance.

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CHAPTER OVERVIEW

7: Respiratory Assessment

7.1: Respiratory Assessment Introduction
7.2: Respiratory Basic Concepts
7.3: Respiratory Assessment
7.4: Sample Documentation
7.5: Checklist for Respiratory Assessment
7.6: Supplementary Videos on Respiratory Assessment
7.7: Learning Activities
7.8: VII Glossary

Thumbnail: Woman coughing. (Unsplash License; Annie Spratt via Unsplash)

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7.1: Respiratory Assessment Introduction

Learning Objectives

- Perform a respiratory assessment
- Differentiate between normal and abnormal lung sounds
- Modify assessment techniques to reflect variations across the life span
- Document actions and observations
- Recognize and report deviations from norms

The evaluation of the respiratory system includes collecting subjective and objective data through a detailed interview and physical examination of the thorax and lungs. This examination can offer significant clues related to issues associated with the body's ability to obtain adequate oxygen to perform daily functions. Inadequacy in respiratory function can have significant implications for the overall health of the patient.

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7.2: Respiratory Basic Concepts

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**. **Respiration** includes ventilation and gas exchange at the alveolar level where blood is oxygenated and carbon dioxide is removed. When completing a respiratory assessment, it is important for the nurse to understand the external and internal structures involved with respiration and ventilation. See Figure 7.2.1 [1] for an illustration of the upper and lower respiratory system structures. Notice the lobular division of the lung structures and the bronchial tree.

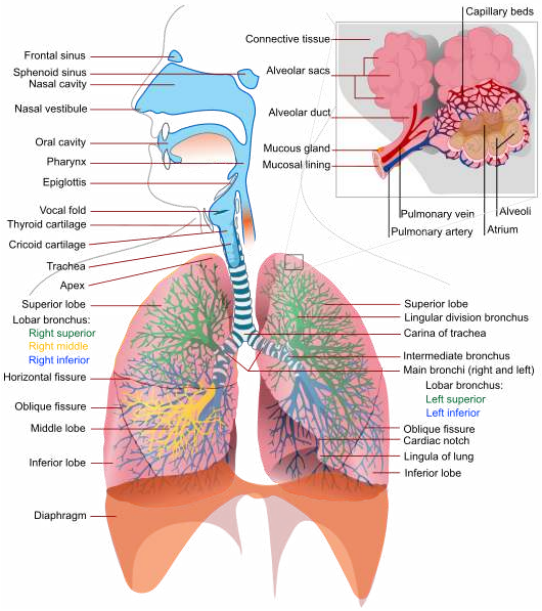
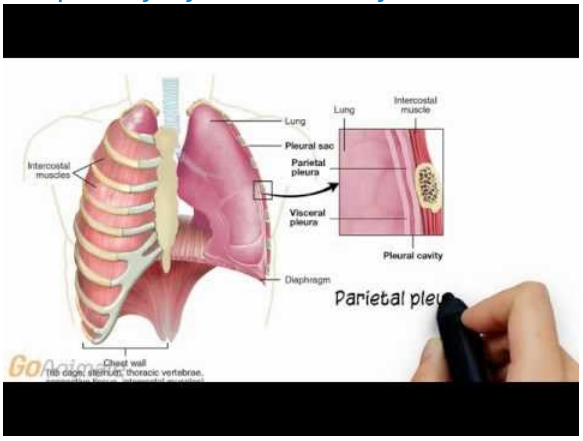


Figure 7.2.1 Respiratory System Structures

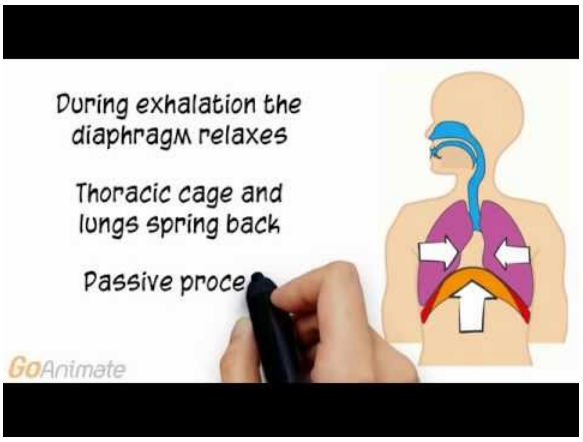
Video Reviews of the Anatomy of the Respiratory System and Breathing Mechanics:

Respiratory System Anatomy[2]



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Respiratory System: Breathing Mechanics[3]



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1. "Respiratory_system_complete_en.png" by British Columbia Institute of Technology is licensed under CC BY 4.0. Access for free at https://opentextbc.ca/clinicalskills/chapter/2-5-focussed-respiratory-assessment/↵
2. Forciea, B. (2015, May 13). *Respiratory system anatomy (v2.0)*. [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/aqTwrdMS6CE↵
3. Forciea, B. (2015, May 12). *Anatomy and physiology: Respiratory system: Breathing mechanics (v2.0)*. [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/X-J5Xgg3l6s↵

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7.3: Respiratory Assessment

With an understanding of the basic structures and primary functions of the respiratory system, the nurse collects subjective and objective data to perform a focused respiratory assessment.

Subjective Assessment

Collect data using interview questions, paying particular attention to what the patient is reporting. The interview should include questions regarding any current and past history of respiratory health conditions or illnesses, medications, and reported symptoms. Consider the patient's age, gender, family history, race, culture, environmental factors, and current health practices when gathering subjective data. The information discovered during the interview process guides the physical exam and subsequent patient education. See Table 7.3.1 for sample interview questions to use during a focused respiratory assessment.[1]

Table 7.3.1 Interview Questions for Subjective Assessment of the Respiratory System

Interview Questions	Follow-up
Have you ever been diagnosed with a respiratory condition, such as asthma, COPD, pneumonia, or allergies? **Do you use oxygen or peak flow meter?** **Do you use home respiratory equipment like CPAP, BiPAP, or nebulizer devices?**	Please describe the conditions and treatments.
Are you currently taking any medications, herbs, or supplements for respiratory concerns?	Please identify what you are taking and the purpose of each.
Have you had any feelings of breathlessness (dyspnea)?	Note: If the shortness of breath is severe or associated with chest pain, discontinue the interview and obtain emergency assistance. Are you having any shortness of breath now? If yes, please rate the shortness of breath from 0-10 with "0" being none and "10" being severe? Does anything bring on the shortness of breath (such as activity, animals, food, or dust)? If activity causes the shortness of breath, how much exertion is required to bring on the shortness of breath? When did the shortness of breath start? Is the shortness of breath associated with chest pain or discomfort? How long does the shortness of breath last? What makes the shortness of breath go away? Is the shortness of breath related to a position, like lying down? Do you sleep in a recliner or upright in bed? Do you wake up at night feeling short of breath? How many pillows do you sleep on? How does the shortness of breath affect your daily activities?
Do you have a cough?	When you cough, do you bring up anything? What color is the phlegm? Do you cough up any blood (**hemoptysis**)? Do you have any associated symptoms with the cough such as fever, chills, or night sweats? How long have you had the cough? Does anything bring on the cough (such as activity, dust, animals, or change in position)? What have you used to treat the cough? Has it been effective?

Do you smoke or vape?	What products do you smoke/vape? If cigarettes are smoked, how many packs a day do you smoke? How long have you smoked/vaped? Have you ever tried to quit smoking/vaping? What strategies gave you the best success? Are you interested in quitting smoking/vaping? If the patient is ready to quit, the five successful interventions are the "5 A's": Ask, Advise, Assess, Assist, and Arrange. **Ask** – Identify and document smoking status for every patient at every visit. **Advise** – In a clear, strong, and personalized manner, urge every user to quit. **Assess** – Is the user willing to make a quitting attempt at this time? **Assist** – For the patient willing to make a quitting attempt, use counseling and pharmacotherapy to help them quit. **Arrange** – Schedule follow-up contact, in person or by telephone, preferably within the first week after the quit date.[2]

Life Span Considerations

Depending on the age and capability of the child, subjective data may also need to be retrieved from a parent and/or legal guardian.

Pediatric

- Is your child up-to-date with recommended immunizations?
- Is your child experiencing any cold symptoms (such as runny nose, cough, or nasal congestion)?
- How is your child's appetite? Is there any decrease or change recently in appetite or wet diapers?
- Does your child have any hospitalization history related to respiratory illness?
- Did your child have any history of frequent ear infections as an infant?

Older Adult

- Have you noticed a change in your breathing?
- Do you get short of breath with activities that you did not before?
- Can you describe your energy level? Is there any change from previous?

Objective Assessment

A focused respiratory objective assessment includes interpretation of vital signs; inspection of the patient's breathing pattern, skin color, and respiratory status; palpation to identify abnormalities; and auscultation of lung sounds using a stethoscope. For more information regarding interpreting vital signs, see the "General Survey" chapter. The nurse must have an understanding of what is expected for the patient's age, gender, development, race, culture, environmental factors, and current health condition to determine the meaning of the data that is being collected.

Evaluate Vital Signs

The vital signs may be taken by the nurse or delegated to unlicensed assistive personnel such as a nursing assistant or medical assistant. Evaluate the respiratory rate and pulse oximetry readings to verify the patient is stable before proceeding with the physical exam. The normal range of a respiratory rate for an adult is 12-20 breaths per minute at rest, and the normal range for oxygen saturation of the blood is 94–98% (SpO_2)[3] **Bradypnea** is less than 12 breaths per minute, and **tachypnea** is greater than 20 breaths per minute.



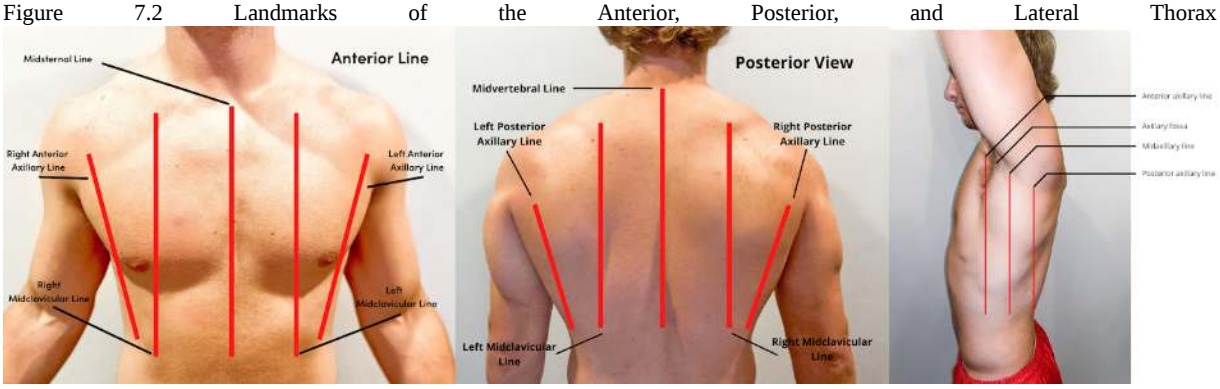
As a general rule of thumb, respiratory rates outside the normal range or oxygen saturation levels less than 95% indicate respiration or ventilation is compromised and requires follow-up. There are disease processes, such as chronic obstructive pulmonary disease (COPD), where patients consistently exhibit below normal oxygen saturations; therefore, trends and deviations from the patient's baseline normal values should be identified. A change in respiratory rate is an early sign of deterioration in a patient, and failing to recognize such a change can result in poor outcomes. For more information on obtaining and interpreting vital signs, see the "General Survey" chapter.

Inspection

Inspection during a focused respiratory assessment includes observation of level of consciousness, breathing rate, pattern and effort, skin color, chest configuration, and symmetry of expansion.

- Assess the level of consciousness. The patient should be alert and cooperative. **Hypoxemia** (low blood levels of oxygen) or **hypercapnia** (high blood levels of carbon dioxide) can cause a decreased level of consciousness, irritability, anxiousness, restlessness, or confusion.
- Obtain the respiratory rate over a full minute. The normal range for the respiratory rate of an adult is 12-20 breaths per minute.
- Observe the breathing pattern, including the rhythm, effort, and use of **accessory muscles**. Breathing effort should be nonlabored and in a regular rhythm. Observe the depth of respiration and note if the respiration is shallow or deep. Pursed-lip breathing, nasal flaring, audible breathing, intercostal **retractions**, anxiety, and use of accessory muscles are signs of respiratory difficulty. Inspiration should last half as long as expiration unless the patient is active, in which case the inspiration-expiration ratio increases to 1:1.
- Observe pattern of expiration and patient position. Patients who experience difficulty expelling air, such as those with emphysema, may have prolonged expiration cycles. Some patients may experience difficulty with breathing specifically when lying down. This symptom is known as **orthopnea**. Additionally, patients who are experiencing significant breathing difficulty may experience most relief while in a "tripod" position. This can be achieved by having the patient sit at the side of the bed with legs dangling toward the floor. The patient can then rest their arms on an overbed table to allow for maximum lung expansion. This position mimics the same position you might take at the end of running a race when you lean over and place your hands on your knees to "catch your breath."
- Observe the patient's color in their lips, face, hands, and feet. Patients with light skin tones should be pink in color. For those with darker skin tones, assess for pallor on the palms, conjunctivae, or inner aspect of the lower lip. **Cyanosis** is a bluish discoloration of the skin, lips, and nail beds, which may indicate decreased perfusion and oxygenation. **Pallor** is the loss of color, or paleness of the skin or mucous membranes and usually the result of reduced blood flow, oxygenation, or decreased number of red blood cells.
- Inspect the chest for symmetry and configuration. The trachea should be midline, and the clavicles should be symmetrical. See Figure 7.2[4] for visual landmarks when inspecting the thorax anteriorly, posteriorly, and laterally. Note the location of the ribs, sternum, clavicle, and scapula, as well as the underlying lobes of the lungs.
  - Chest movement should be symmetrical on inspiration and expiration.
  - Observe the anterior-posterior diameter of the patient's chest and compare to the transverse diameter. The expected anteroposterior-transverse ratio should be 1:2. A patient with a 1:1 ratio is described as **barrel-chested**. This ratio is often seen in patients with chronic obstructive pulmonary disease due to hyperinflation of the lungs. See Figure 7.3.1[5] for an image of a patient with a barrel chest.
  - Older patients may have changes in their anatomy, such as **kyphosis**, an outward curvature of the spine.
- Inspect the fingers for clubbing if the patient has a history of chronic respiratory disease. **Clubbing** is a bulbous enlargement of the tips of the fingers due to chronic hypoxia. See Figure 7.3.2[6] for an image of clubbing.

Figure 7.2 Landmarks of the Anterior, Posterior, and Lateral Thorax



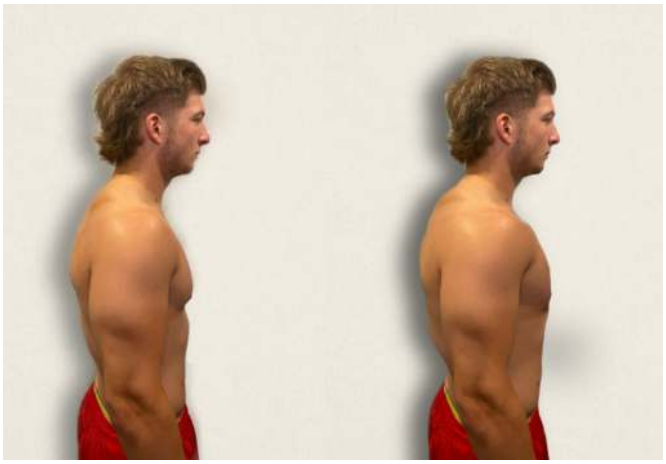


Figure 7.3.1: Comparison of Chest with Normal Anterior/Posterior Diameter (A) to a Barrel Chest(B)



Figure 7.3.2 Clubbing of the Fingers

Palpation

- Palpation of the chest may be performed to investigate for areas of abnormality related to injury or procedural complications. For example, if a patient has a chest tube or has recently had one removed, the nurse may palpate near the tube insertion site to assess for areas of air leak or crepitus. **Crepitus** feels like a popping or crackling sensation when the skin is palpated and is a sign of air trapped under the subcutaneous tissues. If palpating the chest, use light pressure with the fingertips to examine the anterior and posterior chest wall. Chest palpation may be performed to assess specifically for growths, masses, crepitus, pain, or tenderness.
- Confirm symmetric chest expansion by placing your hands on the anterior or posterior chest at the same level, with thumbs over the sternum anteriorly or the spine posteriorly. As the patient inhales, your thumbs should move apart symmetrically. Unequal expansion can occur with pneumonia, thoracic trauma, such as fractured ribs, or pneumothorax.

Auscultation

Using the diaphragm of the stethoscope, listen to the movement of air through the airways during inspiration and expiration. Instruct the patient to take deep breaths through their mouth. Listen through the entire respiratory cycle because different sounds

may be heard on inspiration and expiration. As you move across the different lung fields, the sounds produced by airflow vary depending on the area you are auscultating because the size of the airways change.

Listen to normal breath sounds on inspiration and expiration.

A link to an interactive elements can be found at the bottom of this page.

Correct placement of the stethoscope during auscultation of lung sounds is important to obtain a quality assessment. The stethoscope should not be performed over clothes or hair because these may create inaccurate sounds from friction. The best position to listen to lung sounds is with the patient sitting upright; however, if the patient is acutely ill or unable to sit upright, turn them side to side in a lying position. Avoid listening over bones, such as the scapulae or clavicles or over the female breasts to ensure you are hearing adequate sound transmission. Listen to sounds from side to side rather than down one side and then down the other side. This side-to-side pattern allows you to compare sounds in symmetrical lung fields. See Figures 7.3.3 [7] and 7.3.4 [8] for landmarks of stethoscope placement over the anterior and posterior chest wall.

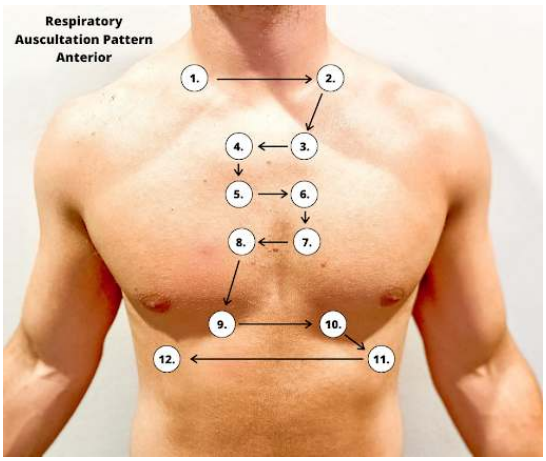


Figure 7.3.3 Anterior Auscultation Areas

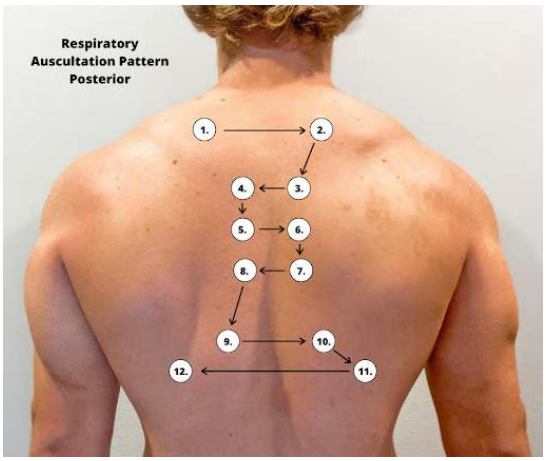


Figure 7.3.4 Posterior Auscultation Areas

When assessing patients who are experiencing shortness of breath (or fatigue easily), it may be helpful to begin auscultation in the bases and progress upward to other lung fields as tolerated by the patient. This ensures that assessment of the vulnerable lower lobes is achieved prior to patient fatigue.

Expected Breath Sounds

It is important upon auscultation to have awareness of expected breath sounds in various anatomical locations.

- **Bronchial breath sounds** are heard over the trachea and larynx and are high-pitched and loud.
- **Bronchovesicular sounds** are medium-pitched and heard over the major bronchi.
- **Vesicular breath sounds** are heard over the lung surfaces, are lower-pitched, and often described as soft, rustling sounds.

Adventitious Lung Sounds

Adventitious lung sounds are sounds heard in addition to normal breath sounds. They most often indicate an airway problem or disease, such as accumulation of mucus or fluids in the airways, obstruction, inflammation, or infection. These sounds include rales/crackles, rhonchi/wheezes, stridor, and pleural rub:

- **Fine crackles**, also called **rales**, are popping or crackling sounds heard on inspiration that occur in association with conditions that cause fluid to accumulate within the alveolar and interstitial spaces, such as heart failure or pneumonia. The sound is similar to that produced by rubbing strands of hair together close to your ear.

Listen to fine crackles:

A link to an interactive elements can be found at the bottom of this page.

- **Wheezes** are whistling-type noises produced during expiration (and sometimes inspiration) when air is forced through airways narrowed by bronchoconstriction or associated mucosal edema. For example, patients with asthma commonly have wheezing.

Listen to wheezes:

A link to an interactive elements can be found at the bottom of this page.

- **Stridor** is heard only on inspiration. It is associated with mechanical obstruction at the level of the trachea/upper airway.

Listen to stridor:

A link to an interactive elements can be found at the bottom of this page.

- **Pleural rub** may be heard on either inspiration or expiration and sounds like the rubbing together of leather. A pleural rub is heard when there is inflammation of the lung pleura, resulting in friction as the surfaces rub against each other.[9]

Life Span Considerations

Children

There are various respiratory assessment considerations that should be noted with assessment of children.

- The respiratory rate in children less than 12 months of age can range from 30-60 breaths per minute, depending on whether the infant is asleep or active.
- Infants have irregular or periodic newborn breathing in the first few weeks of life; therefore, it is important to count the respirations for a full minute. During this time, you may notice periods of **apnea** lasting up to 10 seconds. This is not abnormal unless the infant is showing other signs of distress. Signs of respiratory distress in infants and children include nasal flaring and sternal or intercostal retractions.
- Up to three months of age, infants are considered “obligate” nose-breathers, meaning their breathing is primarily through the nose.
- The anteroposterior-transverse ratio is typically 1:1 until the thoracic muscles are fully developed around six years of age.

Older Adults

As the adult person ages, the cartilage and muscle support of the thorax becomes weakened and less flexible, resulting in a decrease in chest expansion. Older adults may also have weakened respiratory muscles, and breathing may become more shallow. The anteroposterior-transverse ratio may be 1:1 if there is significant curvature of the spine (kyphosis).

Percussion

Percussion is an advanced respiratory assessment technique that is used by advanced practice nurses and other health care providers to gather additional data in the underlying lung tissue. By striking the fingers of one hand over the fingers of the other hand, a sound is produced over the lung fields that helps determine if fluid is present. Dull sounds are heard with high-density areas, such as pneumonia or **atelectasis**, whereas clear, low-pitched, hollow sounds are heard in normal lung tissue.



- Because infants breathe primarily through the nose, nasal congestion can limit the amount of air getting into the lungs.
- Attempt to assess an infant's respiratory rate while the infant is at rest and content rather than when the infant is crying. Counting respirations by observing abdominal breathing movements may be easier for the novice nurse than counting breath sounds, as it can be difficult to differentiate lung and heart sounds when auscultating newborns.
- Auscultation of lungs during crying is not a problem. It will enhance breath sounds.
- The older patient may have a weakening of muscles that support respiration and breathing. Therefore, the patient may report tiring easily during the assessment when taking deep breaths. Break up the assessment by listening to the anterior lung sounds and then the heart sounds and allowing the patient to rest before listening to the posterior lung sounds.
- Patients with end-stage COPD may have diminished lung sounds due to decreased air movement. This abnormal assessment finding may be the patient's baseline or normal and might also include wheezes and fine crackles as a result of chronic excess secretions and/or bronchoconstriction.[10],[11]

Expected Versus Unexpected Findings

See Table 7.3.2 for a comparison of expected versus unexpected findings when assessing the respiratory system.[12]

Table 7.3.2 Expected Versus Unexpected Respiratory Assessment Findings

Assessment	Expected Findings	Unexpected Findings (Document and notify provider if a new finding*)
Inspection	Work of breathing effortless Regular breathing pattern Respiratory rate within normal range for age Chest expansion symmetrical Absence of cyanosis or pallor Absence of accessory muscle use, retractions, and/or nasal flaring Anteroposterior: transverse diameter ratio 1:2	Labored breathing Irregular rhythm Increased or decreased respiratory rate Accessory muscle use, pursed-lip breathing, nasal flaring (infants), and/or retractions Presence of cyanosis or pallor Asymmetrical chest expansion Clubbing of fingernails
Palpation	No pain or tenderness with palpation. Skin warm and dry; no crepitus or masses	Pain or tenderness with palpation, crepitus, palpable masses, or lumps
Percussion	Clear, low-pitched, hollow sound in normal lung tissue	Dull sounds heard with high-density areas, such as pneumonia or atelectasis
Auscultation	Bronchovesicular and vesicular sounds heard over appropriate areas Absence of adventitious lung sounds	Diminished lung sounds Adventitious lung sounds, such as fine crackles/rales, wheezing, stridor, or pleural rub
***CRITICAL CONDITIONS to report immediately**		Decreased oxygen saturation <92%[13] Pain Worsening dyspnea Decreased level of consciousness, restlessness, anxiousness, and/or irritability

A link to an interactive elements can be found at the bottom of this page.

1. This work is a derivative of Clinical Procedures for Safer Patient Care by British Columbia Institute of Technology and is licensed under CC BY 4.0↵
2. Massey, D., & Meredith, T. (2011). Respiratory assessment 1: Why do it and how to do it? *British Journal of Cardiac Nursing*, *5(*11), 537–541. https://doi.org/10.12968/bjca.2010.5.11.79634↵
3. This work is a derivative of Nursing Pharmacology by Open RN licensed under CC BY 4.0↵
4. "Anterior_Chest_Lines.png," "Posterior_Chest_Lines.png," and "Lateral_Chest_Lines.png" by Meredith Pomietlo for Chippewa Valley Technical College are licensed under CC BY 4.0 ↵
5. “Normal A-P Chest Image.jpg" and "Barrel Chest.jpg" by Meredith Pomietlo for Chippewa Valley Technical College are licensed under CC BY 4.0↵
6. “Clubbing of fingers in IPF.jpg” by IPFeditor is licensed under CC BY-SA 3.0↵
7. "Anterior Respiratory Auscultation Pattern.png" by Meredith Pomietlo for Chippewa Valley Technical College is licensed under CC BY 4.0↵
8. "Posterior Respiratory Auscultation Pattern.png" by Meredith Pomietlo for Chippewa Valley Technical College is licensed under CC BY 4.0↵
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10. This work is a derivative of Clinical Procedures for Safer Patient Care by British Columbia Institute of Technology and is licensed under CC BY 4.0↵
11. Honig, E. (1990). An overview of the pulmonary system. In Walker, H. K., Hall, W. D., Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed.). Butterworths. www.ncbi.nlm.nih.gov/books/NBK356/↵
12. This work is a derivative of Clinical Procedures for Safer Patient Care by British Columbia Institute of Technology and is licensed under CC BY 4.0↵
13. Hill, B., & Annesley, S. H. (2020). Monitoring respiratory rate in adults. *British Journal of Nursing*, *29*(1), 12–16. doi.org/10.12968/bjon.2020.29.1.12↵

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7.4: Sample Documentation

Sample Documentation of Expected Findings

Patient denies cough, chest pain, or shortness of breath. Denies past or current respiratory illnesses or diseases. Symmetrical anterior and posterior thorax. Anteroposterior-transverse ratio is 1:2. Respiratory rate is 16 breaths/minute, unlabored, regular, and inaudible through the nose. No retractions, accessory muscle use, or nasal flaring. Chest rise and fall are equal bilaterally. Skin is pink, warm, and dry. No crepitus, masses, or tenderness upon palpation of anterior and posterior chest. Lung sounds clear bilaterally in all lobes anteriorly and posteriorly. No adventitious sounds. SpO2 99% on room air.

Sample Documentation of Unexpected Findings

Patient reports shortness of breath for five to six hours. Patient has labored breathing at rest. Nail beds are cyanotic. Respiratory rate is tachypneic at 32/minute with neck and abdominal accessory muscle use. Lung expansion is symmetrical. Pursed-lip breathing noted with intermittent productive cough. Reports coughing up blood-tinged green sputum for two days. Anterior and posterior chest walls have no tenderness, masses, or crepitus upon palpation. On auscultation bilateral coarse crackles over lung bases. Expiratory wheezes are audible and heard with stethoscope scattered throughout lung fields. SpO2 93% on room air.

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7.5: Checklist for Respiratory Assessment

Use the checklist below to review the steps for completion of a “Respiratory Assessment.”[1]

Steps

Disclaimer: Always review and follow agency policy regarding this specific skill.

1. Gather supplies: stethoscope and pulse oximeter.
2. Perform safety steps:
   - Perform hand hygiene.
   - Check the room for transmission-based precautions.
   - Introduce yourself, your role, the purpose of your visit, and an estimate of the time it will take.
   - Confirm patient ID using two patient identifiers (e.g., name and date of birth).
   - Explain the process to the patient and ask if they have any questions.
   - Be organized and systematic.
   - Use appropriate listening and questioning skills.
   - Listen and attend to patient cues.
   - Ensure the patient’s privacy and dignity.
   - Assess ABCs.
3. Obtain subjective data related to history of respiratory diseases, current symptoms, medications, and history of smoking using the suggested interview questions in Table 7.3a.
4. Obtain and analyze vital signs including the pulse oximetry reading. Act appropriately on unexpected findings outside the normal range.
5. Assist the patient to a seated position if tolerated. Provide privacy while exposing only those areas of assessment.
   - Assess level of consciousness for signs of hypoxia/hypercapnia
   - Count respiratory rate for one minute
   - Observe respirations for rhythm pattern, depth, symmetry, and work of breathing
   - Observe configuration and symmetry of the chest. Compare anterior-posterior diameter to the transverse diameter
   - Inspect skin color lips, face, hands, and feet

   Note that early signs of hypoxia may include anxiety, confusion, restlessness, change in mental status, and/or level of consciousness (LOC).
6. Palpate:
   - Inspect anterior/posterior chest wall for areas of tenderness, crepitus, lumps, or masses
   - Compare for bilaterally equal chest expansion
7. Auscultate: Use correct stethoscope placement directly on the skin over designated auscultation areas. Identify any adventitious sounds.
8. Assist the patient back to a comfortable position, ask if they have any questions, and thank them for their time.
9. Ensure safety measures when leaving the room:
   - CALL LIGHT: Within reach
   - BED: Low and locked (in lowest position and brakes on)
   - SIDE RAILS: Secured
   - TABLE: Within reach
   - ROOM: Risk-free for falls (scan room and clear any obstacles)
10. Perform hand hygiene.
11. Document the assessment findings. Report any concerns according to agency policy.

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7.6: Supplementary Videos on Respiratory Assessment

Video Review of Heart & Lung Assessment | Head-to-Toe Exam[1]



1. RegisteredNurseRN. (2017, December 17). *Chest assessment nursing | Heart & lung assessment | Head-to-toe Exam.* [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/kv3B81mWc1E ↵

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7.7: 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. An elderly client is admitted to the medical floor with increased shortness of breath, new productive cough, and low-grade fever. The nurse begins the physical examination of the respiratory system.

What is the best position for the client to assume for the physical exam?

a. Supine
b. Sitting upright
c. Semi-Fowlers
d. Left-lateral

2. During the course of the preceding patient’s physical exam, auscultation of the lungs reveals rhonchi in the upper airways and coarse crackles in the right lower base. The nurse knows that rhonchi and crackles may indicate _____ or _____ in the airways.

3. A client has pneumonia, which is currently being treated with antibiotics, and reports feeling better since being hospitalized. The nurse assesses the client’s oxygen saturation using a pulse oximeter by placing the probe on the client’s finger. The reading is 89%.

Which of the following actions should the nurse perform first?

a. Assess the pulse oximeter probe site to ensure an accurate reading.
b. Administer oxygen and monitor the pulse oximetry until it reaches 95 percent.
c. Raise the head of the bed and ask the client to take several deep breaths.
d. Contact the provider and recommend prescribing a chest X-ray.

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7.8: VII Glossary

Accessory muscles: Muscles other than the diaphragm and intercostal muscles that may be used for labored breathing.

Apnea: Absence of respirations.

Atelectasis: Alveoli or an entire lung is collapsed, allowing no air movement.

Barrel-chested: An equal AP-to-transverse diameter that often occurs in patients with COPD due to hyperinflation of the lungs.

Bradypnea: Decreased respiratory rate or slow breath less than normal range according to the patient's age.

Bronchial breath sounds: High-pitched hollow sounds heard over trachea and the larynx.

Bronchovesicular sounds: Mixture of low- and high-pitched sounds heard over major bronchi.

Clubbing: A change in the configuration where the tips of the nails curve around the fingertips, usually caused by chronic low levels of oxygen in the blood.

Crackles: Also referred to as "rales"; sound like popping or crackling noises during inspiration. Associated with inflammation and fluid accumulation in the alveoli.

Crepitus: Air trapped under a subcutaneous layer of the skin; creates a popping or crackling sensation as the area is palpated.

Cyanosis: Bluish discoloration of the skin, lips, and nail beds. It is an indication of decreased perfusion and oxygenation.

Dyspnea: A subjective feeling of breathlessness.

Hemoptysis: Blood-tinged mucus secretions from the lungs.

Hypercapnia: Increased carbon dioxide levels in the blood.

Hypoxemia: Decreased levels of oxygen in the blood.

Kyphosis: Outward curvature of the back; often described as "hunchback."

Orthopnea: Breathlessness or a feeling of shortness of breath when lying in a reclined position.

Pallor: A reduced amount of oxyhemoglobin in the skin or mucous membranes and causes skin and mucous membranes to present with a pale skin color.

Rales: Another term used for crackles.

Respiration: Includes ventilation and gas exchange at the alveolar level where blood is oxygenated and carbon dioxide is removed.

Retractions: The "pulling in" of muscles between the ribs or in the neck when breathing, indicating difficulty breathing or respiratory distress.

Stridor: High-pitched crowing sounds heard over the upper airway and larynx indicating obstruction.

Tachypnea: Rapid and often shallow breathing greater than normal range according to the patient's age.

Ventilation: The mechanical movement of air into and out of the lungs.

Vesicular sounds: Low-pitched soft sounds like "rustling leaves" heard over alveoli and small bronchial airways.

Wheeze: High-pitched sounds heard on expiration or inspiration associated with bronchoconstriction or bronchospasm.

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CHAPTER OVERVIEW

8: Cardiovascular Assessment

8.1: Cardiovascular Assessment Introduction
8.2: Cardiovascular Basic Concepts
8.3: Cardiovascular Assessment
8.4: Sample Documentation
8.5: Checklist for Cardiovascular Assessment
8.6: Supplementary Videos on Cardiovascular Assessment
8.7: Learning Activities
8.8: VIII Glossary

Thumbnail: This was captured well waiting for the doctor who was busy at the time. (Unsplash License; Hush Naidoo via Unsplash)

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8.1: Cardiovascular Assessment Introduction

Learning Objectives

- Perform a cardiovascular assessment, including heart sounds; apical and peripheral pulses for rate, rhythm, and amplitude; and skin perfusion (color, temperature, sensation, and capillary refill time)
- Identify S1 and S2 heart sounds
- Differentiate between normal and abnormal heart sounds
- Modify assessment techniques to reflect variations across the life span
- Document actions and observations
- Recognize and report significant deviations from norms

The evaluation of the cardiovascular system includes a thorough medical history and a detailed examination of the heart and peripheral vascular system.[1] Nurses must incorporate subjective statements and objective findings to elicit clues of potential signs of dysfunction. Symptoms like fatigue, indigestion, and leg swelling may be benign or may indicate something more ominous. As a result, nurses must be vigilant when collecting comprehensive information to utilize their best clinical judgment when providing care for the patient.

1. Felner, J. M. (1990). An overview of the cardiovascular system. In Walker, H. K., Hall, W. D., & Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed., Chapter 7). Butterworths. www.ncbi.nlm.nih.gov/books/NBK393/↵

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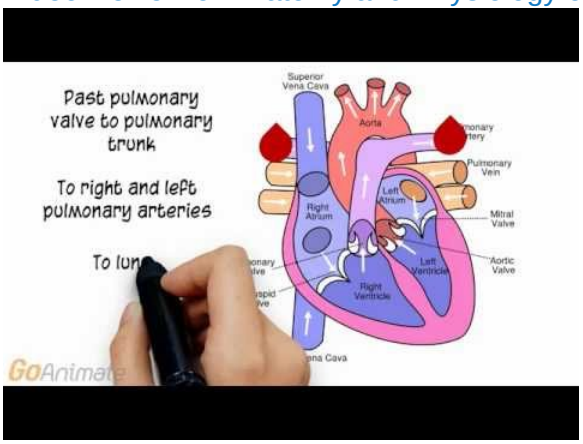
8.2: Cardiovascular Basic Concepts

While the cardiovascular assessment most often focuses on the function of the heart, it is important for nurses to have an understanding of the underlying structures of the cardiovascular system to best understand the meaning of their assessment findings.

Specific sections include the following topics:

- Review of Basic Concepts for more about that anatomy and physiology of the cardiovascular system
- Common Cardiac Disorders for more about cardiovascular medical conditions
- Cardiovascular Medication Classes for more about medications used to treat common cardiovascular conditions

Video Review of Anatomy and Physiology of the Heart[1]



A YouTube element has been excluded from this version of the text. You can view it online here: https://wtcs.pressbooks.pub/nursingskills/?p=67

1. Forciea, B. (2015, May 20). *Anatomy of the heart (v2.0)*. [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/d8RSvcc8koo↵

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8.3: Cardiovascular Assessment

A thorough assessment of the heart provides valuable information about the function of a patient's cardiovascular system. Understanding how to properly assess the cardiovascular system and identifying both normal and abnormal assessment findings will allow the nurse to provide quality, safe care to the patient.

Before assessing a patient's cardiovascular system, it is important to understand the various functions of the cardiovascular system. In addition to the information provided in the "Review of Cardiac Basics" section, the following images provide an overview of the cardiovascular system. Figure 8.1[1] provides an overview of the structure of the heart. Note the main cardiac structures are the atria, ventricles, and heart valves. Figure 8.2[2] demonstrates blood flow through the heart. Notice the flow of deoxygenated blood from the posterior and superior vena cava into the right atria and ventricle during diastole (indicated by blue coloring of these structures). The right ventricle then pumps deoxygenated blood to the lungs via the pulmonary artery during systole. At the same time, oxygenated blood from the lungs returns to the left atria and ventricle via the pulmonary veins during diastole (indicated by red coloring of these structures) and then is pumped out to the body via the aorta during systole. Figure 8.3.1 [3] demonstrates the conduction system of the heart. This image depicts the conduction pathway through the heart as the tissue responds to electrical stimulation. Figure 8.3.2 [4] illustrates the arteries of the circulatory system, and Figure 8.3.3[5] depicts the veins of the circulatory system. The purpose of these figures is to facilitate understanding of the electrical and mechanical function of the heart within the cardiovascular system.

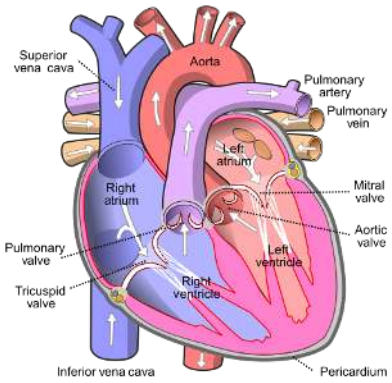


Figure 8.3.1: Structure of the Heart

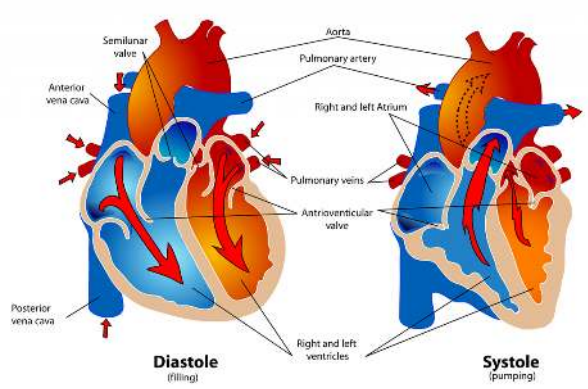


Figure 8.3.2: Blood Flow Through the Heart

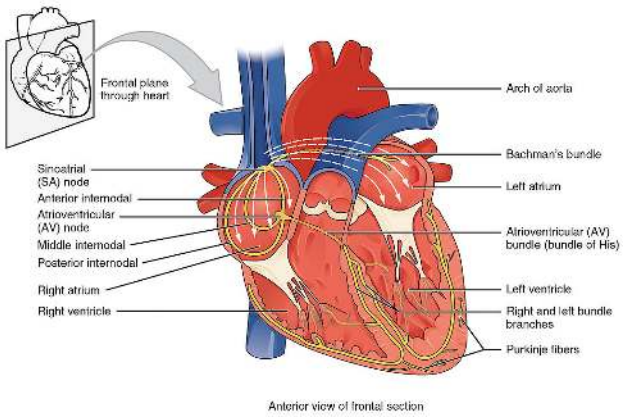


Figure 8.3.3: Conduction System of the Heart

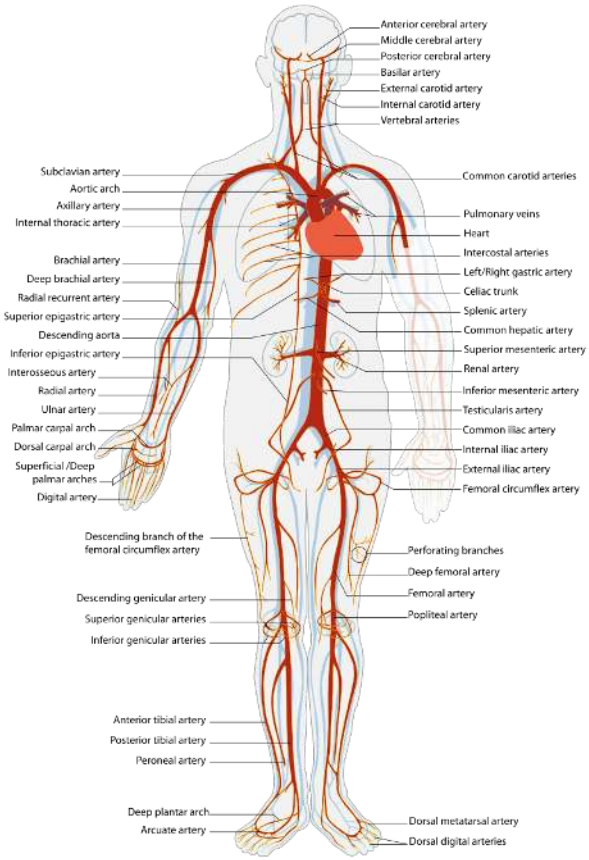


Figure 8.3.4: Circulatory System: Arteries

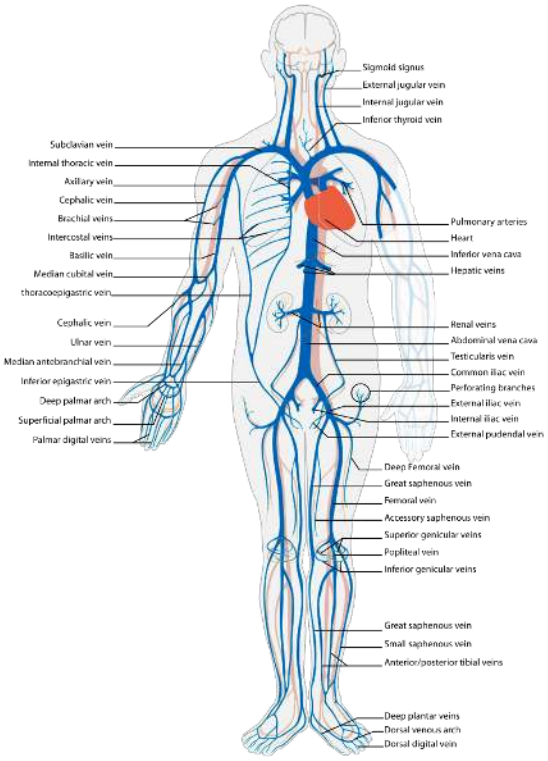


Figure 8.3.5:. Circulatory System: Veins

Assessing the cardiovascular system includes performing several subjective and objective assessments. At times, assessment findings are modified according to life span considerations.

