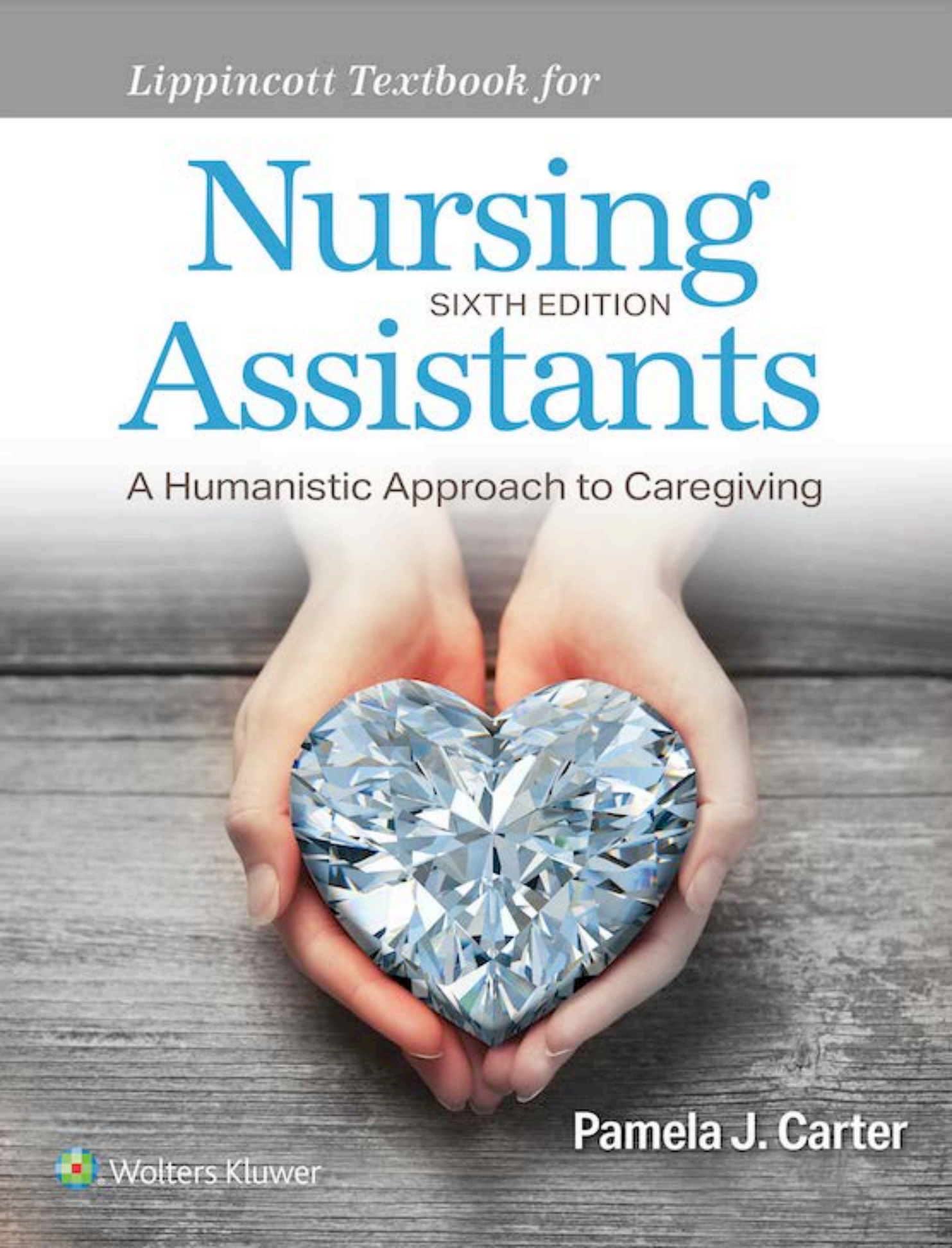
Lippincott Textbook for

Nursing Assistants

SIXTH EDITION

A Humanistic Approach to Caregiving



Pamela J. Carter

Wolters Kluwer

Getting Ready and Finishing Up

Getting Ready

Pre-procedure actions ("Getting Ready" steps) are taken before every patient or resident care procedure. These actions promote efficiency, safety, and respect of the patient's or resident's rights. You can remember the steps by thinking of the word **"WEAVERS"**


ASH – Hand hygiene


QUIPMENT – Assemble needed supplies


NNOUNCE – Knock and introduce yourself


ERIFY – Identify the person and check the person's care plan


XPLAIN – Explain the procedure


ESPECT – Respect the person's privacy


AFETY – See to safety

Finishing Up

Post-procedure actions ("Finishing Up" steps) are taken after every patient or resident care procedure. These actions promote comfort, safety, and communication among members of the health care team. You can remember the steps by thinking of the term "**ALSO Wash & Document.**"


LIGNMENT – Confirm comfort and body alignment


IGHT – Leave the call light within the person's reach


AFETY – See to safety


PEN – Open the curtain and door


ASH – Hand hygiene

&


OCUMENT – Report and record

Contents in Brief

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Wolters Kluwer

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About the Author

Pamela J. Carter is a registered nurse and an award-winning teacher. After receiving her bachelor's degree in nursing from the University of Alabama in Huntsville, Pamela immediately began a career as a perioperative nurse. Over the course of her nursing career, she also worked in a physician's office and as a staff nurse in an intensive care unit.

Pamela started teaching informally while serving as an officer in the United States Air Force Nurse Corps. She formally entered the field of health care education by accepting a position at the Athens Area Technical Institute in Athens, Georgia, where she taught surgical technology. After obtaining a master's degree in adult vocational education from the University of Georgia, Pamela moved to Florida and took a position teaching nursing assisting students. She continued teaching nursing assisting after accepting a position at Davis Technical College in Kaysville, Utah. During her first year at Davis Tech, Pamela piloted a new "open-entry/open-exit" method of curriculum delivery for the nursing assistant program at the college and was awarded the Superintendent's Award for Outstanding Faculty for her work. She then opened a surgical technology program at the college and has obtained national accreditation from the Commission on Accreditation of Allied Health Education Programs (CAAHEP) for delivery of this program using the "open-entry/open-exit" method. In 2002, and again in 2014, 2015, 2016, and 2017, Pamela received a National Merit Award for having her program rank in the top 10% in the nation for students passing their national certification exam. After enjoying over 26 years teaching and preparing students to become health care professionals, Pamela has decided to return to her love of providing patient care to finish out her nursing career.

In addition to authoring this textbook, Pamela has also authored "Lippincott Essentials for Nursing Assistants," "Lippincott Advanced Skills for Nursing Assistants," and "Lippincott Textbook for Long-Term Care Nursing Assistants."

Pamela's writing style reflects her love of teaching, and of nursing. She is grateful for the opportunity teaching and writing have afforded her to share her experience and knowledge with those just entering the health care profession, and to help those who are new to the profession to see how they can have a profound effect on the lives of others.

DEDICATION

This book is dedicated to my colleagues, both past and present, who have worked with me and who share my passion for providing compassionate, humanistic care for all our patients. These past few years have taken a toll, both physically and emotionally, on all health care personnel. I applaud you all for continuing to care for those in need and for being such a positive influence for those entering the profession.

Pam

Preface

Nursing assistant education is changing. Indeed, it must change if we are to keep pace with the needs of the health care industry. Today, the need for competent nursing assistants by hospitals, acute and extended-care facilities, hospice agencies, and home health care agencies is growing rapidly. In addition, the composition of the long-term care population (the population most frequently cared for by nursing assistants) is changing. Shorter hospital stays and advances in medicine and technology mean that today's long-term care resident tends to be older, sicker, and in need of more assistance with activities of daily living than the resident of 15 years ago. As educators, we must seek to provide our students with the skills and knowledge that they will need to meet the changing needs of their patients, residents, and clients, and to advance in their own careers. In the past, the focus of nursing assistant education was on skill competency. However, that focus is shifting now toward graduating nursing assistants who not only possess the technical skills they need to provide competent care, but also the compassion and the communication and critical thinking skills they need to function effectively in the health care setting. It is no longer enough for nursing assistants to be competent at changing bed linens and measuring vital signs. Today's nursing assistants must also be able to recognize the person within the patient, resident, or client, and to understand that each person they are responsible for providing care for is unique and special, with individual needs that are very different from those of the person in the next bed. This textbook, *Lippincott Textbook for Nursing Assistants, 6th edition*, has been written not only to help students develop the skills they need to become nursing assistants, but also to introduce them to a very humanistic approach to caregiving. Because so many students use a Nursing Assisting course as the starting point for other endeavors in the health care profession, developing that sense of humanistic care early on assures its use throughout a person's career.

THEMES

Three key beliefs informed the writing of this textbook:

1. Students need a textbook that captures their interest and increases their desire to learn.
2. Graduates of nursing assistant training programs must be able to provide competent, skilled care in a compassionate way.
3. The nursing assistant is a vital member of the health care team.

These beliefs form the basis for the textbook you hold in your hands.

Lippincott Textbook for Nursing Assistants, 6e, Is Written With the Student in Mind

One of the primary goals in writing this textbook was to make the information it contains interesting and accessible to the student. Great care has been taken to present the student with a textbook that is easy and enjoyable to read, with a well-developed art program and proven learning aids.

A Student-Focused Writing Style

Educators know that a student can easily understand complex information if it is explained in a way

that the student can understand. *Lippincott Textbook for Nursing Assistants* uses a conversational, yet professional, writing style that respects the student's intelligence. Concepts are presented in a straightforward, accessible way, and the text is enlivened through the frequent use of examples and anecdotes from the author's own experience with patients and residents. Recognizing that many students entering nursing assistant training programs speak English as a second language or are resource students, each chapter has been thoroughly reviewed by a special needs consultant to ensure an appropriate reading level.

An Art Program Developed Alongside the Text

The purpose of an art program is to reinforce and expand on concepts discussed in the text. To do this effectively, the art must be planned and developed alongside the manuscript. Numerous photographs, both alone and in combination with line art that has been created specifically for this textbook, help students to visualize and remember important concepts.

Proven Learning Aids in Every Chapter

Learning and remembering new information is challenging for many students. To help them meet the challenge of mastering the information in the textbook, we have developed features to assist students with studying and internalizing information:

- **What Will You Learn?** Each chapter begins with a *What Will You Learn?* section, which previews the chapter and helps to focus the student's reading. Each *What Will You Learn?* section begins with a paragraph that introduces the topic of the chapter to the student and explains why the topic is important. This introductory paragraph is then followed by a list of learning objectives and vocabulary words.
- **Summary.** Each chapter ends with a summary in a unique narrative outline format. This summary helps students to review the key, "take home" concepts of the chapter.
- **What Did You Learn?** Multiple-choice and matching exercises at the end of each chapter provide students with the opportunity to evaluate their understanding of the material they have just studied. Answers to these exercises are given in Appendix A.
- **Highlighted figure, table, and box call-outs.** The references to figures, tables, and boxes are highlighted with color in the narrative, helping students to quickly find their place in the text after stopping to look at a figure, table, or box.

New to This Edition!

Health care is always evolving with new discoveries and advances in treatment occurring constantly. It seems that the more we learn, the more there is to know. We strive to ensure that the material found in our textbook is based on the latest information and is current at the time of publication.