Subjective Assessment

The subjective assessment of the cardiovascular and peripheral vascular system is vital for uncovering signs of potential dysfunction. To complete the subjective cardiovascular assessment, the nurse begins with a focused interview. The focused interview explores past medical and family history, medications, cardiac risk factors, and reported symptoms. Symptoms related to the cardiovascular system include chest pain, peripheral edema, unexplained sudden weight gain, shortness of breath (dyspnea), irregular pulse rate or rhythm, dizziness, or poor peripheral circulation. Any new or worsening symptoms should be documented and reported to the health care provider.

Table 8.3.1 outlines questions used to assess symptoms related to the cardiovascular and peripheral vascular systems. Information obtained from the interview process is used to tailor future patient education by the nurse.[6] [7] [8]

Table 8.3.1 Interview Questions for Cardiovascular and Peripheral Vascular Systems[9]

Symptom	Question	Follow-Up
		Safety Note: If findings indicate current severe symptoms suggestive of myocardial infarction or another critical condition, suspend the remaining cardiovascular assessment and obtain immediate assistance according to agency policy or call 911.

Chest Pain	Have you had any pain or pressure in your chest, neck, or arm?	Review how to assess a patient's chief complaint using the OLD CART & ICE method in the "Health History" chapter. • **Onset** – When did the pain start? • **Location** – Where is the pain? • **Duration** – When it occurs, how long does the pain last? Is it constant or intermittent? • **Characteristics** – Describe what the pain feels like (e.g., sharp, dull, heavy, etc.). How severe is the pain from 0-10 when it occurs? • **Aggravating Factors** – What brings on the pain? • **Relieving Factors** – What relieves the pain? • **Treatment** – What have you used to treat the pain? • **Impact on ADL's** – What effect has the pain had on you? Is there anything you are unable to do because of the pain? • **Coping Strategies** – What do you do to cope with the pain? • **Emotional Response** – How do you feel emotionally?
Shortness of Breath (Dyspnea)	Do you ever feel short of breath with activity? Do you ever feel short of breath while sleeping? Do you feel short of breath when lying flat?	What level of activity elicits shortness of breath? How long does it take you to recover? Have you ever woken up from sleeping feeling suddenly short of breath (**paroxysmal nocturnal dyspnea**)? How many pillows do you need to sleep, or do you sleep in a chair (**orthopnea**)? Has this recently changed?
Edema	Have you noticed swelling of your feet or ankles? Have you noticed your rings, shoes, or clothing feel tight at the end of the day? Have you noticed any unexplained, sudden weight gain? Have you noticed any new abdominal fullness?	Has this feeling of swelling or restriction gotten worse? Is there anything that makes the swelling better (e.g., sitting with your feet elevated)? How much weight have you gained? Over what time period have you gained this weight?
Palpitations	Have you ever noticed your heart feels as if it is racing or "fluttering" in your chest? Have you ever felt as if your heart "skips" a beat?	Are you currently experiencing palpitations? When did palpitations start? Have you previously been treated for palpitations? If so, what treatment did you receive?

Dizziness (Syncope)	Do you ever feel light-headed? Do you ever feel dizzy? Have you ever fainted?	Can you describe what happened? Did you have any warning signs? Did this occur with position change?
Poor Peripheral Circulation	Do your hands or feet ever feel cold or look pale or bluish? Do you have pain in your feet or lower legs when exercising?	What, if anything, brings on these symptoms? How much activity is needed to cause this pain? Is there anything, such as rest, that makes the pain better?
Calf Pain	Do you currently have any constant pain in your lower legs?	Can you point to the area of pain with one finger?

Table 8.3b Interview Questions Exploring Cardiovascular Medical History, Medications, and Cardiac Risk Factors

Topic	Questions
Medical History	Have you ever been diagnosed with any heart or circulation conditions, such as high blood pressure, coronary artery disease, peripheral vascular disease, high cholesterol, heart failure, or valve problems? Have you had any procedures done to improve your heart function, such as ablation or stent placement? Have you ever had a heart attack or stroke?
Medications	Do you take any heart-related medications, herbs, or supplements to treat blood pressure, chest pain, high cholesterol, cardiac rhythm, fluid retention, or the prevention of clots?

Cardiac Risk Factors	Have your parents or siblings been diagnosed with any heart conditions? • If yes, who has what conditions? Do you smoke or vape? • If yes, how many do you smoke/vape daily? • For how many years have you smoked/vaped? If you do not currently smoke, have you smoked in the past? • If yes, what did you smoke? • For how many years did you smoke? Are you physically active during the week? • How many times per week do you exercise and for how many minutes? • What type of exercise do you usually do? What does a typical day look like in your diet? • How many fruits and vegetables do you normally eat in a day? • Do you monitor the amount of saturated fats you eat? • How many times a week do you eat a meal prepared by a restaurant? • Do you pay attention to salt in your diet? Do you add salt to your foods before tasting it? • Do you have caffeine during the day? If so, how much? Do you drink alcoholic drinks? • How many alcoholic drinks do you have on average per day? Per week? • Do you drink while at work? Would you say you experience stress in your life? • How would you rate the amount of stress in your life from 0-10? • How do you cope with the stress in your life? How many hours of sleep do you normally get each day? • Do you have difficulty falling asleep? • Do you have difficulty staying asleep?

Objective Assessment

The physical examination of the cardiovascular system involves the interpretation of vital signs, inspection, palpation, and auscultation of heart sounds as the nurse evaluates for sufficient perfusion and cardiac output.

Equipment needed for a cardiovascular assessment includes a stethoscope, penlight, centimeter ruler or tape measure, and **sphygmomanometer**.[10]

Evaluate Vital Signs and Level of Consciousness

Interpret the blood pressure and pulse readings to verify the patient is stable before proceeding with the physical exam. Assess the level of consciousness; the patient should be alert and cooperative.



As a general rule of thumb, findings of systolic blood pressure in adults less than 100,or a pulse rate less than 60 or greater than 100,require immediate follow-up. Keep in mind that excessive drowsiness, restlessness, or irritability can be symptoms of hypoxia.

Inspection

- **Skin color to assess perfusion.** Inspect the face, lips, and fingertips for **cyanosis** or pallor. Cyanosis is a bluish discoloration of the skin, lips, and nail beds and indicates decreased perfusion and oxygenation. **Pallor** is the loss of color, or paleness of the skin or mucous membranes, as a result of reduced blood flow, oxygenation, or decreased number of red blood cells. Patients with light skin tones should be pink in color. For those with darker skin tones, assess for pallor on the palms, conjunctiva, or inner aspect of the lower lip.
- **Jugular Vein Distension (JVD).** Inspect the neck for JVD that occurs when the increased pressure of the superior vena cava causes the jugular vein to bulge, making it most visible on the right side of a person's neck. JVD should not be present in the upright position or when the head of bed is at 30-45 degrees.
- **Precordium for abnormalities.** Inspect the chest area over the heart (also called **precordium**) for deformities, scars, or any abnormal pulsations the underlying cardiac chambers and great vessels may produce.
- **Extremities:**
  - **Upper Extremities:** Inspect the fingers, arms, and hands bilaterally noting Color, Warmth, Movement, Sensation (CWMS). Alterations or bilateral inconsistency in CWMS may indicate underlying conditions or injury. Assess capillary refill by compressing the nail bed until it blanches and record the time taken for the color to return to the nail bed. Normal capillary refill is less than 3 seconds.[11]
  - **Lower Extremities:** Inspect the toes, feet, and legs bilaterally, noting CWMS, capillary refill, and the presence of peripheral edema, superficial distended veins, and hair distribution. Document the location and size of any skin ulcers.
    - **Edema:** Note any presence of edema. **Peripheral edema** is swelling that can be caused by infection, thrombosis, or venous insufficiency due to an accumulation of fluid in the tissues. (See Figure 8.3.6[12] for an image of pedal edema.)[13]
    - **Deep Vein Thrombosis (DVT):** A deep vein thrombosis (DVT) is a blood clot that forms in a vein deep in the body. DVT requires emergency notification of the health care provider and immediate follow-up because of the risk of developing a life-threatening **pulmonary embolism**.[14] Inspect the lower extremities bilaterally. Assess for size, color, temperature, and for presence of pain in the calves. Unilateral warmth, redness, tenderness, swelling in the calf, or sudden onset of intense, sharp muscle pain that increases with dorsiflexion of the foot is an indication of a deep vein thrombosis (DVT).[15] See Figure 8.3.7[16] for an image of a DVT in the patient's right leg, indicated by unilateral redness and edema.



Figure 8.3.6: Peripheral Edema



Figure 8.3.7: Signs of a DVT

Auscultation

Heart Sounds

Auscultation is routinely performed over five specific areas of the heart to listen for corresponding valvular sounds. These auscultation sites are often referred to by the mnemonic “APE To Man,” referring to Aortic, Pulmonic, Erb’s point, Tricuspid, and Mitral areas (see Figure 8.3.8[17] for an illustration of cardiac auscultation areas). The aortic area is the second intercostal space to the right of the sternum. The pulmonary area is the second intercostal space to the left of the sternum. Erb’s point is directly below the aortic area and located at the third intercostal space to the left of the sternum. The tricuspid (or parasternal) area is at the fourth intercostal space to the left of the sternum. The mitral (also called apical or left ventricular area) is the fifth intercostal space at the midclavicular line.

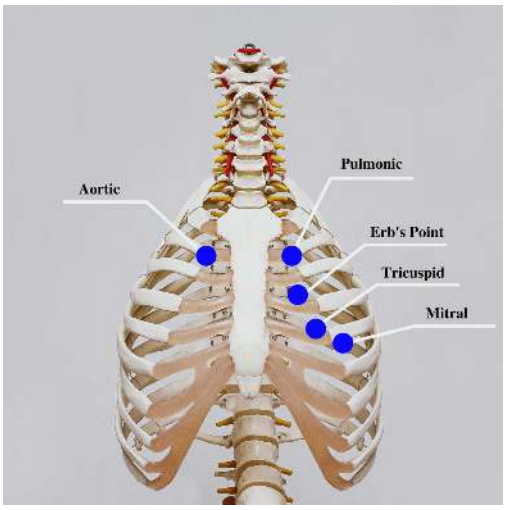


Figure 8.3.8: Cardiac Auscultation Areas

Auscultation usually begins at the aortic area (upper right sternal edge). Use the diaphragm of the stethoscope to carefully identify the S1 and S2 sounds. They will make a “lub-dub” sound. Note that when listening over the area of the aortic and pulmonic valves, the “dub” (S2) will sound louder than the “lub” (S2). Move the stethoscope sequentially to the pulmonic area (upper left sternal edge), Erb’s point (left third intercostal space at the sternal border), and tricuspid area (fourth intercostal space. When assessing the mitral area for female patients, it is often helpful to ask them to lift up their breast tissue so the stethoscope can be placed directly on the chest wall. Repeat this process with the bell of the stethoscope. The apical pulse should be counted over a 60-second period.

For an adult, the heart rate should be between 60 and 100 with a regular rhythm to be considered within normal range. The apical pulse is an important assessment to obtain before the administration of many cardiac medications.

The first heart sound (S1) identifies the onset of systole, when the atrioventricular (AV) valves (mitral and tricuspid) close and the ventricles contract and eject the blood out of the heart. The second heart sound (S2) identifies the end of systole and the onset of diastole when the semilunar valves close, the AV valves open, and the ventricles fill with blood. When auscultating, it is important to identify the S1 ("lub") and S2 ("dub") sounds, evaluate the rate and rhythm of the heart, and listen for any extra heart sounds.

Listen to a normal S1/S2 sound. It may be helpful to use earbuds or a headphone:

A link to an interactive elements can be found at the bottom of this page.



Auscultating Heart Sounds

- To effectively auscultate heart sounds, patient repositioning may be required. Ask the patient to lean forward if able, or position them to lie on their left side.
- It is common to hear lung sounds when auscultating the heart sounds. It may be helpful to ask the patient to briefly hold their breath if lung sounds impede adequate heart auscultation. Limit the holding of breath to 10 seconds or as tolerated by the patient.
- Environmental noise can cause difficulty in auscultating heart sounds. Removing environmental noise by turning down the television volume or shutting the door may be required for an accurate assessment.
- Patients may try to talk to you as you are assessing their heart sounds. It is often helpful to explain the procedure such as, "I am going to take a few minutes to listen carefully to the sounds of blood flow going through your heart. Please try not to speak while I am listening, so I can hear the sounds better."

Extra Heart Sounds

Extra heart sounds include clicks, murmurs, S3 and S4 sounds, and pleural friction rubs. These extra sounds can be difficult for a novice to distinguish, so if you notice any new or different sounds, consult an advanced practitioner or notify the provider. A midsystolic **click**, associated with mitral valve prolapse, may be heard with the diaphragm at the apex or left lower sternal border.

A click may be followed by a murmur. A **murmur** is a blowing or whooshing sound that signifies turbulent blood flow often caused by a valvular defect. New murmurs not previously recorded should be immediately communicated to the health care provider. In the aortic area, listen for possible murmurs of aortic stenosis and aortic regurgitation with the diaphragm of the stethoscope. In the pulmonic area, listen for potential murmurs of pulmonic stenosis and pulmonary and aortic regurgitation. In the tricuspid area, at the fourth and fifth intercostal spaces along the left sternal border, listen for the potential murmurs of tricuspid regurgitation, tricuspid stenosis, or ventricular septal defect.

Listen to a heart murmur caused by mitral valve regurgitation:

A link to an interactive elements can be found at the bottom of this page.

S3 and **S4** sounds, if present, are often heard best by asking the patient to lie on their left side and listening over the apex with the bell of the stethoscope. An S3 sound, also called a **ventricular gallop**, occurs with fluid overload or heart failure when the ventricles are filling. It occurs after the S2 and sounds like "lub-dub-dah," or a sound similar to a horse galloping. The S4 sound, also called **atrial gallop**, occurs immediately before the S1 and sounds like "ta-lub-dub." An S4 sound can occur with decreased ventricular compliance or coronary artery disease.[18]

Listen to a S3 ventricular gallop:

A link to an interactive elements can be found at the bottom of this page.

Listen to a S4 atrial gallop:

A link to an interactive elements can be found at the bottom of this page.

A **pleural friction rub** is caused by inflammation of the pericardium and sounds like sandpaper being rubbed together. It is best heard at the apex or left lower sternal border with the diaphragm as the patient sits up, leans forward, and holds their breath.

Carotid Sounds

The carotid artery may be auscultated for **bruits**. Bruits are a swishing sound due to turbulence in the blood vessel and may be heard due to atherosclerotic changes.

Palpation

Palpation is used to evaluate the precordium, peripheral pulses, capillary refill, and for the presence of edema. When palpating these areas, also pay attention to the temperature and moisture of the skin.

Pulses

Compare the rate, rhythm, and quality of arterial pulses bilaterally, including the carotid, brachial, radial, femoral, posterior tibialis, and dorsalis pedis pulses. Bilateral comparison for all pulses (except the carotid) is important for determining subtle variations in pulse strength. Carotid pulses should be palpated on one side at a time to avoid decreasing perfusion of the brain. The posterior tibial artery is located just behind the medial malleolus. It can be palpated by scooping the patient's heel in your hand and wrapping your fingers around so that the tips come to rest on the appropriate area just below the medial malleolus. The dorsalis pedis artery is located just lateral to the extensor tendon of the big toe and can be identified by asking the patient to flex their toe while you provide resistance to this movement. Gently place the tips of your second, third, and fourth fingers adjacent to the tendon to feel the pulse.

The quality of the pulse is graded on a scale of 0 to 3, with 0 being absent pulses, 1 being decreased pulses, 2 is within normal range, and 3 being increased (also referred to as "bounding"). If unable to palpate a pulse, additional assessment is needed. First, determine if this is a new or chronic finding. Second, if available, use a doppler ultrasound to determine the presence or absence of the pulse. Many agencies use doppler ultrasound to document if a nonpalpable pulse is present. If the pulse is not found, this could be a sign of an emergent condition requiring immediate follow-up and provider notification. See Figures 8.3.9[19] and 8.3.10[20] for images of assessing pedal pulses.



Figure 8.3.9: Assessing Tibial Pedal Pulses



Figure 8.3.10: Assessing Dorsalis Pedis Pulses

Capillary Refill

The **capillary refill** test is performed on the nail beds to monitor **perfusion**, the amount of blood flow to tissue. Pressure is applied to a fingernail or toenail until it pales, indicating that the blood has been forced from the tissue under the nail. This paleness is called **blanching**. Once the tissue has blanched, pressure is removed. Capillary refill time is defined as the time it takes for the color to return after pressure is removed. If there is sufficient blood flow to the area, a pink color should return within 2 to 3 seconds after the pressure is removed.[21]

Edema

Edema occurs when one can visualize visible swelling caused by a buildup of fluid within the tissues. If edema is present on inspection, palpate the area to determine if the edema is pitting or nonpitting. Press on the skin to assess for indentation, ideally over a bony structure, such as the tibia. If no indentation occurs, it is referred to as nonpitting edema. If indentation occurs, it is referred to as **pitting edema**. See Figure 8.3.11[22] for images demonstrating pitting edema.



Figure 8.3.11" Assessing Lower Extremity Edema

Note the depth of the indention and how long it takes for the skin to rebound back to its original position. The indentation and time required to rebound to the original position are graded on a scale from 1 to 4. Edema rated at 1+ indicates a barely detectable depression with immediate rebound, and 4+ indicates a deep depression with a time lapse of over 20 seconds required to rebound. See Figure 8.3.12[23] for an illustration of grading edema. Additionally, it is helpful to note edema may be difficult to observe in larger patients. It is also important to monitor for sudden changes in weight, which is considered a probable sign of fluid volume overload.

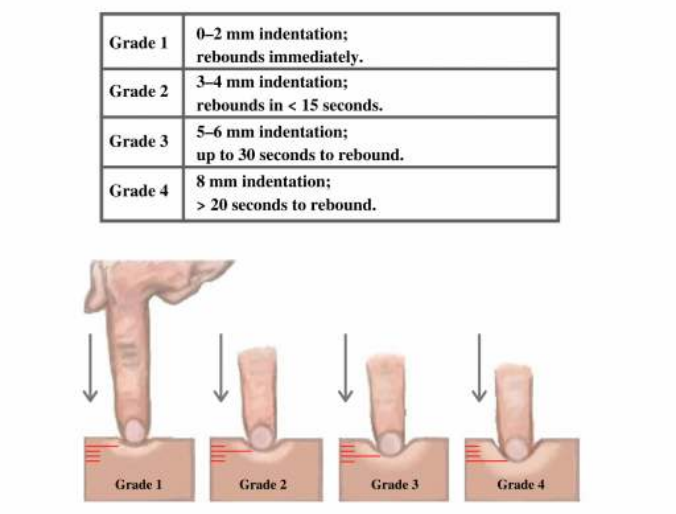


Figure 8.3.12: Grading of Edema

Heaves or Thrills

You may observe advanced practice nurses and other health care providers palpating the anterior chest wall to detect any abnormal pulsations the underlying cardiac chambers and great vessels may produce. Precordial movements should be evaluated at the apex (mitral area). It is best to examine the precordium with the patient supine because if the patient is turned on the left side, the apical region of the heart is displaced against the lateral chest wall, distorting the chest movements.[24] A **heave or lift** is a palpable lifting sensation under the sternum and anterior chest wall to the left of the sternum that suggests severe right ventricular hypertrophy. A **thrill** is a vibration felt on the skin of the precordium or over an area of turbulence, such as an arteriovenous fistula or graft.

Life Span Considerations

The cardiovascular assessment and expected findings should be modified according to common variations across the life span.

Infants and Children

A murmur may be heard in a newborn in the first few days of life until the **ductus arteriosus** closes.

When assessing the cardiovascular system in children, it is important to assess the apical pulse. Parameters for expected findings vary according to age group. After a child reaches adolescence, a radial pulse may be assessed. Table 8.3.2 outlines the expected apical pulse rate by age.

Table 8.3.2 Expected Apical Pulse by Age

Age Group	Heart Rate
Preterm	120-180
Newborn (0 to 1 month)	100-160
Infant (1 to 12 months)	80-140
Toddler (1 to 3 years)	80-130
Preschool (3 to 5 years)	80-110
School Age (6 to 12 years)	70-100
Adolescents (13 to 18 years)	60-90

Listen to pediatric heart tones:

A link to an interactive elements can be found at the bottom of this page.

Older Adults

In adults over age 65, irregular heart rhythms and extra sounds are more likely. An “irregularly irregular” rhythm suggests **atrial fibrillation**, and further investigation is required if this is a new finding. See the hyperlink in the box below for more information about atrial fibrillation.

Listen to atrial fibrillation:

A link to an interactive elements can be found at the bottom of this page.

For more information on atrial fibrillation, visit the following web page: CDC Atrial Fibrillation.

Expected Versus Unexpected Findings

After completing a cardiovascular assessment, it is important for the nurse to use critical thinking to determine if any findings require follow-up. Depending on the urgency of the findings, follow-up can range from calling the health care provider to calling the rapid response team. Table 8.3.3 compares examples of expected findings, meaning those considered within normal limits, to unexpected findings, which require follow-up. Critical conditions are those that should be reported immediately and may require notification of a rapid response team.

Table 8.3.3 Expected Versus Unexpected Findings on Cardiac Assessment

Assessment	Expected Findings	Unexpected Findings (Document and notify the provider if this is a new finding*)
Inspection	Apical impulse may or may not be visible	Scars not previously documented that could indicate prior cardiac surgeries Heave or lift observed in the precordium Chest anatomy malformations
Palpation	Apical pulse felt over midclavicular fifth intercostal space	Apical pulse felt to the left of the midclavicular fifth intercostal space Additional movements over precordium such as a heave, lift, or thrill
Auscultation	S1 and S2 heart sounds in a regular rhythm	New irregular heart rhythm Extra heart sounds such as a murmur, S3, or S4
***CRITICAL CONDITIONS to report immediately**		Symptomatic tachycardia at rest (HR>100 bpm) Symptomatic bradycardia (HR<60 bpm) New systolic blood pressure (<100 mmHg) Orthostatic blood pressure changes (see “Blood Pressure” chapter for more information) New irregular heart rhythm New extra heart sounds such as a murmur, S3, or S4 New abnormal cardiac rhythm changes Reported chest pain, calf pain, or worsening shortness of breath

See Table 8.3.4 for a comparison of expected versus unexpected findings when assessing the peripheral vascular system.

Table 8.3.4 Expected Versus Unexpected Peripheral Vascular Assessment Findings

Assessment	Expected Findings	Unexpected Findings (Document or notify provider if new finding*)

Inspection	Skin color uniform and appropriate for race bilaterally Equal hair distribution on upper and lower extremities Absence of jugular vein distention (JVD) Absence of edema Sensation and movement of fingers and toes intact	Cyanosis or pallor, indicating decreased perfusion Decreased or unequal hair distribution Presence of jugular vein distention (JVD) in an upright position or when head of bed is 30-45 degrees New or worsening edema Rapid and unexplained weight gain Impaired movement or sensation of fingers and toes
Palpation	Skin warm and dry Pulses present and equal bilaterally Absence of edema Capillary refill less than 2 seconds	Skin cool, excessively warm, or diaphoretic Absent, weak/thready, or bounding pulses New irregular pulse New or worsening edema Capillary refill greater than 2 seconds Unilateral warmth, redness, tenderness, or edema, indicating possible deep vein thrombosis (DVT)
Auscultation	Carotid pulse	Carotid bruit
***CRITICAL CONDITIONS to report immediately**		Cyanosis Absent pulse (and not heard using Doppler device) Capillary refill time greater than 3 seconds Unilateral redness, warmth, and edema, indicating a possible deep vein thrombosis (DVT)

A link to an interactive elements can be found at the bottom of this page.
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7. Felner, J. M. (1990). An overview of the cardiovascular system. In Walker, H. K., Hall, W. D., & Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed., Chapter 7). Butterworths. www.ncbi.nlm.nih.gov/books/NBK393/↵
8. Scott, C. & MacInnes, J. D. (2013, September 27). Cardiac patient assessment: putting the patient first. *British Journal of Nursing*, *15*(9). doi.org/10.12968/bjon.2006.15.9.21091↵
9. Scott, C. & MacInnes, J. D. (2013, September 27). Cardiac patient assessment: putting the patient first. *British Journal of Nursing*, *15*(9). doi.org/10.12968/bjon.2006.15.9.21091↵
10. Felner, J. M. (1990). An overview of the cardiovascular system. In Walker, H. K., Hall, W. D., & Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed., Chapter 7). Butterworths. www.ncbi.nlm.nih.gov/books/NBK393/↵
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12. "Swollen feet at Harefield Hospital edema.jpg" by Ryaninuk is licensed under CC BY-SA 4.0↵
13. Simon, E. C. (2014). Leg edema assessment and management. MEDSURG Nursing, 23(1), 44-53. ↵

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17. "Cardiac Auscultation Areas" by Meredith Pomietlo for Chippewa Valley Technical College is licensed under CC BY 4.0↵
18. Felner, J. M. (1990). An overview of the cardiovascular system. In Walker, H. K., Hall, W. D., & Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed., Chapter 7). Butterworths. www.ncbi.nlm.nih.gov/books/NBK393/↵
19. "DSC_2277.jpg" by British Columbia Institute of Technology is licensed under CC BY 4.0. Access for free at https://opentextbc.ca/clinicalskills/chapter/2-5-focussed-respiratory-assessment/↵
20. "DSC_2314.jpg" by British Columbia Institute of Technology is licensed under CC BY 4.0. Access for free at https://opentextbc.ca/clinicalskills/chapter/2-5-focussed-respiratory-assessment/↵
21. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Capillary nail refill test; [updated 2020, Aug 9] https://medlineplus.gov/ency/article/003247.htm↵
22. "Combinpedal.jpg" by James Heilman, MD is licensed under CC BY-SA 3.0↵
23. "Grading of Edema" by Meredith Pomietlo for Chippewa Valley Technical College is licensed under CC BY 4.0↵
24. Felner, J. M. (1990). An overview of the cardiovascular system. In Walker, H. K., Hall, W. D., & Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed., Chapter 7). Butterworths. www.ncbi.nlm.nih.gov/books/NBK393/↵

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8.4: Sample Documentation

Sample Documentation of Expected Cardiac & Peripheral Vascular Findings

Patient denies chest pain or shortness of breath. Vital signs are within normal limits. Point of maximum impulse palpable at the fifth intercostal space of the midclavicular line. No lifts, heaves, or thrills identified on inspection or palpation. JVD absent. S1 and S2 heart sounds in regular rhythm with no murmurs or extra sounds. Skin is warm, pink, and dry. Capillary refill is less than two seconds. Color, movement, and sensation are intact in upper and lower extremities. Peripheral pulses are present (+2) and equal bilaterally. No peripheral edema is noted. Hair is distributed evenly on lower extremities.

Sample Documentation of Unexpected Cardiac & Peripheral Vascular Findings

Patient reports increase in breathing difficulty and increased swelling of bilateral lower extremities over the last three days. Diminished pulses (+1) bilaterally and pitting edema (+2) in the bilateral lower extremities. Upon auscultation, an S3 heart sound is noted and the patient has bilateral crackles in the posterior bases of the lungs. Skin is pink, warm, and dry with capillary refill of < 2 seconds. All other pulses are present (+2), and no other areas of edema are noted. JVD is absent.

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8.5: Checklist for Cardiovascular Assessment

Use the checklist below to review the steps for completion of a "Cardiovascular Assessment."[1]

Steps

Disclaimer: Always review and follow agency policy regarding this specific skill.

1. Gather supplies: stethoscope and watch with a second hand.
2. Perform safety steps:
   - Perform hand hygiene.
   - Check the room for transmission-based precautions.
   - Introduce yourself, your role, the purpose of your visit, and an estimate of the time it will take.
   - Confirm patient ID using two patient identifiers (e.g., name and date of birth).
   - Explain the process to the patient and ask if they have any questions.
   - Be organized and systematic.
   - Use appropriate listening and questioning skills.
   - Listen and attend to patient cues.
   - Ensure the patient's privacy and dignity.
   - Assess ABCs.
3. Conduct a focused interview related to cardiovascular and peripheral vascular disease.
   - Ask relevant focused questions based on patient status. See Tables 8.3a and 8.3b for example questions.
4. Inspect:
   - Face, lips, and extremities for pallor or cyanosis
   - Neck for jugular vein distension (JVD) in upright position or with head of bed at 30-45 degree angle
   - Chest for deformities and wounds/scars on chest
   - Bilateral arms/hands, noting color, warmth, movement, sensation (CWMS), edema, and color of nail beds
   - Bilateral legs, noting CWMS, edema to lower legs and feet, presence of superficial distended veins, and color of nail beds
5. Auscultate with both the bell and the diaphragm of the stethoscope over five auscultation areas of the heart. Auscultate the apical pulse at the fifth intercostal space, midclavicular line for one minute. Note the rate and rhythm. Identify the S1 and S2 sounds and follow up on any unexpected findings (e.g., extra sounds or irregular rhythm).
6. Palpate the radial, brachial, dorsalis pedis, and posterior tibialis pulses bilaterally. Palpate the carotid pulse one side at a time. Note presence/amplitude of pulse and any unexpected findings requiring follow-up.
7. Palpate the nail beds for capillary refill. Document the capillary refill time as less than or greater than 2 seconds.
8. Assist the patient to a comfortable position, ask if they have any questions, and thank them for their time.
9. Ensure safety measures when leaving the room:
   - CALL LIGHT: Within reach
   - BED: Low and locked (in lowest position and brakes on)
   - SIDE RAILS: Secured
   - TABLE: Within reach
   - ROOM: Risk-free for falls (scan room and clear any obstacles)
10. Perform hand hygiene.
11. Document the assessment findings. Report any concerns according to agency policy.

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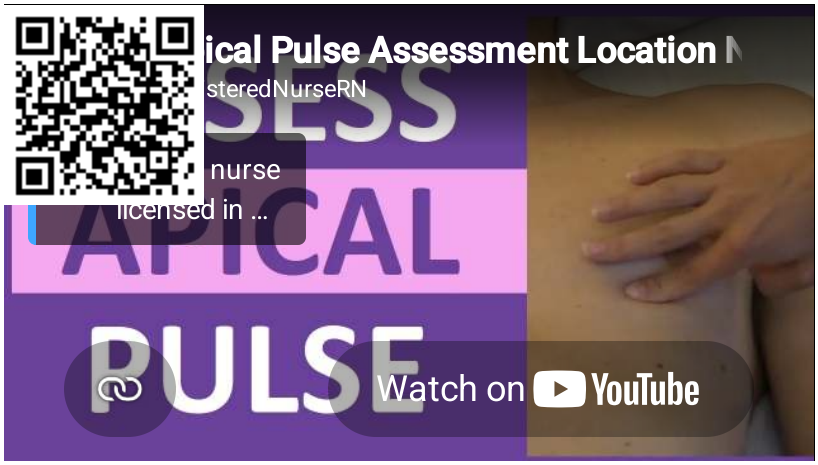
8.6: Supplementary Videos on Cardiovascular Assessment

Video Reviews for Assessing the Heart and Lungs and the Apical Pulse:

Chest Assessment – Heart and Lungs[1]



Assessing the Apical Pulse[2]



1. RegisteredNurseRN. (2017, December 13). *Chest assessment nursing | Heart & lung assessment | Head-to-toe exam.* [Video]. YouTube. All rights reserved. https://youtu.be/kv3B81mWc1E↵
2. RegisteredNurseRN. (2017, September 5). *Apical pulse assessment location nursing | Auscultate and palpate apical pulse.* [Video]. YouTube. All rights reserved. https://youtu.be/RpaY7wM3QoM↵

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8.7: Learning Activities

Learning Activities

1. As you walk into your patient's room, you notice the patient appears to be short of breath. Your patient states "I have been short of breath and tired for the past week." Upon assessment of your patient, you notice JVD, labored breathing, lung sounds with crackles in the posterior bases, and +2 edema to the lower extremities bilaterally.

From your assessment findings, determine the most likely disease state that is being described.

a. Hypertension
b. Pulmonary Embolism
c. Heart Failure
d. Stroke

2. Your patient puts on the call light. You enter the room and notice the patient appears to be in distress. The patient states, "I cannot catch my breath and my heart feels like it is going to explode." The patient's vital signs are T 98, P 148, BP 112/68, and pulse oximetry 88% on room air. You apply oxygen at 2 liters/minute via nasal cannula and notify the health care provider (HCP). The HCP orders a stat ECG. The patient's pulse oximetry increases to 94% with the oxygen, and the patient states, "I feel less short of breath but my heart is still racing." Upon assessment of heart sounds, the apical pulse is 134 and irregular. The ECG results indicate atrial fibrillation.

What would be your next action?

a. Leave the room and see your other patients.
b. Stay with the patient and notify the HCP of the ECG results.
c. Have the CNA stay with your patient as you take a break.
d. Stay with the patient and wait for them to calm down.

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8.8: VIII Glossary

Atrial fibrillation: An irregular heartbeat that is often fast and increases the risk of heart attack or stroke.

Blanching: The whiteness that occurs when pressure is placed on tissue or a nail bed, causing blood to leave the area.

Bruit: A swishing sound when auscultating the carotid arteries. This indicates turbulence in the blood vessel due to atherosclerotic changes.

Capillary refill: The time it takes for color to return after pressure is applied to tissue causing blanching.

Click: Clicking sound heard on auscultation of the precordium; often heard in patients with heart valve abnormalities.

Cyanosis: A bluish discoloration of the skin, lips, and nail beds. It is an indication of decreased perfusion and oxygenation.

Deep Vein Thrombosis (DVT): A blood clot that forms in a vein deep in the body.

Ductus arteriosus: Shunt that connects the pulmonary artery and aorta in the developing fetus.

Dyspnea: A feeling of shortness of breath.

Edema: Swelling in tissues caused by fluid retention.

Heave or lift: Palpable lifting sensation under the sternum and anterior chest wall to the left of the sternum; it suggests severe right ventricular hypertrophy.

Jugular Vein Distension (JVD): Occurs when the increased pressure of the superior vena cava causes the jugular vein to bulge, making it most visible on the right side of a person's neck.

Murmur: A blowing or whooshing sound heard on auscultation of the precordium that signifies turbulent blood flow in the heart often caused by a valvular defect.

Orthopnea: A feeling of shortness of breath when lying flat.

Pallor: A reduced amount of oxyhemoglobin in the skin or mucous membranes. Skin and mucous membranes present with a pale skin color.

Paroxysmal nocturnal dyspnea: An attack of severe shortness of breath that generally occurs at night.

Perfusion: The amount of blood flow to tissue.

Peripheral edema: Swelling due to an accumulation of fluid in tissues perfused by the peripheral vascular system.

Pitting edema: An accumulation of fluid in tissue and causes an indentation when the area is pressed.

Pleural friction rub: Uncommon heart sounds produced when the parietal and visceral pericardium become inflamed, generating a creaky-scratchy noise as they rub together.

Precordium: The region of the thorax in front of the heart.

Pulmonary embolism: A blood clot that lodges in one of the arteries that go from the heart to the lung.

Sphygmomanometer: An instrument for measuring blood pressure typically consisting of an inflatable rubber cuff.

Syncope: A temporary loss of consciousness usually related to insufficient blood flow to the brain.

Thrill: A vibration felt with palpation of the precordium.

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CHAPTER OVERVIEW

9: Abdominal Assessment

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9.1: Abdominal Assessment Introduction

Learning Objectives

- Perform an abdominal assessment
- Differentiate normal and abnormal bowel sounds
- Modify assessment techniques to reflect variations across the life span
- Document actions and observations
- Recognize and report significant deviations from norms

A thorough assessment of the abdomen provides valuable information regarding the function of a patient's gastrointestinal (GI) and genitourinary (GU) systems. Understanding how to properly assess the abdomen and recognizing both normal and abnormal assessment findings will allow the nurse to provide high-quality care to the patient.

It is important for the nurse to be aware of the underlying structures of the abdomen when completing a gastrointestinal or genitourinary assessment. Know the position of the organs within the abdominal cavity as you learn to auscultate, palpate, and percuss the abdomen.

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9.2: Gastrointestinal System Basic Concepts

The human gastrointestinal tract refers to the stomach and intestine, and sometimes to all the structures from the mouth to the anus.

Review the Digestive System:

Key Points

- The major organs of the digestive system are the stomach and intestine.
- The upper gastrointestinal tract consists of the esophagus, stomach, and duodenum.
- The lower gastrointestinal tract includes the small intestine and the large intestine.
- Digestive juices are produced by the pancreas and the gallbladder.
- The small intestine includes the duodenum, jejunum, and ileum.
- The large intestine includes the cecum, colon, rectum, and anus.

Key Terms

- **upper gastrointestinal tract**: This tract consists of the esophagus, stomach, and duodenum.
- **lower gastrointestinal tract**: This tract includes most of the small intestine and all of the large intestine.

See Figure 9.2.1[1] for an illustration of the gastrointestinal system.

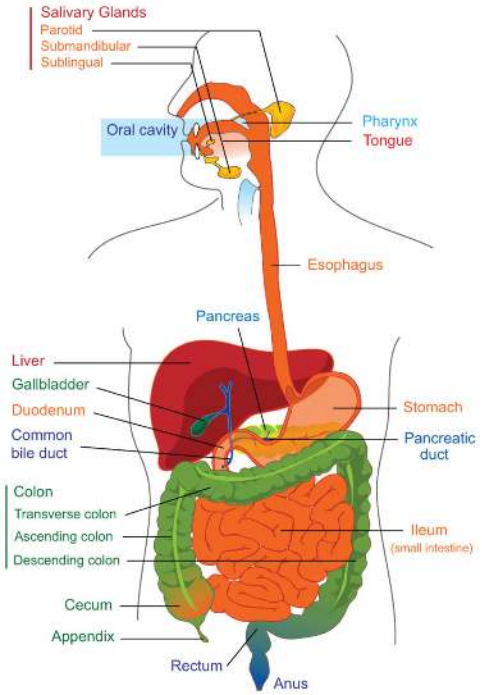


Figure 9.2.1**: Upper and lower gastrointestinal tract**: The major organs of the human gastrointestinal system.

The human gastrointestinal tract refers to the stomach and intestine, and sometimes to all the structures from the mouth to the anus.

Upper Gastrointestinal Tract

The upper gastrointestinal tract consists of the esophagus, stomach, and duodenum. The exact demarcation between upper and lower can vary. Upon gross dissection, the duodenum may appear to be a unified organ, but it is often divided into two parts based upon function, arterial supply, or embryology.

The upper gastrointestinal tract includes the:

- Esophagus, the fibromuscular tube that food passes through—aided by peristaltic contractions—the pharynx to the stomach.
- Stomach, which secretes protein -digesting enzymes called proteases and strong acids to aid in food digestion, before sending the partially digested food to the small intestines.

- Duodenum, the first section of the small intestine that may be the principal site for iron absorption.

Lower Gastrointestinal Tract

The lower gastrointestinal tract includes most of the small intestine and all of the large intestine. According to some sources, it also includes the anus.

The small intestine has three parts:

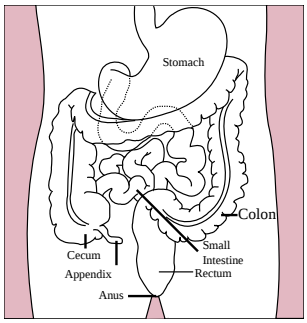


Figure 9.2.2**: Small intestine**: This image shows the position of the small intestine in the gastrointestinal tract.

- Duodenum: Here the digestive juices from the pancreas (digestive enzymes) and the gallbladder (bile) mix together. The digestive enzymes break down proteins and bile and emulsify fats into micelles. The duodenum contains Brunner's glands that produce bicarbonate, and pancreatic juice that contains bicarbonate to neutralize hydrochloric acid in the stomach.
- Jejunum: This is the midsection of the intestine, connecting the duodenum to the ileum. It contains the plicae circulares and villi to increase the surface area of that part of the GI tract.
- Ileum: This has villi, where all soluble molecules are absorbed into the blood (through the capillaries and lacteals).

The large intestine has four parts:

1. Cecum, the vermiform appendix that is attached to the cecum.
2. Colon, which includes the ascending colon, transverse colon, descending colon, and sigmoid flexure. The main function of the colon is to absorb water, but it also contains bacteria that produce beneficial vitamins like vitamin K.
3. Rectum.
4. Anus.