A primary focus of this new edition has been to streamline current information by focusing more on the "need to know" content that students need to succeed. Art and images have been reviewed and updated for relevancy and currency. Unit 7, which covers information on anatomy, physiology, normal aging, and system-specific diseases, has been reviewed and updated by a contributor with expertise in this field.

With this sixth edition, we wish to bring into focus the impact that the COVID-19 pandemic has had on how health care is provided. Changes in how we respond to communicable diseases have affected not only how health care workers provide care, but also how patients, residents, and clients live their daily lives. The infection control chapters in this book have been thoroughly updated and revised to improve their organization and make this important information easier for students to understand.

Recent years have shone a greater spotlight on many social justice issues in the United States, which have impacted us all on both personal and professional levels. With these ongoing challenges in mind, we are introducing a new feature, *Respect*, at the end of each unit. This feature focuses on inclusion and respect of all people, and includes short stories illustrating how nursing assistants learn more about caring for others simply by listening to their patients and residents share their unique backgrounds and experiences. These lessons remind us all that respect for the individual is central to humanistic care.

Other updates specific to this edition are summarized as follows:

- Terminology has been updated where needed throughout the text, including for inclusivity.
- Updated information related to nutrition and new dietary recommendations from the *2020–2025 Dietary Guidelines for Americans* has been included, along with the related art and descriptions of MyPlate and MyPlate for Older Adults.

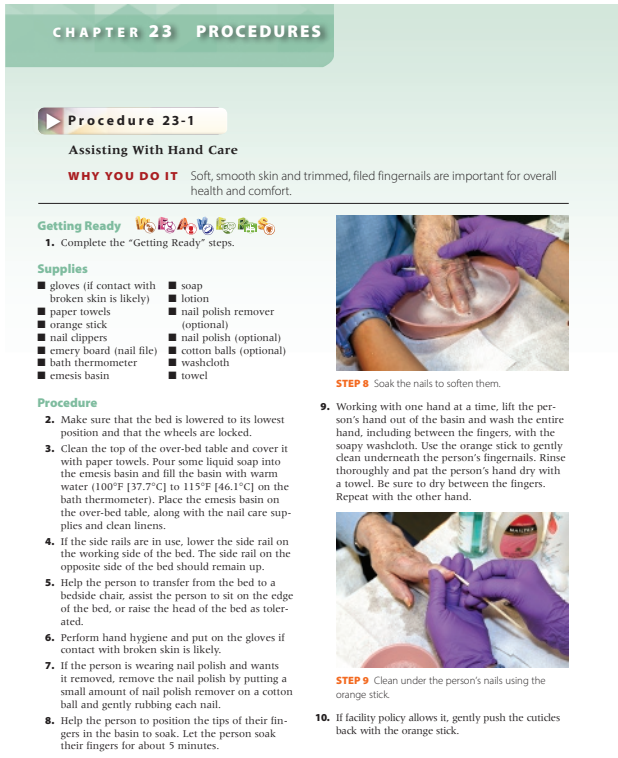
Lippincott Textbook for Nursing Assistants, 6e, is Designed to Prepare Students for Clinical Practice

It is the author's desire to help prepare students to enter the health care profession with the knowledge, skills,

and confidence that education and training can provide. Several of the textbook's features were designed specifically to help prepare the student for clinical practice:

- **Procedures.** Certainly, a major objective of any nursing assistant training course is to ensure that graduates are able to provide care in a safe and correct manner. Each procedure in this text has been revised and updated in accordance with new infection control standards, current practice, and the current National Nurse Aide Assessment Program (NNAAP) Skills List. Those particular skills can be found in the following chapters:
  - **Hand Hygiene (Handwashing):** Chapter 12
  - **Applied One Knee-High Elastic Stocking:** Chapter 32
  - **Assists to Ambulate Using Transfer Belt:** Chapter 15
  - **Assists With Use of Bedpan:** Chapter 25
  - **Cleans Upper or Lower Denture:** Chapter 22
  - **Counts and records Radial Pulse/Respiration/Blood Pressure:** Chapter 20
  - **Donning and Removing PPE (Gown and Gloves):** Chapter 12
  - **Dresses Clients With Affected (Weak) Right Arm:** Chapter 23
  - **Feeds Client Who Cannot Feed Self:** Chapter 24
  - **Gives Modified Bed Bath:** Chapter 22
  - **Measures and Records Urinary Output:** Chapter 25
  - **Measures and Records Weight of Ambulatory Client:** Chapter 20
  - **Performs Modified PROM for Knee and Ankle/Shoulder:** Chapter 30
  - **Positions on Side:** Chapter 15
  - **Provides Catheter Care for Female:** Chapter 25
  - **Provides Foot Care:** Chapter 23
  - **Provides Mouth Care:** Chapter 22
  - **Provides Perineal Care for Female:** Chapter 22
  - **Transfers From Bed to Wheelchair Using Transfer Belt:** Chapter 15

Seventy-nine core procedures are presented in this text. The procedures for each chapter are grouped at the end of the chapter, to avoid breaking up the text with lengthy boxes. Each procedure box begins with a "Why You Do It" statement, to help students understand the "why behind the what," an understanding that is the foundation for the development of critical thinking skills. The concepts of privacy, safety, infection control, comfort, and communication are emphasized consistently in every procedure. *"Getting Ready"* and *"Finishing Up"* steps are included in every procedure box to help students remember these very important pre- and postprocedure actions. Easy-to-remember mnemonics for the pre- and postprocedure actions help students remember. The steps of the procedure are given using clear and concise language, and photographs and illustrations are provided as necessary. A "What You Document" section at the end of each procedure reminds the student to document the care given and what important observations should be noted. An icon identifies procedures that are demonstrated in *Lippincott Video Series for Nursing Assistants.*



CHAPTER 23 PROCEDURES

Procedure 23-1

Assisting With Hand Care

WHY YOU DO IT Soft, smooth skin and trimmed, filed fingernails are important for overall health and comfort.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- gloves (if contact with broken skin is likely)
- paper towels
- orange stick
- nail clippers
- emery board (nail file)
- bath thermometer
- emesis basin
- soap
- lotion
- nail polish remover (optional)
- nail polish (optional)
- cotton balls (optional)
- washcloth
- towel

Procedure

2. Make sure that the bed is lowered to its lowest position and that the wheels are locked.
3. Clean the top of the over-bed table and cover it with paper towels. Pour some liquid soap into the emesis basin and fill the basin with warm water (100°F [37.7°C] to 115°F [46.1°C] on the bath thermometer). Place the emesis basin on the over-bed table, along with the nail care supplies and clean linens.
4. If the side rails are in use, lower the side rail on the working side of the bed. The side rail on the opposite side of the bed should remain up.
5. Help the person to transfer from the bed to a bedside chair, assist the person to sit on the edge of the bed, or raise the head of the bed as tolerated.
6. Perform hand hygiene and put on the gloves if contact with broken skin is likely.
7. If the person is wearing nail polish and wants it removed, remove the nail polish by putting a small amount of nail polish remover on a cotton ball and gently rubbing each nail.
8. Help the person to position the tips of their fingers in the basin to soak. Let the person soak their fingers for about 5 minutes.

STEP 8 Soak the nails to soften them.

9. Working with one hand at a time, lift the person's hand out of the basin and wash the entire hand, including between the fingers, with the soapy washcloth. Use the orange stick to gently clean underneath the person's fingernails. Rinse thoroughly and pat the person's hand dry with a towel. Be sure to dry between the fingers. Repeat with the other hand.

STEP 9 Clean under the person's nails using the orange stick.

10. If facility policy allows it, gently push the cuticles back with the orange stick.

- **Guidelines Boxes.** These boxes summarize general guidelines for various aspects of the nursing assistant's job. The unique "What You Do/Why You Do It" format helps students to understand why things are done a certain way. Rather than just presenting students with an endless list of guidelines to memorize, these boxes help them to remember why these guidelines are important to follow.

Guidelines Box 2-1 Guidelines for Accepting or Declining an Assignment

WHAT YOU DO	WHY YOU DO IT
Always ask the nurse for clarification if there is something you do not understand.	It is your responsibility to make sure you know what is to be done and how it is to be done before going to the patient or resident.
Never perform a task that you have not been taught to do or that you feel uncomfortable doing, unless you are supervised by a nurse.	The nurse is ultimately responsible for ensuring the patient's or resident's safety. This means that it is the nurse's responsibility to ensure that whoever is performing the task on their behalf is qualified to do so and capable. It is irresponsible for you to misrepresent your abilities or to proceed unsupervised with a task that you are not fully capable of doing well.
Never ignore an assignment because you do not know how to perform the task or the task is beyond your scope of practice.	The patient's or resident's needs must be attended to, either by you or by someone else. If you feel that you cannot perform the task that you are being asked to do, explain your concerns to the nurse so that they can either help you with the task or reassign it.

- **Tell the Nurse! Notes.** A recurrent theme throughout the book is the important role the nursing assistant plays in making observations about a patient's or resident's condition and reporting these observations to the nurse. The *Tell the Nurse!* notes highlight and summarize signs and symptoms that a nursing assistant may observe that should be reported to the nurse.

> ***Tell the Nurse!***
>
> As a nursing assistant, you may be the first to notice changes in a resident's behavior that may suggest delirium. If you notice any of the following in a person who is normally alert and oriented, report your observations to a nurse immediately:
>
> - The person is hallucinating (seeing or hearing something that you know cannot possibly be true, such as mice crawling all over the bed)
> - The person does not recognize someone familiar, or mistakes a stranger for a family member or close friend
> - The person is very restless, especially at night
> - The person seems confused
> - The person talks frequently about events from the past, but cannot remember events that occurred recently (such as a meal eaten 2 hours ago)
> - The person gets lost and wanders the halls aimlessly, even though the person knows their way around the facility

- **Stop and Think! Scenarios.** Each chapter concludes with one or more *Stop and Think!* scenarios. These scenarios, which are excellent tools for initiating classroom discussion, encourage students to think critically to solve problems, and help them to see that many situations they will encounter in the workplace do not have cut-and-dried answers.

> **STOP and THINK!**
>
> Imagine that you have just completed your nursing assistant training and taken the state test. While you are waiting for your test results, you decide to begin searching job postings to see what opportunities are available. At this point, you are considering several options. You are excited about beginning your career in the health care field, and you are anxious to get into the workforce and put your new skills to use. However, you think that you might also want to continue your education and become either a licensed practical nurse (LPN) or a registered nurse (RN) someday. What sorts of organizations may be looking for nursing assistants in your community? How could working as a nursing assistant now help you to further define your career goals?
>
> You are a nursing assistant student completing your training in a local health care facility. Do you think that the nurses and nursing assistants view you as a potential employee? What actions can you take as a student to make a good impression?

- **Helping Hands and a Caring Heart: Focus on Humanistic Health Care Boxes.** These boxes, found throughout the text, encourage students to empathize with those in their care, and emphasize the importance of meeting patients' and residents' emotional and spiritual needs, as well as their physical needs.

> **Helping Hands and a Caring Heart**
>
> **Focus on Humanistic Health Care**
>
> Physically and emotionally, restraints have a very negative impact on a person's quality of life. Imagine how you would feel if you had to be "tied down." You might feel embarrassed, frightened, or humiliated. As a nursing assistant, there are many things you can do that may eliminate or reduce the need for restraints. These things require planning and effort, but the effort is considered part of the quality, individualized care that should be given to each person.