The ligament of Treitz is sometimes used to divide the upper and lower GI tracts.

Digestion is necessary for absorbing nutrients from food and occurs through two processes: mechanical and chemical digestion.

Review the processes and functions of the digestive system:

Key Points

- Two important functions of the digestive system are digestion and absorption.
- The nutrients that come from food are derived from proteins, fats, carbohydrates, vitamins, and minerals. These complex macromolecules must be broken down and absorbed in the gastrointestinal (GI) tract.
- Mechanical digestion starts in the mouth, with the physical processing of food by the teeth, and continues in the stomach.
- Chemical digestion starts with the release of enzymes in saliva, and continues in the stomach and intestines.
- During absorption, the nutrients that come from food pass through the wall of the small intestine and into the bloodstream.

Key Terms

- **mastication**: The process of mechanical breakdown by the teeth; also known as chewing.
- **bolus**: Moistened and mechanically manipulated food.
- **mechanical digestion**: The breaking down of food into digestible chunks, normally using the teeth.
- **chemical digestion**: A process that involves the action of enzymes to break down food into components that can be absorbed by the small intestine.

- **gastrointestinal tract**: This tract consists of the stomach and intestine, and sometimes includes all the structures from the mouth to the anus. The digestive system is a broader term that includes other structures, including the accessory organs of digestion, such as the liver, gallbladder, and pancreas.

The Digestive System

The proper functioning of the gastrointestinal (GI) tract is imperative for our well being and life -long health. A non-functioning or poorly-functioning GI tract can be the source of many chronic health problems that can interfere with your quality of life.

Here is a look at the importance of two main functions of the digestive system: digestion and absorption.

Digestion

The gastrointestinal tract is responsible for the breakdown and absorption of the various foods and liquids needed to sustain life. Many different organs have essential roles in the digestion of food, from the mechanical breakdown of food by the teeth to the creation of bile (an emulsifier) by the liver.

Bile production plays a important role in digestion: it is stored and concentrated in the gallbladder during fasting stages, and discharged to the small intestine. Pancreatic juices are excreted into the digestive system to break down complex molecules such as proteins and fats.

Absorption

Absorption occurs in the small intestines, where nutrients directly enter the bloodstream.

Each component of the digestive system plays a special role in these complimentary processes. The structure of each component highlights the function of that particular organ, providing a seamless anatomy to keep our body fueled and healthy.

Components of the Digestive System

The digestive system is comprised of the alimentary canal, or the digestive tract, and other accessory organs that play a part in digestion—such as the liver, the gallbladder, and the pancreas. The alimentary canal and the GI tract are terms that are sometimes used interchangeably.

The alimentary canal is the long tube that runs from the mouth (where the food enters) to the anus (where indigestible waste leaves). The organs in the alimentary canal include the mouth (the site of mastication), the esophagus, the stomach, the small and large intestines, the rectum, and the anus. From mouth to anus, the average adult digestive tract is about thirty feet (30′) long.

Processes of Digestion

Food is the body’s source of fuel. The nutrients in food give the body’s cells the energy they need to operate. Before food can be used it has to be mechanically broken down into tiny pieces, then chemically broken down so nutrients can be absorbed.

In humans, proteins need to be broken down into amino acids, starches into sugars, and fats into fatty acids and glycerol. This mechanical and chemical breakdown encompasses the process of digestion.

To recap these twin processes:

1. Mechanical digestion: Larger pieces of food get broken down into smaller pieces while being prepared for chemical digestion; this process starts in the mouth and continues into the stomach.
2. Chemical digestion: Several different enzymes break down macromolecules into smaller molecules that can be absorbed. The process starts in the mouth and continues into the intestines.

Moistening and Breakdown of Food

Digestion begins in the mouth. A brain reflex triggers the flow of saliva when we see or even think about food. Enzymes in saliva then begin the chemical breakdown of food; teeth aid in the mechanical breakdown of larger food particles.

Saliva moistens the food, while the teeth masticate the food and make it easier to swallow. To accomplish this moistening goal, the salivary glands produce an estimated three liters of saliva per day.

Amylase, the digestive enzyme found in saliva, starts to break down starch into simple sugars before the food even leaves the mouth. The nervous pathway involved in salivary excretion requires stimulation of receptors in the mouth, sensory impulses to the

brain stem, and parasympathetic impulses to salivary glands. Once food is moistened and rolled and ready to swallow, it is known as a bolus.

Swallowing and the Movement of Food

For swallowing to happen correctly a combination of 25 muscles must all work together at the same time. Swallowing occurs when the muscles in your tongue and mouth move the bolus into your pharynx.

The pharynx, which is the passageway for food and air, is about five inches (5″) long—a remarkably small space. A small flap of skin called the epiglottis closes over the pharynx to prevent food from entering the trachea, which would cause choking. Instead, food is pushed into the muscular tube called the esophagus. Waves of muscle movement, called peristalsis, move the bolus down to the stomach.

While in the digestive tract, the food is really passing through the body rather than being in the body. The smooth muscles of the tubular digestive organs move the food efficiently along as it is broken down into easily absorbed ions and molecules.

Large-scale Breakdown in the Stomach

Once the bolus reaches the stomach, gastric juices mix with the partially digested food and continue the breakdown process. The bolus is converted into a slimy material called chyme.

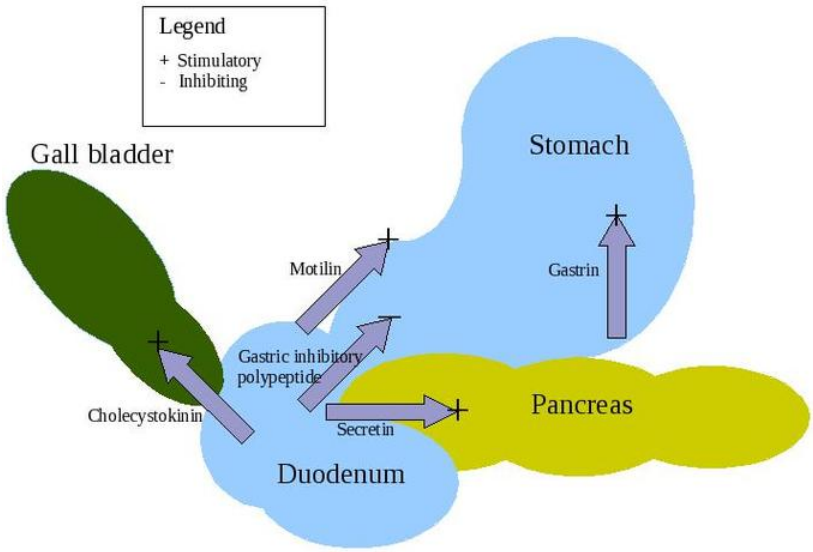


Figure 9.2.3**: Major digestive hormones**: There are at least five major digestive hormones in the gut of mammals that help process food through chemical digestion in the gall bladder, duodenum, stomach, and pancrease. These hormones are cholecystokinin, gastric inhibitory polypeptide, motilin, secretin, and gastrin.

The stomach is a muscular bag that maneuvers food particles, mixing highly acidic gastric juice and powerful digestive enzymes with the chyme to prepare for nutrient absorption in the small intestine. Stimulatory hormones such as gastrin and motilin help the stomach pump gastric juice and move chyme. The complex network of hormones eventually prepares chyme for entry into the duodenum, the first segment of the small intestine.

Absorption in the Small Intestine

During absorption, the nutrients that come from food (such as proteins, fats, carbohydrates, vitamins, and minerals) pass through the wall of the small intestine and into the bloodstream. In this way nutrients can be distributed throughout the rest of the body. The small intestine increases surface area for absorption through tiny interior projections, like small fingers, called villi.

Waste Compaction in the Large Intestine

In the large intestine there is resorption of water and absorption of certain minerals as feces are formed. Feces are the waste parts of the food that the body passes out through the anus.

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9.3: Genitourinary System Basic Concepts

The urinary system maintains blood homeostasis by filtering out excess fluid and other substances from the bloodstream and secreting waste.

Review the urinary system:

Key Points

- The renal system eliminate wastes from the body, controls levels of electrolytes and metabolites, controls the osmoregulation of blood volume and pressure, and regulates blood pH.
- The renal system organs include the kidneys, ureter, bladder, and urethra. Nephrons are the main functional component of the kidneys.
- The respiratory and cardiovascular systems have certain functions that overlap with renal system functions.
- Metabolic wastes and excess ions are filtered out of the blood, combined with water, and leave the body in the form of urine.
- A complex network of hormones controls the renal system to maintain homeostasis.

Key Terms

- **ureter**: These are two long, narrow ducts that carry urine from the kidneys to the urinary bladder.
- **osmoregulation**: The most important function of the renal system, in which blood volume, blood pressure, and blood osmolarity (ion concentration) is maintained in homeostasis.

The Renal System

The renal system, which is also called the urinary system, is a group of organs in the body that filters out excess fluid and other substances from the bloodstream. The purpose of the renal system is to eliminate wastes from the body, regulate blood volume and pressure, control levels of electrolytes and metabolites, and regulate blood pH.

The renal system organs include the kidneys, ureters, bladder, and urethra. Metabolic wastes and excess ions are filtered out of the blood, along with water, and leave the body in the form of urine. See Figure 9.3.1 [2] for an illustration of the genitourinary.

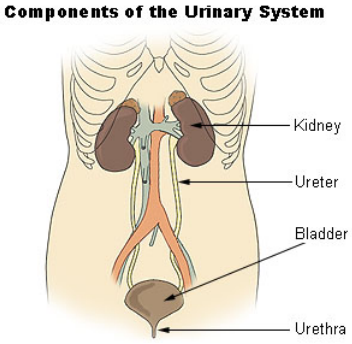


Figure 9.3.1: **Components of the renal system**: Here are the major organs of the renal system.

Renal System Functions

The renal system has many functions. Many of these functions are interrelated with the physiological mechanisms in the cardiovascular and respiratory systems.

1. Removal of metabolic waste products from the body (mainly urea and uric acid).
2. Regulation of electrolyte balance (e.g., sodium, potassium, and calcium).
3. Osmoregulation controls the blood volume and body water contents.
4. Blood pressure homeostasis: The renal system alters water retention and thirst to slowly change blood volume and keep blood pressure in a normal range.
5. Regulation of acid-base homeostasis and blood pH, a function shared with the respiratory system.

Many of these functions are related to one another as well. For example, water follows ions via an osmotic gradient, so mechanisms that alter sodium levels or sodium retention in the renal system will alter water retention levels as well.

Organs of the Renal System

Kidneys and Nephrons

Kidneys are the most complex and critical part of the urinary system. The primary function of the kidneys is to maintain a stable internal environment (homeostasis) for optimal cell and tissue metabolism. The kidneys have an extensive blood supply from the renal arteries that leave the kidneys via the renal vein.

Nephrons are the main functional component inside the parenchyma of the kidneys, which filter blood to remove urea, a waste product formed by the oxidation of proteins, as well as ions like potassium and sodium. The nephrons are made up of a capsule capillaries (the glomerulus) and a small renal tube.

The renal tube of the nephron consists of a network of tubules and loops that are selectively permeable to water and ions. Many hormones involved in homeostasis will alter the permeability of these tubules to change the amount of water that is retained by the body.

Ureter

Urine passes from the renal tube through tubes called ureters and into the bladder.

Bladder

The bladder is flexible and is used as storage until the urine is allowed to pass through the urethra and out of the body.

Urethra

The female and male renal system are very similar, differing only in the length of the urethra.

Human Osmoregulation

The kidneys play a very large role in human osmoregulation by regulating the amount of water reabsorbed from the glomerular filtrate in kidney tubules, which is controlled by hormones such as antidiuretic hormone (ADH), renin, aldosterone, and angiotensin I and II.

A basic example is that a decrease in water concentration of blood is detected by osmoreceptors in the hypothalamus, which stimulates ADH release from the pituitary gland to increase the permeability of the wall of the collecting ducts and tubules in the nephrons. Therefore, a large proportion of water is reabsorbed from fluid to prevent a fair proportion of water from being excreted.

The extent of blood volume and blood pressure regulation facilitated by the kidneys is a complex process. Besides ADH secretion, the renin-angiotensin feedback system is critically important to maintain blood volume and blood pressure homeostasis.

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9.4: Gastrointestinal and Genitourinary Assessment

The gastrointestinal (GI) system is responsible for the ingestion of food and the absorption of nutrients. Additionally, the GI and genitourinary (GU) systems are responsible for the elimination of waste products.[1] Therefore, during assessment of these systems, the nurse collects subjective and objective data regarding the underlying structures of the abdomen, as well as the normal functioning of the GI and GU systems.

Subjective Assessment

A focused gastrointestinal and genitourinary subjective assessment collects data about the signs and symptoms of GI and GU diseases, including any digestive or nutritional issues, relevant medical or family history of GI and GU disease, and any current treatment for related issues.[2] Table 9.4.1 outlines interview questions used to explore medical and surgical history, symptoms related to the gastrointestinal and genitourinary systems, and associated medications. Information gained from the interview process is used to tailor the subsequent physical assessment and create a plan for patient care and education.[3]

Table 9.4.1 Interview Questions for Subjective Assessment of GI and GU Systems

Interview Questions	Follow-up
Have you ever been diagnosed with a gastrointestinal (GI), kidney, or bladder condition?	Please describe the conditions and treatments.
Have you ever had abdominal surgery?	Please describe the surgery and if you experienced any complications.
Are you currently taking any medications, herbs, or supplements?	Please describe.
Do you have any abdominal pain?	Are there any associated symptoms with the pain such as fever, nausea, vomiting, or change in bowel pattern? Are you having bloody stools (**hematochezia**); dark, tarry stools (**melena**); abdominal distention; or vomiting of blood (**hematemesis**)? **Onset:** When did the pain start to occur? **Location:** Where is the pain? **Duration:** When it occurs, how long does the pain last? **Characteristics:** Can you describe what the pain feels like? How severe is the pain from 0-10 when it occurs? **Aggravating Factors:** What brings on the pain? **Relieving Factors:** What relieves the pain? **Treatment:** What have you used to treat the pain? **Impact on ADL's:** I there anything that you are unable to do for yourself when you have this pain? **Coping Strategies:** What do you do to cope with this pain? **Emotional Response:** Emotionally, how does the pain make you feel?
Have you had any issues with nausea, vomiting, food intolerance, heartburn, ulcers, change in appetite, or weight?	Please describe. What treatment did you use for these symptoms? What is your typical diet in a 24-hour period?
Do you have any difficulty swallowing food or liquids (dysphagia)?	Please describe. Have you ever been diagnosed with a stroke or transient ischemic attack (TIA)?
When was your last bowel movement?	Have there been any changes in pattern or consistency of your stool? Are you passing any gas?

Have you had any issues with constipation or diarrhea?	Please describe. How long have you had these issues? What treatment did you use for these symptoms? If constipation: • Has constipation been a problem for you throughout your life? • How frequently do you usually have a bowel movement? If diarrhea: • Are your stools watery or is there some form to them? • How many episodes of diarrhea have you had in the past 24 hours?
Do you experience any pain or discomfort with urination (dysuria)?	Please describe. If you have discomfort while urinating, is the discomfort internal or external? Do you use any treatment for these symptoms?
Do you experience frequent urination (urinary frequency)?	Please describe. Does the frequency occur during daytime or nighttime hours?
Do you ever experience a strong urge to urinate that makes it difficult to reach the bathroom in time (urinary urgency)?	Does this strong urge ever result in a leakage of urine? Does the urge come and go or is it continuous?
Do you have any leakage of urine when you cough, sneeze, or jump (urinary incontinence)? Do you have difficulty starting the flow of urine?	Have you tried any treatment for this issue?

Gastrointestinal

Pain is the most common complaint related to abdominal problems and can be attributed to multiple underlying etiologies. Because of the potential variability of contributing factors, a careful and thorough assessment of this chief complaint should occur. Additional associated questions include asking if bloody stools (**hematochezia**); dark, tarry stools (**melena**); bloating (abdominal distention); or vomiting of blood (**hematemesis**) are occurring.

Nausea, vomiting, diarrhea, and constipation are common issues experienced by hospitalized patients due to adverse effects of medications or medical procedures. Read more details about commonly occurring gastrointestinal conditions in the “Elimination” chapter in Open RN *Nursing Fundamentals*. It is important to ask a hospitalized patient daily about the date of their last bowel movement and flatus so that a bowel management program can be initiated if necessary. If a patient is experiencing diarrhea, it is important to assess and monitor for signs of dehydration or electrolyte imbalances. Dehydration can be indicated by dry skin, dry mucous membranes, or sunken eyes. These symptoms may require contacting the health care provider for further treatment.

Additional specialized assessments of GI system function can include examination of the oropharynx and esophagus. For example, patients who have experienced a cerebrovascular accident (CVA), also called a “stroke,” may experience difficulty swallowing (**dysphagia**). The nurse is often the first to notice these difficulties when swallowing pills, liquid, or food and can advocate for treatment to prevent complications, such as unintended weight loss or **aspiration pneumonia**.[4]

Genitourinary

The nursing assessment of the genitourinary system generally focuses on bladder function. Ask about urinary symptoms, including **dysuria**, **urinary frequency**, or **urinary urgency**. Dysuria is any discomfort associated with urination and often signifies a urinary tract infection. Patients with dysuria commonly experience burning, stinging, or itching sensation. In elderly patients, changes in mental status may be the presenting symptom of a urinary tract infection. In women with dysuria, asking whether the discomfort is internal or external is important because vaginal inflammation can also cause dysuria as urine passes by the inflamed labia.

Abnormally frequent urination (e.g., every hour or two) is termed urinary frequency. In older adults, urinary frequency often occurs at night and is termed nocturia. Frequency of normal urination varies considerably from individual to individual depending on personality traits, bladder capacity, or drinking habits. It can also be a symptom of a urinary tract infection, pregnancy in females, or prostate enlargement in males.

Urinary urgency is an abrupt, strong, and often overwhelming need to urinate. Urgency often causes **urinary incontinence**, a leakage of urine. When patients experience urinary urgency, the desire to urinate may be constant with only a few milliliters of urine eliminated with each voiding.[5]

Life Span Considerations

Infants

Eating and elimination patterns of infants require special consideration based on the stage of development.

- Ask parents about feeding habits. Is the baby being breastfed or formula fed? If formula fed, how does the child tolerate the formula?
- Note that the expected abdominal contour of an infant is called **protuberant**, which means bulging.
- Assess the umbilical cord; it should dry and fall off on its own within two weeks of life.
- Observe for respiratory movement in the abdomen of the infant.

Children

The expected abdominal contour of a child is protuberant until about the age of 4. Children often cannot provide more information than “my stomach hurts”; they may have symptoms of decreased school attendance due to abdominal discomfort.

Older Adults

Constipation may be more common in older adults due to decreased physical mobility and oral intake. Urinary urgency, urinary frequency, urinary retention, nocturia, and urinary incontinence are also common concerns for older adults.

Objective Assessment

Physical examination of the abdomen includes inspection, auscultation, palpation, and percussion. Note that the order of physical assessment differs for the abdominal system compared to other systems. Palpation should occur after the auscultation of bowel sounds so that accurate, undisturbed bowel sounds can be assessed. The abdomen is roughly divided into four quadrants: right upper, right lower, left upper, and left lower (see Figure 9.4.1[6]). When assessing the abdomen, consider the organs located in the quadrant you are examining.

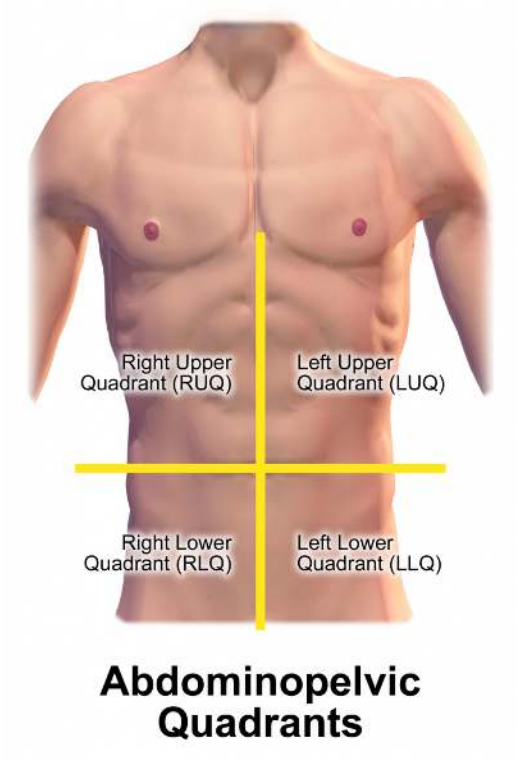


Figure 9.4.1: Four Quadrants of the Abdomen

In preparation for the physical assessment, the nurse should create an environment in which the patient will be comfortable. Encourage the patient to empty their bladder prior to the assessment. Warm the room and stethoscope to decrease tensing during assessment.

Inspection

The abdomen is inspected by positioning the patient supine on an examining table or bed. The head and knees should be supported with small pillows or folded sheets for comfort and to relax the abdominal wall musculature. The patient's arms should be at their side and not folded behind the head, as this tenses the abdominal wall. Ensure the patient is covered adequately to maintain privacy, while still exposing the abdomen as needed for a thorough assessment. Visually examine the abdomen for overall shape, masses, skin abnormalities, and any abnormal movements.

- Observe the general contour and symmetry of the entire abdominal wall. The contour of the abdomen is often described as flat, rounded, **scaphoid** (sunken), or protuberant (convex or bulging).
- Assess for **distention**. Generalized distention of the abdomen can be caused by obesity, bowel distention from gas or liquid, or fluid buildup.
- Assess for masses or bulges, which may indicate structural deformities like hernias or related to disorders in abdominal organs.
- Assess the patient's skin for uniformity of color, integrity, scarring, or **striae**. Striae are white or silvery elongated marks that occur when the skin stretches, especially during pregnancy or excessive weight gain.
- Note the shape of the umbilicus; it should be inverted and midline.
- Carefully note any scars, and correlate these scars with the patient's recollection of previous surgeries or injury.
- Document any abnormal movement or pulsations. Visible intestinal peristalsis can be caused by intestinal obstruction. Pulsations may be seen in the epigastric area in patients who are especially thin, but otherwise should not be observed.[7],[8]

Auscultation

Auscultation, or the listening, of the abdomen, follows inspection for more accurate assessment of bowel sounds. Use a warmed stethoscope to assess the frequency and characteristics of the patient's bowel sounds, which are also referred to as peristaltic murmurs.

Begin your assessment by gently placing the diaphragm of your stethoscope on the skin in the right lower quadrant (RLQ), as bowel sounds are consistently heard in that area. Bowel sounds are generally high-pitched, gurgling sounds that are heard irregularly. Move your stethoscope to the next quadrant in a clockwise motion around the abdominal wall.

It is not recommended to count abdominal sounds because the activity of normal bowel sounds may cycle with peak-to-peak periods as long as 50 to 60 minutes.[9] The majority of peristaltic murmurs are produced by the stomach, with the remainder from the large intestine and a small contribution from the small intestine. Because the conduction of peristaltic murmur is heard throughout all parts of the abdomen, the source of peristaltic murmur is not always at the site where it is heard. If the conduction of peristaltic sounds is good, auscultation at a single location is considered adequate.[10]

Hyperactive bowel sounds may indicate bowel obstruction or gastroenteritis. Sometimes you may be able to hear a patient's bowel sounds without a stethoscope, often described as "stomach growling" or **borborygmus**. This is a common example of hyperactive sounds. **Hypoactive bowel sounds** may be present with constipation, after abdominal surgery, peritonitis, or paralytic ileus. As you auscultate the abdomen, you should not hear vascular sounds. If heard, this finding should be reported to the health care provider.[11],[12]

Palpation

Palpation, or touching, of the abdomen involves using the flat of the hand and fingers (not the fingertips) to detect palpable organs, abnormal masses, or tenderness[13] (see Figure 9.5 [14]).When palpating the abdomen of a patient reporting abdominal pain, the nurse should palpate that area last. Light palpation is primarily used by bedside nurses to assess for musculature, abnormal masses, and tenderness. Deep palpation is a technique used by advanced practice clinicians to assess for enlarged organs. Lightly palpate the abdomen by pressing into the skin about 1 centimeter beginning in the RLQ. Continue to move around the abdomen in a clockwise manner.

Palpate the bladder for distention. Note the patient response to palpation, such as pain, guarding, rigidity, or rebound tenderness. **Guarding** refers to voluntary contraction of the abdominal wall musculature, usually the result of fear, anxiety, or the touch of cold hands. **Rigidity** refers to involuntary contraction of the abdominal musculature in response to peritoneal inflammation, a reflex the patient cannot control.[15] **Rebound tenderness** is another sign of peritoneal inflammation or peritonitis. To elicit rebound

tenderness, the clinician maintains pressure over an area of tenderness and then withdraws the hand abruptly. If the patient winces with pain upon withdrawal of the hand, the test is positive.[16],[17], [18]



Figure 9.4.2 Light Palpation of the Abdomen

Percussion

You may observe advanced practice nurses and other health care providers percussing the abdomen to obtain additional data. Percussing can be used to assess the liver and spleen or to determine if costovertebral angle (CVA) tenderness is present, which is related to inflammation of the kidney.



- Encourage the patient to empty their bladder prior to palpation.
- When palpating the abdomen, ask the patient to bend their knees when lying in a supine position to enhance relaxation of abdominal muscles.

See Table 9.4.2 for a comparison of expected versus unexpected findings when assessing the abdomen.

Table 9.4.2 Expected Versus Unexpected Gastrointestinal and Genitourinary Assessment Findings

Assessment	Expected Findings	Unexpected Findings (Document and notify the provider of any new findings*)
Inspection	Symmetry of shape and color Flat or rounded contour (protuberant in children until age 4) No visible lesions Intact skin Colostomy or Ileostomy	Asymmetry Distension Scars Wounds Skin breakdown Pulsations Visible peristalsis
Auscultation	Presence of normoactive bowel sounds	Hypoactive bowel sounds Hyperactive bowel sounds Absent bowel sounds
Palpation	Absence of pain or tenderness Absence of masses	Pain on palpation Guarding Rigidity Rebound tenderness Masses noted that are not previously documented

Genitourinary Gastrointestinal	Clear, pale yellow urine Absence of pain, urgency, frequency, or retention Soft, formed stool Absence of pain, urgency, or frequency	Dark or bloody urine, foul odor, or sediment present Dysuria Urinary frequency Urinary urgency Urinary retention Hard, dry stool Watery or liquid stool Presence of any blood in the stool
***CRITICAL CONDITIONS to report immediately</strong**		New or worsening melena Bloody stools Hematemesis Signs of dehydration associated with diarrhea and vomiting, such as <30mL urine/hour

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4. Ferguson, C. M. (1990). An overview of the gastrointestinal system. In Walker, H. K., Hall, W. D., Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed.). Butterworths. www.ncbi.nlm.nih.gov/books/NBK405/↵
5. Wrenn, K. (1990). Dysuria, frequency, and urgency. In Walker, H. K., Hall, W. D., Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed.). Butterworths. www.ncbi.nlm.nih.gov/books/NBK291/↵
6. "Blausen 0005 AbdominopelvicQuadrants.png" by BruceBlaus is licensed under CC BY 3.0↵
7. This work is a derivative of Clinical Procedures for Safer Patient Care by British Columbia Institute of Technology and is licensed under CC BY 4.0↵
8. Ferguson, C. M. (1990). Inspection, auscultation, palpation, and percussion of the abdomen. In Walker, H. K., Hall, W. D., Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed.). Butterworths. www.ncbi.nlm.nih.gov/books/NBK420/↵
9. McGee, S. R. (2012). *Evidence-based physical diagnosis* (3rd ed.). Elsevier Saunders. ↵
10. Mayumi, T., Yoshida, M., Tazuma, S., Furukawa, A., Nishii, O., Shigematsu, K., Azuhata, T., Itakura, A., Kamei, S., Kondo, H., Maeda, S., Mihara, H., Mizooka, M., Nishidate, T., Obara, H., Sato, N., Takayama, Y., Tsujikawa, T., Fujii, T., Miyata, T., Maruyama, I., Honda, H., & Hirata, K. (2015). Practice guidelines for primary care of acute abdomen. *J Hepatobiliary Pancreat Sci*, *23*, 3–36. doi.org/10.1002/jhbp.303↵
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12. Ferguson, C. M. (1990). Inspection, auscultation, palpation, and percussion of the abdomen. In Walker, H. K., Hall W. D., Hurst J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed.). Butterworths. www.ncbi.nlm.nih.gov/books/NBK420/↵
13. Ferguson, C. M. (1990). An overview of the gastrointestinal system. In Walker, H. K., Hall W. D., Hurst J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed.). Butterworths. www.ncbi.nlm.nih.gov/books/NBK405/↵
14. "DSC_2286-1024x678.jpg" by British Columbia Institute of Technology is licensed under CC BY 4.0. Access for free at https://opentextbc.ca/clinicalskills/chapter/2-5-focussed-respiratory-assessment/↵
15. McGee, S. R. (2012). *Evidence-based physical diagnosis* (3rd ed.). Elsevier Saunders. https://kimhournet.files.wordpress.com/2018/12/mcgee-evidence-based-physical-diagnosis-3rd-ed1.pdf↵
16. This work is a derivative of Clinical Procedures for Safer Patient Care by British Columbia Institute of Technology and is licensed under CC BY 4.0↵

17. Ferguson, C. M. (1990). Inspection, auscultation, palpation, and percussion of the abdomen. In Walker, H. K., Hall, W. D., Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed.). Butterworths. www.ncbi.nlm.nih.gov/books/NBK420/↵
18. McGee, S. R. (2012). *Evidence-based physical diagnosis* (3rd ed.). Elsevier Saunders. https://kimhournet.files.wordpress.com/2018/12/mcgee-evidence-based-physical-diagnosis-3rd-ed1.pdf↵

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9.5: Sample Documentation

Sample Documentation of Expected Findings

The patient denies abdominal pain, nausea, vomiting, bloating, constipation, diarrhea, urinary pain, urgency or frequency, change in appetite, food intolerance, dysphagia, or personal or family history. Abdominal contour is flat and symmetric. No visible lesions, pulsations, or peristalsis noted. Bowel sounds present and normoactive. Patient denies pain with palpation; no masses noted.

Sample Documentation of Unexpected Findings

The patient reports generalized abdominal pain, along with nausea and vomiting for the last two days. Abdomen is slightly distended. Bowel sounds hypoactive in all four quadrants. Pain reported at 7/10 and guarding noted with palpation of the RLQ. Dr. Smith notified at 0730.

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9.6: Checklist for Abdominal Assessment

Use this checklist below to review the steps for completion of an “Abdominal Assessment.”[1]

Steps

Disclaimer: Always review and follow agency policy regarding this specific skill.

1. Gather stethoscope.
2. Perform safety steps:
   - Perform hand hygiene.
   - Check the room for transmission-based precautions.
   - Introduce yourself, your role, the purpose of your visit, and an estimate of the time it will take.
   - Confirm patient ID using two patient identifiers (e.g., name and date of birth).
   - Explain the process to the patient and ask if they have any questions.
   - Be organized and systematic.
   - Use appropriate listening and questioning skills.
   - Listen and attend to patient cues.
   - Ensure the patient’s privacy and dignity.
   - Assess ABCs.
3. Conduct a focused interview related to gastrointestinal and genitourinary concerns. Ask relevant, focused questions based on patient status. See Tables for sample focused questions.
4. Position the patient in the supine position and drape the patient, exposing only the areas needed for assessment.
5. Inspect the abdomen for shape/contour, symmetry, pigmentation/color, lesions/scars, pulsation, and visible peristalsis.
6. Auscultate using the diaphragm of the stethoscope to assess for bowel sounds.
7. Lightly palpate the four quadrants of the abdomen to assess for pain or masses. Palpate the suprapubic area for bladder distention. If the patient reports abdominal pain, palpate that area last.
8. Assist the patient to a comfortable position, ask if they have any questions, and thank them for their time.
9. Ensure safety measures when leaving the room:
   - CALL LIGHT: Within reach
   - BED: Low and locked (in lowest position and brakes on)
   - SIDERAILS: Secured
   - TABLE: Within reach
   - ROOM: Risk-free for falls (scan room and clear any obstacles)
10. Perform hand hygiene.
11. Document the assessment findings and report any concerns according to agency policy.

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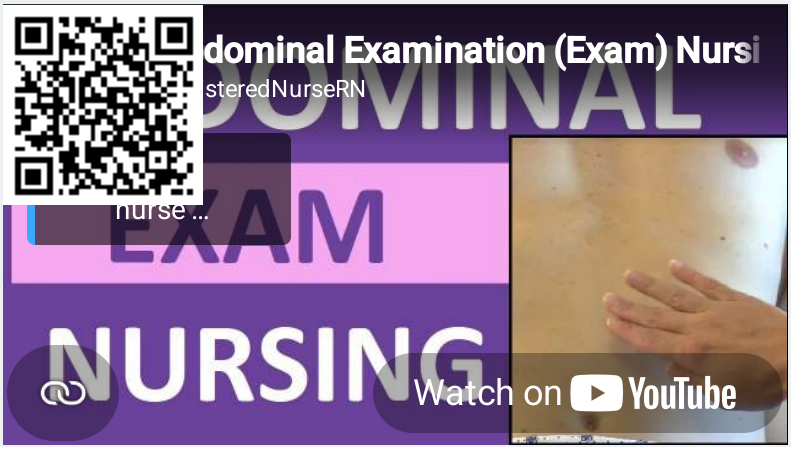
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9.7: Supplementary Video on Abdominal Assessment

Video Review of Abdominal Assessment[1]



1. RegisteredNurseRN. (2017, December 29). *Abdominal examination (exam) nursing assessment | Bowel & vascular sounds, palpation, inspection*. [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/1Xc7RYkz-CE↵

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9.8: Learning Activities

The nurse is performing a daily assessment on a patient who had hip surgery a few days ago. The patient reports she has not had a bowel movement since prior to admission three days ago. The nurse forms a hypothesis that the patient is constipated.

1. What subjective data should the nurse plan to obtain during the assessment to investigate “cues” regarding the potential hypothesis of constipation?

a. Nausea
b. Vomiting
c. Lactose intolerance
d. Bloating

2. What objective data should the nurse plan to obtain during the assessment to investigate “cues” regarding the potential hypothesis of constipation?

a. Bowel sounds
b. Skin integrity
c. Abdominal pulsations
d. Bladder distention

3. The nurse discovers the following findings during the assessment. Which should be reported to the provider?

a. The patient’s abdomen appears flat and symmetric.
b. There are hypoactive bowel sounds in all quadrants.
c. Firmness is palpated in left lower quadrant.
d. There is a scar from a previous appendectomy.

4. The nurse calls the provider and reports the assessment findings supporting the hypothesis of constipation. A new order for Milk of Magnesia 30 mL PO is obtained and the medication is administered. A few hours later, the patient has a large bowel movement. Write a focused DAR or SOAP note documenting the patient’s constipation status.

Practice creating documentation for this learning activity.

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9.9: IX Glossary

Borborygmus: Hyperperistalsis, often referred to as “stomach growling.”

Distention: An expansion of the abdomen caused by the accumulation of air or fluid. Patients often report “feeling bloated.”

Dysphagia: Difficulty swallowing.

Dysuria: Painful urination.

Guarding: Voluntary contraction of abdominal wall musculature; may be related to fear, anxiety, or presence of cold hands.

Hematochezia: Passage of bloody stool.

Hematemesis: Blood-tinged mucus secretions from the lungs.

Hyperactive bowel sounds: Increased peristaltic activity; may be related to diarrhea, obstruction, or digestion of a meal.

Hypoactive bowel sounds: Decreased peristaltic activity; may be related to constipation following abdominal surgery or with an ileus.

Melena: Stool dark in color and tarry in consistency.

Protuberant: Convex or bulging appearance.

Rebound tenderness: Pain when hand is withdrawn during palpation.

Rigidity: Involuntary contraction of the abdominal musculature in response to peritoneal inflammation.

Scaphoid: Sunken appearance.

Striae: White or silver markings from stretching of the skin.

Urinary frequency: Urination every hour or two.

Urinary incontinence: Involuntary leakage of urine.

Urinary urgency: An intense urge to urinate that can lead to urinary incontinence.

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CHAPTER OVERVIEW

10: Musculoskeletal Assessment

10.1: Musculoskeletal Assessment Introduction
10.2: Musculoskeletal Basic Concepts
10.3: Common Musculoskeletal Conditions
10.4: Musculoskeletal Assessment
10.5: Sample Documentation
10.6: Checklist for Musculoskeletal Assessment
10.7: Learning Activities
10.8: X Glossary

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10.1: Musculoskeletal Assessment Introduction

Learning Objectives

- Perform a musculoskeletal assessment
- Palpate joints for pain, swelling, change in temperature, and range of motion
- Modify assessment techniques to reflect variations across the life span
- Recognize and report significant deviations from norms
- Document actions and observations

The musculoskeletal system gives us the ability to move. It is composed of bones, muscles, joints, tendons, ligaments, and cartilage that support the body, allow movement, and protect vital organs. An assessment of the musculoskeletal system includes collecting data regarding the structure and movement of the body, as well the patient's mobility. Let's begin by reviewing the anatomy of the musculoskeletal system and common conditions a nurse may find on assessment.

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10.2: Musculoskeletal Basic Concepts

Skeleton

The skeleton is composed of 206 bones that provide the internal supporting structure of the body. See Figure 10.2.1[1] for an illustration of the major bones in the body. The bones of the lower limbs are adapted for weight-bearing support, stability, and walking. The upper limbs are highly mobile with large range of movements, along with the ability to easily manipulate objects with our hands and opposable thumbs.[2]

For additional information about the bones in the body, visit the OpenStax *Anatomy and Physiology* book.

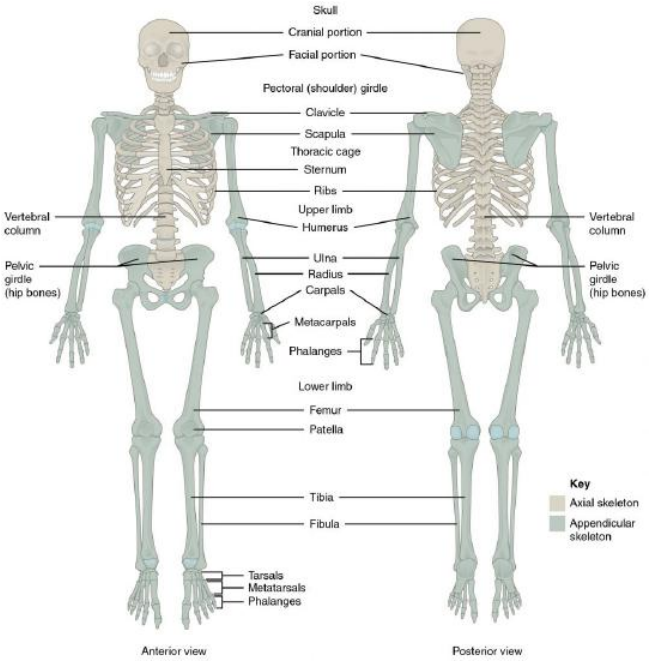


Figure 10.2.1: Skeletal Bones

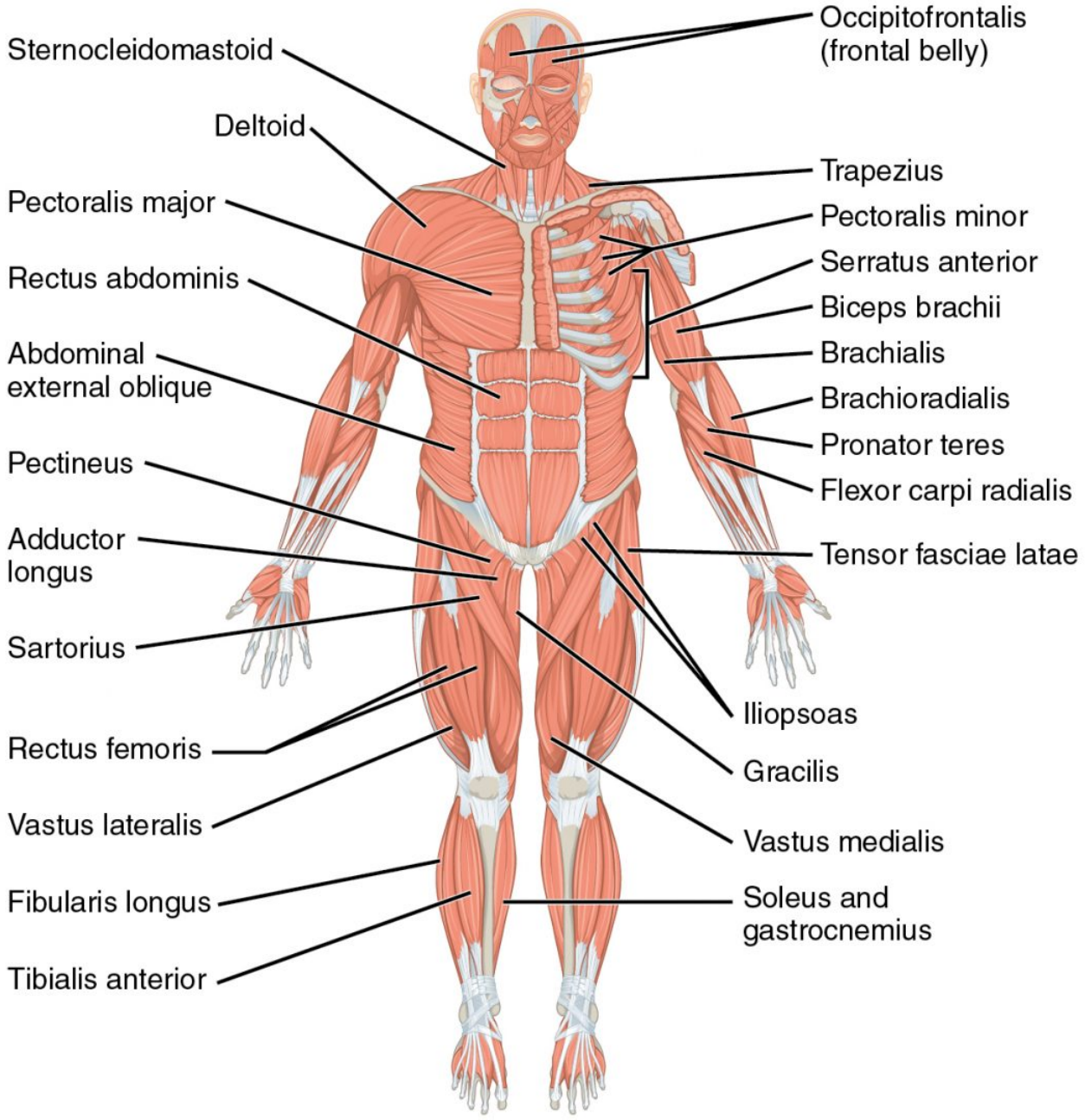
Bones are connected together by ligaments. **Ligaments** are strong bands of fibrous connective tissue that strengthen and support the joint by anchoring the bones together and preventing their separation. Ligaments allow for normal movements of a joint while also limiting the range of these motions to prevent excessive or abnormal joint movements.[3]

Muscles

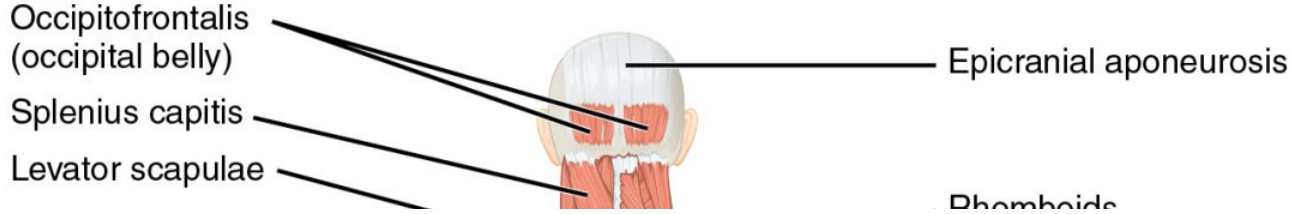
There are three types of muscle tissue: skeletal muscle, cardiac muscle, and smooth muscle. **Skeletal muscle** produces movement, assists in maintaining posture, protects internal organs, and generates body heat. Skeletal muscles are voluntary, meaning a person is able to consciously control them, but they also depend on signals from the nervous system to work properly. Other types of muscles are involuntary and are controlled by the autonomic nervous system, such as the smooth muscle within our bronchioles.[4] See Figure 10.2[5] for an illustration of skeletal muscle.