- **Concerns for Long-Term Care.** This feature is found throughout the textbook and focuses on specific information that is important to remember when providing care for older residents in the long-term care setting.

> **Concerns for Long-Term Care**
>
> The majority of your residents in the long-term care setting are older adults and may experience difficulty with communication due to hearing loss, aphasia, or dementia. Unfortunately, many people think of older adults as people who are "going through their second childhood" and speak to them accordingly. When speaking with your older adult residents, avoid the use of "baby talk" or calling them all "sweetie" or "honey." These residents, like all people needing health care services, deserve to be spoken to with respect and as the adults they are. If a resident has a specific communication difficulty, learn about why the person has the difficulty and use communication techniques specific for that problem.

- **Taking It to the Next Level: Advanced Skills.** This feature is found throughout the textbook where related information on advanced skills that nursing assistants may be providing in an advanced care setting can be accessed through the new ebook.

> **Taking It to the Next Level: Advanced Skills**
>
> More in-depth information related to advanced skills training and responsibilities of nursing assistants who work in acute care settings can be found in *Lippincott Acute Care Skills for Advanced Nursing Assistants.*
>
> Visit thePoint at thepoint.lww.com for access to the ebook.

Lippincott Textbook for Nursing Assistants, 6e, Seeks to Instill in Students Pride in Themselves and Their Chosen Profession

It is important to impress upon students entering the health care profession that no one is "just" a nursing assistant. Nursing assistants are often the members of the health care team with the most day-to-day contact with patients, residents, and clients. As such, they bear a large part of the responsibility for the well-being of those in their care. To highlight the contributions that nursing assistants make, on thePoint® can be found first-person accounts of how a nursing assistant had a positive impact on the lives of patients, residents, and clients or the lives of their loved ones. The goal of these *Nursing Assistants Make a Difference!* stories is to help students to see that nursing assistants are vital members of the health care team. Nursing assistants who feel that they can and do make a difference in the lives of others will go the "extra mile" to ensure that the care they provide is humanistic.

AN OVERVIEW OF LIPPINCOTT TEXTBOOK FOR NURSING ASSISTANTS

Lippincott Textbook for Nursing Assistants is a comprehensive textbook, designed to prepare students to work as nursing assistants in any health care setting, as well as to open their eyes to the many career opportunities that exist within the health care field and to entice them to further their learning. The United States is in the midst of a health care crisis—profound demographic changes have led to an ever-widening gap between the number of people who need care and the number of people who are qualified to provide that care. Educators of future health care professionals are charged with providing the community with competent, dedicated, and compassionate caregivers. In recognition of this need, this textbook has been designed to be in accordance with standards for curriculum

development established by organizations such as the National Consortium on Health Science and Technology Education (NCHSTE) and Health Occupations Students of America (HOSA). Each instructional objective for approved nursing assistant training, as mandated by the Omnibus Budget Reconciliation Act (OBRA), is covered in-depth.

A lifelong interest in learning new information is an important quality for any health care professional to have, as the body of information related to medicine and health care is constantly evolving. A lifelong interest in learning benefits the recipients of care as well as the caregivers themselves. Awareness of career pathways allows those just entering the health care profession to set goals for career advancement and reach them, over time receiving higher levels of compensation for higher levels of experience, skills, and responsibilities.

This textbook consists of 10 units. The following is a brief survey of these units and the information they contain.

Unit 1: Introduction to Health Care

The six chapters that make up Unit 1 provide the student with basic background knowledge. Chapter 1 begins with an overview of how health care has evolved, and continues to evolve, in the United States. It then provides the student with a basic understanding of how the governmental regulations that control health care standards and payment came into existence. The nursing home survey process is introduced so that students become better informed of how regulatory organizations determine a facility's ability to provide quality care to the residents. Chapter 1 also provides an overview of the many different types of health care facilities, and introduces the idea of holistic, humanistic health care and the "health care team." Chapter 2 focuses on the nursing assistant's roles and responsibilities as a member of the health care team, and on the concept of delegation. Professionalism, the concept of work ethic, and job-seeking skills are thoroughly discussed in Chapter 3, introducing students to the idea that a professional attitude promotes respect and is necessary for career advancement. Legal and ethical issues, including patient and resident rights and the Health Insurance Portability and Accountability Act (HIPAA), are covered in Chapter 4. Information specific to abuse and defining "vulnerable adults" who are often victims of abuse, is included. Communication, one of the most essential responsibilities of the nursing assistant, is discussed in Chapter 5. This unit concludes with Chapter 6, which focuses on the central member of the health care team—the patient, resident, or client. Information has been included to stress the importance of the person's family members and how they should be included in the health care plan of care. This final chapter introduces the concept of human needs and explains how the person being cared for in a health care setting has many needs other than those specifically associated with illness or disability.

Unit 2: Long-Term Care

This unit is comprised of three chapters that focus on the long-term care setting and the care of residents. Chapter 7, Overview of Long-Term Care, introduces the student to the long-term care setting and includes a discussion about the past, present, and future of long-term care. Chapter 8, The Long-Term Care Resident, helps students understand the factors that can lead to admission to a long-term care facility, and the special needs that residents of long-term care facilities, and their families, may have. Chapter 9 continues the discussion by providing information about dementia, a condition that affects many long-term care residents.

Unit 3: Infection Control

Unit 3 is a new unit in this edition and contains current information about communicable disease, how it is transmitted, and the measures that health care workers take to protect their patients and residents as well as themselves from contracting these illnesses. Chapter 10 introduces students to communicable disease and how our bodies can either fight off an infection or become infected. Chapter 11 continues with a discussion of common communicable diseases and how they can be transmitted within a health care setting. Chapter 12 concludes this unit with measures that health care workers use to help prevent the spread of infection in the health care setting. Updated recommendations by the CDC and management of epidemics and pandemics are also included.

Unit 4: Safety

The four chapters that compose Unit 4 are concerned with the measures taken to ensure safety. Chapter 13 deals with workplace safety, and includes an extensive discussion about the importance of using proper body mechanics and ergonomics to prevent work-related injuries. Also in Chapter 13, the student is introduced to the "Getting Ready" and "Finishing Up" steps that are taken before and after each procedure. Colorful and descriptive mnemonics help students to easily remember each of these important pre- and post-procedure steps. Chapter 14 explores some of the conditions that put patients, residents, or clients at risk for injury, followed by a discussion about methods used to prevent accidents from occurring. Restraints, with

a focus on methods that can be used as an alternative to a restraint, are discussed in-depth. In Chapter 15, the techniques used to safely assist patients, residents, and clients with repositioning and transferring are covered. This unit concludes with Chapter 16, which contains information related to recognizing emergencies and responding to them. Included in Chapter 16 are the current AHA BLS guidelines.

Unit 5: Basic Patient and Resident Care

The nine chapters in this unit focus on the skills and equipment used to provide basic daily care to patients, residents, and clients. Chapters 17 and 18 introduce the student to the health care environment and explain the processes for admitting, transferring, or discharging patients, residents, and clients. Chapter 19 covers bedmaking. Chapter 20 covers vital signs, with an emphasis on exactly what function of the body is being measured and situations that may alter these measurements. Also included are practical tips to take the mystery out of taking vital sign measurements, procedures that many students find intimidating and difficult to master at first. Chapter 21 discusses the importance of rest and sleep and how the nursing assistant can help to promote a person's comfort in the health care setting. Pain, and information on pain relief measures are also included here. Chapters 22 and 23 cover bathing and grooming, with a focus on empathizing with the person receiving the care. In Chapter 24, current dietary recommendations from the *2020–2025 Dietary Guidelines for Americans* discusses MyPlate and MyPlate for Older Adults, along with basic information about nutrition and the nursing assistant's role in assisting patients or residents with meeting their nutritional needs. We conclude Unit 5 with Chapter 25, a discussion about assisting with elimination. Again, much emphasis is placed on empathizing with the patient, resident, or client who requires assistance with this most intimate of activities.

Unit 6: Death and Dying

This unit has been written as two separate chapters to emphasize that a person may cope with a terminal illness and the stages of grief for a long period of time before the actual physical process of dying takes place. Chapter 26 introduces the student to the stages of grief within the context of a discussion about terminal illness. Important concepts such as advance directives, wills, and palliative care are also discussed in this chapter. Chapter 27 focuses on the care a nursing assistant provides to the dying person and their family members in the hours immediately leading up to, and following, death. Both chapters in this unit include discussions about the grief a nursing assistant can expect to feel when a patient, resident, or client dies or receives a diagnosis of a terminal illness.

Unit 7: Body Systems: Normal Function and the Effects of Aging and Disease

Unit 7 has been reviewed and revised by an expert in the field of anatomy and physiology to provide the most current information related to the body systems. Having a basic understanding of how each of the body's organ systems functions in health is essential to understanding how failure of an organ system to work properly leads to disease and disability. This unit begins with Chapter 28, which provides an overview of the body's organization and introduces the student to different types of disease processes that can affect each body system. Chapters 29 through 38 each cover one of the organ systems. A basic explanation of the normal structure and function of the organ system is given, with an emphasis on homeostasis. Next, the normal effects of aging are discussed and differentiated from the effects of disease and disability. Key disorders specific to that particular body system are then discussed. Diagnostic tests and treatments are also covered. Throughout these chapters, the nursing assistant's role in recognizing problems and providing care is emphasized.

Unit 8: Special Care Concerns

This unit, which consists of four chapters, introduces the student to the special needs of certain groups of people. Chapter 39 introduces the student to the different phases of the rehabilitation process and discusses rehabilitation measures specific for different types of disability. In Chapter 40, some of the major types of developmental disabilities are reviewed, along with updated information related to each disability. Chapter 41 is dedicated to a discussion about mental disorders, including the importance of recognizing depression in older adult patients, residents, and clients. Information that discusses posttraumatic stress disorder and substance use disorder is also included. The final chapter in this unit, Chapter 42, discusses the diagnosis and treatment of cancer, as well as the special needs of people with cancer.

Unit 9: Acute Care

Nursing assistants provide care in many different types of health care settings. Many work in hospitals and clinics and assist nurses in caring for patients with acute conditions. The focus of the three chapters in Unit 9 is on special populations of patients that the nursing assistant may encounter in the acute care

setting. Chapter 43 is dedicated to the surgical patient, Chapter 44 to obstetrical patients and newborns, and Chapter 45 to the pediatric patient.

Unit 10: Home Health Care

The two chapters in this final unit introduce the student to the home health care setting. These two chapters have been revised in accordance to suggestions and recommendations from experts who currently work in the home health care field. Building on the basic knowledge and skills presented in previous units, this unit explores some of the concerns and issues that are unique to the home health care setting. Chapter 46 provides the student with an overview of what home health care is, who might require it, and how it is paid for, and explores some of the qualities that a person must have to succeed as a home health care aide. Chapter 47 covers specific issues related to safety and infection control within the home.

Appendices and Glossary

The textbook concludes with two appendices and a comprehensive glossary. Appendix A contains the answers to the *What Did You Learn?* exercises that appear at the end of each chapter. Appendix B introduces the student to the language of health care. We chose to include this discussion about medical terminology as an appendix so that it could be introduced at any point during the training course, and referred to frequently. The tables containing common roots, prefixes, suffixes, and updated abbreviations are in close physical proximity to the glossary for easy and quick reference. The glossary is the most comprehensive found in any nursing assistant textbook. A precise definition of each vocabulary word is given. The number in parentheses at the end of each entry indicates the chapter where the term is introduced as a vocabulary word. Extensive cross-references remind students of synonyms and antonyms, and help them to differentiate related words.

A NOTE ABOUT THE LANGUAGE USED IN THIS BOOK

Wolters Kluwer recognizes that people have a diverse range of identities, and we are committed to using inclusive and nonbiased language in our content. In line with the principles of nursing, we strive not to define people by their diagnoses, but to recognize their personhood first and foremost, using as much as possible the language diverse groups use to define themselves, and including only information that is relevant to nursing care.

We strive to better address the unique perspectives, complex challenges, and lived experiences of diverse populations traditionally underrepresented in health literature. When describing or referencing populations discussed in research studies, we will adhere to the identities presented in those studies to maintain fidelity to the evidence presented by the study investigators. We follow best practices of language set forth by the Publication Manual of the American Psychological Association, 7th edition, but acknowledge that language evolves rapidly, and we will update the language used in future editions of this book as necessary.

A COMPREHENSIVE PACKAGE FOR TEACHING AND LEARNING

To further facilitate teaching and learning, a carefully designed ancillary package is available. In addition to the usual print resources, we are pleased to present multimedia tools that have been developed in conjunction with the text.

Resources for Instructors

- ***Lippincott Acute Care Skills for Advanced Nursing Assistants* first edition ebook.** Depending on the needs of the different types of facilities that hire nursing assistants, the skills required and the daily duties of the nursing assistant varies greatly. As a nursing assistant advances within their career, the need for additional training increases.

  Because of this, we are providing an ebook addition, titled *Lippincott Acute Care Skills for Advanced Nursing Assistants,* as a companion to this textbook. We feel that the ebook companion will be a useful tool for nursing assisting instructors who teach advanced skills in their programs. It has also been developed for use by nursing assistants who have completed their basic nursing assisting training and have obtained employment in an acute care setting where they are required to perform advanced skills.
- ***Lippincott® CoursePoint.*** This integrated, digital curriculum solution for nursing education provides other course knowledge and prepares students for practice. The time-tested, easy-to-use and trusted solution includes engaging learning tools and in-depth reporting to meet students where they are in their learning, combined with the most trusted nursing education content on the market to help prepare students for practice. This easy-to-use digital learning solution of *Lippincott® CoursePoint,* combined with unmatched support, gives instructors and students everything they need for course and curriculum success!

- *Lippincott® CoursePoint* includes:
  - Engaging course content provides a variety of learning tools to engage students of all learning styles.
  - Adaptive and personalized learning helps students learn the critical thinking and clinical judgment skills needed to help them become practice-ready nurses.
  - Unparalleled reporting provides in-depth dashboards with several data points to track student progress and help identify strengths and weaknesses.
  - Unmatched support includes training coaches, product trainers, and nursing education consultants to help educators and students implement CoursePoint with ease.
- ***Lippincott Video Series for Nursing Assistants.*** Procedure-based modules provide step-by-step demonstrations of the core skills that form the basis of the daily care the nursing assistant provides. As in the textbook, all procedures have been reviewed and updated in accordance with current practice, infection control, and the current NNAAP skills. *Getting Ready and Finishing Up* actions are reviewed on every procedure-based module, and the concepts of privacy, safety, infection control, comfort, and communication are emphasized throughout. Four non–procedure-based modules, on the topics of preparing for entry into the workforce, caring for people with dementia, death and dying, and communication and patient and resident rights, are also available.

Tools to assist you with teaching your course are available upon adoption of this text on thePoint® at https://thePoint.lww.com/Carter6e.

- **Stop and Think! Scenario Discussion Points** outline the main concepts of the text's *Stop and Think!* feature.
- A **Test Generator** lets you put together exclusive new tests from a bank containing hundreds of questions to help you in assessing your students' understanding of the material. Test questions link to chapter learning objectives.
- **PowerPoint Presentations** provide an easy way for you to integrate the textbook with your students' classroom experience, either via slideshows or handouts. Multiple-choice and true/false questions are integrated into the presentations to promote class participation and allow you to use i-clicker technology.
- An **Image Bank** lets you use the photographs and illustrations from this textbook in your PowerPoint slides or as you see fit in your course.
- **Guided Lecture Notes** include Learning Objectives and references to PowerPoint presentation slides.
- **Sample Syllabi** for long and short courses.
- **Answers and Rationales to** *Workbook for Lippincott Textbook for Nursing Assistants*, Assignments, Pre-Lecture Quizzes, and Discussion Topics.
- Plus **Strategies for Effective Teaching, Discussion Topics, Assignments**, and **Pre-Lecture Quizzes**.

Resources for Students

An exciting set of free resources is available on thePoint® to help students review material and become even more familiar with vital concepts. Students can access all these resources at https://thePoint.lww.com/Carter6e using the codes printed in the front of their textbooks.

- ***Watch and Learn!,*** a series of video clips that support information given in the text.
- **Audio Clips for** *Nursing Assistants Make a Difference!* allow the student to listen to first-person accounts of how nursing assistants have made a difference in the lives of patients, residents, clients, and family members.
- **Certification-Style Review Questions** for each chapter help students review important concepts and practice for certification exams.
- Plus downloadable **Procedures** checklists from the text.

Workbook to Accompany *Lippincott Textbook for Nursing Assistants, 6e*. Developed by an instructional design team, this workbook provides the student with a fun and engaging way of reviewing important concepts and vocabulary. Each part of the student workbook has been updated and revised alongside the changes made in the sixth edition of the textbook. Multiple-choice questions, matching exercises, true/false exercises, word finds, crossword puzzles, labeling exercises, and other types of active learning tools are provided to appeal to many different learning styles. The workbook also contains procedure checklists for each procedure in the textbook.

It is with great pleasure that the author and publisher introduce these resources—the textbook, the ancillary package, the videos, and the companion ebook—to you. One of my primary goals in creating these resources has been to share with those just entering the health care field my sense of excitement about the health care profession, and my commitment to the idea that being a nursing assistant involves much more than just "bedpans and blood pressures." I hope I have succeeded in that goal, and I welcome your feedback.

Pamela J. Carter

To the Students

Welcome! By enrolling in this nursing assistant training course, you have taken a big first step. You may be taking this course for any number of different reasons. For example, you may be taking this course to "test the waters"—to see if working in health care is something you really want to do. Or, you may already know that you want to work in health care, and you are taking this course because it is the first step toward reaching your goal. Health care is an exciting, yet demanding, field. During your training course, you will be expected to learn and apply a lot of new information. You will even have to learn a new language, the language of health care! My name is Pam Carter, and I am the author of this book. It is my pleasure and my honor to assist you on your journey toward becoming a health care professional.

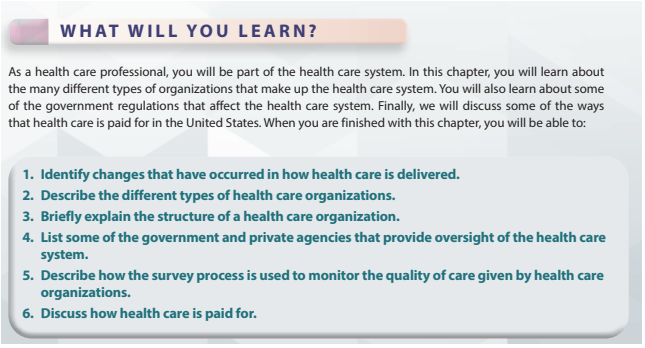
HOW TO USE THE BOOK TO PREPARE FOR CLASS AND STUDY

Learning is an active process. You need to read, make notes, and ask questions about anything you are having trouble understanding. Most students who are successful learners take a three-step approach to learning:

Preview

During the *preview* stage of learning, you focus on preparing yourself for class. Most likely, your instructor will give you reading and possibly video assignments that must be completed before each class. The course *syllabus* that you will receive at the beginning of the course will tell you when each reading assignment must be completed. The reading assignments give you the chance to get a general idea of what is going to be discussed in the next class.

To prepare for class, just read the assignment as if you were reading a novel, magazine, or news story for enjoyment. During the preview, you do not need to take notes or try to memorize facts—just read through the material to get the "big picture" of the information you are about to learn. Some people find it helpful to read the chapter out loud to themselves (or into an audio recorder, so that they can listen to the chapter again later). Others like to highlight parts of the chapter using a highlighting pen, or make notes in the margin. Learning becomes much easier when you discover what methods work best for you. To assist you with previewing, each chapter in the book begins with a *What Will You Learn?* section. This section contains a list of specific goals for the chapter, called *learning objectives*. Learning objectives tell you what you will be expected to know or be able to do to demonstrate complete understanding of the material in the chapter. During the preview stage, the learning objectives are useful for giving you an overview of the key goals of the chapter. The *What Will You Learn?* section also contains a list of the new vocabulary words you will need to learn. The vocabulary words, which appear in



WHAT WILL YOU LEARN?

As a health care professional, you will be part of the health care system. In this chapter, you will learn about the many different types of organizations that make up the health care system. You will also learn about some of the government regulations that affect the health care system. Finally, we will discuss some of the ways that health care is paid for in the United States. When you are finished with this chapter, you will be able to:

1. Identify changes that have occurred in how health care is delivered.
2. Describe the different types of health care organizations.
3. Briefly explain the structure of a health care organization.
4. List some of the government and private agencies that provide oversight of the health care system.
5. Describe how the survey process is used to monitor the quality of care given by health care organizations.
6. Discuss how health care is paid for.

bold type throughout the chapter, are listed in the order that they appear. You can also look each word up in the glossary at the back of the book to find a complete definition. Familiarizing yourself with the chapter's vocabulary words before class puts you one step ahead, because when you hear those words in class, they will not sound strange to you, and you may already know what they mean.

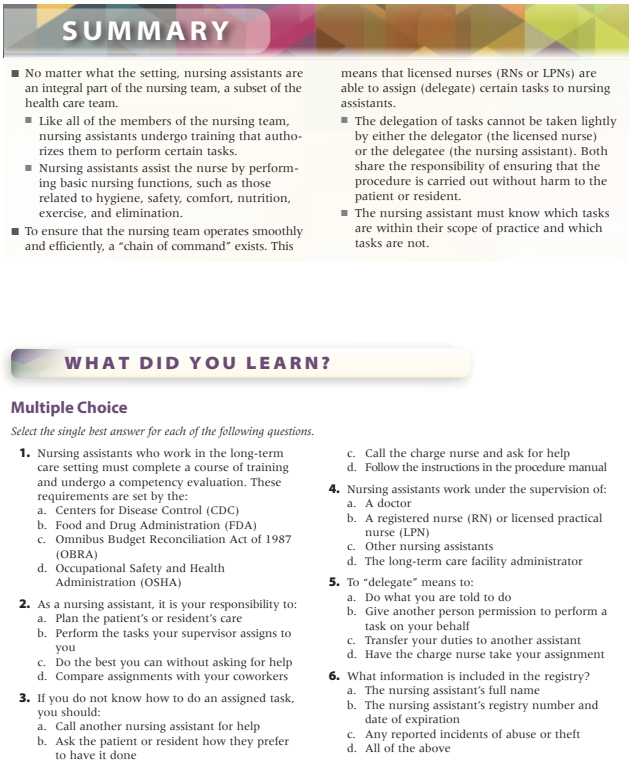
If you are a nursing assistant who is working or planning to work in an acute care setting, look for the *Taking It to the Next Level: Advanced Skills* feature. The feature calls out information that is further explained in the updated companion ebook, *Lippincott Acute Care Skills for Advanced Nursing Assistants.* This ebook is available on thePoint® and is written in mind for the nursing assistant who is already progressing to the next level in their nursing assistant careers.