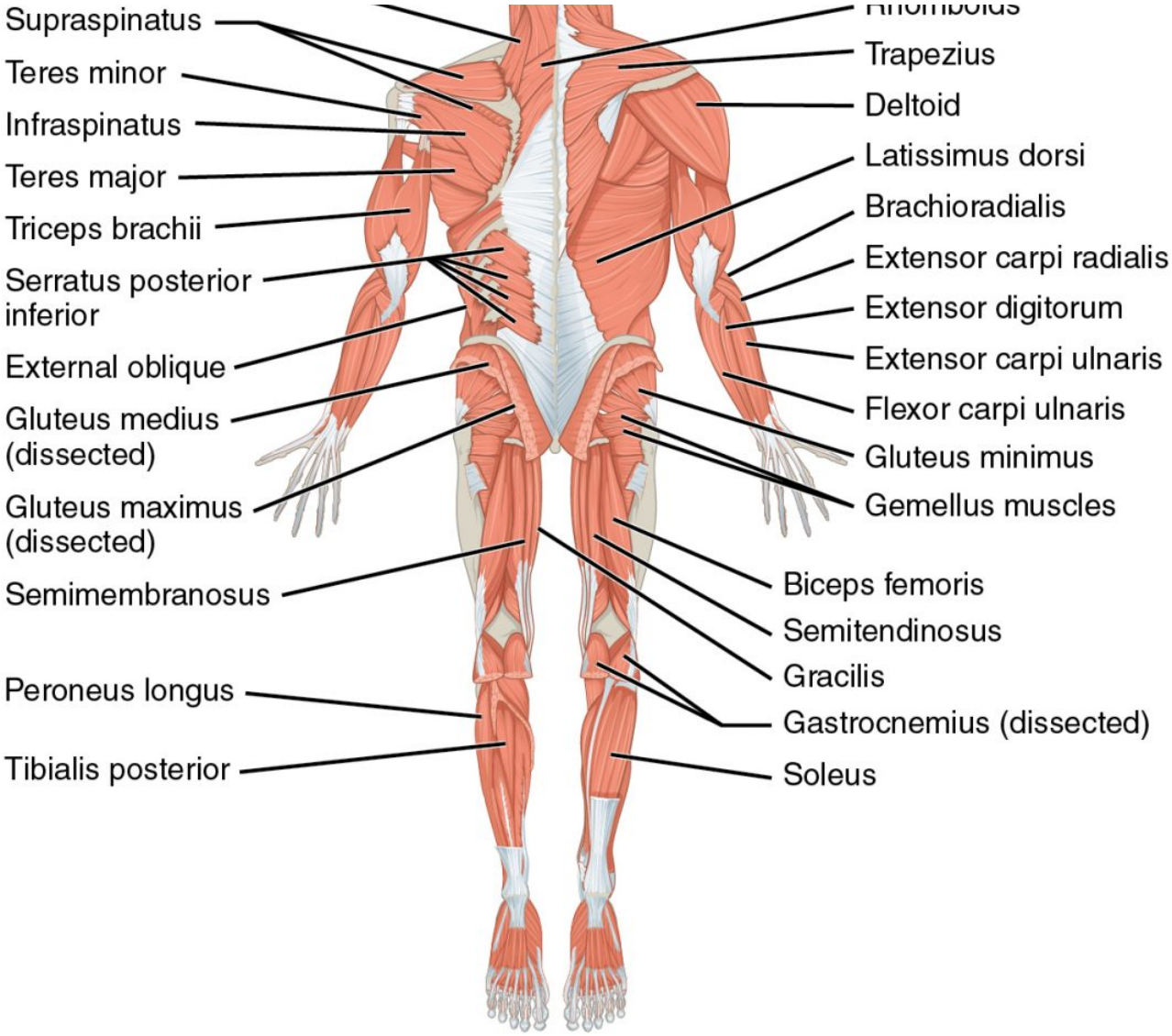
To move the skeleton, the tension created by the contraction of the skeletal muscles is transferred to the **tendons**, strong bands of dense, regular connective tissue that connect muscles to bones.[6]

For additional information about skeletal muscles, visit the OpenStax *Anatomy and Physiology* book.



Major muscles of the body. Right side: superficial; left side: deep (anterior view)





Major muscles of the body. Right side: superficial; left side: deep (posterior view)

Figure 10.2.2: Skeletal Muscle

Muscle Atrophy

Muscle atrophy is the thinning or loss of muscle tissue. See Figure 10.2.3[7] for an image of muscle atrophy. There are three types of muscle atrophy: physiologic, pathologic, and neurogenic.

Physiologic atrophy is caused by not using the muscles and can often be reversed with exercise and improved nutrition. People who are most affected by physiologic atrophy are those who:

- Have seated jobs, health problems that limit movement, or decreased activity levels
- Are bedridden
- Cannot move their limbs because of stroke or other brain disease
- Are in a place that lacks gravity, such as during space flights

Pathologic atrophy is seen with aging, starvation, and adverse effects of long-term use of corticosteroids. Neurogenic atrophy is the most severe type of muscle atrophy. It can be from an injured or diseased nerve that connects to the muscle. Examples of neurogenic atrophy are spinal cord injuries and polio.[8]

Although physiologic atrophy due to disuse can often be reversed with exercise, muscle atrophy caused by age is irreversible. The effects of age-related atrophy are especially pronounced in people who are sedentary because the loss of muscle results in functional impairments such as trouble with walking, balance, and posture. These functional impairments can cause decreased quality of life and injuries due to falls.[9]

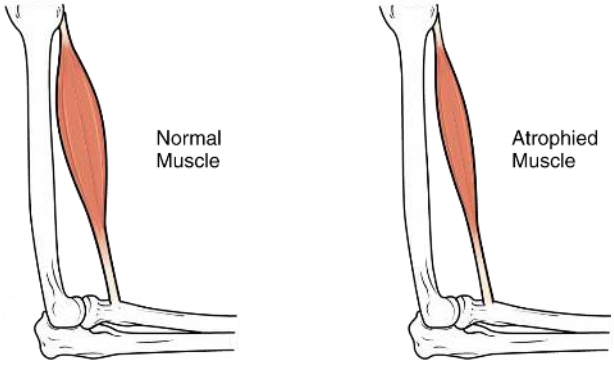


Figure 10.2.3: Muscle Atrophy

Joints

Joints are the location where bones come together. Many joints allow for movement between the bones. **Synovial joints** are the most common type of joint in the body. Synovial joints have a fluid-filled joint cavity where the articulating surfaces of the bones contact and move smoothly against each other. See Figure 10.2.4[10] for an illustration of a synovial joint. **Articular cartilage** is smooth, white tissue that covers the ends of bones where they come together and allows the bones to glide over each other with very little friction. Articular cartilage can be damaged by injury or normal wear and tear. Lining the inner surface of the articular capsule is a thin synovial membrane. The cells of this membrane secrete **synovial fluid**, a thick, slimy fluid that provides lubrication to further reduce friction between the bones of the joint.[11]

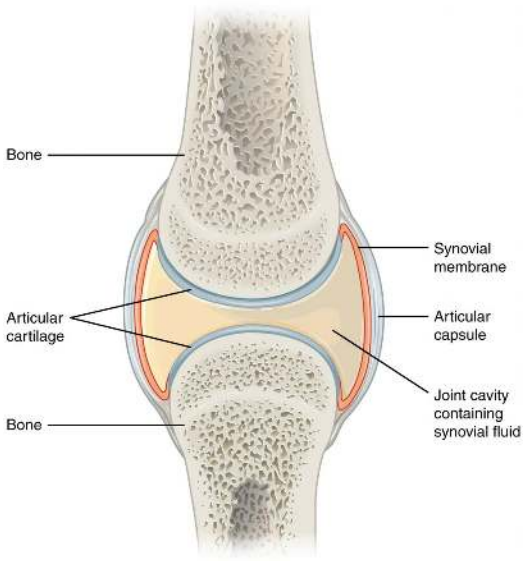


Figure 10.2.4 Synovial Joint

Types of Synovial Joints

There are six types of synovial joints. See Figure 10.2.5[12] for an illustration of the types of synovial joints. Some joints are relatively immobile but stable. Other joints have more freedom of movement but are at greater risk of injury. For example, the hinge joint of the knee allows flexion and extension, whereas the ball and socket joint of the hip and shoulder allows flexion, extension, abduction, adduction, and rotation. The knee, hip, and shoulder joints are commonly injured and are discussed in more detail in the following subsections.

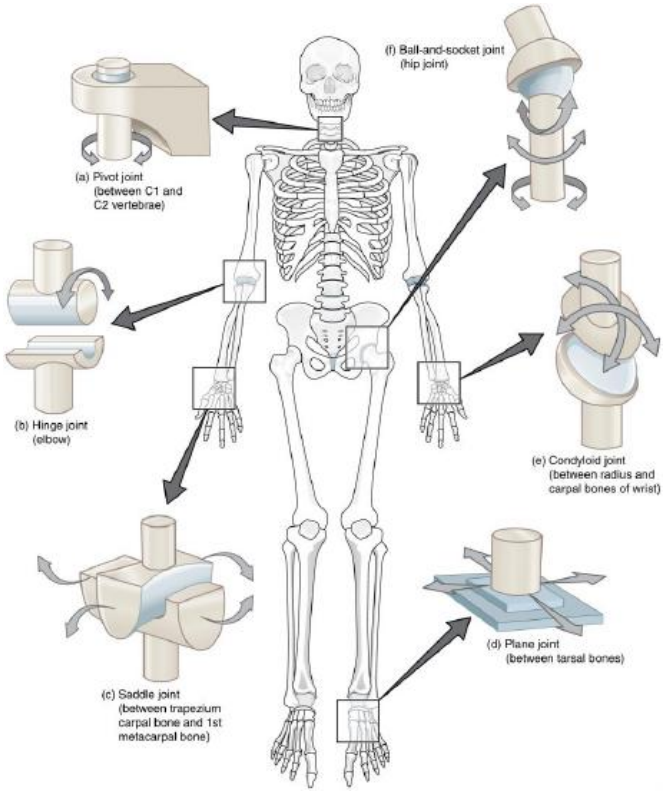


Figure 10.2.5 Types of Synovial Joints

Shoulder Joint

The shoulder joint is a ball-and-socket joint formed by the articulation between the head of the humerus and the glenoid cavity of the scapula. This joint has the largest range of motion of any joint in the body. See Figure 10.2.6[13] to review the anatomy of the shoulder joint. Injuries to the shoulder joint are common, especially during repetitive abductive use of the upper limb such as during throwing, swimming, or racquet sports.[14]

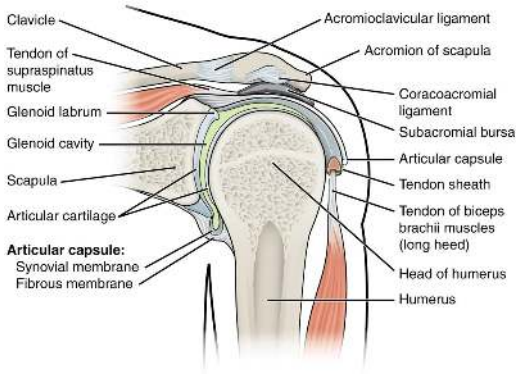


Figure 10.2.6: Shoulder Joint

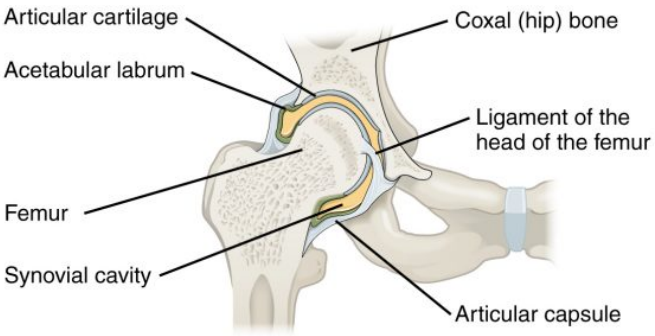
Hip Joint

The hip joint is a ball-and-socket joint between the head of the femur and the acetabulum of the hip bone. The hip carries the weight of the body and thus requires strength and stability during standing and walking.[15]

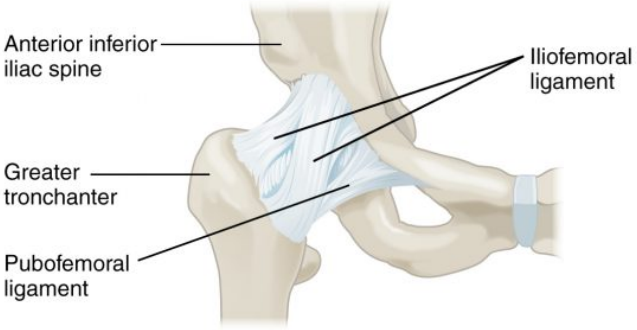
See Figure 10.2.7[16] for an illustration of the hip joint.

A common hip injury in older adults, often referred to as a “broken hip,” is actually a fracture of the head of the femur. Hip fractures are commonly caused by falls.[17]

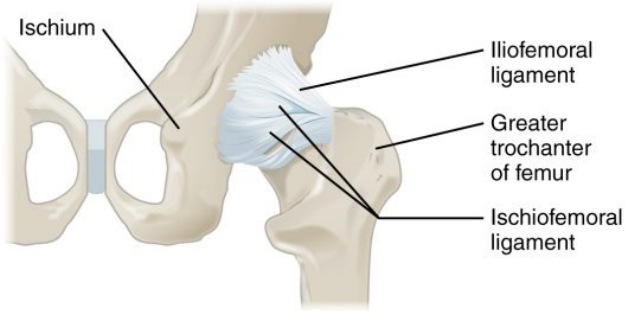
See more information about hip fractures under the “Common Musculoskeletal Conditions” section.



(a) Frontal section through the right hip joint



(b) Anterior view of right hip joint, capsule in place



(c) Posterior view of right hip joint, capsule in place

Figure 10.2.7 Hip Joint

Knee Joint

The knee functions as a hinge joint that allows flexion and extension of the leg. In addition, some rotation of the leg is available when the knee is flexed, but not when extended. See Figure 10.2.8[18] for an illustration of the knee joint. The knee is vulnerable to injuries associated with hyperextension, twisting, or blows to the medial or lateral side of the joint, particularly while weight bearing.[19]

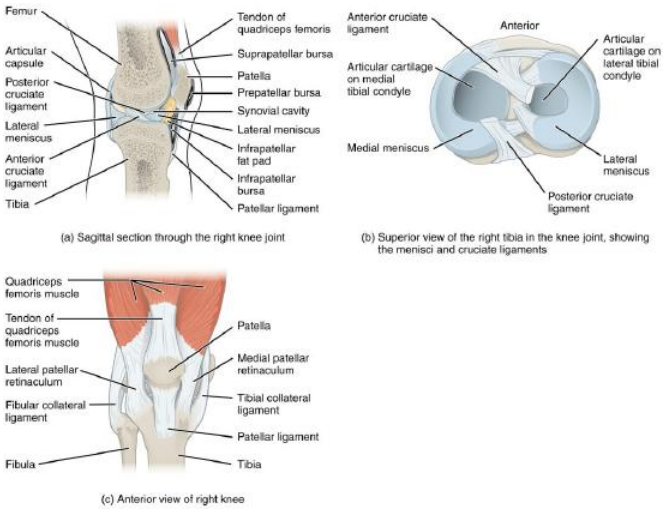


Figure 10.2.8: Knee Joint

The knee joint has multiple ligaments that provide support, especially in the extended position. On the outside of the knee joint are the lateral collateral, medial collateral, and tibial collateral ligaments. The lateral collateral ligament is on the lateral side of the knee and spans from the lateral side of the femur to the head of the fibula. The medial collateral ligament runs from the medial side of the femur to the medial tibia. The tibial collateral ligament crosses the knee and is attached to the articular capsule and to the medial meniscus. In the fully extended knee position, both collateral ligaments are taut and stabilize the knee by preventing side-to-side or rotational motions between the femur and tibia.[20]

Inside the knee joint are the anterior cruciate ligament and posterior cruciate ligament. These ligaments are anchored inferiorly to the tibia and run diagonally upward to attach to the inner aspect of a femoral condyle. The posterior cruciate ligament supports the knee when it is flexed and weight-bearing such as when walking downhill. The anterior cruciate ligament becomes tight when the knee is extended and resists hyperextension.[21]

The patella is a bone incorporated into the tendon of the quadriceps muscle, the large muscle of the anterior thigh. The patella protects the quadriceps tendon from friction against the distal femur. Continuing from the patella to the anterior tibia just below the knee is the patellar ligament. Acting via the patella and patellar ligament, the quadriceps is a powerful muscle that extends the leg at the knee and provides support and stabilization for the knee joint.

Located between the articulating surfaces of the femur and tibia are two articular discs, the medial meniscus and lateral meniscus. Each meniscus is a C-shaped fibrocartilage that provides padding between the bones.[22]

Joint Movements

Several movements may be performed by synovial joints. **Abduction** is the movement away from the midline of the body. **Adduction** is the movement toward the middle line of the body. **Extension** is the straightening of limbs (increase in angle) at a joint. **Flexion** is bending the limbs (reduction of angle) at a joint. **Rotation** is a circular movement around a fixed point. See Figures 10.2.9[23] and 10.2.10[24] for images of the types of movements of different joints in the body.

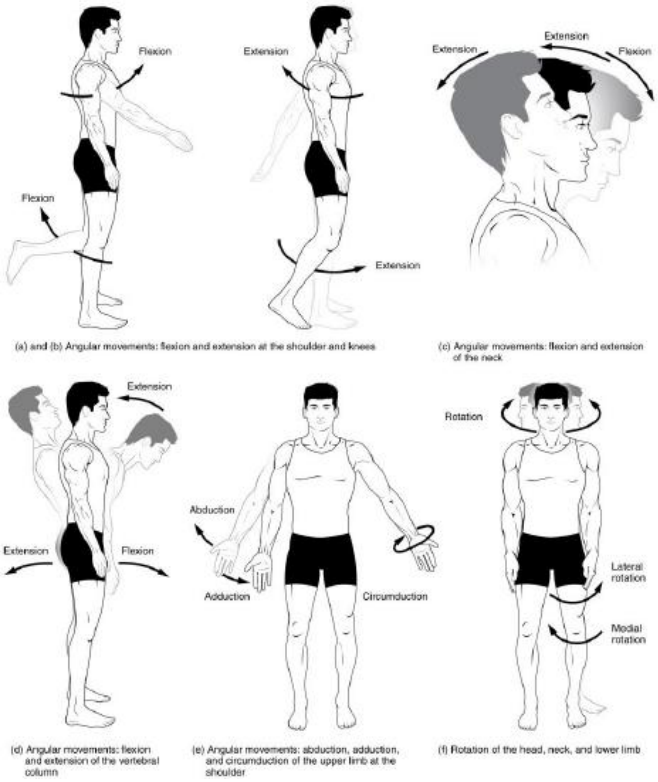


Figure 10.2.9: Joint Movements

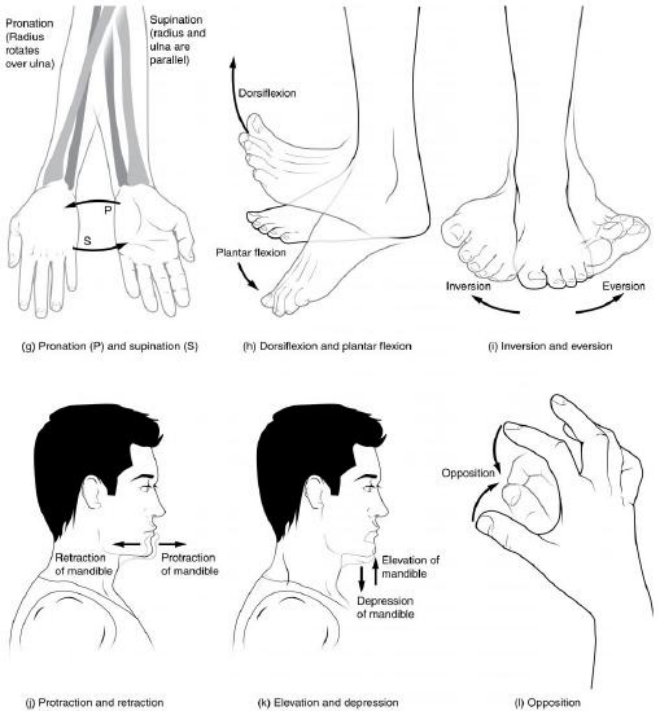


Figure 10.2.10: Joint Movements

Joint Sounds

Sounds that occur as joints are moving are often referred to as **crepitus**. There are many different types of sounds that can occur as a joint moves, and patients may describe these sounds as popping, snapping, catching, clicking, crunching, cracking, crackling, creaking, grinding, grating, and clunking. There are several potential causes of these noises such as bursting of tiny bubbles in the synovial fluid, snapping of ligaments, or a disease condition. While assessing joints, be aware that joint noises are common during

activity and are usually painless and harmless, but if they are associated with an injury or are accompanied by pain or swelling, they should be reported to the health care provider for follow-up.[25]

View Physitutor's YouTube video for a review of crepitus sounds:
Physitutor's "Why Your Knees Crack | Joint Crepitations[26]

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8. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Muscle atrophy; [updated 2020, Sep 16; cited 2020, Sep 18]. https://medlineplus.gov/ency/article/003188.htm↵
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26. Physitutors. (2017, March 25). *Why your knees crack | Joint crepitations.* [Video]. YouTube. All rights reserved. https://youtu.be/NQOZZgh5z8I↵

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10.3: Common Musculoskeletal Conditions

Now that we have reviewed the basic anatomy of the musculoskeletal system, let's review common musculoskeletal conditions that a nurse may find on assessment.

Osteoporosis

Osteoporosis is a disease that thins and weakens bones, causing them to become fragile and break easily. See Figure 10.3.1[1] for an illustration comparing the top right image of normal bone to the bottom right image of bone with osteoporosis. Osteoporosis is common in older women and often occurs in the hip, spine, and wrist. To keep bones strong, patients at risk are educated to eat a diet rich in calcium and vitamin D, participate in weight-bearing exercise, and avoid smoking. If needed, medications such as bisphosphonates and calcitonin are used to treat severe osteoporosis.[2]

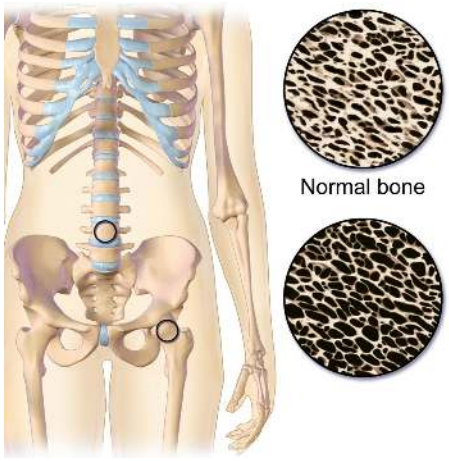


Figure 10.3.1: Osteoporosis

Fracture

A **fracture** is the medical term for a broken bone. There are many different types of fractures commonly caused by sports injuries, falls, and car accidents. Additionally, people with osteoporosis are at higher risk for fractures from minor injuries due to weakening of the bones. See Figure 10.3.2[3] for an illustration of different types of fractures. For example, if the broken bone punctures the skin, it is called an **open fracture**. Symptoms of a fracture include the following:

- Intense pain
- Deformity (i.e., the limb looks out of place)
- Swelling, bruising, or tenderness around the injury
- Numbness and tingling of the extremity distal to the injury
- Difficulty moving a limb

A suspected fracture requires immediate medical attention and an X-ray to determine if the bone is broken. Treatment includes a cast or splint. In severe fractures, surgery is performed to place plates, pins, or screws in the bones to keep them in place as they heal.[4]

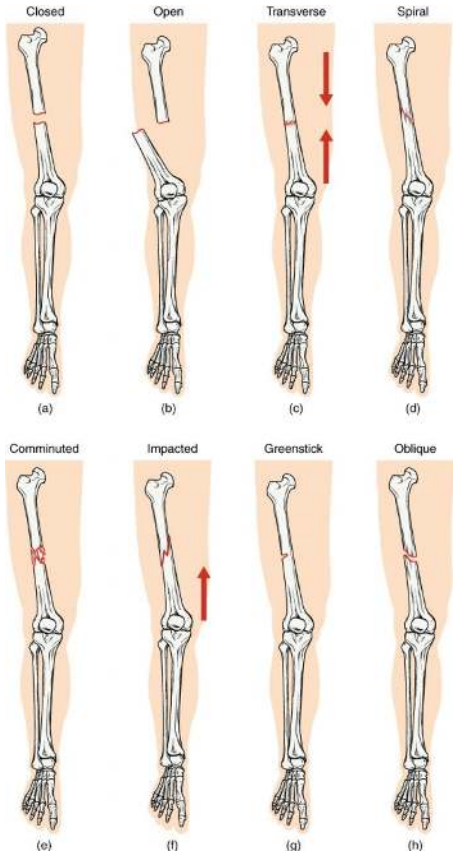


Figure 10.3.2: Types of Fractures

Hip Fracture

A hip fracture, commonly referred to as a “broken hip,” is actually a fracture of the femoral neck. See Figure 10.3.3[5] for an image of a hip fracture. Hip fractures are typically caused by a fall, especially in older adults with preexisting osteoporosis. Symptoms of a hip fracture after a fall include the following:

- Pain
- An inability to lift, move, or rotate the affected leg
- An inability to stand or put weight on the affected leg
- Bruising and swelling around the hip
- The injured leg appears shorter than the other leg
- The injured leg is rotated outwards[6]

Hip fractures typically require surgical repair within 48 hours of the injury. In approximately half of the cases of hip fractures, hip replacement is needed. See more information about hip replacement under the “Osteoarthritis” section below. In other cases, the fracture is fixed with surgery called Open Reduction Internal Fixation (ORIF) where the surgeon makes an incision to realign the bones, and then they are internally fixated (i.e., held together) with hardware like metal pins, plates, rods, or screws. After the bone heals, this hardware isn’t removed unless additional symptoms occur. After surgery, the patient will need mobility assistance for a prolonged period of time from family members or in a long-term care facility, and the reduced mobility can result in additional falls if protective measures are not put into place. Additionally, hip fractures are also associated with life-threatening complications, such as pneumonia, infected pressure injuries, and blood clots that can move to the lungs causing pulmonary embolism.[7]



Figure 10.3.3: Hip Fracture

Osteoarthritis

Osteoarthritis (OA) is the most common type of arthritis associated with aging and wear and tear of the articular cartilage that covers the surfaces of bones at a synovial joint. OA causes the cartilage to gradually become thinner, and as the cartilage layer wears down, more pressure is placed on the bones. The joint responds by increasing production of the synovial fluid for more lubrication, but this can cause swelling of the joint cavity. The bone tissue underlying the damaged articular cartilage also responds by thickening and causing the articulating surface of the bone to become rough or bumpy. As a result, joint movement results in pain and inflammation. In early stages of OA, symptoms may be resolved with mild activity that warms up the joint. However, in advanced OA, the affected joints become more painful and difficult to use, resulting in decreased mobility. There is no cure for osteoarthritis, but several treatments can help alleviate the pain. Treatments may include weight loss, low-impact exercise, and medications such as acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), and celecoxib. For severe cases of OA, joint replacement surgery may be required.[8]

See Figure 10.3.4[9] for an image comparing a normal joint to one with osteoarthritis and another type of arthritis called rheumatoid arthritis. (Rheumatoid arthritis is further explained under the “Joint Replacement” subsection.)

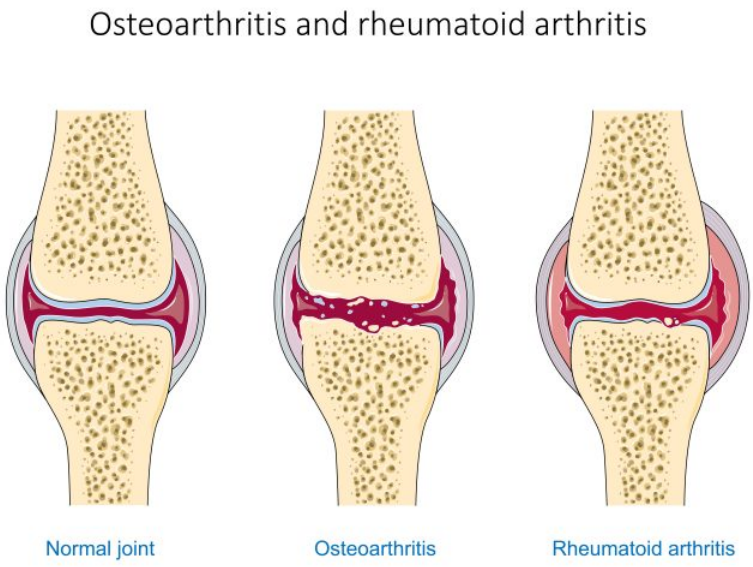


Figure 10.3.4: Comparison of Osteoarthritis and Rheumatoid Arthritis

Joint Replacement

Arthroplasty, the medical term for joint replacement surgery, is an invasive procedure requiring extended recovery time, so conservative treatments such as lifestyle changes and medications are attempted before surgery is performed. See Figure 10.3.5[10] for an illustration of joint replacement surgery. This type of surgery involves replacing the articular surfaces of the bones with prosthesis (artificial components). For example, in hip arthroplasty, the worn or damaged parts of the hip joint, including the head and neck of the femur and the acetabulum of the pelvis, are removed and replaced with artificial joint components. The replacement head for the femur consists of a rounded ball attached to the end of a shaft that is inserted inside the femur. The acetabulum of the pelvis is reshaped and a replacement socket is fitted into its place.[11]

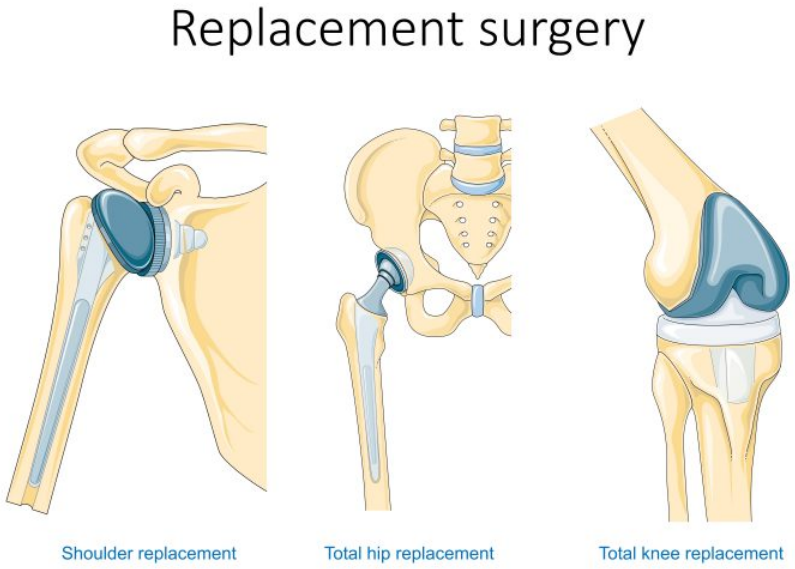


Figure 10.3.5: Joint Replacement

Hip Replacement

Hip replacement is surgery for people with severe hip damage often caused by osteoarthritis or a hip fracture. During a hip replacement operation, the surgeon removes damaged cartilage and bone from the hip joint and replaces them with artificial parts.[12]

The most common complication after surgery is hip dislocation. Because a man-made hip is smaller than the original joint, the ball may easily come out of its socket. Some general rules of thumb when caring for patients during the recovery period are as follows:

- Patients should not cross their legs or ankles when they are sitting, standing, or lying down.
- Patients should not lean too far forward from their waist or pull their leg up past their waist. This bending is called hip flexion. Avoid hip flexion greater than 90 degrees.[13]

For more information about patient education after a hip replacement surgery, read the following article from Medline Plus: How to Take Care of Your New Hip Joint

Rheumatoid Arthritis

Rheumatoid arthritis (RA) is a type of arthritis that causes pain, swelling, stiffness, and loss of function in joints due to inflammation caused by an autoimmune disease. See Figure 10.3.6[14] for an illustration of RA in the hands causing inflammation and a common deformity of the fingers. It often starts in middle age and is more common in women. RA is different from osteoarthritis because it is an autoimmune disease, meaning it is caused by the immune system attacking the body's own tissues.[15] In rheumatoid arthritis, the joint capsule and synovial membrane become inflamed. As the disease progresses, the articular cartilage is severely damaged, resulting in joint deformation, loss of movement, and potentially severe disability. There is no known cure for

RA, so treatments are aimed at alleviating symptoms. Medications such as nonsteroidal anti-inflammatory drugs (NSAIDS), corticosteroids, and antirheumatic drugs such as methotrexate are commonly used to treat rheumatoid arthritis.[16]

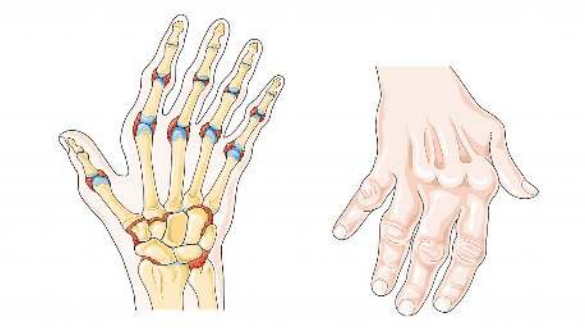


Figure 10.3.6 Rheumatoid Arthritis in the Hands

Gout

Gout is a type of arthritis that causes swollen, red, hot, and stiff joints due to the buildup of uric acid. It typically first attacks the big toe. See Figure 10.3.7[17] for an illustration of gout in the joint of the big toe. Uric acid usually dissolves in the blood, passes through the kidneys, and is eliminated in urine, but gout occurs when uric acid builds up in the body and forms painful, needle-like crystals in joints. Gout is treated with lifestyle changes such avoiding alcohol and food high in purines, as well as administering antigout medications, such as allopurinol and colchicine.[18]



Figure 10.3.7: Gout

Vertebral Disorders

The spine is composed of many vertebrae stacked on top of one another, forming the vertebral column. There are several disorders that can occur in the vertebral column causing curvature of the spine such as kyphosis, lordosis, and scoliosis. See Figure 10.3.8[19] for an illustration of kyphosis, lordosis, and scoliosis.

Kyphosis is a curving of the spine that causes a bowing or rounding of the back, often referred to as a “buffalo hump” that can lead to a hunchback or slouching posture. Kyphosis can be caused by osteoarthritis, osteoporosis, or other conditions. Pain in the middle or lower back is the most common symptom. Treatment depends upon the cause, the severity of pain, and the presence of any neurological symptoms.[20]

Lordosis is the inward curve of the lumbar spine just above the buttocks. A small degree of lordosis is normal, especially during the third trimester of pregnancy. Too much curving of the lower back is often called swayback. Most of the time, lordosis is not treated if the back is flexible because it is not likely to progress or cause problems.[21]

Scoliosis causes a sideways curve of the spine. It commonly develops in late childhood and the early teens when children grow quickly. Symptoms of scoliosis include leaning to one side and having uneven shoulders and hips. Treatment depends on the patient’s age, the amount of expected additional growth, the degree of curving, and whether the curve is temporary or permanent. Patients with mild scoliosis might only need checkups to monitor if the curve is getting worse, whereas others may require a brace or have surgery.[22]

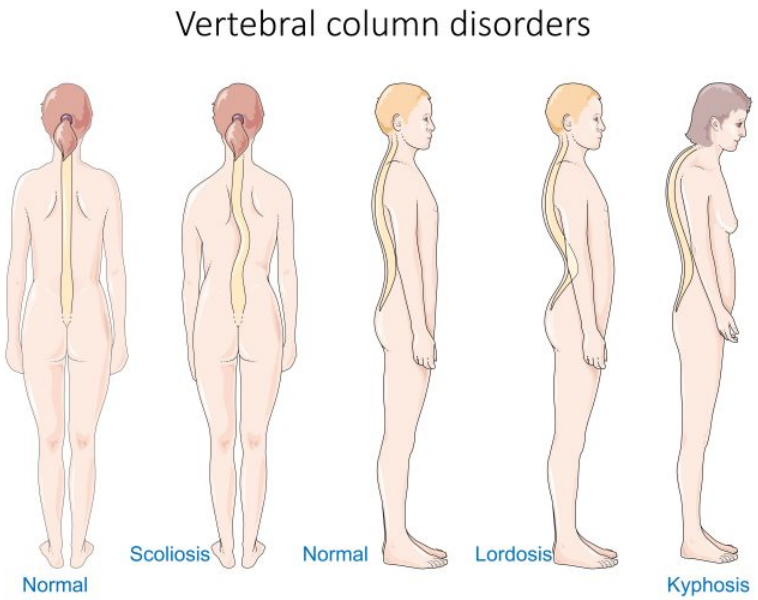


Figure 10.3.8 Vertebral Disorders

Sprains and Strains

A **strain** is a stretched or torn muscle or tendon. Tendons are tissues that connect muscle to bone. See Figure 10.3.10[28] for an image of a strained tendon. Strains can happen suddenly from an injury or develop over time due to chronic overuse. Symptoms include pain, muscle spasms, swelling, and trouble moving the muscle.

Treatment of sprains and strains is often referred to with the mnemonic **RICE** that stands for Resting the injured area, Icing the area, Compressing the area with an ACE bandage or other device, and Elevating the affected limb. Medications such as acetaminophen or nonsteroidal anti-inflammatory drugs (NSAIDs) may also be used.[29]



Figure 10.3.9 Sprained Ankle Ligaments

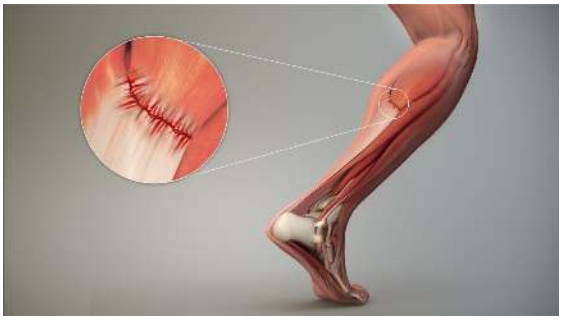


Figure 10.3.10: Strained Tendon

Knee Injuries and Arthroscopic Surgery

Knee injuries are common. Because the knee joint is primarily supported by muscles and ligaments, injuries to any of these structures will result in pain or knee instability. **Arthroscopic surgery** has greatly improved the surgical treatment of knee injuries and reduced subsequent recovery times. This procedure involves a small incision and the insertion of an arthroscope, a pencil-thin instrument that allows for visualization of the joint interior. Small surgical instruments are inserted via additional incisions to remove or repair ligaments and other joint structures.[30]

Contracture

A **contracture** develops when the normally elastic tissues are replaced by inelastic, fiber-like tissue. This inelastic tissue makes it difficult to stretch the area and prevents normal movement.

Contractures occur in the skin, the tissues underneath, and the muscles, tendons, and ligaments surrounding a joint. They affect the range of motion and function in a specific body part and can be painful. See Figure 10.3.11[31] for an image of severe contracture of the wrist that occurred after a burn injury.

Contracture can be caused by any of the following:

- Brain and nervous system disorders, such as cerebral palsy or stroke
- Inherited disorders, such as muscular dystrophy
- Nerve damage
- Reduced use (for example, from lack of mobility)
- Severe muscle and bone injuries
- Scarring after traumatic injury or burns

Treatments may include exercises, stretching, or applying braces and splints.[32]



Figure 10.3.11: Contracture

Foot Drop

Foot drop is the inability to raise the front part of the foot due to weakness or paralysis of the muscles that lift the foot. As a result, individuals with foot drop often scuff their toes along the ground when walking or bend their knees to lift their foot higher than usual to avoid the scuffing. Foot drop is a symptom of an underlying problem and can be temporary or permanent, depending on the cause. The prognosis for foot drop depends on the cause. Foot drop caused by trauma or nerve damage usually shows partial or complete recovery, but in progressive neurological disorders, foot drop will be a symptom that is likely to continue as a lifelong disability. Treatment depends on the specific cause of foot drop. The most common treatment is to support the foot with lightweight leg braces. See Figure 10.3.12[33] for an image of a patient with foot drop treated with a leg brace. Exercise therapy to strengthen the muscles and maintain joint motion also helps to improve a patient's gait.[34]



Figure 10.3.12: Foot Drop Treated with Leg Brace

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12. MedlinePlus [Internet]. Bethesda (MD): National Library of Medicine (US); [updated 2020, Aug 21]. Hip replacement; [reviewed 2016, Aug 31; cited 2020, Sep 18]. https://medlineplus.gov/hipreplacement.html↵
13. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Taking care of your new hip joint; [updated 2020, Sep 16; cited 2020, Sep 18]. https://medlineplus.gov/ency/patientinstructions/000171.htm↵
14. "Rheumatoid arthritis -- Smart- Servier (cropped).jpg" by Laboratoires Servier is licensed under CC BY-SA 3.0↵
15. MedlinePlus [Internet]. Bethesda (MD): National Library of Medicine (US); [updated 2020, Aug 14]. Rheumatoid arthritis; [reviewed 2018, May 2; cited 2020, Sep 18]. https://medlineplus.gov/rheumatoidarthritis.html↵
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20. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Kyphosis; [updated 2020, Sep 16; cited 2020, Sep 18]. https://medlineplus.gov/ency/article/001240.htm↵
21. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Lordosis - lumbar; [updated 2020, Sep 16; cited 2020, Sep 18]. https://medlineplus.gov/ency/article/003278.htm↵
22. MedlinePlus [Internet]. Bethesda (MD): National Library of Medicine (US); [updated 2020, Apr 29]. Scoliosis; [reviewed 2016, Oct 18; cited 2020, Sep 18]. https://medlineplus.gov/scoliosis.html↵
23. "AnterDisAPMark.png" by James Heilman, MD is licensed under CC BY-SA 4.0↵
24. MedlinePlus [Internet]. Bethesda (MD): National Library of Medicine (US); [updated 2019, Feb 7]. Dislocations; [reviewed 2016, Oct 26; cited 2020, Sep 18]. https://medlineplus.gov/dislocations.html↵
25. "813 Clubfoot.jpg" by OpenStax is licensed under CC BY 3.0↵

26. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Club foot; [updated 2020, Sep 16; cited 2020, Sep 18]. https://medlineplus.gov/ency/article/001228.htm↵
27. “Ankle sprain -- Smart-Servier.jpg” by Laboratoires Servier is licensed under CC BY-SA 3.0↵
28. “3D Medical Animation Depicting Strain-Tendon.jpg” by https://www.scientificanimations.com is licensed under CC BY-SA 4.0↵
29. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Sprains and strains; [updated 2020, Jun 17; reviewed 2017, Jan 3; cited 2020, Sep 18]. https://medlineplus.gov/sprainsandstrains.html↵
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31. “Complications of Hypertrophic Scarring.png” by Aarabi, S., Longaker, M. T., & Gurtner, G. C. is licensed under CC BY 3.0↵
32. A.D.A.M. Medical Encyclopedia [Internet]. Atlanta (GA): A.D.A.M., Inc.; c1997-2020. Contracture deformity; [updated 2020, Sep 16; cited 2020, Sep 18]. https://medlineplus.gov/ency/article/003185.htm↵
33. “AFO brace for foot drop.JPG” by Pagemaker787 is licensed under CC BY-SA 4.0↵
34. National Institute of Neurological Disorders and Stroke. (2019, March 27). *Foot drop information page*. https://www.ninds.nih.gov/Disorders/All-Disorders/Foot-Drop-Information-Page↵

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10.4: Musculoskeletal Assessment

Now that you reviewed the anatomy of the musculoskeletal system and common musculoskeletal conditions, let's discuss the components of a routine nursing assessment.

Subjective Assessment

Collect subjective data from the patient and pay particular attention to what the patient is reporting about current symptoms, as well as past history of musculoskeletal injuries and disease. Information during the subjective assessment should be compared to expectations for the patient's age group or that patient's baseline. For example, an older client may have chronic limited range of motion in the knee due to osteoarthritis, whereas a child may have new, limited range of motion due to a knee sprain that occurred during a sports activity.

If the patient reports a current symptom, use the OLD CART & ICE method described in the "Health History" chapter to obtain more information about this chief complaint. If the patient is experiencing acute pain or recent injury, focus on providing pain relief and/or stabilization of the injury prior to proceeding with the interview. Use information obtained during the subjective assessment to guide your physical examination. Sample focused interview questions to include during a subjective assessment of the musculoskeletal system are contained in Table 10.4.1. The first question of the musculoskeletal interview is based on the six most common symptoms related to musculoskeletal disease.[1]

Table 10.4.1 Focused Interview Questions Related to the Musculoskeletal System

Interview Questions	Follow-up
Are you experiencing any current musculoskeletal symptoms such as muscle weakness, pain, swelling, redness, warmth, or stiffness?	Describe your concern today. **Onset:** When did this problem first start? Is it constant or does it come and go? **Location:** Where is this problem located? Can you point to it? **Duration:** How long have you had this problem? **Characteristics:** Please describe this problem (aching, throbbing, sharp, dull). For pain, how severe is the pain on a scale of 0-10? **Aggravating Factors:** Does anything bring on the symptom such as activity, weight-bearing, or rest? Does it occur at a certain time of day? **Relieving Factors:** Is there anything that makes it better or go away? **Treatment:** Have you taken anything or tried other treatments to relieve these symptoms, such as heat, ice, or massage. **Impact on ADL's:** How is it affecting your ability to complete daily activities? **Coping Strategies:** How do you cope when you have these symptoms? **Emotional Symptoms:** Emotionally, how do you feel when you have these symptoms?
Have you ever been diagnosed with a chronic musculoskeletal disease such as osteoporosis, osteoarthritis, or rheumatoid arthritis?	Please describe the conditions and treatments.
Have you ever been diagnosed with a neurological condition that affected the use of your muscles?	Please describe.
Have you had any previous surgeries on your bones or muscles, such as fracture repair or knee or hip surgery?	Please describe.
Are you currently taking any medications, herbs, or supplements for your muscles, bones, or the health of your musculoskeletal system?	Please describe.

Have you ever had a broken bone, strain, or other injury to a muscle, joint, tendon, or ligament?	Please describe.

Life Span Considerations

When conducting a subjective interview of children, additional information may be obtained from the parent or legal guardian.

Newborn

- Did your baby experience any trauma during labor and delivery?
- Did the head come first during delivery of your baby? Was the baby in breech position requiring delivery by Caesarean section?
- Were forceps used during delivery?
- Have been told your infant has a “click” within the hip(s)?
- Do you have any concern with your baby moving any joints, extremities, or neck normally? If so, describe.

Pediatric

- Has your child ever had a broken bone? If so, how was it treated?
- Has your child had any dislocation of a joint?
- Have you noticed any abnormality with your child’s spine, toes, feet, or hands? If so, describe.
- Does your child have any difficulty walking, jumping, or playing? If so, describe.
- Is your child involved in sports or organized physical activities? Do you have any concerns about your child being physically able to perform these activities?

Older Adults

When assessing older adults, it is important to assess their mobility and their ability to perform activities of daily living.

- Do you use any assistive devices such as a brace, cane, walker, or wheelchair?
- Have you fallen or had any near falls in the past few months? If so, was there any injury or did you seek medical care?
- Describe your mobility as of today. Have you noticed any changes in your ability to complete your usual daily activities such as walking, going to the bathroom, bathing, doing laundry, or preparing meals? If so, do you have any assistance available?

Objective Assessment

The purpose of a routine physical exam of the musculoskeletal system by a registered nurse is to assess function and to screen for abnormalities. Most information about function and mobility is gathered during the patient interview, but the nurse also observes the patient’s posture, walking, and movement of their extremities during the physical exam.

During a routine assessment of a patient during inpatient care, a registered nurse typically completes the following musculoskeletal assessments:

- Assess gait
- Inspect the spine
- Observe range of motion of joints
- Inspect muscles and extremities for size and symmetry
- Assess muscle strength
- Palpate extremities for tenderness[2]

While assessing an older adult, keep in mind they may have limited mobility and range of motion due to age-related degeneration of joints and muscle weakness. Be considerate of these limitations and never examine any areas to the point of pain or discomfort. Support the joints and muscles as you assess them to avoid pain or muscle spasm. Compare bilateral sides simultaneously and expect symmetry of structure and function of the corresponding body area.

Inspection

General inspection begins by observing the patient in the standing position for postural abnormalities. Observe their stance and note any abnormal curvature of the spine such as kyphosis, lordosis, or scoliosis. Ask the patient to walk away from you, turn, and walk back toward you while observing their gait and balance.

Ask the patient to sit. Inspect the size and contour of the muscles and joints and if the corresponding parts are symmetrical. Notice the skin over the joints and muscles and observe if there is tenderness, swelling, erythema, deformity, or asymmetry. Observe how the patient moves their extremities and note if there is pain with movement or any limitations in **active range of motion** (ROM). Active range of motion is the degree of movement the patient can voluntarily achieve in a joint without assistance. See Figures 10.9 and 10.10 as resources for describing joint movement.

Palpation

Palpation is typically done simultaneously during inspection. As you observe, palpate each joint for warmth, swelling, or tenderness. If you observe decreased active range of motion, gently attempt passive range of motion by stabilizing the joint with one hand while using the other hand to gently move the joint to its limit of movement. **Passive range of motion** is the degree of range of motion demonstrated in a joint when the examiner is providing the movement. You may hear crepitus as the joint moves. Crepitus sounds like a crackling, popping noise that is considered normal as long as it is not associated with pain. As the joint moves, there should not be any reported pain or tenderness.

Assess muscle strength. Muscle strength should be equal bilaterally, and the patient should be able to fully resist an opposing force. Muscle strength varies among people depending on their activity level, genetic predisposition, lifestyle, and history. A common method of evaluating muscle strength is the Medical Research Council Manual Muscle Testing Scale.[3] This method involves testing key muscles from the upper and lower extremities against gravity and the examiner's resistance and grading the patient's strength on a 0 to 5 scale. See Table 10.4a for the muscle strength testing scale.

Table 10.4a: Muscle Strength Scale[4]

0 – No muscle contraction
1 – Trace muscle contraction, such as a twitch
2 – Active movement only when gravity eliminated
3 – Active movement against gravity but not against resistance
4 – Active movement against gravity and some resistance
5 – Active movement against gravity and examiner's full resistance

To assess upper extremity strength, first begin by assessing bilateral hand grip strength. Extend your index and second fingers on each hand toward the patient and ask them to squeeze them as tightly as possible. Then, ask the patient to extend their arms with their palms up. As you provide resistance on their forearms, ask the patient to pull their arms towards them. Finally, ask the patient to place their palms against yours and press while you provide resistance. See Figure 10.4.1[5] for images of a nurse assessing upper extremity strength.



Figure 10.4.1: Assessing Hand Grips and Upper Extremity Strength

To assess lower extremity strength, perform the following maneuvers with a seated patient. Place your palms on the patient's thighs and ask them to lift their legs while providing resistance. Secondly, place your hands behind their calves and ask them to pull their legs backwards while you provide resistance. Place your hands on the top of their feet and ask them to pull their feet upwards against your resistance. Finally, place your hands on the soles of their feet and ask them to press downwards while you provide resistance, instructing them to "press downwards like pressing the gas pedal on a car." See Figure 10.4.2[6] for images of a nurse assessing lower extremity strength.



Figure 10.4.2: Assessing Lower Extremity Strength

Video Review of Musculoskeletal Assessment[7]



A YouTube element has been excluded from this version of the text. You can view it online here: https://wtcs.pressbooks.pub/nursingskills/?p=1371

See Table 10.4.2 for a comparison of expected versus unexpected findings when assessing the musculoskeletal system.

Table 10.4.2 Expected Versus Unexpected Findings on Musculoskeletal Assessment

Assessment	Expected Findings	Unexpected Findings (document and notify provider if a new finding*)
Inspection	Erect posture with good balance and normal gait while walking. Joints and muscles are symmetrical with no swelling, redness, or deformity. Active range of motion of all joints without difficulty. No spine curvature.	Spinal curvature is present. Poor balance or unsteady gait while walking. Swelling, bruising, erythema, or tenderness over joints or muscles. Deformity of joints. Decreased active range of motion. Contracture or foot drop present.
Auscultation	Not applicable	Crepitus associated with pain on movement.
Palpation	No palpable tenderness or warmth of joints, bones, or muscles. Muscle strength 5/5 against resistance.	Warmth or tenderness on palpation of joints, bones, or muscles. Decreased passive range of motion. Muscle strength of 3/5 or less.
***CRITICAL CONDITIONS to report immediately**		Hot, swollen, painful joint. Suspected fracture, dislocation, sprain, or strain.

1. Miller, S. B. (1990). An overview of the musculoskeletal system. In Walker, H. K., Hall, W. D., Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed.). Butterworths. www.ncbi.nlm.nih.gov/books/NBK266/↵

2. Giddens, J. F. (2007). A survey of physical examination techniques performed by RNs: Lessons for nursing education. *Journal of Nursing Education, 46*(2), 83-87. doi.org/10.3928/01484834-20070201-09↵
3. This work is a derivative of StatPearls by Naqvi and Sherman and is licensed under CC BY 4.0↵
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6. "Musculoskeletal Exam image 2.png," "Neuro Exam image 6.png," and "Musculoskeletal Exam Image 7.png" by Meredith Pomietlo for Chippewa Valley Technical College are licensed under CC BY 4.0↵
7. RegisteredNurseRN. (2017, December 22). *Upper & lower extremities assessment nursing | Upper, lower extremity examination.* [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/1sKnumpKT_Y↵

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10.5: Sample Documentation

Sample Documentation of Expected Findings

Patient reports no previous history for bone trauma, disease, infection, injury, or deformity. No symptoms of joint stiffness, pain, swelling, limited function, or muscle weakness. Patient is able to perform and manage regular daily activities without limitations and reports consistent exercise consisting of walking 2 miles for 5 days a week. Joints and muscles are symmetrical bilaterally. No swelling, deformity, masses, or redness upon inspection. Nontender palpation of joints without crepitus. Full ROM of the arms and legs with smooth movement. Upper and lower extremity strength is rated at 5 out of 5. Patient is able to maintain full resistance of muscle without tenderness or discomfort.

Sample Documentation of Unexpected Findings

Patient reports "I felt a pop in my right ankle while playing basketball this afternoon" and "My right ankle hurts when trying to walk on it." Pain is constant and worsens with weight-bearing. Patient rates pain at 4/10 at rest and 9/10 with walking and describes pain as an "aching, burning feeling." Ibuprofen and ice decrease pain. Right ankle is moderately swollen laterally and anteriorly with tenderness to palpation but no erythema, warmth, or obvious deformity. Color, motion, and sensation are intact distal to the ankle. ROM of the right ankle is limited and produces moderate pain. Minimal eversion and inversion demonstrated. Patient is unable to bear weight on the right ankle. Dr. Smith notified and an order for an ankle X-ray received. The right ankle was elevated and ice applied while the patient waits for the X-ray.

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10.6: Checklist for Musculoskeletal Assessment

Use this checklist below to review the steps for completion of “Musculoskeletal Assessment.”

Steps

Disclaimer: Always review and follow agency policy regarding this specific skill.

1. Gather supplies: assistive device (i.e., walker, cane, crutches, brace, etc.) based on patient status.
   - Check the patient chart for information prior to assessment regarding mobility status, fall risk, and use of assistive devices.
2. Perform safety steps:
   - Perform hand hygiene.
   - Check the room for transmission-based precautions.
   - Introduce yourself, your role, the purpose of your visit, and an estimate of the time it will take.
   - Confirm patient ID using two patient identifiers (e.g., name and date of birth).
   - Explain the process to the patient and ask if they have any questions.
   - Be organized and systematic.
   - Use appropriate listening and questioning skills.
   - Listen and attend to patient cues.
   - Ensure the patient’s privacy and dignity.
   - Assess ABCs.
3. Perform inspection:
   - Observe the patient using their arms, legs, gait, ability to sit and stand, and posture.
   - Note symmetry; compare each side of the body.
   - Inspect overall size, bony enlargement, and alignment of muscles and joints.
   - Observe coordination and muscle function and note balance, limping, presence of deformity, or shuffling.
4. Palpate and assess range of motion (ROM) and muscle strength:
   - Gently palpate bones, joints, muscles, and surrounding tissue for heat, swelling, stiffness, tenderness, or crepitation.
   - Ask the patient to move major joints (knees, shoulders, hips, and ankles) through the expected ROM movements. Observe the quality and equality of motion bilaterally with the same body parts. Note any limitation, pain, or crepitus with movement. Use passive ROM if indicated and appropriate.
   - Assess muscle strength and tone in:
     - Hand grips
     - Upper extremities
     - Lower extremities
   - Compare strength of symmetrical muscle groups. Upper and lower extremities on the dominant side are usually stronger. Rate muscle strength on scale of 0 to 5.
5. Assist the patient to a comfortable position, ask if they have any questions, and thank them for their time.
6. Ensure safety measures when leaving the room:
   - CALL LIGHT: Within reach
   - BED: Low and locked (in lowest position and brakes on)
   - SIDE RAILS: Secured
   - TABLE: Within reach
   - ROOM: Risk-free for falls (scan room and clear any obstacles)
7. Perform hand hygiene.
8. Document the assessment findings and report any concerns according to agency policy.

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10.7: Learning Activities

Learning Activities

1. During a musculoskeletal assessment, the nurse has the patient simultaneously resist against exerted force with both upper extremities. **The nurse knows this it is important to perform this assessment on both extremities simultaneously for what reason?**

a. It measures muscle strength symmetry.
b. It provides a more accurate reading.
c. It involves more muscle use.
d. It decreases assessment time.

2. The nurse is testing upper body strength on an adolescent. The test indicates full ROM against gravity and full resistance. **How does the nurse document these assessment findings according to the muscle strength scale?**

a. 4 out of 5
b. 3 out of 5
c. 5 out of 5
d. 1 out of 5

3. A young adult presents to the urgent care with a right knee injury. The injury occurred during a basketball game. The nurse begins to perform a musculoskeletal assessment. **What is the first step of the assessment?**

a. Palpation
b. Inspection
c. Percussion
d. Auscultation

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10.8: X Glossary

Abduction: Joint movement away from the midline of the body.

Active range of motion: The degree of movement a patient can voluntarily achieve in a joint without assistance.

Adduction: Joint movement toward the middle line of the body.

Arthroplasty: Joint replacement surgery.

Arthroscopic surgery: A surgical procedure involving a small incision and the insertion of an arthroscope, a pencil-thin instrument that allows for visualization of the joint interior. Small surgical instruments are inserted via additional incisions to remove or repair ligaments and other joint structures.

Articular cartilage: Smooth, white tissue that covers the ends of bones where they come together at joints, allowing them to glide over each other with very little friction. Articular cartilage can be damaged by injury or normal wear and tear.

Congenital condition: A condition present at birth.

Contracture: A fixed or permanent tightening of muscles, tendons, ligaments, or the skin that prevents normal movement of the body part.

Crepitus: A crackling, popping noise heard on joint movement. It is considered normal when it is not associated with pain.

Dislocation: A joint injury that forces the ends of bones out of position; often caused by a fall or a blow to the joint.

Extension: Joint movement causing the straightening of limbs (increase in angle) at a joint.

Flexion: Joint movement causing the bending of the limbs (reduction of angle) at a joint.

Foot drop: The inability to raise the front part of the foot due to weakness or paralysis of the muscles that lift the foot.

Fracture: A broken bone.

Gout: A type of arthritis that causes swollen, red, hot, and stiff joints due to the buildup of uric acid, commonly starting in the big toe.

Joints: The location where bones come together.

Kyphosis: A curving of the spine that causes a bowing or rounding of the back, leading to a hunchback or slouching posture.

Ligaments: Strong bands of fibrous connective tissue that connect bones and strengthen and support joints by anchoring bones together and preventing their separation.

Lordosis: An inward curve of the lumbar spine just above the buttocks. A small degree of lordosis is normal, but too much curving is called swayback.

Muscle atrophy: The thinning or loss of muscle tissue that can be caused by disuse, aging, or neurological damage.

Open fracture: A type of fracture when the broken bone punctures the skin.

Osteoarthritis: The most common type of arthritis associated with aging and wear and tear of the articular cartilage that covers the surfaces of bones at the synovial joint.

Osteoporosis: A disease that thins and weakens bones, especially in the hip, spine, and wrist, causing them to become fragile and break easily.

Passive range of motion: The degree of range of motion a patient demonstrates in a joint when the examiner is providing the movement.

Rheumatoid arthritis: A type of arthritis that causes pain, swelling, stiffness, and loss of function in joints due to inflammation caused by an autoimmune disease.

RICE: A mnemonic for treatment of sprains and strains that stands for: Resting the injured area, Icing the area, Compressing the area with an ACE bandage or other device, and Elevating the affected limb.

Rotation: Circular movement of a joint around a fixed point.

Scoliosis: A sideways curve of the spine that commonly develops in late childhood and the early teens.

Skeletal muscle: Voluntary muscle that produces movement, assists in maintaining posture, protects internal organs, and generates body heat.

Sprain: A stretched or torn ligament caused by an injury.

Strain: A stretched or torn muscle or tendon.

Synovial fluid: A thick fluid that provides lubrication in joints to reduce friction between the bones.

Synovial joints: A fluid-filled joint cavity where the articulating surfaces of the bones contact and move smoothly against each other. The elbow and knee are examples of synovial joints.

Tendons: Strong bands of dense, regular connective tissue that connect muscles to bones.

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CHAPTER OVERVIEW

11: Neurological Assessment

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11.1: Neurological Assessment Introduction

Learning Objectives

- Perform a neurological assessment, including mental status, cranial nerves, sensory function, motor strength, cerebellar function, and reflexes
- Modify assessment techniques to reflect variations across the life span
- Document actions and observations
- Recognize and report significant deviations from norms

The neurological system is a complex and intricate system that affects all body functions. A neurological assessment includes collecting subjective and objective data through an interview and detailed physical examination of the central nervous system and the peripheral nervous system. Let's begin by reviewing the anatomy of the neurological system.

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11.2: Basic Neurological Concepts

When completing a neurological assessment, it is important to understand the functions performed by different parts of the nervous system while analyzing findings. For example, damage to specific areas of the brain, such as that caused by a head injury or cerebrovascular accidents (i.e., strokes), can cause specific deficits in speech, facial movements, or use of the extremities. Damage to the spinal cord, such as that caused by a motor vehicle accident or diving accident, will cause specific motor and sensory deficits according to the level where the spinal cord was damaged.

The nervous system is divided into two parts, the central nervous system and the peripheral nervous system. See Figure 11.2.1[1] for an image of the entire nervous system. The **central nervous system (CNS)** includes the brain and the spinal cord. The brain can be described as the interpretation center, and the spinal cord can be described as the transmission pathway. The peripheral nervous system (PNS) consists of the neurological system outside of the brain and spinal cord, including the cranial nerves that branch out from the brain and the spinal nerves that branch out from the spinal cord. The **peripheral nervous system** can be described as the communication network between the brain and the body parts. Both parts of the nervous system must work correctly for healthy body functioning.

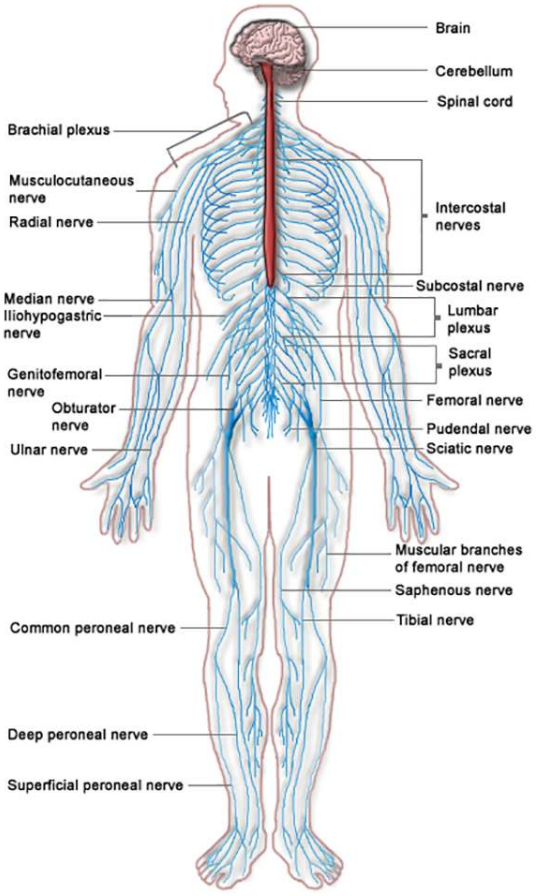


Figure 11.2.1: Central and Peripheral Nervous Systems

Central Nervous System

There major regions of the brain are the cerebrum and cerebral cortex, the diencephalon, the brain stem, and the cerebellum. See Figure 11.2.2[2] for an illustration of the cerebellum and the lobes of the cerebrum.

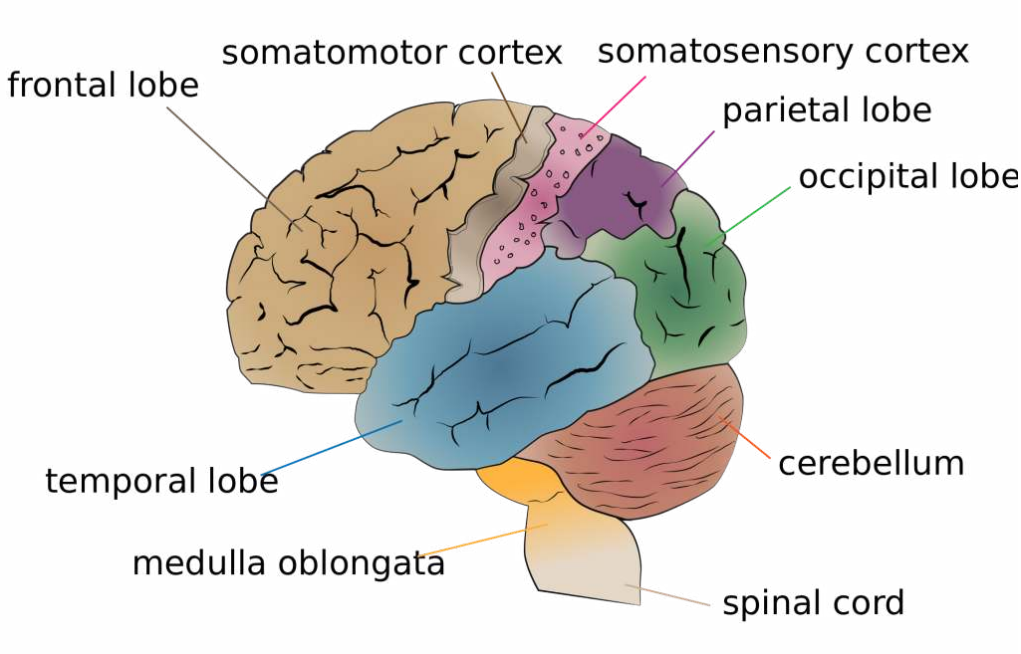


Figure 11.2.2 Regions of the Brain

Cerebrum and Cerebral Cortex

The largest portion of our brain is the cerebrum. The cerebrum is covered by a wrinkled outer layer of gray matter called the cerebral cortex. See Figure 11.2.3[3] for an image of the cerebral cortex. The cerebral cortex is responsible for the higher functions of the nervous system such as memory, emotion, and consciousness. The corpus callosum is the major pathway of communication between the right and left hemispheres of the cerebral cortex. The **cerebral cortex** is further divided into four lobes named the frontal, parietal, occipital, and temporal lobes.[4] Each lobe has specific functions.

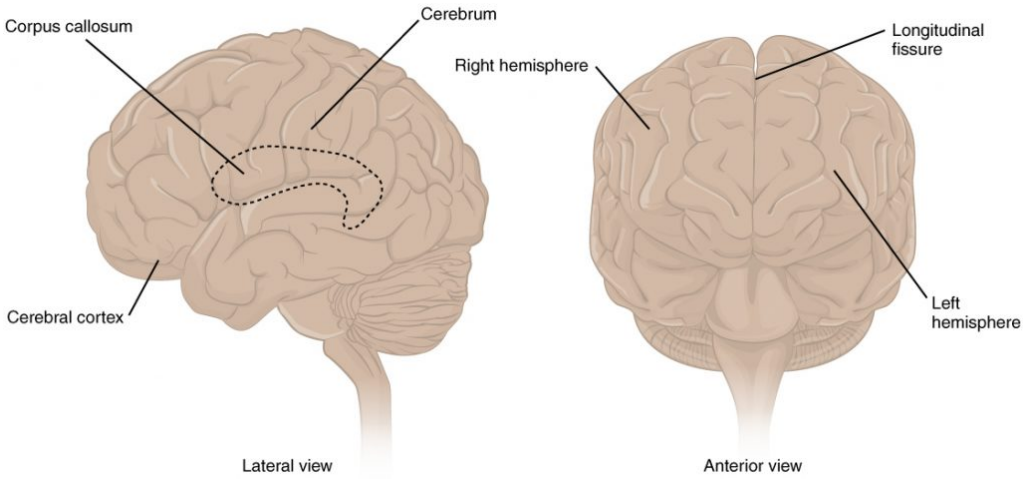


Figure 11.2.3 Cerebral Cortex

Frontal Lobe

The frontal lobe is associated with movement because it contains neurons that instruct cells in the spinal cord to move skeletal muscles. The anterior portion of the frontal lobe is called the prefrontal lobe, and it provides cognitive functions such as planning and problem-solving that are the basis of our personality, short-term memory, and consciousness. **Broca's area** is also located in the frontal lobe and is responsible for the production of language and controlling movements responsible for speech.[5]

Parietal Lobe

The parietal lobe processes general sensations from the body. All of the tactile senses are processed in this area, including touch, pressure, tickle, pain, itch, and vibration, as well as general senses of the body, such as **proprioception** (the sense of body position)

and **kinesthesia** (the sense of movement).[6]

Temporal Lobe

The temporal lobe processes auditory information and is involved with language comprehension and production. Wernicke's area and Broca's area are located in the temporal lobe. Wernicke's area is involved in the comprehension of written and spoken language, and Broca's area is involved in the production of language. Because regions of the temporal lobe are part of the limbic system, memory is also an important function associated with the temporal lobe.[7] The limbic system is involved with our behavioral and emotional responses needed for survival, such as feeding, reproduction, and the fight – or – flight responses.

Occipital Lobe

The occipital lobe primarily processes visual information.[8]

Diencephalon

Information from the rest of the central and peripheral nervous system is sent to the cerebrum through the diencephalon, with the exception of the olfactory nerve that connects directly to the cerebrum.[9] See Figure 11.2.4[10] for an illustration of the diencephalon deep within the cerebrum. The diencephalon contains the hypothalamus and the thalamus.

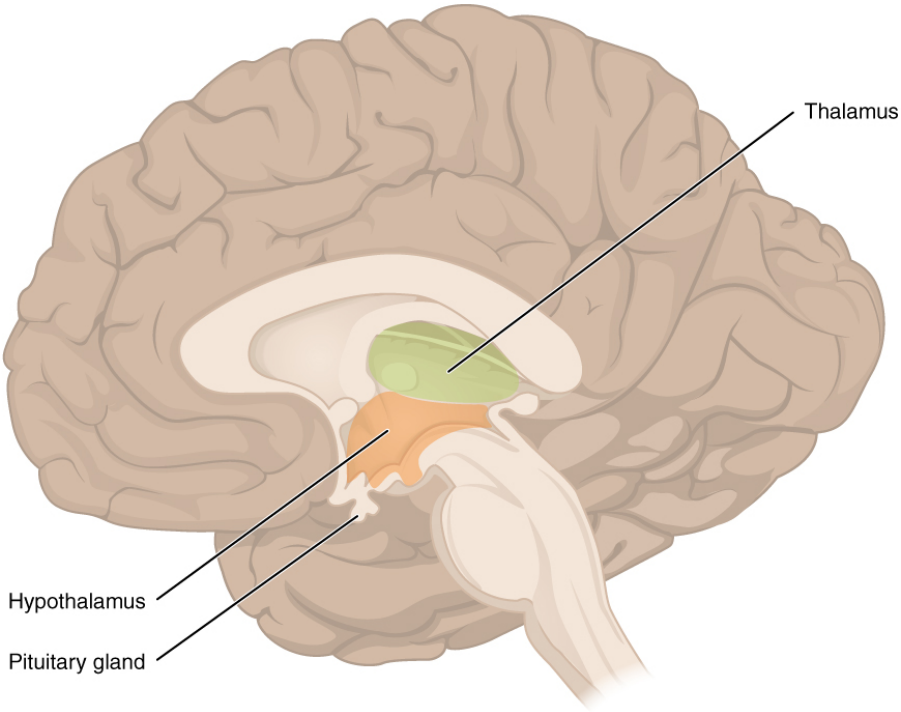


Figure 11.2.4 The Diencephalon Containing the Hypothalamus and the Thalamus.

The **hypothalamus** helps regulate homeostasis such as body temperature, thirst, hunger, and sleep. The hypothalamus is also the executive region in charge of the autonomic nervous system and the endocrine system through its regulation of the anterior pituitary gland. Other parts of the hypothalamus are involved in memory and emotion as part of the limbic system.[11]

The **thalamus** relays sensory information and motor information in collaboration with the cerebellum. The thalamus does not just pass the information on, but it also processes and prioritizes that information. For example, the portion of the thalamus that receives visual information will influence what visual stimuli are considered important enough to receive further attention from the brain.[12]

Brain Stem

The brain stem is composed of the pons and the medulla. The pons and the medulla regulate several crucial autonomic functions in the body, including involuntary functions in the cardiovascular and respiratory systems, vasodilation, and reflexes like vomiting, coughing, sneezing, and swallowing. Cranial nerves also connect to the brain through the brain stem and provide sensory input and motor output.[13]

Cerebellum

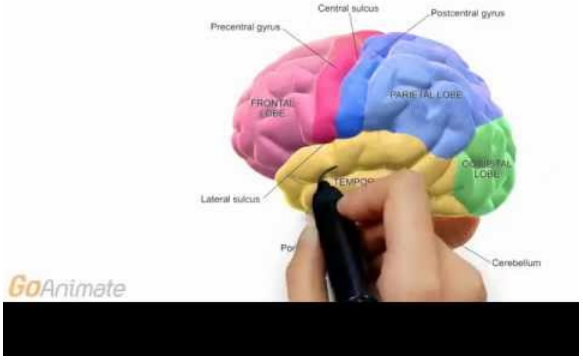
The **cerebellum** is located in the posterior part of the brain behind the brain stem and is responsible for fine motor movements and coordination. For example, when the motor neurons in the frontal lobe of the cerebral cortex send a command down the spinal cord to initiate walking, a copy of that instruction is also sent to the cerebellum. Sensory feedback from the muscles and joints, proprioceptive information about the movements of walking, and sensations of balance are sent back to the cerebellum. If the person becomes unbalanced while walking because the ground is uneven, the cerebellum sends out a corrective command to compensate for the difference between the original cerebral cortex command and the sensory feedback.[14]

Spinal Cord

The spinal cord is a continuation of the brain stem that transmits sensory and motor impulses. The length of the spinal cord is divided into regions that correspond to the level at which spinal nerves pass through the vertebrae. Immediately adjacent to the brain stem is the cervical region, followed by the thoracic, the lumbar, and finally the sacral region.[15] The spinal nerves in each of these regions innervate specific parts of the body. See more information under the “Spinal Nerves” section.

Review the anatomy of the brain using following supplementary video.

Video Review for Anatomy of the Brain[16]



A YouTube element has been excluded from this version of the text. You can view it online here: https://wtcs.pressbooks.pub/nursingskills/?p=1182

Peripheral Nervous System

The peripheral nervous system (PNS) consists of cranial nerves and spinal nerves that exist outside of the brain, spinal cord, and autonomic nervous system. The main function of the PNS is to connect the limbs and organs to the central nervous system (CNS). Sensory information from the body enters the CNS through cranial and spinal nerves. Cranial nerves are connected directly to the brain, whereas spinal nerves are connected to the brain via the spinal cord.

Peripheral nerves are classified as sensory nerves, motor nerves, or a combination of both. **Sensory nerves** carry impulses from the body to the brain for processing. **Motor nerves** transmit motor signals from the brain to the muscles to cause movement.

Cranial Nerves

Cranial nerves are directly connected from the periphery to the brain. They are primarily responsible for the sensory and motor functions of the head and neck. There are twelve cranial nerves that are designated by Roman numerals I through XII. See Figure 11.2.5[17] for an image of cranial nerves. Three cranial nerves are strictly sensory nerves; five are strictly motor nerves; and the remaining four are mixed nerves.[18] A traditional mnemonic for memorizing the names of the cranial nerves is “**O**n **O**ld **O**lympus **T**owering **T**ops **AF**inn **A**nd **G**erman **V**iewed **S**ome **H**ops,” in which the initial letter of each word corresponds to the initial letter in the name of each nerve.

- The **o**lfactory nerve is responsible for the sense of smell.
- The **o**ptic nerve is responsible for the sense of vision.
- The **o**culomotor nerve regulates eye movements by controlling four of the extraocular muscles, lifting the upper eyelid when the eyes point up and for constricting the pupils.

- The **t**rochlear nerve and the **a**bducens nerve are both responsible for eye movement, but do so by controlling different extraocular muscles.
- The **t**rigeminal nerve regulates skin sensations of the face and controls the muscles used for chewing.
- The **f**acial nerve is responsible for the muscles involved in facial expressions, as well as part of the sense of taste and the production of saliva.
- The **a**ccessory nerve controls movements of the neck.
- The **v**estibulocochlear nerve manages hearing and balance.
- The **g**lossopharyngeal nerve regulates the controlling muscles in the oral cavity and upper throat, as well as part of the sense of taste and the production of saliva.
- The **v**agus nerve is responsible for contributing to homeostatic control of the organs of the thoracic and upper abdominal cavities.
- The **s**pinal accessory nerve controls the muscles of the neck, along with cervical spinal nerves.
- The **h**ypoglossal nerve manages the muscles of the lower throat and tongue.[19] Methods for assessing each of these nerves are described in the "Assessing Cranial Nerves" section.