View

The *viewing* stage is when you get down to business and really work to understand the material. During the classroom lecture or discussion, highlight important points and take notes as you need to. Ask questions about any of the material that you do not fully understand. Remember, there are no "stupid" questions! If you do not fully understand something, you need to speak up so that the instructor can help you. This is your instructor's job.

Review

After class, go back over the notes you took in class, and review the chapter in your book. Some students like to read the entire chapter over again. Others just skim the chapter, paying close attention to the topics they still have questions about. Read the chapter summary, which reviews the key concepts of the chapter. If you are using the student workbook in your class, complete the exercises by looking the answers up in the textbook chapter. Looking for the answers is another way of reviewing the information in the chapter, and many students find that the act of writing the answers down helps them to remember the information. When you feel comfortable with your understanding of the material, test yourself! Go back to the learning objectives in the *What Will You Learn?* section at the beginning of the chapter and pretend they are questions. Try to answer them. If you have trouble answering them, then you know that you need to review certain parts of the chapter again. You can also test yourself using the *What Did You Learn?* section, at the end of each chapter. The answers to the questions in the *What Did You Learn?* section are in Appendix A in the back of the book so that you can see how well you understood the material you just studied. Again, if you have trouble answering these questions, then you will know that your studying is not quite finished! You may need to read certain parts of the chapter again, or ask your instructor for help. Try to set aside short periods of time for studying each day. For example, you might study for 30 to 45 minutes, take a break to attend to other activities or chores, and then come back and study for another 30 to 45 minutes. After 30 to 45 minutes of studying, most people become tired and lose their ability to concentrate. Studying in short bursts will help keep you focused on the material you are trying to learn.



SUMMARY

- No matter what the setting, nursing assistants are an integral part of the nursing team, a subset of the health care team.
  - Like all of the members of the nursing team, nursing assistants undergo training that authorizes them to perform certain tasks.
  - Nursing assistants assist the nurse by performing basic nursing functions, such as those related to hygiene, safety, comfort, nutrition, exercise, and elimination.
- To ensure that the nursing team operates smoothly and efficiently, a "chain of command" exists. This means that licensed nurses (RNs or LPNs) are able to assign (delegate) certain tasks to nursing assistants.
  - The delegation of tasks cannot be taken lightly by either the delegator (the licensed nurse) or the delegatee (the nursing assistant). Both share the responsibility of ensuring that the procedure is carried out without harm to the patient or resident.
  - The nursing assistant must know which tasks are within their scope of practice and which tasks are not.

WHAT DID YOU LEARN?

Multiple Choice

Select the single best answer for each of the following questions.

1. Nursing assistants who work in the long-term care setting must complete a course of training and undergo a competency evaluation. These requirements are set by the:
   a. Centers for Disease Control (CDC)
   b. Food and Drug Administration (FDA)
   c. Omnibus Budget Reconciliation Act of 1987 (OBRA)
   d. Occupational Safety and Health Administration (OSHA)
2. As a nursing assistant, it is your responsibility to:
   a. Plan the patient's or resident's care
   b. Perform the tasks your supervisor assigns to you
   c. Do the best you can without asking for help
   d. Compare assignments with your coworkers
3. If you do not know how to do an assigned task, you should:
   a. Call another nursing assistant for help
   b. Ask the patient or resident how they prefer to have it done
   c. Call the charge nurse and ask for help
   d. Follow the instructions in the procedure manual
4. Nursing assistants work under the supervision of:
   a. A doctor
   b. A registered nurse (RN) or licensed practical nurse (LPN)
   c. Other nursing assistants
   d. The long-term care facility administrator
5. To "delegate" means to:
   a. Do what you are told to do
   b. Give another person permission to perform a task on your behalf
   c. Transfer your duties to another assistant
   d. Have the charge nurse take your assignment
6. What information is included in the registry?
   a. The nursing assistant's full name
   b. The nursing assistant's registry number and date of expiration
   c. Any reported incidents of abuse or theft
   d. All of the above

HOW TO PREPARE FOR TESTS

Did you learn the material or not? This is what instructors want to know when they give tests, quizzes, and exams. Not doing well on a test does not mean that you are a failure. It just means that you need to figure out what went wrong, and make an effort to improve the next time. Perhaps you did not study as well as you could have for the test. Or maybe you got so nervous, you forgot everything you learned when it came time to take the test!

The course syllabus will tell you when a test is scheduled to be given, and what material it will cover. Mark these dates on your calendar, so you are not surprised! Preparing for a test should not be a major

event. If you use the preview–view–review approach and study each day, when it comes time to prepare for the test, you will be very well prepared. In the days leading up to the test, all you will need to do is review the material that will be covered on the test one more time, by skimming the chapters in the book and reviewing the notes you took in class. When it comes time to actually take the test, remember the following tips:

- Relax! You have prepared for this test, and you know the answers to these questions!
- Take a deep breath and make sure you read the directions carefully. The directions will tell you whether there is only one correct answer for each question, or whether it is possible for a question to have more than one correct answer.
- Read each question completely and carefully. Many students answer questions incorrectly simply because they are in a hurry and miss important words, like "except" or "not."
- If the question is a multiple-choice question, try to state the answer in your head before looking at the answer choices. Then read each answer choice before choosing the one that best matches the answer you have in your head. This will increase your confidence that the answer you have selected is the correct one.
- After selecting an answer, avoid second-guessing yourself. Research has shown that your first choice is most likely to be correct, if you studied the material well. Sometimes, however, you will come across a question later in the test that makes you realize that you answered an earlier question incorrectly. In this case, when you are sure that you have made a mistake, it is all right to go back and change your answer. But if you do not have a clear idea of what the correct answer is, doubting your first choice will most likely result in changing a correct answer to an incorrect one!
- If you cannot answer a question, go on to the next. Often, another question on the test will jog your memory and help you to remember the answer to the question you skipped earlier. Just remember to go back over your answer sheet before you hand in your test to make sure you have answered all of the questions.

Many people think that the goal of studying is to pass a test. It is true that as you work through your training course, you will have to pass many tests. And most states require people who want to be nursing assistants to pass a certification exam at the end of the training course. But passing the test is a short-term goal. It is more important for you to be able to remember and use the information that you learned during your training course long after you complete the course and pass the certification exam. The people you will be caring for are depending on you to be knowledgeable and good at what you do. They are trusting you with their health and well-being. Study hard, ask questions, and remember that each and every person you care for throughout your career deserves the same type of competent, compassionate care that you would expect to be given to your own parents, spouse, partner, sibling, or child. As a nursing assistant, you will have the chance to have a positive effect on the lives of many people. Caring for those in need is very important work. Let me be among the first to thank you for your interest in pursuing a career in health care, and to wish you luck on your journey.

Sincerely,
PAM

Acknowledgments

Health care has undergone some unique and challenging changes since our last edition! These changes have affected our society and how we interact with other people and have increased our need to practice tolerance and respect for everyone. The pandemic has not only changed how we provide health care, but how we live our daily lives. It has also stressed the providers of health care to the breaking point. As we work to regroup and move forward, new challenges will face us, and it is our responsibility to teach and support the next generation of health care workers as they enter this field. Thank you all for your hard work as you strive to mentor and nurture the future of health care.

I wish to extend my sincere thanks to Chelsea Neve, Development Editor, for her exceptional assistance in making this edition more streamlined, inclusive, and sensitive in content. She is such a pleasure to work with! Also to Anthony Gonzalez, Editorial Coordinator, who has worked so hard to keep this project on track, even when my eyes would not work. And finally, to Jonathon Joyce, Senior Acquisitions Editor, for continuing to believe in me and what I write. You are all exceptional and I am truly honored to be able to work with such a great crew!

I would also like to personally thank the OR crew at Davis Hospital and Medical Center for their care and concern during my surgeries this year. And a special thanks to Dr. Mark Rush, Dr. Jason Rupp. Dr. Claron Alldredge, and Trish Perkins for your care and expertise to help save my eyesight. Without you all, completing this book would not have been possible.

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UNIT 3

UNIT 4

CHAPTER

20

Photo: A nursing assistant takes a resident's blood pressure.

Vital Signs, Height, and Weight

WHAT WILL YOU LEARN?

The word "vital" means "necessary to life." This is why those in the health care field refer to certain key measurements that provide essential information about a person's health as **vital signs**. When we evaluate a person's vital signs, we look at the person's body temperature, heartbeat (pulse), breathing (respirations), and blood pressure. One of the many important duties you will perform as a nursing assistant will be to routinely measure and record your patients' or residents' vital signs. A person's height and weight, although not technically vital signs, also provide insight into a person's overall health status. Therefore, you will also be responsible for obtaining and recording these measurements (although not as frequently as the vital sign measurements). Because a change in a person's normal vital sign measurements can be a sign of illness, your ability to detect a change and report this to the nurse promptly is essential to the well-being of your patients or residents. When you are finished with this chapter, you will be able to:

1. **Explain the term *vital signs* and how they reflect changes in a person's medical condition.**
2. **Explain the importance of accurately measuring and recording vital signs, and of reporting any changes to the nurse.**
3. **Define the term *body temperature* and describe the factors affecting a person's body temperature.**

4. List common sites used for measuring a person's body temperature and the advantages and disadvantages of each.
5. Demonstrate the proper use of a glass thermometer, an electronic or digital thermometer, a tympanic thermometer, and a temporal thermometer.
6. Define the term *pulse* and describe factors that may affect a person's pulse.
7. List common sites used for taking a person's pulse.
8. Demonstrate the proper way to measure and record a radial pulse and an apical pulse, including using a stethoscope.
9. Explain the terms used to describe a person's respirations and the factors that may affect a person's respirations.
10. Demonstrate the proper way to measure and record a person's respirations.
11. Define the term *blood pressure* and describe factors that may affect a person's blood pressure.
12. Demonstrate the proper way to measure a person's blood pressure, including using a sphygmomanometer and listening for Korotkoff sounds.
13. Define various terms used to describe an abnormal blood pressure.
14. Discuss factors that can lead to a change in a person's weight.
15. Demonstrate the proper way to measure a person's height and weight using an upright scale, a chair scale, and when the person is in bed.

Vocabulary

Vital signs
Body temperature
Metabolism
Febrile
Pulse
Pulse rate
Pulse rhythm
Dysrhythmia
Pulse amplitude
Stethoscope
Diaphragm
Bell
Pulse deficit
Tachycardia
Bradycardia
Inhalation (inspiration)
Exhalation (expiration)
Respiratory rate
Respiratory rhythm
Depth of respiration
Eupnea
Tachypnea
Bradypnea
Dyspnea
Hyperventilation
Hypoventilation
Blood pressure
Systolic pressure
Diastolic pressure
Pulse pressure
Sphygmomanometer
Korotkoff sounds
Hypertension
Hypotension
Orthostatic hypotension

WHAT DO VITAL SIGNS TELL US?