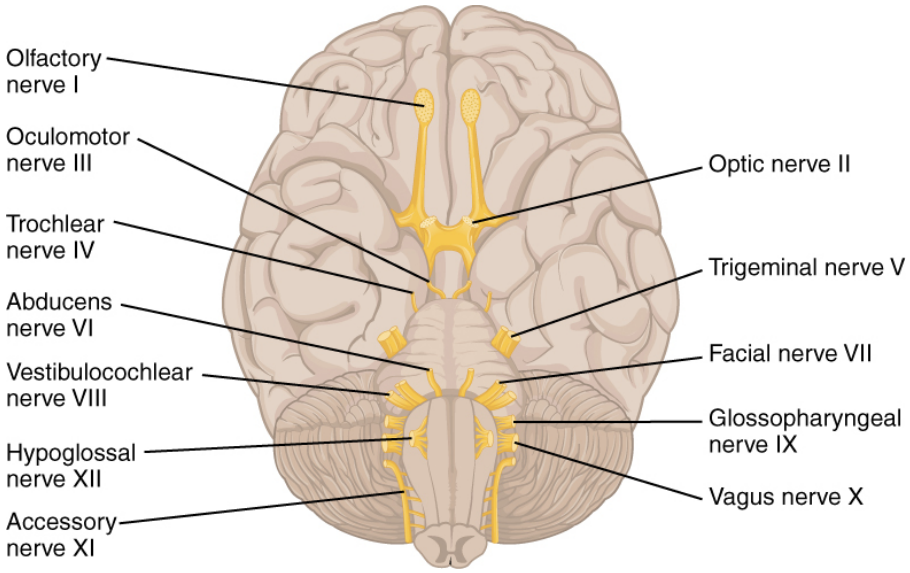
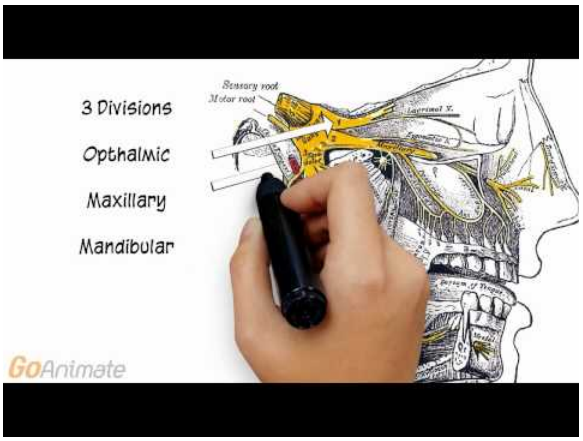


Figure 11.2.5: Cranial Nerves

Video Review of Cranial Nerves[20]



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Spinal Nerves

There are 31 spinal nerves that are named based on the level of the spinal cord where they emerge. See Figure 11.2.6[21] for an illustration of spinal nerves. There are eight pairs of cervical nerves designated C1 to C8, twelve thoracic nerves designated T1 to

T12, five pairs of lumbar nerves designated L1 to L5, five pairs of sacral nerves designated S1 to S5, and one pair of coccygeal nerves. All spinal nerves are combined sensory and motor nerves. Spinal nerves extend outward from the vertebral column to innervate the periphery while also transmitting sensory information back to the CNS.[22]

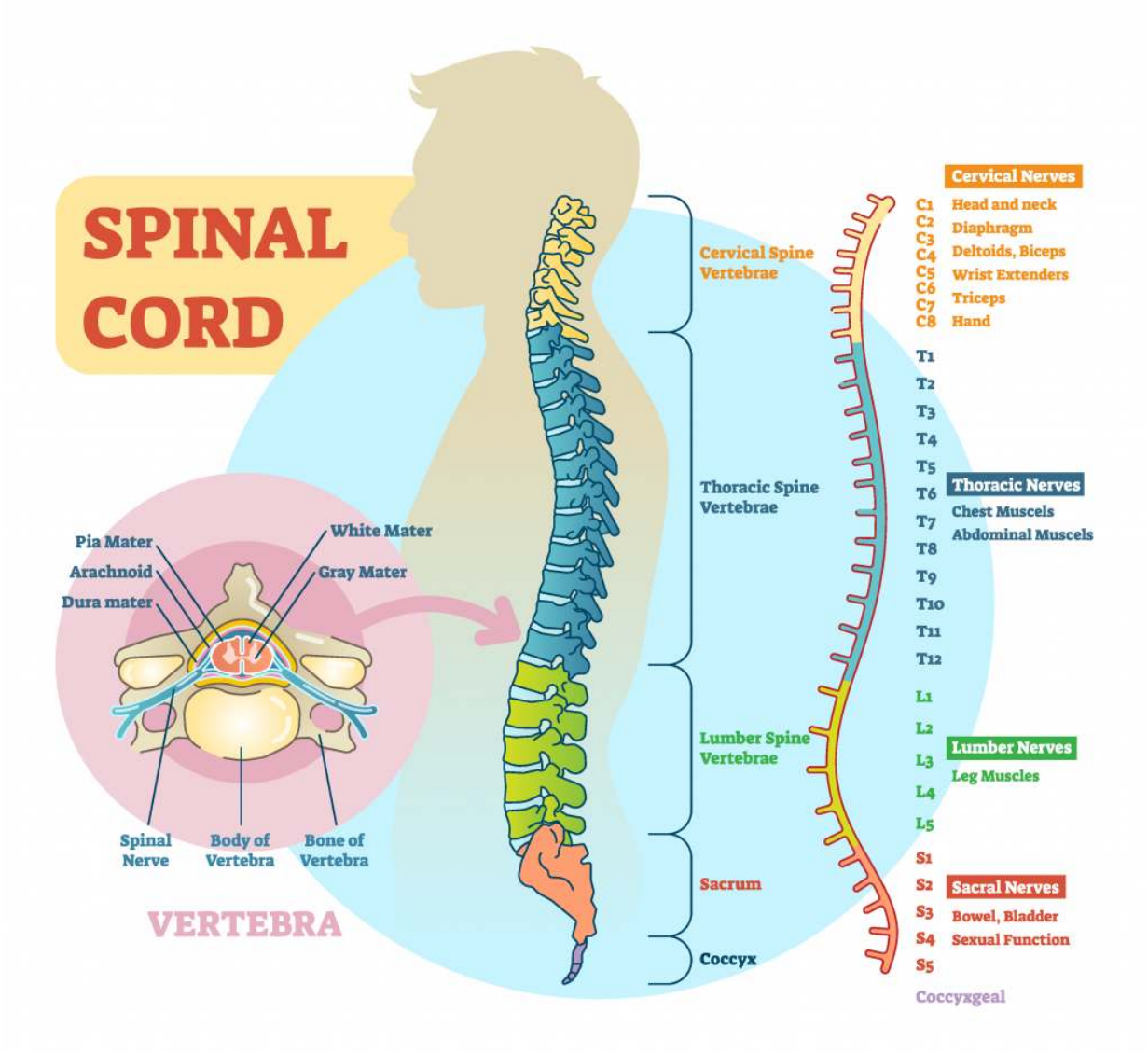


Figure 11.2.6: Spinal Cord and Spinal Nerves

Functions of Spinal Nerves

Each spinal nerve innervates a specific region of the body:

- C1 provides motor innervation to muscles at the base of the skull.[23]
- C2 and C3 provide both sensory and motor control to the back of the head and behind the ears.[24]
- The phrenic nerve arises from nerve roots C3, C4, and C5. This is a vital nerve because it innervates the diaphragm to enable breathing. If a patient's spinal cord is transected above C3 from an injury, then spontaneous breathing is not possible.[25]
- C5 through C8 and T1 combine to form the brachial plexus, a tangled array of nerves that serve the upper limbs and upper back.[26]
- The lumbar plexus arises from L1-L5 and innervates the pelvic region and the anterior leg.[27]
- The sacral plexus comes from the lower lumbar nerves L4 and L5 and the sacral nerves S1 to S4. The most significant systemic nerve to come from this plexus is the sciatic nerve. The sciatic nerve is associated with the painful medical condition sciatica, which is back and leg pain as a result of compression or irritation of the sciatic nerve.[28]



When a patient experiences a spinal cord injury, the degree of paralysis can be predicted by the location of the spinal cord injury. It is also important to remember when a patient has a spinal cord injury and their motor nerves are damaged, their sensory nerves may still be intact. If this occurs, the patient can still feel sensation even if they can't move the extremity. Therefore, don't assume that a paralyzed patient cannot feel pain in the affected extremity because this is not always the case.

Functions of the Nervous System

The nervous system receives information about the environment around us (sensation) and generates responses to that information (motor responses). The process of integration combines sensory perceptions and higher cognitive functions such as memories, learning, and emotion while producing a response.

Sensation

Sensation is defined as receiving information about the environment. The major senses are taste, smell, touch, sight, and hearing. Additional sensory stimuli are also provided from inside the body, such as the stretch of an organ wall or the concentration of certain ions in the blood.[29]

Response

The nervous system produces a response based on the stimuli perceived by sensory nerves. For example, withdrawing a hand from a hot stove is an example of a response to a painfully hot stimulus. Responses can be classified by those that are voluntary (such as contraction of a skeletal muscle) and those that are involuntary (such as contraction of smooth muscle in the intestine). Voluntary responses are governed by the somatic nervous system, and involuntary responses are governed by the autonomic nervous system.[30]

Integration

Integration occurs when stimuli received by sensory nerves are communicated to the nervous system and the information is processed, leading to the generation of a conscious response. Consider this example of sensory integration. A batter in a baseball game does not automatically swing when they see the baseball thrown to them by the pitcher. First, the trajectory of the ball and its speed will need to be considered before creating the motor response of a swing. Then, integration will occur as the batter generates a conscious decision of whether to swing or not. Perhaps the count is three balls and one strike, and the batter decides to let this pitch go by in the hope of getting a walk to first base. Perhaps the batter is afraid to strike out and doesn't swing, or maybe the batter learned the pitcher's nonverbal cues the previous time at bat and is confident to take a swing at an anticipated fast ball. All of these considerations are included as part of the batter's integration response and the higher level functioning that occurs in the cerebral cortex.[31]

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1. "Nervous system diagram.png " by unknown is licensed under CC BY-NC-SA 3.0. Access for free at med.libretexts.org/Bookshelves/Nursing/Book%3A_Clinical_Procedures_for_Safer_Patient_Care_(Doyle_and_McCutcheon)/02%3A_Patient_Assessment/2.07%3A_Focused_Assessments↵
2. "Cerebrum lobes.svg" by Jkwchui is licensed under CC BY-SA 3.0↵
3. "1305 CerebrumN.jpg" by OpenStax is licensed under CC BY 4.0. Access for free at https://openstax.org/books/anatomy-and-physiology/pages/13-2-the-central-nervous-system↵
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16. Forciea, B. (2015, May 12). *Anatomy and physiology: Central nervous system: Brain anatomy v2.0.* [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/DBRdInd2-Vg↵
17. "1320 The Cranial Nerves.jpg" by OpenStax is licensed under CC BY 4.0. Access for free at https://openstax.org/books/anatomy-and-physiology/pages/13-4-the-peripheral-nervous-system↵
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20. Forciea, B. (2015, May 12). *Anatomy and physiology: Nervous system: Cranial nerves (v2.0).* [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/JBEZh6CHogo↵
21. "1008694237-vector.png" by VectorMine on Shutterstock. All rights reserved. Imaged used with purchased permission. ↵
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11.3: Neurological Assessment

The neurological exam is a clinical assessment of the functioning of the central nervous system (CNS) and peripheral nervous system (PNS). See Figure 11.3.1[1] for an image of the anatomical underpinnings of the neurological exam. Several tests are available when performing a neurological assessment; the tests included in the assessment are selected based on the patient's medical condition and the neurological symptoms they are experiencing. The range of tests that can be included in a neurological exam include evaluation of mental status, cranial nerves, sensory functioning, motor strength, cerebellar functioning, and reflexes. The mental status exam assesses the higher cognitive functions such as memory, orientation, and language associated with the cerebrum and cerebral cortex. The cranial nerve exam tests the sensory and motor functioning of the 12 cranial nerves that connect to the diencephalon and the brain stem. The sensory response and motor strength tests evaluate functions associated with the spinal nerves. The cerebellar function tests evaluate balance, muscle tone, and coordination of voluntary movements. Deep tendon reflexes may also be used to assess the health of the nervous system.[2] Each of these components of a neurological exam is further described in the remaining sections of this chapter.

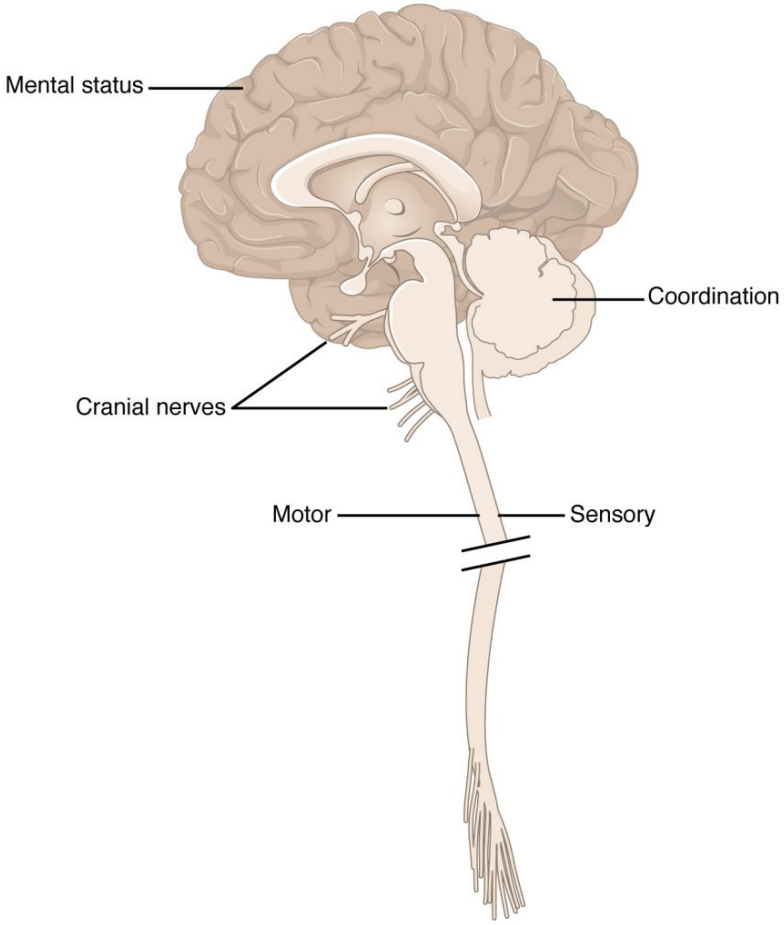


Figure 11.3.1: Anatomical Underpinnings of Neurological Exam

Types of Neurological Examinations

The type of neurological exam performed is based on the patient's reason for seeking care, their current medical condition, and the practice setting.

Routine Exam

Routine neurological exams performed by registered nurses during their daily clinical practice include assessing mental status and level of consciousness, pupillary response, motor strength, sensation, and gait. The Glasgow Coma Scale is also frequently used to objectively monitor level of consciousness in patients with neurological damage such as a head injury or cerebrovascular accident (i.e., stroke).[3]

Comprehensive

A comprehensive neurologic exam is performed on patients with a neurological concern. This exam is more extensive and may be performed in specialty settings or by advanced practice nurses. In addition to the components included in a routine neurological exam, the examiner may also assess cranial nerves, detailed cerebellar function, deep tendon reflexes, and complete a Mini-Mental State Exam (MMSE).

Periodic Reevaluation

Periodic reevaluations are performed by registered nurses when the patient has experienced an acute injury or illness causing neurological deficits that require frequent monitoring for change in condition. For example, a patient admitted to the hospital for an acute cerebrovascular accident (i.e., stroke) will have their neurological status rechecked and documented frequently according to agency policy. See Figure 11.3.2[4] of a nurse assessing a patient's neurological status in an intensive care unit.



Figure 11.3.2: Nurse Assessing Patient's Neurological Status in ICU

1. "1601 Anatomical Underpinnings of the Neurological Exam-02.jpg" by OpenStax is licensed under CC BY 3.0. Access for free at https://openstax.org/books/anatomy-and-physiology/pages/16-1-overview-of-the-neurological-exam↵
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3. Giddens, J. F. (2007). A survey of physical examination techniques performed by RNs: Lessons for nursing education. *Journal of Nursing Education*, *46*(2), 83-87. doi.org/10.3928/01484834-20070201-09↵
4. "US Navy 030424-N-6967M-240 Lt. j.g. Elavonta Thomas conducts a routine check on one of the patients in the Intensive Care Units (ICU) aboard USNS Comfort (T-AH 20).jpg" by Photographer's Mate 1st Class Shane T. McCoy at U.S. Navy is in the Public Domain↵

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11.4: Assessing Mental Status

Routine assessment of a patient's mental status by registered nurses includes evaluating their level of consciousness, as well as their overall appearance, general behavior, affect and mood, general speech, and cognitive performance.[1] [2] See the "General Survey Assessment" chapter for more information about an overall mental status assessment.

Level of Consciousness

Level of consciousness refers to a patient's level of arousal and alertness.[3] Assessing a patient's orientation to time, place, and person is a quick indicator of cognitive functioning. Level of consciousness is typically evaluated on admission to a facility to establish a patient's baseline status and then frequently monitored every shift for changes in condition.[4] To assess a patient's orientation status, ask, "Can you tell me your name? Where are you? What day is it?" If the patient is unable to recall a specific date, it may be helpful to ask them the day of the week, the month, or the season to establish a baseline of their awareness level.

A normal level of orientation is typically documented as, "Patient is alert and oriented to person, place, and time," or by the shortened phrase, "Alert and oriented x 3." [5] If a patient is confused, an example of documentation is, "Patient is alert and oriented to self, but disoriented to time and place."

There are many screening tools that can be used to further objectively assess a patient's mental status and cognitive impairment. Common screening tools used frequently by registered nurses to assess mental status include the Glasgow Coma Scale, the National Institutes of Health Stroke Scale (NIHSS), and the Mini-Mental State Exam (MMSE).

Glasgow Coma Scale

The Glasgow Coma Scale (GCS) is a standardized tool used to objectively assess and continually monitor a patient's level of consciousness when damage has occurred, such as after a head injury or a cerebrovascular accident (stroke). See Figure 11.4.1[6] for an image of the Glasgow Coma Scale. Three primary areas assessed in the GCS include eye opening, verbal response, and motor response. Scores are added from these three categories to assign a patient's level of responsiveness. Scores ranging from 15 or higher are classified as the best response, less than 8 is classified as **comatose,** and 3 or less is classified as unresponsive.

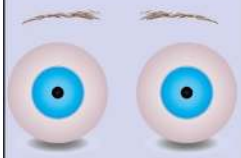
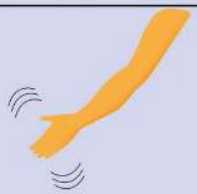
Behaviour	Response
 Eye Opening Response	4. Spontaneously 3. To speech 2. To pain 1. No response
 Verbal Response	5. Oriented to time, person and place 4. Confused 3. Inappropriate words 2. Incomprehensible sounds 1. No response
 Motor Response	6. Obeys command 5. Moves to localised pain 4. Flex to withdraw from pain 3. Abnormal flexion 2. Abnormal extension 1. No response

Figure 11.4.1: Glasgow Coma Scale

National Institutes of Health Stroke Scale

The National Institutes of Health Stroke Scale (NIHSS) is a standardized tool that is commonly used to assess patients suspected of experiencing an acute cerebrovascular accident (i.e., stroke).[7] The three most predictive findings that occur during an acute stroke are facial drooping, arm drift/weakness, and abnormal speech. Use the following hyperlink to view the stroke scale.

A commonly used mnemonic regarding assessment of individuals suspected of experiencing a stroke is "BE FAST." BE FAST stands for **B**alance, **E**yes, **F**ace, **A**rm, and **S**peech **T**est.

- **B:** Does the person have a sudden loss of balance?
- **E:** Has the person lost vision in one or both eyes?
- **F:** Does the person's face look uneven?
- **A:** Is one arm weak or numb?
- **S:** Is the person's speech slurred? Are they having trouble speaking or seem confused?
- **T:** Time to call for assistance immediately

View the NIH Stroke Scale at the National Institutes of Health.

Mini-Mental Status Exam

The Mini-Mental Status Exam (MMSE) is commonly used to assess a patient's cognitive status when there is a concern of cognitive impairment. The MMSE is sensitive and specific in detecting delirium and dementia in patients at a general hospital and in residents of long-term care facilities.[8] Delirium is acute, reversible confusion that can be caused by several medical conditions such as fever, infection, and lack of oxygenation. Dementia is chronic, irreversible confusion and memory loss that impacts functioning in everyday life.

Prior to administering the MMSE, ensure the patient is wearing their glasses and/or hearing aids, if needed.[9] A patient can score up to 30 points by accurately responding and following directions given by the examiner. A score of 24-30 indicates no cognitive impairment, 18-23 indicates mild cognitive impairment, and a score less than 18 indicates severe cognitive impairment. See Figure 11.4.2[10] for an image of one of the questions on the MMSE regarding interlocking pentagons.

Visit the following website for more information about the Mini-Mental Status Exam.
Oxford Medical Education

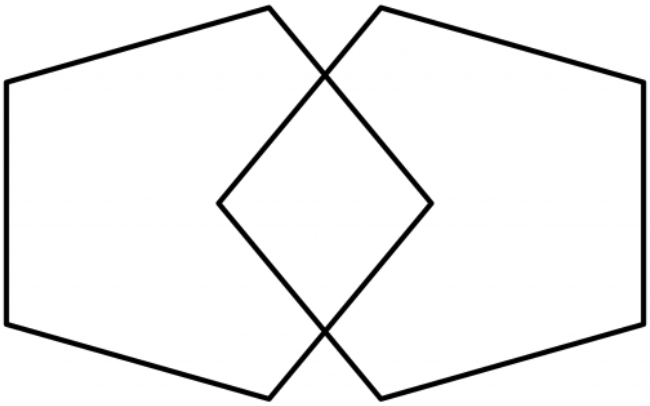


Figure 11.4.2: MMSE Question on Interlocking Pentagons

1. Martin, D. C. The mental status examination. In Walker, H. K., Hall, W. D., Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed.). Butterworths. www.ncbi.nlm.nih.gov/books/NBK320/↵
2. Giddens, J. F. (2007). A survey of physical examination techniques performed by RNs: Lessons for nursing education. *Journal of Nursing Education, 46*(2), 83-87. doi.org/10.3928/01484834-20070201-09↵
3. Huntley, A. (2008). Documenting level of consciousness. *Nursing*, *38*(8), 63-64. doi.org/10.1097/01.nurse.0000327505.69608.35↵
4. McDougall, G. J. (1990). A review of screening instruments for assessing cognition and mental status in older adults. *The Nurse Practitioner, 15*(11), 18–28. ↵
5. Huntley, A. (2008). Documenting level of consciousness. *Nursing*, *38*(8), 63-64. https://doi.org/10.1097/01.nurse.0000327505.69608.35↵

6. "glasgow-coma-scale-gcs-600w-309293585.jpg" by joshya on Shutterstock. All rights reserved. Imaged used with purchased permission. ↵
7. National Institutes of Health. (n.d.). *NIH stroke scale*.https://www.stroke.nih.gov/resources/scale.htm↵
8. McDougall, G. J. (1990). A review of screening instruments for assessing cognition and mental status in older adults. *The Nurse Practitioner, 15*(11), 18–28. ↵
9. Koder-Anne, D., & Klahr, A. (2010). Training nurses in cognitive assessment: Uses and misuses of the mini-mental state examination. *Educational Gerontology, 36*(10/11), 827–833. doi.org/10.1080/03601277.2010.485027↵
10. "InterlockingPentagons.svg" by Jfdwolff[2] is licensed under CC BY-SA 3.0↵

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11.5: Assessing Cranial Nerves

When performing a comprehensive neurological exam, examiners may assess the functioning of the cranial nerves. When performing these tests, examiners compare responses of opposite sides of the face and neck. Instructions for assessing each cranial nerve are provided below.

Cranial Nerve I – Olfactory

Ask the patient to identify a common odor, such as coffee or peppermint, with their eyes closed. See Figure 11.5.1[1] for an image of a nurse performing an olfactory assessment.

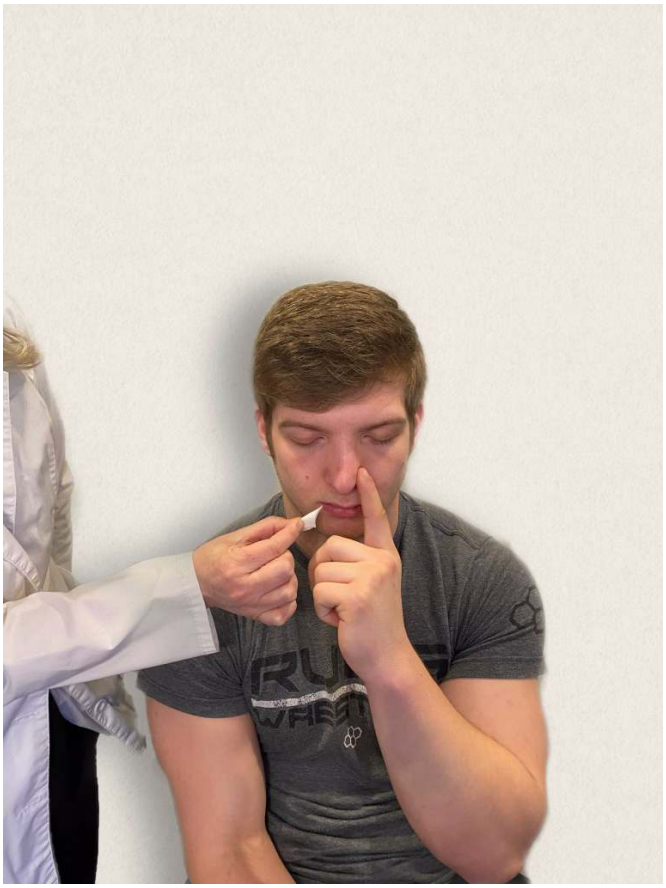


Figure 11.5.1: Assessing Cranial Nerve I (Olfactory)

Cranial Nerve II – Optic

Be sure to provide adequate lighting when performing a vision assessment.

Far vision is tested using the Snellen chart. See Figure 11.5.2[2] for an image of a Snellen chart. The numerator of the fractions on the chart indicate what the individual can see at 20 feet, and the denominator indicates the distance at which someone with normal vision could see this line. For example, a result of 20/40 indicates this individual can see this line at 20 feet but someone with normal vision could see this line at 40 feet.

Test far vision by asking the patient to stand 20 feet away from a Snellen chart. Ask the patient to cover one eye and read the letters from the lowest line they can see.[3] Record the corresponding result in the furthermost right-hand column, such as 20/30. Repeat with the other eye. If the patient is wearing glasses or contact lens during this assessment, document the results as “corrected vision.” Repeat with each eye, having the patient cover the opposite eye. Alternative charts are available for children or adults who can’t read letters in English.

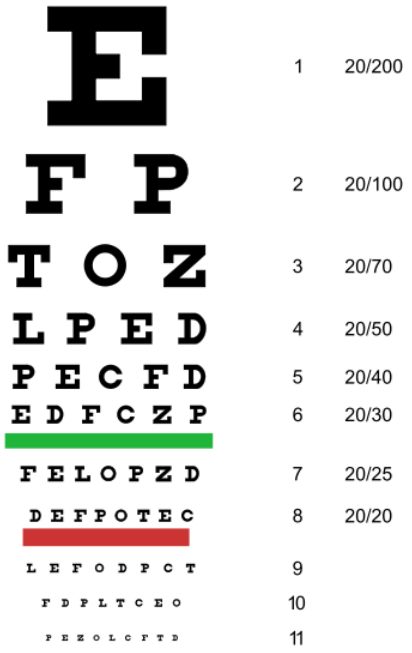


Figure 11.5.12: Snellen Chart

Near vision is assessed by having a patient read from a prepared card from 14 inches away. See Figure 11.5.3[4] for a card used to assess near vision.



Figure 11.5.3: Assessing Near Vision

Cranial Nerve III, IV, and VI – Oculomotor, Trochlear, Abducens

Cranial nerve III, IV, and VI (oculomotor, trochlear, abducens nerves) are tested together.

- Test eye movement by using a penlight. Stand 1 foot in front of the patient and ask them to follow the direction of the penlight with only their eyes. At eye level, move the penlight left to right, right to left, up and down, upper right to lower left, and upper left to lower right. Watch for smooth movement of the eyes in all fields. An unexpected finding is involuntary shaking of the eye as it moves, referred to as **nystagmus**.
- Test bilateral pupils to ensure they are equally round and reactive to light and **accommodation**. Dim the lights of the room before performing this test.
  - Pupils should be round and bilaterally equal in size. The diameter of the pupils usually ranges from two to five millimeters. Emergency clinicians often encounter patients with the triad of pinpoint pupils, respiratory depression, and coma related to opioid overuse.

- Test pupillary reaction to light. Using a penlight, approach the patient from the side, and shine the penlight on one pupil. Observe the response of the lighted pupil, which is expected to quickly constrict. Repeat by shining the light on the other pupil. Both pupils should react in the same manner to light. See Figure 11.5.4[5] for an image of a nurse assessing a patient's pupillary reaction to light. An unexpected finding is when one pupil is larger than the other or one pupil responds more slowly than the other to light, which is often referred to as a "sluggish response."
- Test eye **convergence** and accommodation. Recall that accommodation refers to the ability of the eye to adjust from near to far vision, with pupils constricting for near vision and dilating for far vision. Convergence refers to the action of both eyes moving inward as they focus on a close object using near vision. Ask the patient to look at a near object (4-6 inches away from the eyes), and then move the object out to a distance of 12 inches. Pupils should constrict while viewing a near object and then dilate while looking at a distant object, and both eyes should move together. See Figure 11.5.5[6] for an image of a nurse assessing convergence and accommodation.
- The acronym PERRLA is commonly used in medical documentation and refers to, "pupils are equal, round and reactive to light and accommodation."

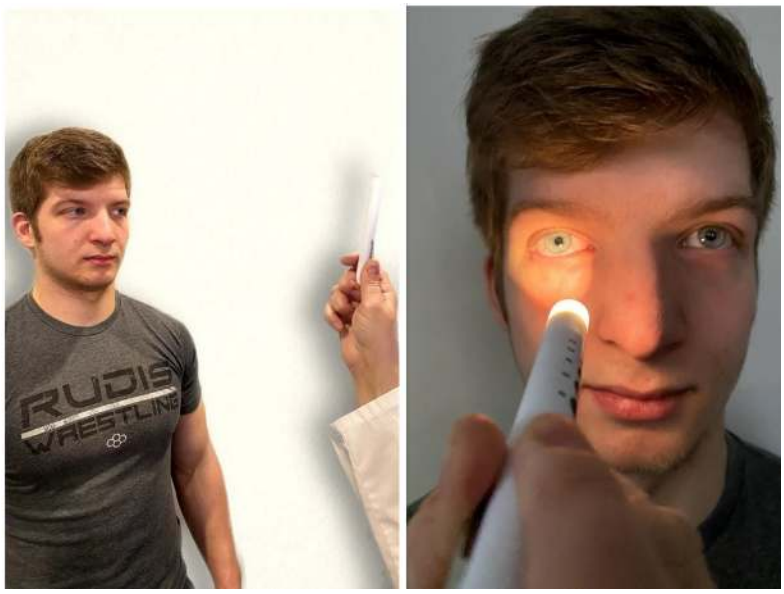


Figure 11.5.4: Assessing Pupillary Reaction to Light

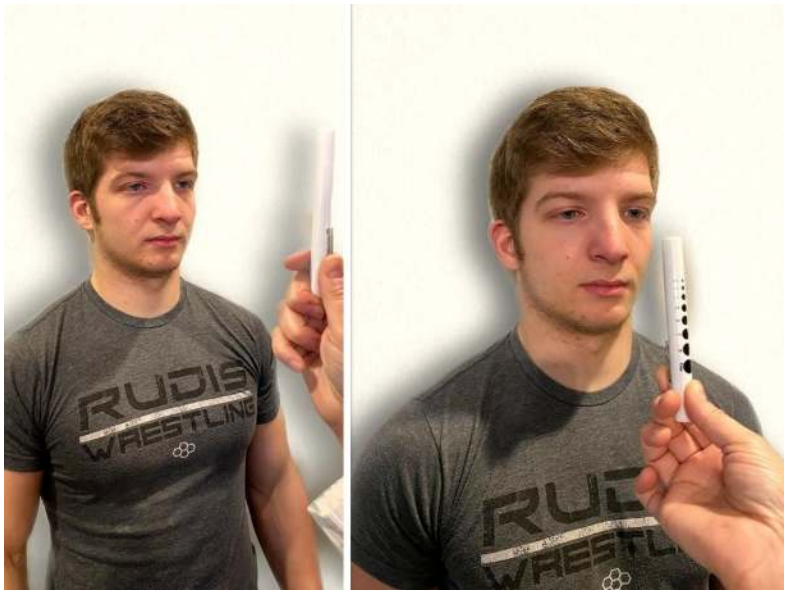


Figure 11.5.5: Assessing Eye Convergence and Accommodation

Video Review for Assessment of the Cardinal Fields of Gaze[7]



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Read more details about assessing the Pupillary Light Reflex.

Cranial Nerve V – Trigeminal

- Test sensory function. Ask the patient to close their eyes, and then use a wisp from a cotton ball to lightly touch their face, forehead, and chin. Instruct the patient to say ”Now” every time they feel the placement of the cotton wisp. See Figure 11.5.6[8] for an image of assessing trigeminal sensory function. The expected finding is that the patient will report every instance the cotton wisp is placed. An advanced technique is to assess the corneal reflex in comatose patients by touching the cotton wisp to the cornea of the eye to elicit a blinking response.
- Test motor function. Ask the patient to clench their teeth tightly while bilaterally palpating the temporalis and masseter muscles for strength. Ask the patient to open and close their mouth several times while observing muscle symmetry. See Figure 11.5.7[9] for an image of assessing trigeminal motor strength. The expected finding is the patient is able to clench their teeth and symmetrically open and close their mouth.

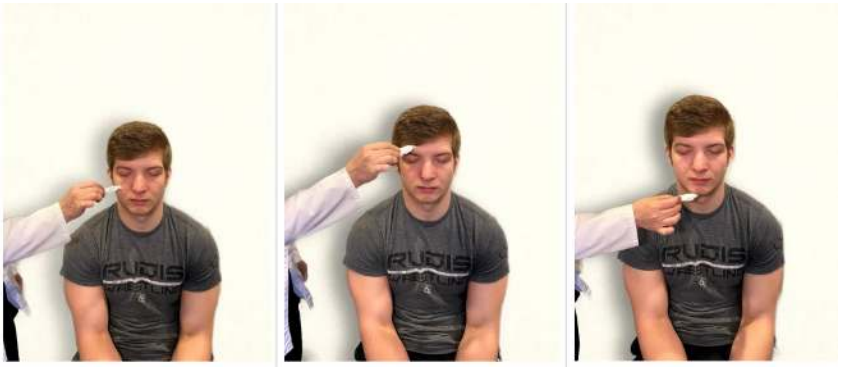


Figure 11.5.6: Assessing Trigeminal Sensory Function



Figure 11.5.7: Assessing Trigeminal Motor Function

Cranial Nerve VII – Facial Nerve

- Test motor function. Ask the patient to smile, show teeth, close both eyes, puff cheeks, frown, and raise eyebrows. Look for symmetry and strength of facial muscles. See Figure 11.5.8[10] for an image of assessing motor function of the facial nerve.
- Test sensory function. Test the sense of taste by moistening three different cotton applicators with salt, sugar, and lemon. Touch the patient's anterior tongue with each swab separately, and ask the patient to identify the taste. See Figure 11.5.9[11] for an image of assessing taste.



Figure 11.5.8: Assessing Motor Function of Facial Nerve

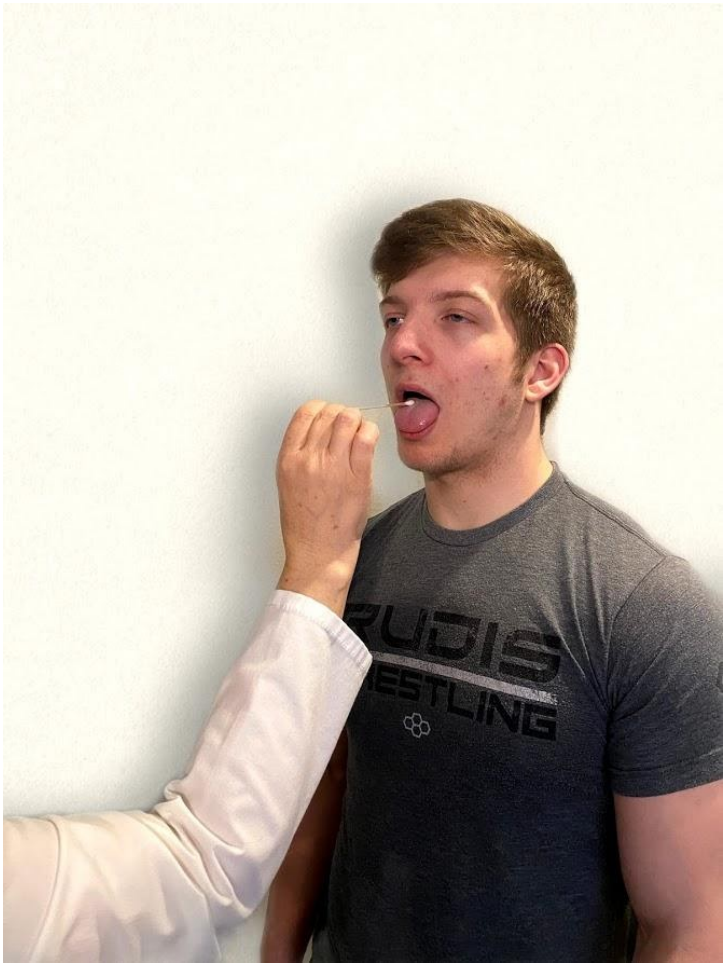


Figure 11.5.9: Assessing Sensory Function of Facial Nerve

Cranial Nerve VIII – Vestibulocochlear

- Test auditory function. Perform the whispered voice test. The whispered voice test is a simple test for detecting hearing impairment if done accurately. See Figure 11.5.10[12] for an image assessing hearing using the whispered voice test. Complete the following steps to accurately perform this test:
  - Stand at arm's length behind the seated patient to prevent lip reading.
  - Each ear is tested individually. The patient should be instructed to occlude the non-test ear with their finger.
  - Exhale before whispering and use as quiet a voice as possible.
  - Whisper a combination of numbers and letters (for example, 4-K-2), and then ask the patient to repeat the sequence.
  - If the patient responds correctly, hearing is considered normal; if the patient responds incorrectly, the test is repeated using a different number/letter combination.
  - The patient is considered to have passed the screening test if they repeat at least three out of a possible six numbers or letters correctly.
  - The other ear is assessed similarly with a different combination of numbers and letters.
- Test balance. The Romberg test is used to test balance and is also used as a test for driving under the influence of an intoxicant. See Figure 11.5.11[13] for an image of the Romberg test. Ask the patient to stand with their feet together and eyes closed. Stand nearby and be prepared to assist if the patient begins to fall. It is expected that the patient will maintain balance and stand erect. A positive Romberg test occurs if the patient sways or is unable to maintain balance. The Romberg test is also a test of the body's sense of positioning (proprioception), which requires healthy functioning of the spinal cord.

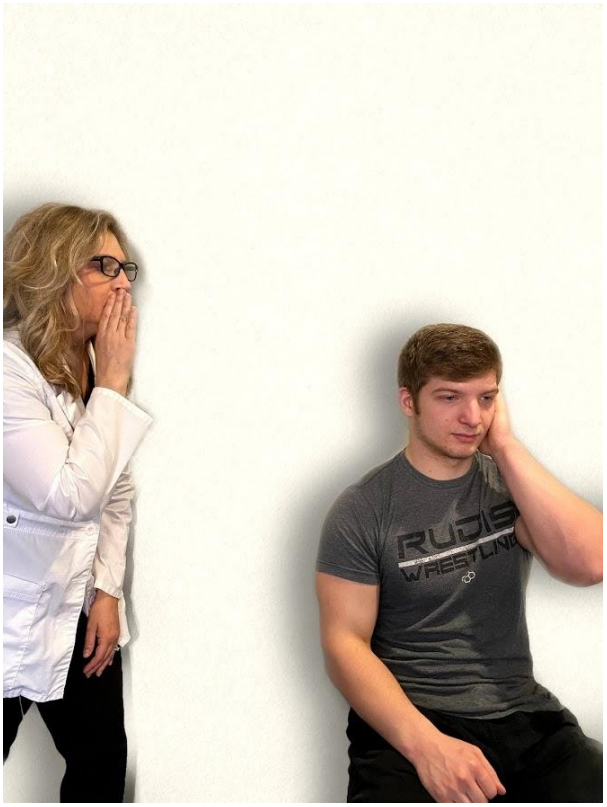


Figure 11.5.10: Assessing Auditory Function

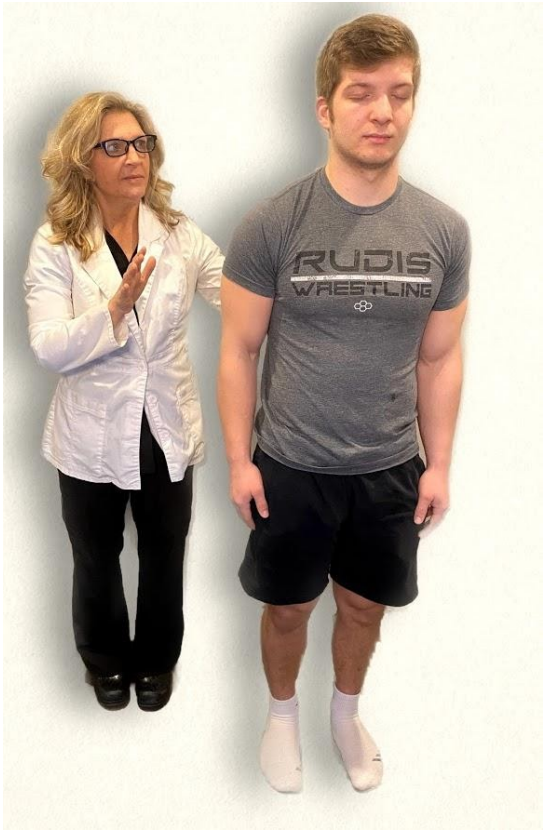


Figure 11.5.11: Romberg Test

Cranial Nerve IX – Glossopharyngeal

Ask the patient to open their mouth and say “Ah” and note symmetry of the upper palate. The uvula and tongue should be in a midline position and the uvula should rise symmetrically when the patient says “Ah.” (see Figure 11.5.12[14]).



Figure 11.5.12: Assessing Glossopharyngeal Nerve

Cranial Nerve X – Vagus

Use a cotton swab or tongue blade to touch the patient’s posterior pharynx and observe for a gag reflex followed by a swallow. The glossopharyngeal and vagus nerves work together for integration of gag and swallowing. See Figure 11.5.13[15] for an image of assessing the gag reflex.



Figure 11.5.13: Observing the Gag Reflex

Cranial Nerve XI – Spinal Accessory

Test the right sternocleidomastoid muscle. Face the patient and place your right palm laterally on the patient's left cheek. Ask the patient to turn their head to the left while resisting the pressure you are exerting in the opposite direction. At the same time, observe and palpate the right sternocleidomastoid with your left hand. Then reverse the procedure to test the left sternocleidomastoid.

Continue to test the sternocleidomastoid by placing your hand on the patient's forehead and pushing backward as the patient pushes forward. Observe and palpate the sternocleidomastoid muscles.

Test the trapezius muscle. Ask the patient to face away from you and observe the shoulder contour for hollowing, displacement, or winging of the scapula and observe for drooping of the shoulder. Place your hands on the patient's shoulders and press down as the patient elevates or shrugs the shoulders and then retracts the shoulders.[16] See Figure 11.5.14[17] for an image of assessing the trapezius muscle.



Figure 11.5.14: Assessing Cranial Nerve XI

Cranial Nerve XII – Hypoglossal

Ask the patient to protrude the tongue. If there is unilateral weakness present, the tongue will point to the affected side due to unopposed action of the normal muscle. An alternative technique is to ask the patient to press their tongue against their cheek while providing resistance with a finger placed on the outside of the cheek. See Figure 11.5.15[18] for an image of assessing the hypoglossal nerve.