Vital signs reflect functions that are regulated automatically by the body, such as:

- How fast the heart beats
- The internal temperature of the body
- The rate at which a person breathes

Because the body is always trying to maintain a state of balance, "control centers" (located mostly in the brain) regulate what is going on inside the body and make adjustments as necessary to keep things within the range of normal. Therefore, a change in a vital sign may indicate that something has put the body out of balance, and the body is trying to get that balance back. Pain is often considered the "fifth vital sign" because the presence of pain is another indicator that the body is out of balance. Pain is discussed in detail in Chapter 21.

There are many factors that can cause changes in a person's vital sign measurements. A person's vital sign measurements may vary over the course of a day (for example, in response to emotional or physical stress or a change in position) while still staying within the range of "normal." However, a major or a long-lasting change in one or more of a person's vital sign measurements may be a response to illness or injury. As you read this chapter, pay attention to the ranges that are considered "normal" for each vital sign. Knowing these ranges will allow you to quickly

recognize measurements that are not within the range of normal. Also remember that your definition of "normal" will vary according to the person. For example, you may come to know that Ms. Goldblum's blood pressure tends to be at the low end of the normal range while Mr. Singh's tends to be a little bit higher than average. Your knowledge of your patient or resident will allow you to know whether the vital sign measurements you have obtained are normal readings for that person.

MEASURING AND RECORDING VITAL SIGNS

Vital signs are measured and compared with normal values (as well as the values that are considered normal for the individual) under many different circumstances. For example, it is routine for vital signs to be taken each time a person visits the doctor and when a person is admitted to a hospital or long-term care facility. It may also be necessary to check a person's vital signs:

- Before and after certain medications are given
- Before, during, and after a surgical or diagnostic procedure
- In an emergency situation
- After an incident or accident, such as a fall

Patients in a hospital may have their vital signs taken every shift or every few hours while residents of a long-term care facility may have their vital signs taken only once daily or even weekly. A patient who is critically ill may be attached to machines that measure their vital signs continuously and display the results on a monitor. The nursing care plan and Kardex, the doctor's orders, or all will specify how often each of your patient's or resident's vital signs are to be measured and recorded. However, it is also within your scope of practice to take a person's vital signs if the person complains of dizziness, nausea, or pain, or if you notice that the person just is not looking or acting like they normally do. If a person has been participating in an activity that may affect their vital signs (for example, walking, drinking, eating), you should give the person a few minutes to sit and relax before taking their vital signs.

Facilities will have different policies regarding how vital signs are recorded. Some facilities will record vital sign measurements on one flow sheet for the unit, which lists the names of all of the patients or residents on a particular unit. Other facilities will use one flow sheet per patient or resident. This flow sheet may be kept in the person's medical record, or at the person's bedside. Many health care facilities are now using electronic methods of recording vital signs. In some instances, the nursing assistant uses a computer "tablet" to record and document each person's vital sign measurements. If you take a person's vital signs and get a measurement that is abnormal (either higher or lower than normal for that particular person), you should take the measurement again for the sake of accuracy and then report your findings to the nurse immediately.

The skills you will use to measure a person's vital signs may seem difficult when you are first learning them, but practice will make you more comfortable with taking vital sign measurements. Measuring and recording vital sign measurements accurately is critical because many people rely on this information to make important decisions about the patient's or resident's care. In addition, a problem may go unnoticed if a vital sign is measured or recorded inaccurately. Always ask for assistance, either from another nursing assistant or a nurse, if you are having difficulty when checking a person's vital signs. Asking for help when you need it is not a sign of failure or an inability to do your job—rather, it demonstrates that you are responsible and committed to seeing that your patient or resident receives the best possible care. Let's take a look now at the individual vital signs, starting with body temperature.

BODY TEMPERATURE

The **body temperature** is simply how hot the body is. When we measure someone's body temperature, what we are measuring is the difference between the heat produced by the person's body and the heat lost by the person's body. The human body produces heat as a normal process of **metabolism**. Metabolism is the term for the physical and chemical changes that occur when the cells of the body convert the food that we eat into energy. Muscle movement also produces heat. This is why we become hotter when we exercise, and why we shiver when we are cold (shivering moves the muscles, producing heat). Heat loss occurs normally through the skin, through the passing of urine and feces, and through the process of breathing, and is increased by bodily responses such as sweating. The body temperature is regulated by a "control center" that is located in the brain.

Factors Affecting the Body Temperature

Although a healthy person's body temperature is usually fairly constant, small changes may occur as a result of physical or emotional stress, the environmental temperature, or even the time of day. For example, it is typical for a person's body temperature

to be lower in the morning and increase slightly throughout the day, probably from an increase in activity levels. Stress causes the release of hormones that increase metabolism and the heart rate, readying the body to respond to the source of the stress. This response, called the "fight or flight" response, is discussed in detail in Chapter 35. The increase in metabolism and heart rate can lead to an increase in body temperature as well. Finally, exposure to either very hot or very cold environmental temperatures can cause changes in a person's body temperature.

A person's age and sex also play a role in determining body temperature. Very young people and very old people tend to be more sensitive to environmental temperature changes. Infants often have immature control centers, which means that their bodies are slower to adjust to changes in temperature. In addition, infants usually lose body heat through their skin more easily. An older person's body may not produce as much heat as it did in younger years, due to muscle loss as a result of normal aging. Finally, body temperature for females tends to change more frequently than that of males, because of the hormonal changes that occur with the menstrual cycle and during pregnancy and menopause.

Measuring the Body Temperature

The body temperature can be measured from several different areas of the body:

- Mouth (an *oral temperature*)
- Rectum (a *rectal temperature*)
- Armpit (an *axillary temperature*)
- Ear (a *tympanic temperature*)
- Forehead (a *temporal temperature*)

Where the body temperature is measured depends on facility policy and the needs of the patient or resident. Because the method used to measure the temperature affects the accuracy of the measurement, you should note which method was used when you record the temperature, as per your facility's policy. For example, many facilities use "O" for oral, "R" for rectal, "T" for tympanic or temporal artery, and "A" for axillary. The body temperature is measured in either degrees Fahrenheit (°F) or degrees Celsius (°C), using a clinical thermometer.

Types of Thermometers

There are many different types of thermometers in use.

Glass Thermometers

When many of us think of a thermometer, we think of a glass thermometer (Fig. 20-1). In past years, glass

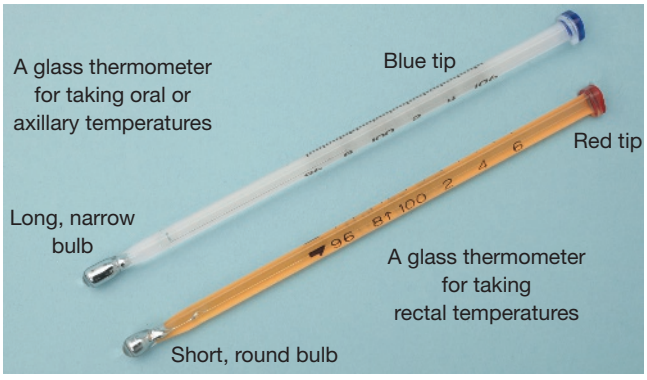
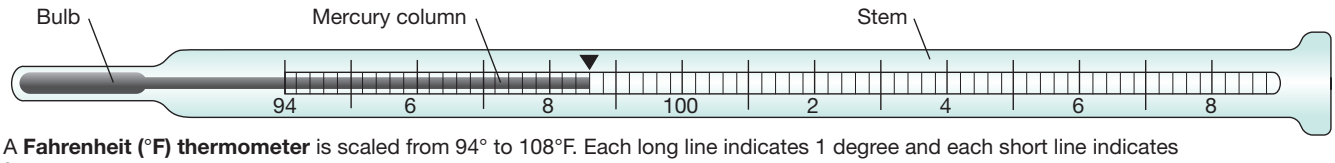


Figure 20-1 Glass thermometers may vary slightly in appearance depending on their intended use.

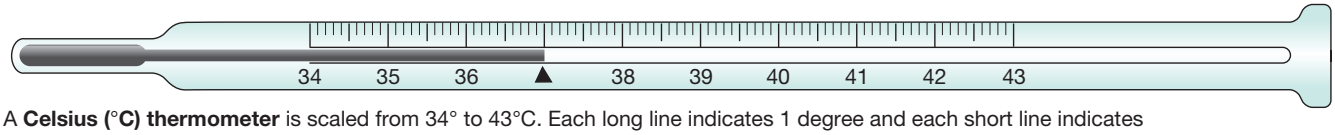
thermometers contained mercury, a toxic substance. Because of the dangers associated with breakage and spilled mercury, most health care settings do not use glass thermometers at all. Some settings still use glass thermometers, but have switched to using newer models, which contain a substance that behaves the same way as mercury but is less toxic. Glass thermometers consist of a glass bulb attached to a thin glass tube that is marked with a temperature scale and filled with a liquid substance. The liquid inside the thermometer expands with heat and moves up the glass tube, showing the temperature on the scale. The Fahrenheit thermometer is scaled from 94° to 108°F while the Celsius thermometer is scaled from 34° to 43°C (Fig. 20-2). Before you use a glass thermometer, the liquid must be "shaken down" to below the 94° mark on a Fahrenheit thermometer, or the 34° mark on a Celsius thermometer (Fig. 20-3). To read a glass thermometer, hold it horizontally by the stem at eye level and rotate it until the line of liquid becomes visible (Fig. 20-4). It will show up as a thin silvery or red line.

In facilities that still use glass thermometers, each patient or resident has their own thermometer, which is kept in a case at the person's bedside. Because glass thermometers are not disposable, they must be cleaned properly after each use, according to facility policy. Sometimes, a clear plastic cover called a *sheath* is used to cover the thermometer, and then the sheath is discarded. The thermometer is washed with cool water and soap (never hot water, which can cause the thermometer to shatter), rinsed with cool water, and cleaned with a disinfectant solution. If a glass thermometer breaks while you are cleaning it (or at any other time), avoid touching the liquid and the broken glass, and prevent others from doing so as well.

Glass thermometers are still sometimes used in the home health care setting and some states still require nursing assistants to learn how to use them.



A **Fahrenheit (°F) thermometer** is scaled from 94° to 108°F. Each long line indicates 1 degree and each short line indicates $^{2}/_{10}$ (0.2) of a degree. This thermometer is reading 98.6°F.



A **Celsius (°C) thermometer** is scaled from 34° to 43°C. Each long line indicates 1 degree and each short line indicates $^{1}/_{10}$ (0.1) of a degree. This thermometer is reading 37°C.

Figure 20-2 Temperature scales on glass thermometers.

You will be taught how to use the equipment that is required by your particular state guidelines and used in the type of setting in which you will work.