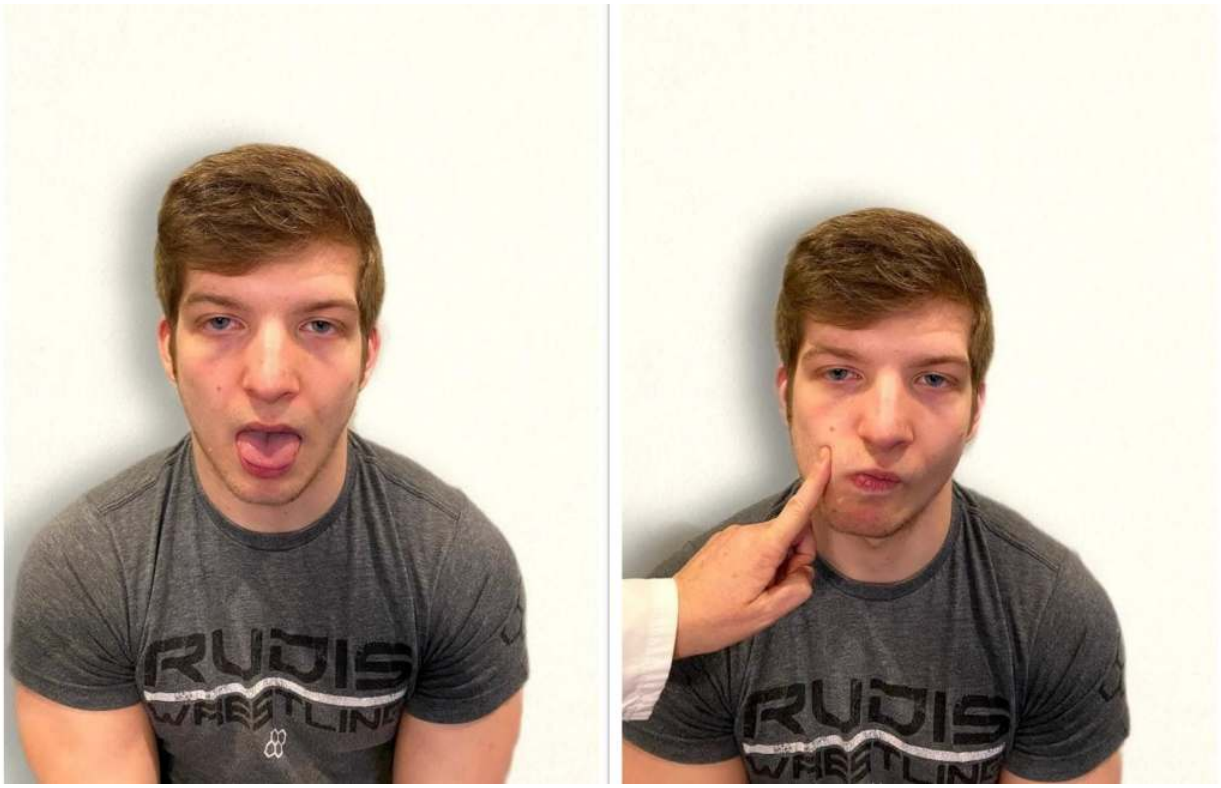


Figure 11.5.15 Assessing the Hypoglossal Nerve

Video Review of Cranial Nerve Assessment[18]



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Expected Versus Unexpected Findings

See Table 11.5.1 for a comparison of expected versus unexpected findings when assessing the cranial nerves.

Table 11.5.1 Expected Versus Unexpected Findings of an Adult Cranial Nerve Assessment

Cranial Nerve	Expected Finding	Unexpected Finding (Dysfunction)
I. Olfactory	Patient is able to describe odor.	Patient has inability to identify odors (**anosmia**).
II. Optic	Patient has 20/20 near and far vision.	Patient has decreased visual acuity and visual fields.
III. Oculomotor	Pupils are equal, round, and reactive to light and accommodation.	Patient has different sized or reactive pupils bilaterally.
IV. Trochlear	Both eyes move in the direction indicated as they follow the examiner's penlight.	Patient has inability to look up, down, inward, outward, or diagonally. **Ptosis** refers to drooping of the eyelid and may be a sign of dysfunction.
V. Trigeminal	Patient feels touch on forehead, maxillary, and mandibular areas of face and chews without difficulty.	Patient has weakened muscles responsible for chewing; absent corneal reflex; and decreased sensation of forehead, maxillary, or mandibular area.
VI. Abducens	Both eyes move in coordination.	Patient has inability to look side to side (lateral); patient reports **diplopia** (double vision).
VII. Facial	Patient smiles, raises eyebrows, puffs out cheeks, and closes eyes without difficulty; patient can distinguish different tastes.	Patient has decreased ability to taste. Patient has facial **paralysis** or asymmetry of face such as facial droop.
VIII. Vestibulocochlear (Acoustic)	Patient hears whispered words or finger snaps in both ears; patient can walk upright and maintain balance.	Patient has decreased hearing in one or both ears and decreased ability to walk upright or maintain balance.
IX. Glossopharyngeal	Gag reflex is present.	Gag reflex is not present; patient has **dysphagia**.

X. Vagus	Patient swallows and speaks without difficulty.	Slurred speech or difficulty swallowing is present.
XI. Spinal Accessory	Patient shrugs shoulders and turns head side to side against resistance.	Patient has inability to shrug shoulders or turn head against resistance.
XII. Hypoglossal	Tongue is midline and can be moved without difficulty.	Tongue is not midline or is weak.

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7. Registered NurseRN.(2018, June 5). *Six cardinal fields of gaze nursing | Nystagmus eyes, cranial nerve 3, 4, 6, test.* [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/lrO4pLB95p0↵
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16. Walker, H. K. Cranial nerve XI: The spinal accessory nerve. In Walker, H. K., Hall, W. D., Hurst, J. W. (Eds.), *Clinical methods: The history, physical, and laboratory examinations (3rd ed.).* Butterworths. www.ncbi.nlm.nih.gov/books/NBK387/↵
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19. RegisteredNurseRN. (2018, April 8). *Cranial nerve examination nursing | Cranial nerve assessment I-XII (1-12).* [Video]. YouTube. All rights reserved. Video used with permissions. https://youtu.be/oZGFrwogx14↵

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11.6: Assessing Sensory Function

The sensory function exam tests the somatic senses, meaning those senses that are consciously perceived. Assessing sensory function includes two components, the sensory response that occurs when stimuli are perceived by afferent nerves in the peripheral nervous system and the cortical processing that occurs in the cerebral cortex of the brain.

Sensory Response

Testing of peripheral sensation begins with examining the response to light touch according to regions of the skin known as dermatomes. A **dermatome** is an area of the skin that is supplied by a single spinal nerve that sends information to the brain for processing. See Figure 11.6.1[1] for an illustration of color-coded dermatomes according to their associated spinal nerves. See more information about spinal nerves in the "Basic Neurological Concepts" section.

To test the sensory fields, ask the patient to close their eyes, and then gently touch the soft end of a cotton-tipped applicator on random locations of the skin according to the dermatome region. Instruct the patient to report "Now" when feeling the placement of the applicator. If a patient is unable to feel the sensation of a cotton applicator, an advanced technique is to use ice or even the prick of a pin in comatose patients.

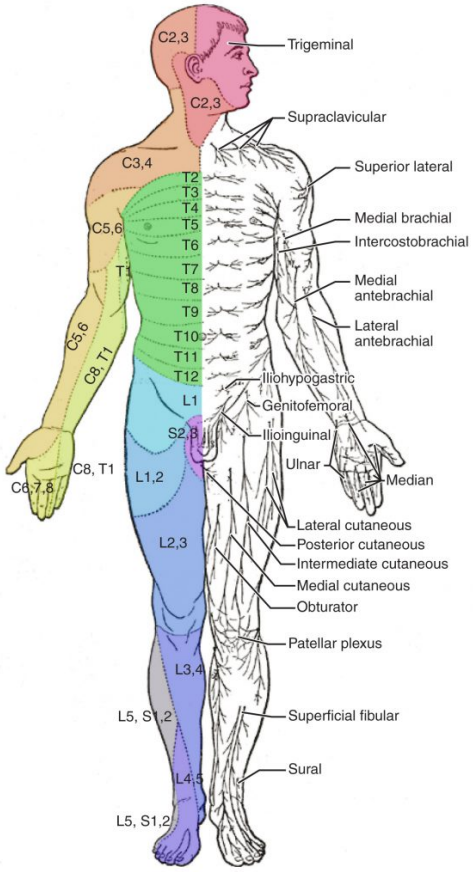


Figure 11.6.1: Dermatomes

It is not necessary to test every part of the skin's surface during a routine neurological exam; testing a few distal areas with light touch is usually sufficient. In-depth testing is performed when the patient is exhibiting neurological symptoms such as motor deficits, numbness, tingling, and weakness. See Figure 11.6.2[2] demonstrating assessment of the sensory response.



Figure 11.6.2 Assessing Sensory Response

Cortical Processing

Cortical processing that occurs in the cerebral cortex of the parietal lobe is assessed using stereogenesis. **Stereognosis** is the ability to perceive the physical form and identity of a familiar object such as a key or paper clip based on tactile stimuli alone.[3] The person typically uses the finger to move the object around and then correctly names the object.

To perform the stereognosis test, ask the patient to close their eyes; then place a familiar object in their hand and ask them to name it. Each hand should be tested with a different object. See Figure 11.6.3[4] for an image of a patient being tested for stereognosis.

Graphesthesia tests assess both cortical sensation and primary sensation. Graphesthesia is the ability to recognize a tracing on the skin while using the sensation of touch. To test graphesthesia, trace a number or letter on the patient's outstretched palm and ask them to identify it.

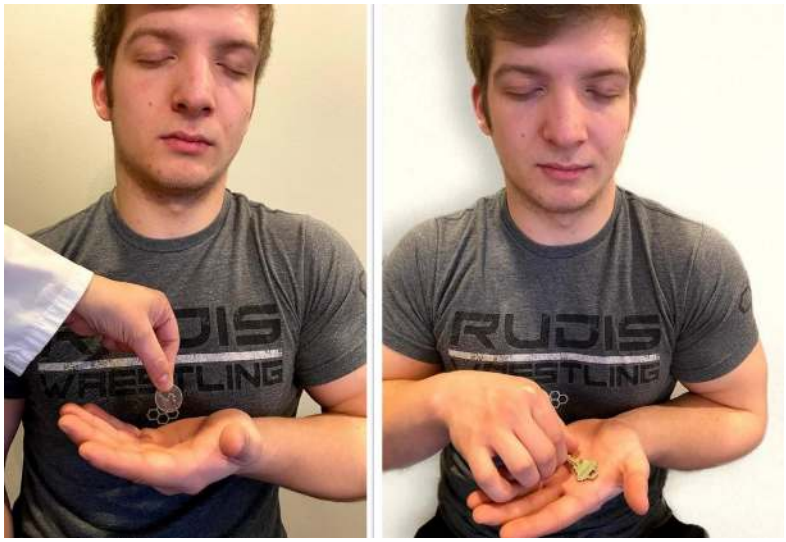


Figure 11.6.3 Assessing Stereognosis

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11.7: Assessing Motor Strength

A brief musculoskeletal assessment is performed as part of the neurological assessment to determine the neurological stimulation of bilateral strength. Read more details about muscles and musculoskeletal assessment in the “Musculoskeletal Assessment” chapter. Unequal extremity motor strength can indicate underlying neurological disease or injury. Assessing motor strength includes comparing bilateral hand grasps, upper extremity strength, and lower extremity strength. Keep in mind that extremities on the dominant side are usually slightly stronger than the nondominant side.

Hand Grasps

To perform a hand grasp test, extend two fingers on both hands toward the patient. Ask the patient to squeeze both of your hands and compare for similar bilateral strength. See Figure 11.7.1 [1] for an image of assessing hand grasp strength.



Figure 11.7.1 Assessing for Equal Strength in Bilateral Hand Grasps

Upper Extremity Strength

To test upper extremity strength, ask the patient to extend their forearms with palms facing upwards. Place your hands on their inner forearms and ask them to pull their arms toward them while you provide resistance. An expected finding is the patient strongly bilaterally pulls against resistance with both arms.

An alternative test is to ask the patient to put their hands in the air with their palms facing you. Place your palms against theirs and ask them to push while you provide resistance. See Figure 11.7.2 [2] for an image of assessing upper body strength.



Figure 11.7.2: Assessing for Equal Upper Extremity Strength

Lower Body Strength

To assess lower body strength while the patient is in a seated position, place your hands behind their calves. Ask them to pull backwards with their lower legs while you provide resistance in the opposite direction.

Alternative tests are to place your hands on the patient's lower thighs and ask them to lift their legs upwards while you provide downward resistance, or place your hands on the top of their feet and ask them to pull their toes upwards while you provide resistance. In a similar manner, you can also place your hands on the dorsal part of their feet and ask them to press downwards "like pressing the gas pedal of a car," while providing resistance. Compare lower extremity strength on both sides. See Figure 11.7.3[3] for images of assessing lower extremity strength.



Figure 11.7.3: Assessing for Equal Strength in Lower Extremities

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11.8: Assessing Cerebellar Function

The neurological aspect of motor function is based on the activities of the cerebellum. The cerebellum is responsible for equilibrium, coordination, and the smoothness of movement. Specific tests used to evaluate cerebellar function include assessment of gait and balance, pronator drift, the finger-to-nose test, rapid alternating action, and the heel-to-shin test.

Gait and Balance

When assessing gait and balance, ask the patient to perform the following actions, using an assistive device if needed:

- Walk 10 feet, pivot, and walk back
- Look straight ahead and walk heel to toe
- Walk on tiptoes
- Walk on heels

Steps should be equal with a regular pace while arms are swinging and coordinated with walking. Balance should be maintained. A change in gait, weakness, shuffling, jerky movements, loss of balance, or incoordination of arm swing can indicate a neurological dysfunction. See Figure 11.8.1 [1] for an image of assessing gait and balance.



When performing assessment of gait and balance, be aware that the older patient may have a mild degree of muscle weakness or decreased balance associated with aging. When feasible, obtain the patient's baseline ability and compare current findings to their baseline.

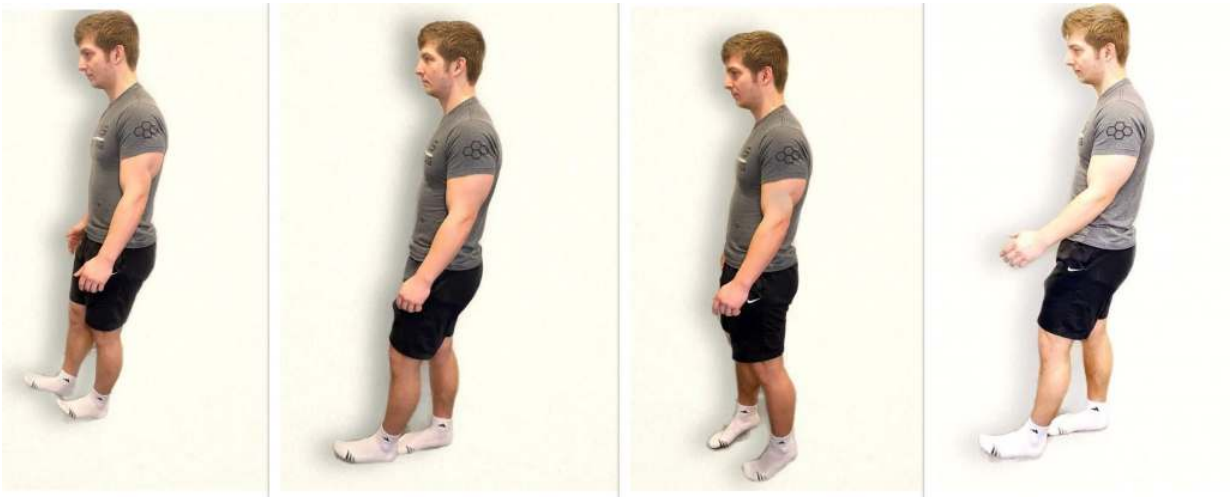


Figure 11.8.1: Assessing Gait and Balance

Pronator Drift

Assessing for pronator drift helps to detect mild upper limb weakness. Ask the patient to close their eyes and extend both arms at 90 degrees at shoulder level with the palms facing upwards. The patient should try to maintain this position for 20 to 30 seconds. Closing the eyes accentuates the effect because the brain is deprived of visual information about the position of the body and must rely on proprioception. **Proprioception** is the awareness of body position and movement. The expected finding is both arms will maintain this position equally. If the patient is unable to maintain the position, the result is referred to as a positive pronator drift test. Patients with weakness in one arm will not be able to keep the affected arm raised, and ultimately the palm may begin to pronate (palm facing down). In some patients, the arm may remain supinated but will drop lower than the unaffected arm.

Finger-to-Nose Test

The finger-to-nose test assesses equilibrium and coordination. Place the patient in a seated or standing position and ask them to close their eyes. Instruct the patient to extend their arms outward from the sides of the body, and then touch the tip of the nose with the right index finger and return the arm to extended position. Repeat with the left side and continue to repeat touching the nose with alternating movements by both arms.

The expected finding is the patient will smoothly touch the nose with alternating left and right index fingers and return their arms to an extended position repeatedly. An abnormal result occurs when the patient is unable to alternate fingers or demonstrates the inability to touch the nose. For example, the patient may touch the cheek or other part of the face, or movement may be clumsy with stops and restarts. See Figure 11.8.2[2] for an image of a finger-to-nose test.



Figure 11.8.2: Finger-to-Nose Test

Rapid Alternating Action

To perform a rapid alternating action test, place the patient in a seated position with palms down on thighs. Ask the patient to turn their hands so their palms face upwards and then quickly return them to a downward position and repeat. Instruct the patient to alternate this movement at a fast pace. The expected finding is the rhythm, rate, and movement are smooth and coordinated as pace increases. An abnormal finding is when the patient is unable to alternate movements or can only do so at a slow pace. See Figure 11.8.3 [3] for an example of the rapid alternating action test.

An alternative test is to have the patient touch the thumb to each finger on their hand in sequence and gradually increase the pace. Repeat this test on the other hand. See Figure 11.8.4 [4] for an alternative finger touch test.



Figure 11.8.3 Rapid Alternating Action Test

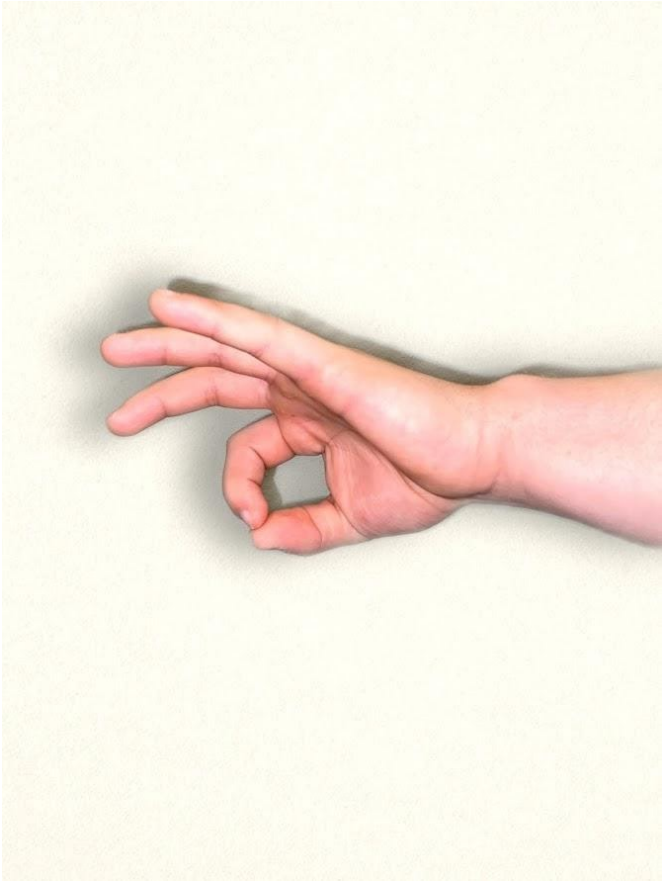


Figure 11.8.4 Alternative Finger Touch Test

Heel-to-Shin Test

To perform a heel-to-shin test, place the patient in a supine position. Ask the patient to place the heel of the right foot just below their left kneecap, and then slide the right heel in a straight line down the shin bone to the ankle. Ask them to repeat this procedure on the left leg. The expected action is a smooth and straight movement of both legs. An abnormal finding is if the heel falls off the lower leg or the patient is not able to complete the movement smoothly in a straight motion. See Figure 11.8.5 [5] for an image of the heel-to-shin test.



Figure 11.8.5: Heel-to-Shin Test

Visit Stanford Medicine 25's "Cerebellum Exam" video on YouTube for a review of cerebellar exam.[6]

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6. Stanford medicine 25. *(2014, March 18). Cerebellum exam (Stanford medicine 25)*. [Video]. YouTube. All rights reserved. https://youtu.be/Imu1kk_gOKA↵

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11.9: Assessing Reflexes

Assessment of reflexes is not typically performed by registered nurses as part of a routine nursing neurological assessment of adult patients, but it is used in nursing specialty units and in advanced practice. Spinal cord injuries, neuromuscular diseases, or diseases of the lower motor neuron tract can cause weak or absent reflexes. To perform deep reflex tendon testing, place the patient in a seated position. Use a reflex hammer in a quick striking motion by the wrist on various tendons to produce an involuntary response. Before classifying a reflex as absent or weak, the test should be repeated after the patient is encouraged to relax because voluntary tensing of the muscles can prevent an involuntary reflexive action.

Reflexes are graded from 0 to 4+, with "2+" considered normal:

- 0: Absent
- 1+: Hypoactive
- 2+: Normal
- 3+: Hyperactive without clonus
- 4+: Hyperactive with clonus (involuntary muscle contraction)

To observe assessment of deep tendon reflexes, view the following video.

View Stanford Medicine's Assessment of Deep Tendon Reflexes Video.[1]

Brachioradialis Reflex

The brachioradialis reflex is used to assess the cervical spine nerves C5 and C6. Ask the patient to support their arm on their thigh or on your hand. Identify the insertion of the brachioradialis tendon on the radius and briskly tap it with the reflex hammer. The reflex consists of flexion and supination of the forearm. See Figure 11.9.1[2] for an image of obtaining the brachioradialis reflex.



Figure 11.9.1: Brachioradialis Reflex

Triceps Reflex

The triceps reflex assesses cervical spine nerves C6 and C7. Support the patient's arm underneath their bicep to maintain a position midway between flexion and extension. Ask the patient to relax their arm and allow it to fully be supported by your hand. Identify the triceps tendon posteriorly just above its insertion on the olecranon. Tap briskly on the tendon with the reflex hammer. Note extension of the forearm. See Figure 11.9.2[3] for an image of the triceps reflex exam.



Figure 11.9.2: Triceps Reflex

Patella (Knee Jerk) Reflex

The patellar reflex, commonly referred to as the knee jerk test, assesses lumbar spine nerves L2, L3, and L4. Ask the patient to relax the leg and allow it to swing freely at the knee. Tap the patella tendon briskly, looking for extension of the lower leg. See Figure 11.9.3[4] for an image of assessing a patellar reflex.

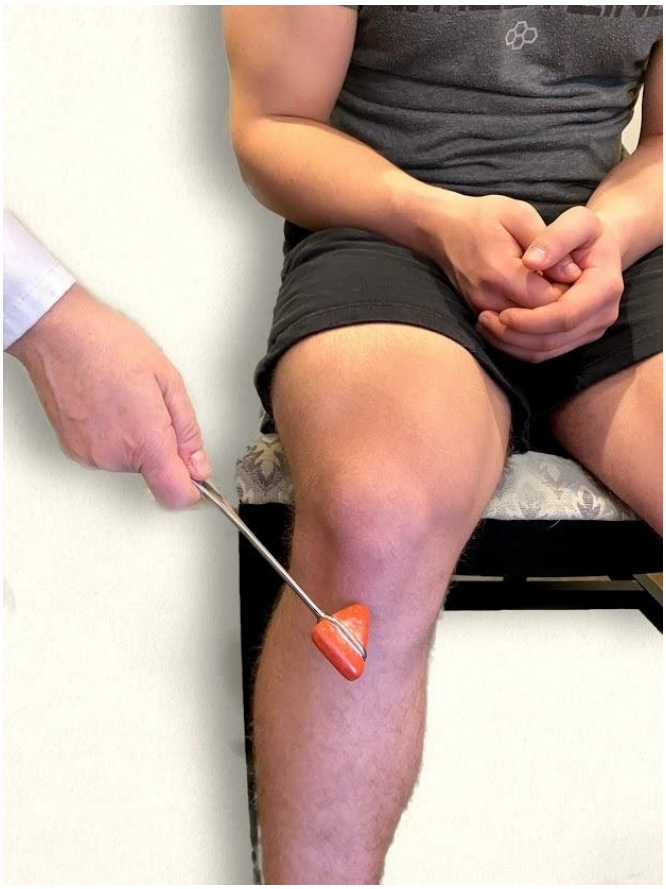


Figure 11.9.3: Patellar Reflex

Plantar Reflex

The plantar reflex assesses lumbar spine L5 and sacral spine S1. Ask the patient to extend their lower leg, and then stabilize their foot in the air with your hand. Stroke the lateral surface of the sole of the foot toward the toes. Many patients are ticklish and withdraw their foot, so it is sufficient to elicit the reflex by using your thumb to stroke lightly from the sole of the foot toward the toes. If there is no response, use a blunt object such as a key or pen. The expected reflex is flexion (i.e., bending) of the great toe. An abnormal response is toe extension (i.e., straightening), also known as the Babinski reflex, which is considered abnormal after 2 years of age. See Figures 11.9.4 – 11.9.7[5] [6] [7] [8] for images of assessing the plantar reflex.

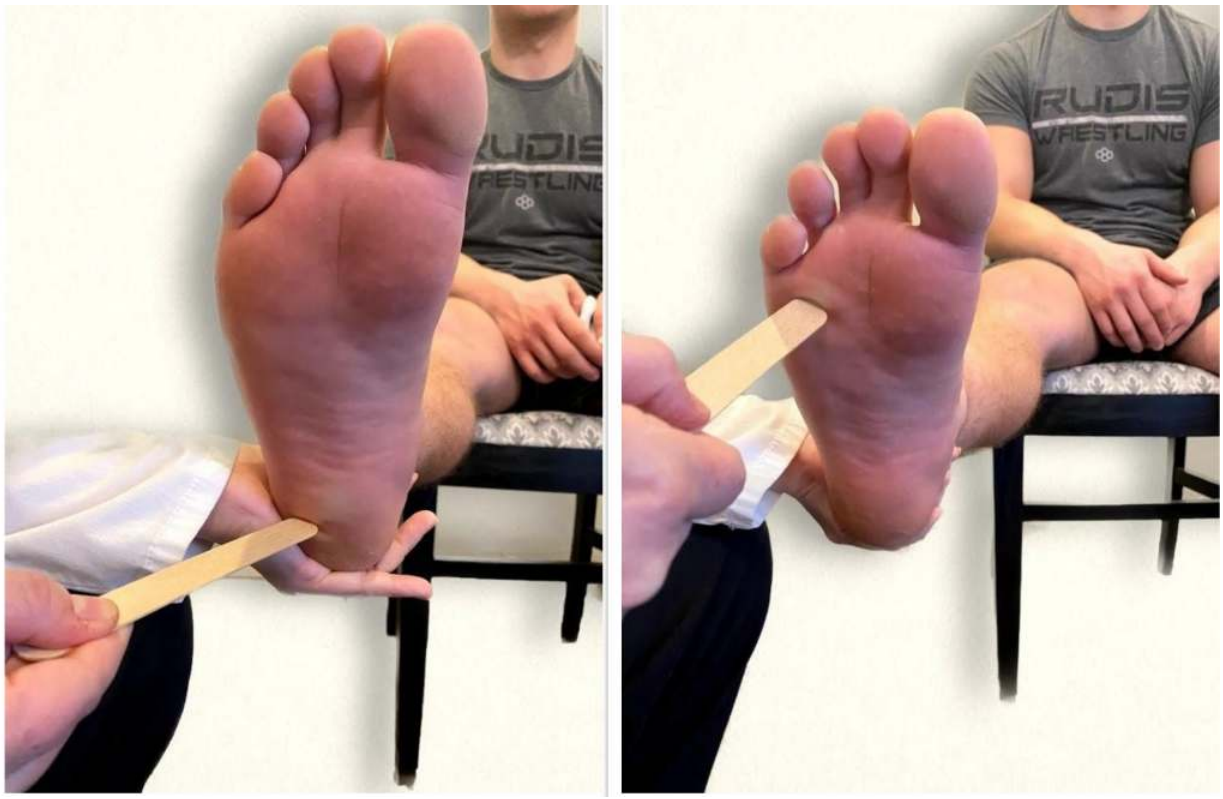


Figure 11.9.4: The Plantar Reflex

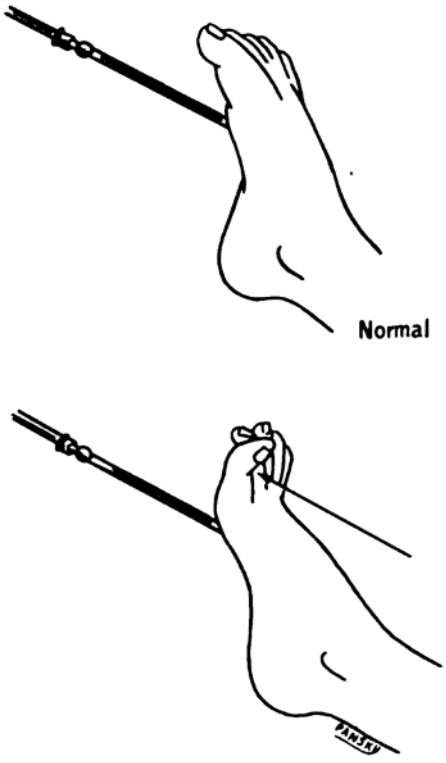


Figure 11.9.5: Plantar Reflex and Babinski Sign

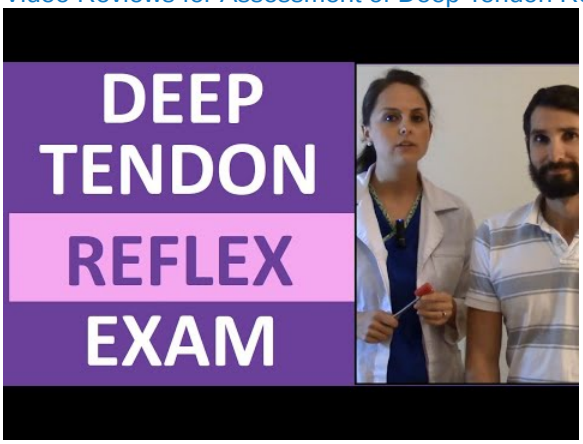


Figure 11.9.6: The Babinski Sign in an Adult



Figure 11.9.7: The Normal Babinski Reflex in a Newborn

Video Reviews for Assessment of Deep Tendon Reflexes[9]



Babinski-Plantar Reflex[10]



1. Stanford Medicine 25. (2014, March 16). *Deep tendon reflexes (Stanford medicine 25).* [Video]. YouTube. All rights reserved. https://youtu.be/0sqCIzuotWo↵
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10. RegisteredNurseRN (2016, March 29). *Babinski reflex | Plantar reflex test | Nursing head to toe assessment.* [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/dcJgxuLtHdg↵

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11.10: Neurological Assessment

Now that we have reviewed tests included in a neurological exam, let's review components of a routine neurological assessment typically performed by registered nurses. The neurological assessment begins by collecting subjective data followed by a physical examination.

Subjective Assessment

Subjective data collection guides the focus of the physical examination. Collect data from the patient using effective communication and pay particular attention to what the patient is reporting, including current symptoms and any history of neurological illness. Ask follow-up questions related to symptoms such as confusion, headache, vertigo, seizures, recent injury or fall, weakness, numbness, tingling, difficulty swallowing (called **dysphagia**) or speaking (called **dysphasia**), or lack of coordination of body movements.[1]

See Table 11.10.1 for sample interview questions to use during the subjective assessment

Table 11.10.1 Interview Questions Related to Subjective Assessment of Neurological System

Interview Questions	Follow-up
Are you experiencing any current neurological concerns such as headache, dizziness, weakness, numbness, tingling, tremors, loss of balance, or decreased coordination? Have you experienced any difficulty swallowing or speaking? Have you experienced any recent falls?	If the patient is seeking care for an acute neurological problem, use the OLD CART & ICE method to further evaluate their chief complaint. The OLD CART & ICE method is described in the "Health History" chapter. Note: If critical findings of an acute neurological event are actively occurring, such as signs of a stroke, obtain emergency assistance according to agency policy.
Have you ever experienced a neurological condition such as a stroke, transient ischemic attack, seizures, or head injury?	Describe the condition(s), date(s), and treatment(s).
Are you currently taking any medications, herbs, or supplements for a neurological condition?	Please describe.

Life Span Considerations

Newborn

At birth, the neurologic system is not fully developed. The brain is still developing, and the newborn's anterior fontanelle doesn't close until approximately 18 months of age. The sensory and motor systems gradually develop in the first year of life. The newborn's sensory system responds to stimuli by crying or moving body parts. Initial motor activity is primitive in the form of newborn reflexes. Additional information about newborn reflexes is provided in the "Assessing Reflexes" section. As the newborn develops, so do the motor and sensory integration. Specific questions to ask parents or caregivers of infants include the following:

- Have you noticed your infant sleeping excessively or having difficulty arousing?
- Has your infant had difficulty feeding, sucking, or swallowing?

Children

Depending on the child's age and developmental level, they may answer questions independently or the child's parent/guardian may provide information. Specific questions for children include the following:

- Have you ever had a head injury or a concussion?
- Do you experience headaches? If so, how often?
- Have you had a seizure or convulsion?
- Have you noticed if your child has any problems with walking or balance?
- Have you noticed if your child experiences episodes of not being aware of their environment?

Older Adults

The aging adult experiences a general slowing in nerve conduction, resulting in a slowed motor and sensory interaction. Fine coordination, balance, and reflex activity may be impaired. There may also be a gradual decrease in cerebral blood flow and oxygen use that can cause dizziness and loss of balance. Examples of specific subjective questions for the older adult include the following:

- Have you ever had a head injury or recent fall?
- Do you experience any shaking or tremors of your hands? If so, do they occur more with rest or activity?
- Have you had any weakness, numbness, or tingling in any of your extremities?
- Have you noticed a problem with balance or coordination?
- Do you ever feel lightheaded or dizzy? If so, does it occur with activity or change in position?



Educate older adults to change positions slowly, especially when standing up from a lying or sitting position. Lightheadedness and loss of balance during these activities increase the risk for falls.

Objective Assessment

The physical examination of the neurological system includes assessment of both the central and peripheral nervous systems. A routine neurological exam usually starts by assessing the patient's mental status followed by evaluation of sensory function and motor function. Comprehensive neurological exams may further evaluate cranial nerve function and deep tendon reflexes. The nurse must be knowledgeable of what is normal or expected for the patient's age, development, and condition to analyze the meaning of the data that is being collected.

Inspection

Nurses begin assessing a patient's overall neurological status by observing their general appearance, posture, ability to walk, and personal hygiene in the first few minutes of nurse-patient interaction. For additional information about obtaining an overall impression of a patient's status while performing an assessment, see the "General Survey" chapter.

Level of orientation is assessed and other standardized tools to evaluate a patient's mental status may be used, such as the Glasgow Coma Scale (GCS), NIH Stroke Scale, or Mini-Mental State Exam (MMSE). Read more information about these tools under the "Assessing Mental Status" section earlier in this chapter.

The nurse also assesses a patient's cerebellar function by observing their gait and balance. See the "Assessing Cerebellar Function" section earlier in chapter for more information.

Auscultation

Auscultation refers to the action of listening to sounds from the heart, lungs, or other organs with a stethoscope as a part of physical examination. Auscultation is not typically performed by registered nurses during a routine neurological assessment. However, advanced practice nurses and other health care providers may auscultate the carotid arteries for the presence of a swishing sound called a **bruit**. Bruits suggest interference with cerebral blood flow that can cause neurological deficits.

Palpation

Palpation during a physical examination typically refers to the use of touch to evaluate organs for size, location, or tenderness, but palpation during the neurologic physical exam involves using touch to assess sensory function and motor function. Refer to sections on "Assessing Sensory Function," "Assessing Motor Function," "Assessing Cranial Nerves," and "Assessing Reflexes" earlier in this chapter for additional information on how to perform these tests.

See Table 11.10.2 for a summary of expected and unexpected findings when performing an adult neurological assessment.

Table 11.10.2 Expected Versus Unexpected Findings on Adult Neurological Assessment

Assessment	Expected Findings	Unexpected Findings (Document and notify provider if new finding*)

Inspection	Alert and oriented to person, place, and time	
Critical findings to report immediately and/or obtain emergency assistance:		Change in mental status, pupil responsiveness, facial drooping, slurred words or inability to speak, or sudden unilateral loss of motor strength

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11.11: Sample Documentation

Sample Documentation of Expected Findings

Patient denies any new onset of symptoms of headaches, dizziness, visual disturbances, numbness, tingling, or weakness. Patient is alert and oriented to person, place, and time. Dress is appropriate, well-groomed, and proper hygiene. Patient is cooperative and appropriately follows instructions during the exam. Speech is clear and facial expressions are symmetrical. Glasgow scores at 15. Gait is coordinated and erect with good balance. PERRLA, pupil size 4mm. Sensation intact in all extremities to light touch. Cranial nerves intact x 12. No deficits demonstrated on Mini-Mental Status Exam. Upper and lower extremity strength and hand grasps are 5/5 (equal with full resistance bilaterally). Follows commands appropriately. Cerebellar function intact as demonstrated through alternating hand movements and finger-to-nose test. Negative Romberg and Pronator drift. Balance is stable during heel-to-toe test. Tolerated exam without difficulty.

Sample Documentation of Unexpected Findings

Patient is alert and oriented to person, place, and time. Speech is clear; affect and facial expressions are appropriate to situation. Patient cooperative with exam and exhibits pleasant and calm behavior. Dress is appropriate, well-groomed, and proper hygiene. Posture remains erect in wheelchair, with intermittent drift to left side. History of CVA with left sided hemiplegia. Bilateral hearing aids in place with corrective lenses on. Pupils are 4mm equal and round. Reaction intact right and accommodation intact right eye. Left pupil 2mm, round nonreactive to light and accommodation. Upper extremity hand grips, nonsymmetrical due to left-sided weakness. Right hand grip and upper extremity strength strong at 4/5. Left lower extremity residual weakness, rated at 1/5, right lower extremity strength 4/5. Sensation intact to light touch bilaterally, R>L. Unable to assess Romberg and Pronator drift.

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11.12: Checklist for Neurological Assessment



Begin assessing a patient's general appearance, posture, ability to walk, personal hygiene, and other general survey assessments during the first few minutes of the initial nurse-patient interaction. When asking the patient to perform specific neurological tests, it is helpful to demonstrate movements for the patient. Explain the purpose and use of any equipment used.

Use the checklist below to review the steps for completion of a routine "Neurological Assessment."

Steps

Disclaimer: Always review and follow agency policy regarding this specific skill.

1. Gather supplies: penlight. For a comprehensive neurological exam, additional supplies may be needed: Snellen chart; tongue depressor; cotton wisp or applicator; and percussion hammer; objects to touch, such as coins or paper clips; substances to smell, such as vanilla, mint, or coffee; and substances to taste such as sugar, salt, or lemon.
2. Perform safety steps:
   - Perform hand hygiene.
   - Check the room for transmission-based precautions.
   - Introduce yourself, your role, the purpose of your visit, and an estimate of the time it will take.
   - Confirm patient ID using two patient identifiers (e.g., name and date of birth).
   - Explain the process to the patient and ask if they have any questions.
   - Be organized and systematic.
   - Use appropriate listening and questioning skills.
   - Listen and attend to patient cues.
   - Ensure the patient's privacy and dignity.
   - Assess ABCs.
3. Obtain subjective assessment data related to history of neurological disease and any current neurological concerns using effective communication.
4. Assess the patient's behavior, language, mood, hygiene, and choice of dress while performing the interview. Note any hearing or visual deficits and ensure glasses and hearing aids are in place, if needed.
5. Assess level of consciousness and orientation; use Glasgow Coma Scale if appropriate.
6. Complete Mini-Mental State Examination (MMSE), if indicated.
7. Assess for PERRLA.
8. Assess motor strength and sensation.
   - Hand grasps
   - Upper body strength/resistance
   - Lower body strength/resistance
   - Sensation in extremities
9. Assess coordination and balance.
   - Ask the patient to walk, using an assistive device if needed, assessing gait for smoothness, coordination, and arm swing.
   - As appropriate, assess the patient's ability to tandem walk (heel to toe), walk on tiptoes, walk on heels.
   - Assess cerebellar functioning using tests such as Romberg, pronator drift, rapid alternating hand movement, fingertip-to-nose, and heel-to-shin tests.
10. Perform a cranial nerve assessment and assess deep tendon reflexes as indicated.
11. Assist the patient to a comfortable position, ask if they have any questions, and thank them for their time.
12. Ensure five safety measures when leaving the room:
    - CALL LIGHT: Within reach
    - BED: Low and locked (in lowest position and brakes on)

- SIDE RAILS: Secured
- TABLE: Within reach
- ROOM: Risk-free for falls (scan room and clear any obstacles)

13. Perform hand hygiene.
14. Document the assessment findings and report any concerns according to agency policy.

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11.13: Learning Activities

Learning Activities

1. A male client has an impairment of cranial nerve II. **Specific to this impairment, the nurse would plan to do which of the following to ensure client safety?**

a. Use loud a tone when speaking to the client
b. Test the temperature of the shower water
c. Check the temperature of the food prior to eating
d. Remove obstacles when ambulating

2. The nurse is performing a mental status examination on a client with confusion. **This test assesses which of the following?**

a. Cerebral function
b. Cerebellar function
c. Sensory function
d. Intellectual function

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11.14: XI Glossary

Accommodation: The ability of the eye to adjust from near vision to far vision. Pupils constrict at near vision and dilate at far vision.

Anosmia: Partial or complete loss of smell. This symptom can be related to underlying cranial nerve dysfunction or other nonpathological causes such as a common cold.

Babinski response: A reflex demonstrated by the fanning of toes with the great toe pointed toward the back (dorsum) of the foot. In adults, the Babinski response is considered abnormal and an indication of motor neuron disease.

Broca's area: An area located in the frontal lobe that is responsible for the production of language and controlling movements responsible for speech.

Bruit: A swishing sound heard upon auscultation.

Central nervous system: The part of the nervous system that includes the brain (the interpretation center) and the spinal cord (the transmission pathway).

Cerebellum: The part of the brain that coordinates skeletal and smooth muscle movement and maintains equilibrium and balance.

Cerebral cortex: The cerebrum is covered by a wrinkled outer layer of gray matter.

Comatose: A decreased level of consciousness with a score of less than 8 on the Glasgow Coma Scale.

Convergence: The action of both eyes moving inward as they focus on a close object using near vision.

Dermatome: An area of the skin that is supplied by a single spinal nerve.

Diplopia: Double vision (i.e., seeing two images of a single object).

Dysphagia: Difficulty swallowing.

Dysphasia: Difficulty speaking.

Hypothalamus: The autonomic control center of the brain that controls functions such as blood pressure, heart rate, digestive movement, and pain perception.

Kinesthesia: A person's sense of movement.

Level of consciousness: A patient's level of arousal and alertness, commonly assessed by asking them to report their name, current location, and time.

Motor nerves: Nerves in the peripheral nervous system that transmit motor signals from the brain to the muscles to cause movement.

Nystagmus: Involuntary, shaky eye movements.

Paralysis: The partial or complete loss of strength, movement, or control of a muscle or group of muscles within a body part that can be caused by brain or spinal injury.

Peripheral nervous system: The part of the nervous system that includes the cranial and spinal nerves.

Proprioception: A person's sense of their body position.

Ptosis: Drooping of the eyelid.

Sensation: The function of receiving information about the environment. The major senses are taste, smell, touch, sight, and hearing.

Sensory nerves: Nerves in the peripheral nervous system that carry impulses from the body to the brain for processing.

Stereognosis: The ability to perceive the physical form and identity of an object based on tactile stimuli alone.

Thalamus: Relays sensory information and motor information in collaboration with the cerebellum.

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1.3: Critical Thinking and Clinical Reasoning

O

older adults
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P

Personal Protective Equipment (PPE)
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1.5: Nursing Education and the NCLEX

S

safety culture
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Snellen chart
11.5: Assessing Cranial Nerves

Glossary

15-15 Rule | A rule in an agency's hypoglycemia protocols that includes providing 15 grams of carbohydrate, then repeating the blood glucose reading in 15 minutes, and then repeating as needed until the patient's blood glucose reading is above 70.

ABCDE | A mnemonic for assessing for melanoma developing in moles: Asymmetrical, Borders are irregular in shape, Color is various shades of brown or black, Diameter is larger than 6 mm., and the shape of the mole is Evolving.

Abduction | Joint movement away from the midline of the body.

Accessory muscles | Muscles other than the diaphragm and intercostal muscles that may be used for labored breathing.

Accommodation | The ability of the eye to adjust from near vision to far vision. Pupils constrict at near vision and dilate at far vision.

Active range of motion | The degree of movement a patient can voluntarily achieve in a joint without assistance.

Activities of daily living | Daily basic tasks fundamental to everyday functioning (e.g., hygiene, elimination, dressing, eating, ambulating/moving).

Acute otitis media | The medical diagnosis for a middle ear infection.

Adduction | Joint movement toward the middle line of the body.

Affect | Outward display of one's emotional state. A "flat" affect with little display of emotion is associated with depression.

AIDET | Mnemonic for introducing oneself in health care that includes Acknowledge, Introduce, Duration, Explanation, and Thank You.[1]

Airborne precautions | Infection prevention and control interventions to be used in addition to standard precautions for diseases spread by airborne transmission, such as measles and tuberculosis.

Ampules | Small glass containers of liquid medication ranging from 1 mL to 10 mL sizes.

Angiogenesis | The development of new capillaries in a wound base.

Anosmia | Partial or complete loss of smell. This symptom can be related to underlying cranial nerve dysfunction or other nonpathological causes such as a common cold.

Apnea | Absence of respirations.

Apocrine sweat gland | Sweat glands associated with hair follicles in densely hairy areas that release organic compounds subject to bacterial decomposition causing odor.

Around the Clock (ATC) order | An order that reflects that medication should be administered at regular time intervals, such as every six hours, to maintain consistent levels of the drug in the patient's bloodstream

arterial blood gas (ABG) | A sample of arterial blood that measures the oxygen, carbon dioxide, and bicarbonate levels.

Arterial ulcers | Ulcers caused by lack of blood flow and oxygenation to tissues and typically occur in the distal areas of the body such as the feet, heels, and toes.

Arthroplasty | Joint replacement surgery.

Arthroscopic surgery | A surgical procedure involving a small incision and the insertion of an arthroscope, a pencil-thin instrument that allows for visualization of the joint interior. Small surgical instruments are inserted via additional incisions to remove or repair ligaments and other joint structures.

Articular cartilage | Smooth, white tissue that covers the ends of bones where they come together at joints, allowing them to glide over each other with very little friction. Articular cartilage can be damaged by injury or normal wear and tear.

Asepsis | A state of being free of disease-causing microorganisms.

Aseptic non-touch technique | A standardized technique, supported by evidence, to maintain asepsis and standardize practice.

Aseptic technique | The purposeful reduction of pathogen numbers while preventing microorganism transfer from one person or object to another. This technique is commonly used to perform invasive procedures, such as IV starts or urinary catheterization.

Aspiration pneumonia | A type of lung infection caused by material from the stomach or mouth inadvertently entering the lungs that can be life-threatening.

Atelectasis | Alveoli or an entire lung is collapsed, allowing no air movement.

Atrial fibrillation | An irregular heartbeat that is often fast and increases the risk of heart attack or stroke.

Auricle | The large, fleshy structure of the ear on the lateral aspect of the head.

Auscultation | Listening to sounds, such as heart, lung, and bowel sounds, created by organs using a stethoscope.

Babinski response | A reflex demonstrated by the fanning of toes with the great toe pointed toward the back (dorsum) of the foot. In adults, the Babinski response is considered abnormal and an indication of motor neuron disease.

Barrel-chested | An equal AP-to-transverse diameter that often occurs in patients with COPD due to hyperinflation of the lungs.

Belief | Something accepted as true with a sense of certainty.[1]

Bladder scan | A bedside test using a noninvasive tool used to measure the volume of urine in the bladder.

Blanching | The whiteness that occurs when pressure is placed on tissue or a nail bed, causing blood to leave the area.

Bleb | A small, raised circle that appears after administration of an intradermal medication indicating correct placement into the dermis.

BMI | Body Mass Index; The measurement of body fat in adults, based on height and weight.

Body image | A mental picture of one's body related to appearance and function.[2]

Borborygmus | Hyperperistalsis, often referred to as "stomach growling."

Bradypnea | Decreased respiratory rate or slow breath less than normal range according to the patient's age.

Brain case | Eight bones that protect the brain in the cranial cavity.

Broca's area | An area located in the frontal lobe that is responsible for the production of language and controlling movements responsible for speech.

Bronchial breath sounds | High-pitched hollow sounds heard over trachea and the larynx.

Bronchovesicular sounds | Mixture of low- and high-pitched sounds heard over major bronchi.

Bruit | A swishing sound when auscultating the carotid arteries. This indicates turbulence in the blood vessel due to atherosclerotic changes.

Candidiasis | A fungal infection often referred to as "thrush" when it occurs in the oral cavity in children.

Capillary refill | The time it takes for color to return after pressure is applied to tissue causing blanching.

Care partners | Family and friends who are involved in helping to care for the patient.

CAUTI | Catheter-associated urinary tract infection.

Central nervous system | The part of the nervous system that includes the brain (the interpretation center) and the spinal cord (the transmission pathway).

Cerebellum | The part of the brain that coordinates skeletal and smooth muscle movement and maintains equilibrium and balance.

Cerebral cortex | The cerebrum is covered by a wrinkled outer layer of gray matter.

Cerumen impaction | A buildup of earwax causing occlusion of the ear canal.

Chief complaint | The reason a patient is seeking health care during a visit to a clinic or on admission to a health care facility.

Cleft lip | A birth defect caused by a partial or complete failure of the right and left portions of the upper lip to fuse together, leaving a gap in the lip.

Cleft palate | A birth defect caused when two halves of the hard palate fail to completely come together and fuse at the midline, leaving a gap between them, and making it very difficult for an infant to generate the suckling needed for nursing.

Click | Clicking sound heard on auscultation of the precordium; often heard in patients with heart valve abnormalities.

Clubbing | A gradual enlargement of the fingertips with the angle between the skin and the nail base is greater than 160 degrees; occurs with chronic hypoxia or impaired tissue perfusion.

Clubfoot | A congenital condition that causes the foot and lower leg to turn inward and downward.

Colostomy | The colon is attached to a stoma to bypass the rectum and the anus.

Comatose | A decreased level of consciousness with a score of less than 8 on the Glasgow Coma Scale.

Concussion | A type of traumatic brain injury caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and damaging brain cells.

Conductive hearing loss | Hearing loss that occurs when something in the external or middle ear is obstructing the transmission of sound.

Congenital condition | A condition present at birth.

Conjunctiva | Inner surface of the eyelid.

Conjunctivitis | A viral or bacterial infection in the eye causing swelling and redness in the conjunctiva and sclera.

Contact precautions | Infection prevention and control interventions to be used in addition to standard precautions for diseases spread by contact with the patient, their body fluids, or their surroundings, such as C-diff, MRSA, VRE, and RSV.

Contracture | A fixed or permanent tightening of muscles, tendons, ligaments, or the skin that prevents normal movement of the body part.

Convergence | The action of both eyes moving inward as they focus on a close object using near vision.

Cornea | The transparent front part of the eye that covers the iris, pupil, and anterior chamber.

Coude catheter | A catheter specifically designed to maneuver around obstructions or blockages in the urethra such as with enlarged prostate glands in males. Coude originates from the French word that means "bend."

Crackles | Also referred to as "rales"; sound like popping or crackling noises during inspiration. Associated with inflammation and fluid accumulation in the alveoli.

Crepitus | Air trapped under a subcutaneous layer of the skin; creates a popping or crackling sensation as the area is palpated.

Cultural safety | The creation of safe spaces for patients to interact with health professionals without judgment, racial reductionism, racialization, or discrimination.

Cyanosis | Bluish discoloration of the skin, lips, and nail beds. It is an indication of decreased perfusion and oxygenation.

Debridement | The removal of nonviable tissue in a wound.

Deep Vein Thrombosis (DVT) | A blood clot that forms in a vein deep in the body.

Dehiscence | The separation of the edges of a surgical wound.

Deltoid | Commonly used for intramuscular vaccinations in adults because it has a triangular shape and is easy to locate and access. The injection site is in the middle of the deltoid muscle, about 1 to 2 inches below the acromion process.

Dermatome | An area of the skin that is supplied by a single spinal nerve.

Dermis | The inner layer of skin with connective tissue, blood vessels, sweat glands, nerves, hair follicles, and other structures.

Developmental stages | A person's life span can be classified into nine categories of development, including Prenatal Development, Infancy and Toddlerhood, Early Childhood, Middle Childhood, Adolescence, Early Adulthood, Middle Adulthood, Late Adulthood, and Death and Dying.

Diabetic ulcers | Ulcers that typically develop on the plantar aspect of the feet and toes of patients with diabetes due to lack of sensation of pressure or injury.

Diaphoretic | Excessive, abnormal sweating.

Diastole | The phase between each contraction of the heart when the ventricles are filling with blood.

Diastolic blood pressure | The resting pressure of blood on the arteries between each cardiac contraction.

Dimensional analysis | Dimensional analysis is a problem-solving technique where measurements are converted to a different (but equivalent) unit of measure by multiplying with a fractional form of 1 to obtain a desired unit of administration.

Diplopia | Double vision (i.e., seeing two images of a single object).

Dislocation | A joint injury that forces the ends of bones out of position; often caused by a fall or a blow to the joint.

Distention | An expansion of the abdomen caused by the accumulation of air or fluid. Patients often report "feeling bloated."

Doff | To take off or remove personal protective equipment, such as gloves or a gown.

Don | To put on equipment for personal protection, such as gloves or a gown.

Drop factor | The number of drops in one mL of solution when fluids or medications are administered using gravity IV tubing.

Droplet precautions | Infection prevention and control interventions to be used in addition to standard precautions; used for diseases spread by large respiratory droplets such as influenza, COVID-19, or pertussis.

Dry Powder Inhaler (DPI) | An inhaler with medication provided in a powder form that is inhaled from the mouth into the lungs using a quick breath to activate the medication and move it into the lungs. An example of a DPI is tiotropium (Spiriva).

Ductus arteriosus | Shunt that connects the pulmonary artery and aorta in the developing fetus.

Dysphagia | Inability or difficulty swallowing.

Dysphasia | Difficulty speaking.

Dyspnea | Labored or difficulty breathing; the subjective feeling of not being able to get enough air; shortness of breath.

Dysuria | Difficult or painful urination.

Ecchymosis | Bruising that occurs when small veins and capillaries under the skin break.

Eccrine sweat gland | Sweat gland that produces hypotonic sweat for thermoregulation.

Edema | Swelling in tissues caused by fluid retention.

Elimination | Refers to the removal of waste products through the urine and stool.

eMAR | Electronic medication administration record contained in a patient's electronic chart.

Enteral medications | Medications that are administered directly into the gastrointestinal tract orally, rectally, or through a tube such as a nasogastric (NG) tube, nasointestinal (NI) tube, or percutaneous endoscopic gastrostomy (PEG) tube.

Enteral Nutrition (EN) | Nutrition provided directly into the gastrointestinal (GI) tract through an enteral tube that bypasses the oral cavity.

Epidermis | The thin, uppermost layer of skin.

Epiglottis | A flexible piece of cartilage that covers the opening of the trachea during swallowing to prevent ingested material from entering the trachea.

Epistaxis | Nosebleed.

Epithelialization | The development of new epidermis and granulation tissue.

Equivalency | Two values or quantities that are the same amount. For example, one cup is equivalent to eight ounces.

Erythema | A red color of the skin.

Eschar | Dark brown/black, dry, thick, and leathery dead tissue in a wound base that must be removed for healing to occur.

Eustachian tube | The tube connecting the middle ear to the pharynx that helps equilibrate air pressure across the tympanic membrane.

Extension | Joint movement causing the straightening of limbs (increase in angle) at a joint.

Extraocular muscles | Six muscles that control the movement of the eye within the orbit. Extraocular muscles are innervated by three cranial nerves, the abducens nerve, the trochlear nerve, and the oculomotor nerve.

Extravasation | The infiltration of damaging intravenous medications, such as chemotherapy, into the extravascular tissue around the site of infusion, causing tissue injury and possible necrosis.

Exudate | Fluid that drains from a wound.

Facial drooping | An asymmetrical facial expression that occurs due to damage of the nerve innervating a particular part of the face.

Family dynamics | Patterns of interactions between family members that influence family structure, hierarchy, roles, values, and behaviors.

Fenestrated cannula | Type of tracheostomy tube that contains holes so the patient can speak if the cuff is deflated and the inner cannula is removed.

FiO2 | Fraction of inspired oxygen (i.e., the concentration of oxygen inhaled). Room air contains 21% oxygen levels, and oxygenation devices can increase the inhaled concentration of oxygen up to 100%. However, FiO2 levels should be decreased as soon as feasible to do so to prevent lung injury.

First-degree burn | A superficial burn that affects only the epidermis.

Five moments of hand hygiene | Hand hygiene should be performed during the five moments of patient care: 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); and immediately after glove removal.

Flange | The end of the tracheostomy tube that is placed securely against the patient's neck.

Flexion | Joint movement causing the bending of the limbs (reduction of angle) at a joint.

Fluid volume excess (hypervolemia) | A condition when there is too much fluid in the blood. Patients may present with shortness of breath, edema to the extremities, and weight gain.

Foot drop | The inability to raise the front part of the foot due to weakness or paralysis of the muscles that lift the foot.

Fourth-degree burn | Severe burn damaging the dermis and the underlying muscle and bone.

Fracture | A broken bone.

Functional health | The patient's physical and mental capacity to participate in activities of daily living (ADLs) and instrumental activities of daily living (IADLs).

Gastric Residual Volume (GRV) | Stomach contents aspirated with a 60-mL syringe, typically performed for patients receiving enteral feeding to assess aspiration risk with associated interventions such as slowing or stopping tube feeding. GRVs in the range of 200–500 mL should raise concern and lead to the implementation of measures to reduce risk of aspiration.

Gauge | Refers to the diameter of a needle. Gauges can vary from very small diameter (25 to 29 gauge) to large diameter (18 to 22 gauge).

Gender expression | Characteristics in appearance, personality, and behavior, culturally defined as masculine or feminine.[3]

Gender identity | One's basic sense of being male, female, or other gender.[4]

General survey assessment | A component of a patient assessment that observes the entire patient as a whole. Observation includes using all five senses to gather cues that provide a guideline for additional focused assessments in areas of concern.

Goiter | An abnormal enlargement of the thyroid gland that can occur with hypothyroidism or hyperthyroidism.

Gout | A type of arthritis that causes swollen, red, hot, and stiff joints due to the buildup of uric acid, commonly starting in the big toe.

Granulation tissue | New connective tissue in a wound base with fragile, thin-walled capillaries that must be protected.

Guarding | Voluntary contraction of abdominal wall musculature; may be related to fear, anxiety, or presence of cold hands.

Hand hygiene | A way of cleaning one's hands to substantially reduce the number of pathogens and other contaminants (e.g., dirt, body fluids, chemicals, or other unwanted substances) to prevent disease transmission or integumentary harm, typically using soap, water, and friction. An alcohol-based hand rub solution may be appropriate hand hygiene for hands not visibly soiled.

HCO3 | Bicarbonate level reflected in arterial blood gas results. Normal range is 22-26 meq/L.

Health history | The process of using directed interview questions to obtain symptoms and perceptions about a patient's illness or life condition. The purpose of obtaining a health history is to gather subjective data from the patient and/or the patient's family so that the health care team and the patient can collaboratively create a plan that will promote health, address acute health problems, and minimize chronic health conditions.

Healthcare-Associated Infections (HAIs) | Unintended infections caused by care received in a health care setting.

Heave or lift | Palpable lifting sensation under the sternum and anterior chest wall to the left of the sternum; it suggests severe right ventricular hypertrophy.

Hematemesis | The vomiting of blood.

Hematochezia | Blood in the stool.

Hematoma | An area of blood that collects outside of larger blood vessels that elevates the skin and looks like swelling.

Hemoptysis | Blood-tinged mucus secretions from the lungs.

Hemosiderin staining | Dark-colored discoloration of the lower legs due to blood pooling in the tissues.

Hemostasis phase | The first phase of wound healing that occurs immediately after skin injury. Blood vessels constrict and clotting factors are activated.

Hyperactive bowel sounds | Increased peristaltic activity; may be related to diarrhea, obstruction, or digestion of a meal.

Hypercapnia | Elevated carbon dioxide levels in the blood, indicated by PaCO2 level greater than 45 in an ABG test.

Hyperglycemia | Elevated blood glucose reading with associated signs and symptoms such as frequent urination and increased thirst.

Hypertension | Elevated blood pressure over 130/80 mmHg in an adult.

Hypoactive bowel sounds | Decreased peristaltic activity; may be related to constipation following abdominal surgery or with an ileus.

Hypodermis | The layer of skin beneath the dermis composed of connective tissue and used for fat storage.

Hypoglycemia | A blood glucose reading less than 70 associated with symptoms such as irritability, shakiness, hunger, weakness, or confusion. If not rapidly treated, hypoglycemia can cause seizures and a coma.

Hypotension | Decreased blood pressure less than 90/60 mmHg in an adult.

Hypothalamus | The autonomic control center of the brain that controls functions such as blood pressure, heart rate, digestive movement, and pain perception.

Hypoxemia | Decreased levels of oxygen in the blood; dissolved oxygen in the arterial blood, indicated by a PaO2 level less than 80 mmHg in an ABG test.

Hypoxia | A reduced level of tissue oxygenation.

Ileostomy | The lower end of the small intestine (ileum) is attached to a stoma to bypass the colon, rectum, and anus.

Incident report | A report submitted per agency policy used to document the events surrounding a medication error.

Induration | Area of hardened tissue.

Indwelling catheter | A device often referred to as a "Foley catheter" that is inserted into the neck of the bladder and remains in place for continual collection of urine into a collection bag.

Infiltration | Infiltration occurs when the tip of the IV catheter slips out of the vein, the catheter passes through the wall of the vein, or the blood vessel wall allows part of the fluid to infuse into the surrounding tissue, resulting in the leakage of IV fluids into the surrounding tissue.

Inflammatory phase | The second phase of wound healing when vasodilation occurs so that white blood cells in the bloodstream can move into the wound to start cleaning the wound bed.

Inner cannula | The cannula inside the outer cannula that is removed during tracheostomy care by the nurse. Inner cannulas can be disposable or reusable with appropriate cleaning.

Innunction | A medication that is massaged or rubbed into the skin.

Inspection | The observation of a patient's anatomical structures.

Instrumental activities of daily living | Complex daily tasks that allow patients to function independently such as managing finances, paying bills, purchasing and preparing meals, managing one's household, taking medications, and facilitating transportation.

Intermittent catheterization | The insertion and removal of a straight catheter for relief of urinary retention.

Intradermal injection | Medication administered in the dermis just below the epidermis.

Intramuscular injection | Medication administered into a muscle.

Intravenous injection | Medication administered directly into the bloodstream.

Iris | Colored part of the eye.

Jaundice | A yellowing of the skin or sclera caused by underlying medical conditions.

Joints | The location where bones come together.

Jugular Vein Distension (JVD) | Occurs when the increased pressure of the superior vena cava causes the jugular vein to bulge, making it most visible on the right side of a person's neck.

Keloid | A raised scar caused by overproduction of scar tissue.

Ketoacidosis | A life-threatening complication of hyperglycemia that can occur in patients with diabetes mellitus that is associated with symptoms such as fruity-smelling breath, nausea, vomiting, severe thirst, and shortness of breath.

Key part | Any sterile part of equipment used during an aseptic procedure, such as needle hubs, syringe tips, dressings, etc.

Key site | The site contacted during an aseptic procedure, such as nonintact skin, a potential insertion site, or an access site used for medical devices connected to the patients. Examples of key sites include the insertion or access site for intravenous (IV) devices, urinary catheters, and open wounds.

Kinesthesia | A person's sense of movement.

Korotkoff sounds | The audible sounds of blood pressure named after Dr. Korotkoff who discovered them.

Kyphosis | A curving of the spine that causes a bowing or rounding of the back, leading to a hunchback or slouching posture.

Lacrimal duct | Tears produced by the lacrimal gland flow through this duct to the medial corner of the eye.

Laryngopharynx | The portion of the pharynx inferior to the oropharynx and posterior to the larynx that is a passageway for ingested material and air until its inferior end where the digestive and respiratory systems diverge into the esophagus and the larynx.

Larynx | The structure connecting the pharynx to the trachea that helps regulate the volume of air that enters and leaves the lungs and contains the vocal cords.

Lens | An inner part of the eye that helps the eye focus.

Lesion | An area of abnormal tissue.

Level of consciousness | A patient's level of arousal and alertness, commonly assessed by asking them to report their name, current location, and time.

LGBT | An acronym standing for lesbian, gay, bisexual, and transgender and is an umbrella term that generally refers to a group of people who are diverse with regard to their gender identity and sexual orientation. There are expanded versions of this acronym.[5]

Ligaments | Strong bands of fibrous connective tissue that connect bones and strengthen and support joints by anchoring bones together and preventing their separation.

Lordosis | An inward curve of the lumbar spine just above the buttocks. A small degree of lordosis is normal, but too much curving is called swayback.

Lymph nodes | Structures in the lymphatic system that filter pathogens.

Lymphadenopathy | Enlarged lymph nodes.

Lymphedema | A type of swelling that occurs when lymph fluid builds up in the body's soft tissues due to damage to the lymph system.

Maceration | The softening and wasting away of skin due to excess fluid.

Macrodrip tubing | Gravity IV tubing with drop factors of 10, 15, or 20 drops per milliliter that are typically used to deliver general IV solutions for adults.

Main health care needs | Term used to classify what needs the patient feels are most important to address after admission to a health care agency.

Mandible | Lower jaw bone.

MAR | Medication administration record contained in a patient's chart.

Masseter | Main muscle used for chewing because it elevates the mandible to close the mouth.

Maturation phase | The final phase of wound healing as collagen continues to be created to strengthen the wound, causing scar tissue.

Maxilla | Bone that forms the upper jaw and supports the upper teeth.

Medical asepsis | Measures to confine microorganisms to prevent the spread of infection.

Medication cup | A small plastic or paper cup used to dispense oral medications. Some plastic medication cups have calibration marks for measuring medication amounts.

Medication reconciliation | A comparison of a list of current medications with a previous list and is completed at every hospitalization and clinic visit.

Melanin | Skin pigment produced by melanocytes scattered throughout the epidermis.

Melanoma | Skin cancer characterized by the uncontrolled growth of melanocytes that commonly develops from a mole. Melanoma is the most fatal of all skin cancers because it is highly metastatic. Melanomas usually appear as asymmetrical brown and black patches with uneven borders and a raised surface.

Melena | Dark, tarry-looking stool due to the presence of digested blood.

Mental health | A state of well-being in which every individual realizes their own potential, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to their community.[6]

Metered Dose Inhaler (MDI) | An inhaler that provides a mist of medication that is inhaled through the mouth into the lungs. An example of an MDI is albuterol. Optimal administration is achieved with a spacer attached to the inhaler.

Microdrip tubing | Gravity IV tubing with a drop factor of 60 drops per milliliter.

Military time | A method of measuring the time based on the full 24 hours of the day rather than two groups of 12 hours indicated by AM and PM.

Mobility | A patient's ability to move around (e.g., sit up, sit down, stand up, walk).

Motor nerves | Nerves in the peripheral nervous system that transmit motor signals from the brain to the muscles to cause movement.

Murmur | A blowing or whooshing sound heard on auscultation of the precordium that signifies turbulent blood flow in the heart often caused by a valvular defect.

Muscle atrophy | The thinning or loss of muscle tissue that can be caused by disuse, aging, or neurological damage.

Myopia | Impaired vision, also known as nearsightedness, that makes far-away objects look blurry.

Nares | Nostril openings into the nasal cavity.

Nasal septum | Bone and cartilage that separate the nasal cavity into two compartments.

Nasopharynx | The upper region of the pharynx that connects to the nasal cavity and is a passageway for air.

Necrosis | Tissue death.

Necrotic | Black tissue color due to tissue death from lack of oxygenation to the area.

Nonblanchable erythema | Skin redness that does not turn white when pressure is applied.

Nursing | The protection, promotion, and optimization of health and abilities, prevention of illness and injury, facilitation of healing, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, groups, communities, and population.[7]

Nystagmus | Involuntary, shaky eye movements.

Objective data | Information that is analyzed, measured or counted during a physical assessment; data that is collected through your sense of hearing, sight, smell, and touch while assessing the patient.

Obstructive Sleep Apnea (OSA) | Characterized by repeated occurrences of complete or partial obstructions of the upper airway during sleep, resulting in apneic episodes.

Older adults | People over the age of 65.

One-time order | A prescription for a medication to be administered only once. An example of a one-time order is a prescription for an IV dose of antibiotics to be administered immediately prior to surgery.

Open fracture | A type of fracture when the broken bone punctures the skin.

Optic nerve | Cranial nerve II that conducts visual information from the retina to the brain.

Oral syringe | A specific type of syringe used to measure and/or administer medications via the oral route.

Orbit | The bony socket that houses the eyeball and muscles that move the eyeball.

Oropharyngeal suctioning | Suction of secretions through the mouth, often using a Yankauer device.

Oropharynx | The middle region of the pharynx bordered superiorly by the nasopharynx and anteriorly by the oral cavity that is a passageway for air and ingested material. It includes the back third of the tongue, the soft palate, the side and back walls of the throat, and the tonsils.

Orthopnea | Breathlessness or feeling short of breath when lying flat.

Orthostatic hypotension | A decrease in blood pressure by at least 20 mmHg systolic or 10 mmHg diastolic within three minutes of standing from a seated or lying position.

Osteoarthritis | The most common type of arthritis associated with aging and wear and tear of the articular cartilage that covers the surfaces of bones at the synovial joint.

Osteomyelitis | Bone infection.

Osteoporosis | A disease that thins and weakens bones, especially in the hip, spine, and wrist, causing them to become fragile and break easily.

Ostomy | The surgical procedure that creates the opening from the stoma outside the body to an organ such as the small intestine, colon, rectum, or bladder. A stoma can be permanent, such as when an organ is removed, or temporary, such as when an organ requires time to heal.

Otitis externa | The medical diagnosis for external ear inflammation and/or infection.

Ototoxic medications | Medications that cause the adverse effect of sensorineural hearing loss by affecting the hair cells in the cochlea.

Outer cannula | The outer cannula placed by the provider through the tracheostomy hole and continuously remains in place.

Pallor | Skin and mucous membranes present with a pale skin color; caused by a reduced amount of oxyhemoglobin in the skin or mucous membranes.

Palpation | The use of touch to evaluate organs for size, location, or tenderness.

PaO2 | The partial pressure of dissolved oxygen in the blood measured by arterial blood gas samples.

Paralysis | The partial or complete loss of strength, movement, or control of a muscle or group of muscles within a body part that can be caused by brain or spinal injury.

Paroxysmal nocturnal dyspnea | An attack of severe shortness of breath that generally occurs at night.

Passive range of motion | The degree of range of motion a patient demonstrates in a joint when the examiner is providing the movement.

Percussion | An advanced physical examination technique where body parts are tapped with fingers to determine their size and if fluid is present.

Perfusion | The amount of blood flow to tissue.

Peripheral edema | Swelling due to an accumulation of fluid in tissues perfused by the peripheral vascular system.

Peripheral nervous system | The part of the nervous system that includes the cranial and spinal nerves.

Peripheral neuropathy | A condition that causes decreased sensation of pain and pressure, typically in the lower extremities.

Periwound | The skin around the outer edges of a wound.

Personal Protective Equipment (PPE) | Personal protective equipment, such as gloves, gowns, face shields, goggles, and masks, along with environmental controls to prevent transmission of disease from patient to patient, patient to health care provider, and health care provider to patient.

Petechiae | Tiny red dots caused by bleeding under the skin.

Pharyngitis | Infection and/or inflammation in the back of the throat (pharynx).

Pharynx | A tube lined with mucous membrane that begins at the nasal cavity and is divided into three major regions: the nasopharynx, the oropharynx, and the laryngopharynx.

Phlebitis | Inflammation of a vein.

Physical examination | A systematic data collection method of the body that uses the techniques of inspection, auscultation, palpation, and percussion.

Pitting edema | An accumulation of fluid in tissue and causes an indentation when the area is pressed.

Pleural friction rub | Uncommon heart sounds produced when the parietal and visceral pericardium become inflamed, generating a creaky-scratchy noise as they rub together.

Precordium | The region of the thorax in front of the heart.

Presbycusis | Sensorineural hearing loss that occurs with aging due to gradual nerve degeneration.

Presbyopia | Impaired near vision that commonly occurs in middle-aged and older adults.

Prescriptions | Orders, interventions, remedies, or treatments ordered or directed by an authorized primary health care provider.

Pressure injury | Skin breakdown caused when a patient's skin and soft tissue press against a hard surface, usually a bony prominence, for a prolonged period of time, causing reduced blood supply and resulting in damaged tissue.

Primary intention | Wound healing that occurs with surgical incisions or clean-edged lacerations that are closed with sutures, staples, or surgical glue.

Primary source of data | Information obtained directly from the patient.

Primary survey | A brief observation at the start of a shift or visit to verify the patient is stable by assessing mental status, airway, breathing, and circulation.

PRN (as needed) order | A prescription for medication to be administered when it is requested by, or as needed by, the patient. PRN orders are usually administered based on patient symptoms such as pain medications. An example of a PRN order is a prescription for pain medication, such as "Acetaminophen 500 mg PO every 4-6 hours PRN for pain."

Proliferative phase | The third phase of wound healing that includes epithelialization, angiogenesis, collagen formation, and contraction.

Proprioception | A person's sense of their body position.

Prostate hypertrophy | A common medical condition of the enlargement of the prostate gland in males as they age, causing uncomfortable urinary symptoms such as urgency and frequency, and urinary retention.

Protuberant | Convex or bulging appearance.

Ptosis | Drooping of the eyelid.

Pulmonary embolism | A blood clot that lodges in one of the arteries that go from the heart to the lung.

Pupil | The hole at the center of the eye that allows light to enter.

Purulent drainage | Wound exudate that is thick or opaque and can be tan, yellow, green, or brown in color; also called "pus." It is never considered normal in a wound, and new purulent drainage should always be reported to the health care provider.

Rales | Another term used for crackles.

Rebound tenderness | Pain when hand is withdrawn during palpation.

Reconstitution | The process of adding a liquid diluent to a dry ingredient to make a liquid in a specific concentration.

Respiration | Includes ventilation and gas exchange at the alveolar level where blood is oxygenated and carbon dioxide is removed.

Retina | The nervous tissue and photoreceptors in the eye that initially process visual stimuli.

Retractions | The "pulling in" of muscles between the ribs or in the neck when breathing, indicating difficulty breathing or respiratory distress.

Rheumatoid arthritis | A type of arthritis that causes pain, swelling, stiffness, and loss of function in joints due to inflammation caused by an autoimmune disease.

RICE | A mnemonic for treatment of sprains and strains that stands for: Resting the injured area, Icing the area, Compressing the area with an ACE bandage or other device, and Elevating the affected limb.

Rigidity | Involuntary contraction of the abdominal musculature in response to peritoneal inflammation.

Rotation | Circular movement of a joint around a fixed point.

Routine order | A written prescription that is followed until another order cancels it. An example of a routine order is a prescription for daily medication such as "Lisinopril 10 mg PO daily."

Rule of Nines | A tool used in the emergency department to assess the total body surface area burned to quickly estimate intravenous fluid requirements.

Safety culture | A culture established in health care agencies to empower staff 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.

Sanguineous drainage | Wound drainage that is fresh bleeding; bright red drainage.

SaO2 | Calculated arterial oxygen saturation level.

Scaphoid | Sunken appearance.

Sclera | White area of the eye.

Scoliosis | A sideways curve of the spine that commonly develops in late childhood and the early teens.

Second-degree burn | Burn affecting both the epidermis and a portion of the dermis, resulting in swelling and a painful blistering of the skin.

Secondary intention | Wound healing that occurs when the edges of a wound cannot be approximated (brought together), so the wound fills in from the bottom up by the production of granulation tissue. Examples of wounds that heal by secondary intention are pressure injuries and chainsaw injuries.

Secondary source of data | Information from the patient's chart, family members, or other health care team members.

Self-concept | Knowledge a person has about themselves that makes up who they are (i.e., their identity).

Self-esteem | A person's self-evaluation of their self-concept as being worthy or unworthy.

Sensation | The function of receiving information about the environment. The major senses are taste, smell, touch, sight, and hearing.

Sensorineural hearing loss | Hearing loss caused by pathology of the inner ear, cranial nerve VIII, or auditory areas of the cerebral cortex; prolonged exposure to loud noise is a common cause.

Sensory nerves | Nerves in the peripheral nervous system that carry impulses from the body to the brain for processing.

Serosanguinous drainage | Wound exudate contains serous drainage with small amounts of blood present; thin, watery pink drainage.

Serous drainage | Wound drainage that is clear, thin, watery plasma. It is considered normal in minimal amounts during the inflammatory stage of wound healing; yellow or straw color.

Sexual orientation | The preferred term used when referring to an individual's physical and/or emotional attraction to the same and/or opposite gender.[8]

Shear | A mechanical force 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.

Sign | Objective data found by the nurse or health care provider when assessing a patient.

Sinusitis | Inflamed sinuses caused by a viral or bacterial infection.

Skeletal muscle | Voluntary muscle that produces movement, assists in maintaining posture, protects internal organs, and generates body heat.

Skin tears | Wounds caused by mechanical forces, typically in the nonelastic skin of older adults.

Skin turgor | The skin's elasticity and its ability to change shape and return to normal when gently grasped between two fingers.

Slough | Inflammatory exudate that is light yellow, soft, and moist and must be removed for wound healing to occur.

Small-volume nebulizers | Devices that provide a fine mist using oxygen or compressed air to transport the medication from a nebulizer cup into the mouth and into the lungs as the patient breathes normally through a mask or pipe device.

Snellen chart | A chart used to test far vision.

Sphygmomanometer | An instrument for measuring blood pressure typically consisting of an inflatable rubber cuff.

Spirituality | A way of living that comes from a set of meanings, values, and beliefs that are important to a person.[9]

SpO2 | An estimated oxygenation level based on the saturation level of hemoglobin measured by a pulse oximeter.

Sprain | A stretched or torn ligament caused by an injury.

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.

Standardized sliding-scale insulin protocol | Standardized instructions for administration of adjustable insulin dosages based on a patient's blood glucose readings.

Standing order | Standing orders are standard prescriptions for nurses to implement for patients in clearly defined circumstances without the need to notify a provider. They may also be referred to as an "order set" or a "protocol." An example of a standing order/protocol is a standard prescription for all patients coming into an urgent care reporting chest pain to immediately receive four chewable aspirin, the placement of an IV, and an electrocardiogram (ECG).

STAT order | A one-time prescription that is administered without delay. An example of a STAT order is the prescription for a dose of Benadryl to be administered to a patient having an allergic reaction.

Stereognosis | The ability to perceive the physical form and identity of an object based on tactile stimuli alone.

Sterile technique | Techniques used to eliminate every potential microorganism in and around a sterile field while maintaining objects and areas as free from microorganisms as possible; surgical asepsis. This technique is the standard of care for surgical procedures, invasive wound management, and central line care.

Sternocleidomastoid | The major muscle that laterally flexes and rotates the head.

Stoma | An opening on the abdomen that is connected to the gastrointestinal or urinary systems to allow waste (urine or feces) to be collected in a pouch.

Stomach Decompression | Using suctioning through a nasogastric tube to remove the contents of the stomach.

Straight catheter | A catheter used for intermittent urinary catheterization; it does not have a balloon at the insertion end.

Strain | A stretched or torn muscle or tendon.

Striae | White or silver markings from stretching of the skin.

Stridor | High-pitched crowing sounds heard over the upper airway and larynx indicating obstruction.

Subcutaneous injection | Medication administered into the subcutaneous tissue just under the dermis.

Subjective data | Information obtained from the patient and/or family members that offers important cues from their perspectives.

Suction canister | A container for collecting suctioned secretions that is attached to a suction source.

Suction catheter | A soft, flexible, sterile catheter used for nasopharyngeal and tracheostomy suctioning.

Suture | An interlocking joint between adjacent bones of the skull.

Symptom | Subjective data that the patient reports, such as "I feel dizzy."

Syncope | A temporary loss of consciousness usually related to insufficient blood flow to the brain; fainting.

Synovial fluid | A thick fluid that provides lubrication in joints to reduce friction between the bones.

Synovial joints | A fluid-filled joint cavity where the articulating surfaces of the bones contact and move smoothly against each other. The elbow and knee are examples of synovial joints.

Syringe | A medical device used to administer parenteral medication into tissue or into the bloodstream. Syringes can also be used to withdraw blood or fluid.

Systole | The phase of the heartbeat when the left ventricle contracts and pumps blood into the arteries.

Systolic blood pressure | The maximum pressure of blood on the arteries during the contraction of the left ventricle of the heart referred to as systole.

Tachypnea | Rapid and often shallow breathing greater than normal range according to the patient's age.

Temporalis | Muscle that assists in chewing by retracting the mandible. The temporalis muscle can be felt moving by placing fingers on the patient's temple as they chew.

Tendons | Strong bands of dense, regular connective tissue that connect muscles to bones.

Tertiary intention | Wound healing that occurs when a wound must remain open or has been reopened, often due to severe infection.

Thalamus | Relays sensory information and motor information in collaboration with the cerebellum.

Third-degree burn | Severe burn that fully extends into the epidermis and dermis, destroying the tissue and affecting the nerve endings and sensory function.

Thrill | A vibration felt with palpation of the precordium.

Tinnitus | Ringing, buzzing, roaring, hissing, or whistling sound in the ears.

Titration order | An order in which the medication dose is either progressively increased or decreased by the nurse in response to the patient's status.

Topical medications | Medications administered via the skin or mucous membranes for direct local action, as well as for systemic effects.

Trachea | A tube lined with mucus membrane that carries air from the larynx to the lungs.

Tracheostomy | A surgically created opening that goes from the front of the neck into the trachea.

Tracheostomy dressing | A manufactured dressing used with tracheostomies that does not shed fibers, which could potentially be inhaled by the patient.

Transdermal route | Patches or disks applied to the skin that deliver medication over an extended period of time.

Trapezius | The muscle that elevates the shoulders (shrugs), pulls the shoulder blades together, and tilts the head backwards.

Tunneling | Passageways underneath the surface of the skin that extend from a wound and can take twists and turns.

Tympanic membrane | The membrane at the end of the external ear canal, commonly called the eardrum, that vibrates after it is struck by sound waves.

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 | Occurs when slough or eschar obscures the wound so that tissue loss cannot be assessed.

Urinary catheterization | The insertion of a catheter tube into the urethral opening and placing it in the neck of the urinary bladder to drain urine.

Urinary frequency | How often a person urinates; Urination every hour or two.

Urinary incontinence | Involuntary leakage of urine.

Urinary Tract Infection (UTI) | An infection in the urinary system causing symptoms such as burning on urination (dysuria), frequent urination, malodorous urine, fever, confusion, and change in level of consciousness.

Urinary urgency | An intense urge to urinate that can lead to urinary incontinence.

Urostomy | The ureters (tubes that carry urine from the kidney to the bladder) are attached to a stoma to bypass the bladder.

Uvula | A small, teardrop-shaped structure located at the apex of the soft palate that swings upward during swallowing to close off the nasopharynx and prevent ingested materials from entering the nasal cavity.

Value | An accepted principle or standard of an individual or group.[10]

Vastus lateralis | A muscle located on the anterior lateral aspect of the thigh and extends from one hand's breadth above the knee to one hand's breadth below the greater trochanter. It is commonly used for immunizations in infants and toddlers because the muscle is thick and well-developed.

Venous insufficiency | A medical condition where the veins in the legs do not adequately send blood back to the heart, resulting in a pooling of fluids in the legs that can cause venous ulcers.

Venous ulcers | Ulcers caused by the pooling of fluid in the veins of the lower legs when the valves are not working properly, causing fluid to seep out, macerate the skin, and cause an ulcer.

Ventilation | The mechanical movement of air into and out of the lungs.

Ventrogluteal | The safest intramuscular injection site for adults and children because it provides the greatest thickness of gluteal muscles, is free from penetrating nerves and blood vessels, and has a thin layer of fat.

Vertigo | A type of dizziness often described by patients as "the room feels as if it is spinning."

Vesicular sounds | Low-pitched soft sounds like "rustling leaves" heard over alveoli and small bronchial airways.

Vestibulocochlear nerve | Cranial nerve VIII that transports neural signals from the cochlea and the vestibule to the brain stem regarding hearing and balance.

Voiding | Medical terminology used for urinating.

Wheeze | High-pitched sounds heard on expiration or inspiration associated with bronchoconstriction or bronchospasm.

Wound-Vac | A device used with special foam dressings and suctioning to remove fluid and decrease air pressure around a wound to assist in healing.

Yankauer suction tip | Rigid device used to suction secretions from the mouth.

Z-track method | A method for administering intramuscular injections that prevents the medication from leaking into the subcutaneous tissue, allows the medication to stay in the muscles, and minimizes irritation.

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