Electronic Thermometers

Because of the safety risks of glass thermometers, almost all health care facilities use electronic thermometers instead (Fig. 20-5). Electronic thermometers are powered by batteries, and the temperature is displayed on a screen on the front of the instrument. A probe, covered with a disposable sheath, is placed in the patient's or resident's mouth, rectum, or armpit to measure the temperature. A blue probe is used for taking oral or axillary temperatures. A red probe is used for taking rectal temperatures. After the probe is used, the disposable sheath is discarded.

Tympanic Thermometers

A tympanic thermometer (Fig. 20-6) is an electronic thermometer used to measure the body temperature in the ear. The probe of this battery-operated instrument is inserted into the ear canal, where it rests near the eardrum (tympanic membrane). The person's temperature is displayed on a screen after a few seconds. Tympanic thermometers are often used for children because they allow a temperature to be

Figure 20-4 To read a glass thermometer, hold it horizontally by the stem at eye level.

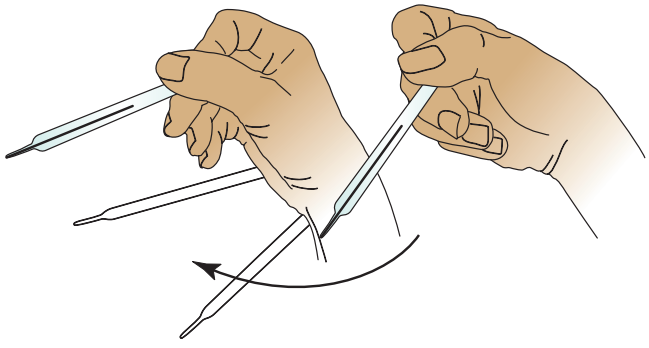


Figure 20-3 A glass thermometer is "shaken down" before use by holding the thermometer firmly by the stem and snapping your wrist downward.

Figure 20-5 A battery-operated electronic thermometer.

Figure 20-6 A tympanic thermometer is inserted into the ear canal.

measured in a safe, quick, and relatively painless manner.

Temporal Artery Thermometers

The temporal artery thermometer represents the latest development in thermometer technology (Fig. 20-7). Remember how a parent or caregiver used to place a cool hand on your hot forehead to check for a fever? The temporal artery thermometer is simply a "high-tech" version of this gesture. As the device is passed over a person's forehead, it detects the body temperature at numerous points. It then performs a series of calculations on the readings to arrive at the person's peak body temperature. The temporal artery thermometer is even more accurate than a tympanic thermometer, and because it does not have to be inserted into any body opening, it is considered the least invasive of all of the thermometers available.

Figure 20-7 A temporal artery thermometer is placed on the middle of the person's forehead and swept toward the ear, stopping in front of the ear.

Sites for Measuring Body Temperature

Measuring body temperature at different sites can result in varying degrees of comfort for your patients or residents, as well as varying levels of accuracy in the measurement. Several factors can determine which site is best for measuring the body temperature of your patient or resident.

Mouth (Oral Temperature)

Measuring a person's body temperature by placing the thermometer into the mouth is simple and causes the person minimal discomfort. Because the thermometer is being placed in the mouth, which is not an entirely enclosed space, the temperature reading may not be as accurate as with some of the other methods. For example, measuring the temperature in the rectum or ear gives a more accurate reading, because the thermometer is placed into a tightly closed space. However, many times, the reading provided by placing the thermometer in the mouth is accurate enough. An oral temperature may be measured using a glass thermometer or an electronic thermometer (Procedure 20-1).

If a person eats, drinks, smokes, or chews gum 15 minutes before having an oral temperature taken, the measurement may not be accurate. If one of your patients or residents has done any of these things shortly before you intend to take their temperature orally, then you must either use a different method or wait for a period of time as specified by your facility's policy (usually 15 to 30 minutes).

In certain situations, an oral temperature should not be taken. For example, an oral temperature should not be taken if the patient or resident is:

- Unconscious
- Unable to keep the mouth closed (necessary in order to keep the thermometer in place)
- Unable to breathe through the nose
- Likely to bite the oral thermometer (for example, a child younger than 5 years, a disoriented person, or a person with a history of seizures)
- Coughing or sneezing
- Recovering from recent mouth surgery or an injury to the mouth
- Receiving oxygen by a face mask (because the oxygen may cause the temperature measurement to be inaccurate)

Rectum (Rectal Temperature)

Measuring a person's body temperature by placing the thermometer in the rectum provides a more accurate measurement of the person's body temperature because the thermometer is placed in an enclosed space. However, placing the thermometer rectally is also the riskiest method of taking a temperature, and it

can be uncomfortable and embarrassing for the patient or resident.

A rectal temperature may be obtained using a glass thermometer or an electronic thermometer (Procedure 20-2). The thermometer must be lubricated and inserted carefully into the rectum, not more than one half inch in a child or one inch in an adult.

When you are taking a temperature rectally, it is important that you stay with the patient or resident during the entire procedure, both to hold the thermometer in place and to make sure that the person is all right. The thermometer could stimulate the vagus nerve, an important nerve that begins in the brain and sends branches to the heart, lungs, stomach, and rectum. Stimulation of the vagus nerve may temporarily decrease the person's heart rate and blood pressure, which can be dangerous. A different method of measuring the temperature should be used if the person has:

- Hemorrhoids, rectal bleeding, or a disease involving the rectum
- Diarrhea
- Certain heart conditions
- Recently had rectal surgery

Armpit (Axillary Temperature)

An axillary temperature is measured by placing the thermometer under the person's arm, directly in contact with the person's skin, and then having the person hold the arm close to their body. The axillary method provides the least reliable measurement of body temperature, but if the oral and rectal methods are not safe, and a tympanic or temporal thermometer is not available, then the axillary method can be used. The axillary temperature may be taken using a glass thermometer or an electronic thermometer (Procedure 20-3). If the person has just washed under their arms, or applied deodorant or antiperspirant, then you must wait for at least 15 minutes before taking the axillary temperature. Also, if the person has recently had chest or breast surgery, and it is necessary to take the person's temperature using the axillary method, then the thermometer should be placed on the unaffected side of the body.

Ear (Tympanic Temperature)

Because a tympanic thermometer measures the temperature of the blood in the small vessels in the eardrum, the temperature it gives is very accurate. Procedure 20-4 describes how to take a tympanic temperature. If a patient or resident has an earache or drainage from the ear, use the other ear to prevent discomfort. If the person has been sleeping with one side of the head against a pillow, use the other ear for taking their temperature. Heat may be increased on the side against the pillow, resulting in an inaccurate measurement.

Forehead (Temporal Temperature)

A person's temporal artery has branches that run very close underneath the skin across the forehead and in front of the ear. The reading is very accurate. However, if a person is sweating, the evaporation from the sweat on the skin can lower the temperature in this area and give a false low reading. A temporal artery thermometer is swept across a person's forehead to obtain a body temperature measurement. Procedure 20-5 describes how to take a temporal artery temperature. If a patient or resident has anything covering the forehead, such as hair, a wig, a hat, or bandages, they can insulate the area, making it warmer and cause an inaccurate measurement. Make sure that you measure only the side of the forehead that is uncovered.

Normal and Abnormal Findings

The normal body temperature varies slightly from person to person. In fact, a person's normal body temperature may be anywhere from 0.5° to 1°F higher or lower than the range generally considered normal. The normal range also varies according to what method is used to measure the body temperature (Table 20-1).

TABLE 20-1 Normal Temperature Ranges

METHOD USED TO OBTAIN TEMPERATURE	ADULT RANGES		PEDIATRIC RANGES	
	Fahrenheit (°F)	Celsius (°C)	Fahrenheit (°F)	Celsius (°C)
Oral	97.6–99.6	36.5–37.5	97–99	36–37
Rectal	98.6–100.6	37–38.1	98–100	37–38
Axillary	96.6–98.6	36–37	96–98	35–36
Tympanic	98.6	37	98.6	37
Temporal	99.6	37.5	99.6	37.5

Oral temperatures are not taken in children younger than 5 years.

Tell the Nurse!

Changes in a person's temperature can be a sign that something is wrong. Be sure to report the following observations to the nurse immediately:

- The person's temperature is higher than normal
- The person's temperature is lower than normal
- You have difficulty talking and reading the person's temperature

A person who has an increased body temperature is said to have a fever, or to be **febrile**. Fever is a common finding with illness and is the body's normal response to infection. Fever may also be caused by chemicals that the body releases when tissues are injured, for example, after a heart attack, traumatic injuries, surgery, and cancer treatments. However, an older person's temperature may actually decrease, or only slightly increase, in response to illness or infection. For this reason, even a very slight change in an older person's temperature should be reported to the nurse.

PULSE

Each time the heart beats, it sends a wave, or **pulse**, of blood through the arteries. The arteries are the blood vessels that carry oxygen-containing blood away from the heart to all of the tissues of the body. The pulse, a throbbing sensation just underneath the skin, can be felt (palpated) by placing your fingers gently over an artery that runs close to the surface of the skin, such as the carotid artery in the neck or the radial artery in the wrist (Fig. 20-8). Although we can only feel the pulse in a few of the body's arteries (those that run closest to the surface of the skin), all of the arteries in the body have a pulse. The pulse tells us many things:

- By feeling for and counting the pulse, we are able to measure the **pulse rate**, or the number of pulsations that can be felt in 1 minute. The pulse rate tells us the heart rate, or how fast the heart is beating.
- In addition to measuring the pulse rate, we can detect the **pulse rhythm**, or the pattern of the pulsations and the pauses between them. Normally, the pulse rhythm is smooth and regular, with the same amount of time in between each pulsation. An irregular pulse rhythm is called a **dysrhythmia** (*dys-* means "bad" or "difficult").

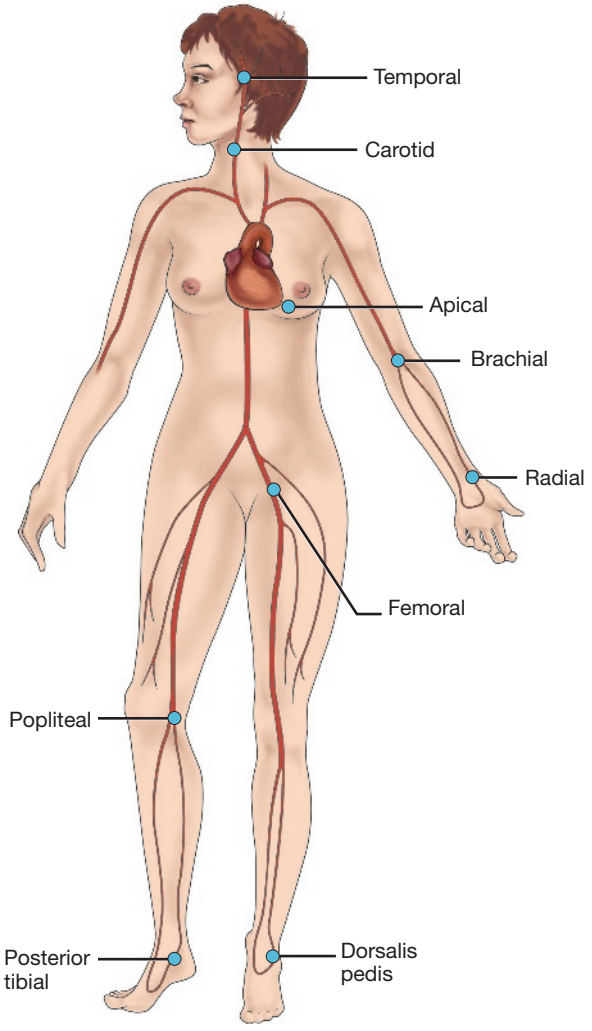


Figure 20-8 The pulse points are places where the arteries run close to the surface of the skin, allowing the pulse to be felt. When taking a person's pulse, it is common to place your fingers on the radial artery (in the wrist). An apical pulse can be taken by placing a stethoscope on the person's chest, over the apex of the heart.

- Finally, we can evaluate the force or quality of the pulse, known as the **pulse amplitude** or the pulse character. Each pulsation should be strong and easy to feel. Pulses that are difficult to feel may be described as "weak" or "thready." A weak or thready pulse usually means that the heart is having trouble circulating blood throughout the body.

Factors Affecting the Pulse

The rate at which the heart beats is controlled automatically by the body's central nervous system. When the nervous system senses that the tissues need more oxygen and nutrients (for example, when a person is

exercising), it increases the heart rate so that blood reaches the tissues faster. A person's heart rate will also increase during times of anger and anxiety, illness, pain, fever, and excitement, and when taking certain medications.

Measuring the Pulse

There are two main methods for measuring a person's pulse rate.

Radial Pulse

One common way of measuring the pulse rate is by placing the middle two or three fingers lightly over the radial artery, which is located on the inside of the wrist (see Fig. 20-8) and counting the number of pulses that occur in either 30 seconds or 1 minute. The thumb is not used to palpate the artery because the thumb has its own fairly strong pulse. Although the pulse may be taken at other pulse points, taking the pulse at the radial artery is easiest for the patient or resident. The carotid or femoral arteries may be used to assess the pulse during an emergency situation when cardiopulmonary resuscitation (CPR) is being administered. Procedure 20-6 describes how to take a radial pulse.

Apical Pulse

The apical pulse is measured by listening (auscultating) over the apex of the heart with a stethoscope. The apex of the heart (that is, the lower tip of the heart) is located slightly to the left side of the chest, between the sternum (breast bone) and the left nipple. The apical pulse is best heard approximately 2 inches below the level of the left nipple (see Fig. 20-8). An apical pulse is taken when a person has a weak or irregular pulse that may be difficult to feel in the radial artery. An apical pulse may also be used to measure heart rate in infants and in people with known heart disease.

A **stethoscope**, a device that makes sound louder and transfers it to the listener's ears, is used to take an apical pulse. The stethoscope allows you to hear, rather than feel, each beat of the person's heart. The stethoscope has the following parts (Fig. 20-9):

- Earpieces, which are placed in your ears
- A brace and binaurals, which connect the earpieces to the rubber or plastic tubing that conducts the sound
- An amplifying device, which makes the sound louder

The amplifying device, which is the part of the stethoscope that is placed against the person's skin, is usually two-sided. One side, called the **diaphragm**, is a large flat surface that is used to hear loud, harsh sounds like an apical pulse, blood rushing through the arteries, or respiratory sounds. The other side, called the **bell**, is a small, rounded surface that is designed to pick up softer sounds like heart murmurs or difficult-to-hear blood pressures. The bell side is also commonly used to listen to apical pulses in infants and small children. The amplifying device rotates so that the sound comes from either the diaphragm or the bell, but not both at once.

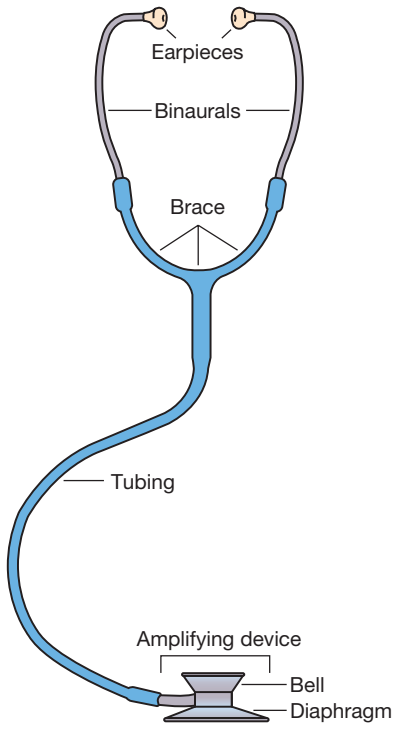


Figure 20-9 A stethoscope is used to listen to the heartbeat (when taking an apical pulse) or blood moving through the arteries (when taking a blood pressure). The sound is made louder by the amplifying device and transmitted by the rubber tubing to the earpieces, which fit snugly in the user's ear canals. The brace and binaurals, which are usually made of metal, connect the rubber or plastic tubing to the earpieces and prevent it from twisting or kinking, which could distort the sound. The rubber or plastic tubing may be single (as shown) or double.

Before using a stethoscope, clean both the earpieces and the diaphragm or bell by wiping them with alcohol wipes. Place the earpieces in each ear canal. You will know that the earpieces are placed correctly when they fit snugly, yet comfortably, and block out any outside sound. Next, tap lightly on the diaphragm. You should be able to hear the tapping. If you cannot hear the tapping, rotate the amplifying device and tap again. When you can hear the tapping, you are ready to go! Procedure 20-7 describes how to take an apical pulse using a stethoscope.

The apical pulse rate and the radial pulse rate should be the same in any single person. Occasionally, however, the heart does not pump strongly enough to send enough blood through the arteries with each beat. This means that while each beat of the heart may be heard over the apex of the heart using a stethoscope, it may not be felt in the wrist. This difference between the apical pulse rate and the radial pulse rate is known as the **pulse deficit**. The pulse deficit is measured by having one member of the nursing team take the person's apical pulse while another team member takes the person's radial pulse. The two counts are then compared to determine the pulse deficit. For example, if the apical pulse is 84 beats per minute and the radial pulse is 80 beats per minute, the difference between the apical pulse and the radial pulse (that is, the pulse deficit) is 4 beats per minute (84 – 80 = 4). The apical pulse rate will always be the same or higher than the radial pulse rate because it is easier to hear a heartbeat at the source than to feel it.

Normal and Abnormal Findings

As with temperature, there is an accepted normal pulse rate. The pulse rate is faster in infants and small children and gradually slows as a person reaches adulthood. **Tachycardia** is a rapid heart rate, or a pulse rate of more than 100 beats per minute for an adult (*tachy-* means "fast" and *cardia* means "heart"). A heart rate that is slower than normal (that is, a pulse rate of less than 60 beats per minute) is called **bradycardia** (*brady-* means "slow"). Certain illnesses or conditions can cause bradycardia. Bradycardia may also be a normal finding in a young, athletic person who is very physically fit because the person's physical conditioning allows the heart to pump stronger and more effectively, which slows the heart rate. Table 20-2 lists normal pulse rate ranges for adults and children.

Tell the Nurse!

Changes in a person's pulse rate, rhythm, or amplitude can be a sign that something is wrong. Be sure to report the following observations to the nurse immediately:

- The person's pulse rate is higher than normal
- The person's pulse rate is lower than normal
- The person's pulse rhythm is irregular
- The person's pulse is weak or "thready"
- You have difficulty taking the person's pulse

TABLE 20-2 Normal Pulse Rate Ranges

AGE OF PERSON	PULSE RATE (beats/min)[a]
Adult	60–100
Adolescent (12–20 years)	60–100
School-aged child (5–12 years)	75–110
Preschooler (3–5 years)	80–120
Toddler (1–3 years)	80–140
Infant (0–1 year)	80–180

[a]The pulse rate is always measured for a full minute in children younger than 12 years.

RESPIRATION

Respiration is the process of breathing. To live, we must have oxygen. We must also get rid of waste products that are created as a result of normal cellular function (metabolism). One of these waste products is carbon dioxide (see Chapter 31).

During the **inhalation (inspiration)** phase of respiration, the chest expands (rises) as air is brought into the lungs. During the **exhalation (expiration)** phase of respiration, the chest deflates (falls) as air moves out of the lungs. When we measure a person's respirations, we look at the person's:

- **Respiratory rate**, or the number of times the person breathes in 1 minute (one breath is both an inhalation and an exhalation).
- **Respiratory rhythm**, or the regularity with which the person breathes.
- **Depth of respiration**, or the quality of each breath (for example, is it deep or shallow?).
- We also listen for any abnormal sounds, such as wheezing or congestion.

Factors Affecting Respiration

As with other vital functions, the process of breathing is controlled mainly by the central nervous system, in a part of the brain called the medulla. Control centers, called chemoreceptors, are located in the medulla and in some of the major arteries. These control centers monitor the carbon dioxide and oxygen content of the blood and adjust the rate and depth of breathing accordingly. For example, exercise increases the body's use of oxygen as well as its production of carbon dioxide, and will increase both the rate and depth of a person's respirations. Other factors that may affect respiration rate, depth, and regularity include anxiety, pain, fear, fever, infections and diseases of the heart and lungs, stroke or head injury, and certain medications.

In addition to being controlled automatically by the nervous system, breathing can also be controlled to a certain extent by the individual (for example, when we "hold our breath" while swimming). In this respect, breathing is different from the other vital signs.

Measuring Respiration

Many tests are available to evaluate a person's respiratory function. The simplest approach involves no equipment, other than a watch. The respiratory rate is easily determined by watching the rise and fall of a person's chest and counting the number of breaths that occur in either 30 seconds or 1 minute. (Remember that one breath consists of both an inhalation and an exhalation.) Usually, the rise and fall of the chest can be easily observed by standing beside the person, or by watching their back. In some situations, you may need to stand slightly behind the person while they are seated and look down at the chest to detect the movement. Or, you can actually place your hand either near the collarbone or on the person's side to feel them breathing if it is not easily seen. Most small children and some older adults use their abdominal muscles to assist with breathing. In these people, breathing can be easily seen by watching the abdomen move instead of the chest.

Because a person can consciously control their respirations if they are aware that they are being observed, a more accurate measurement may be obtained if you measure the respiratory rate right after you take the person's pulse, with your fingers still on the person's wrist as if you were still counting the pulse. It is also easy to count a person's respirations while they sleep, before you have awakened them to measure other vital signs. This is the one instance where it is acceptable to carry out a task without telling the patient or resident exactly what you are doing! Procedure 20-8 describes how to measure a person's respiratory rate.

In some facilities, you will be asked to record a patient's or resident's *pulse oximetry* measurement, which is how much oxygen is being carried by the blood cells. This procedure is discussed in Chapter 31.

Normal and Abnormal Findings

Under normal conditions, a healthy, resting adult will breathe about 12 to 20 times a minute, while infants and children may have a significantly higher respiratory rate. A normal respiratory rate is called **eupnea**. (The prefix *eu-* means "good" and the suffix *-pnea* means "breathing.") A respiratory rate that is higher than normal (greater than 24 breaths per minute in an adult) is called **tachypnea** while a respiratory rate that is lower than normal (less than 10 breaths per minute) is called **bradypnea**. (Recall that *tachy-* means "fast," and *brady-* means "slow.") Table 20-3 lists the normal respiratory rates for adults and children.

TABLE 20-3 Normal Respiration Rate Ranges

AGE OF PERSON	RESPIRATION RATE (breaths/min)[a]
Adult	12–20
Adolescent (12–20 years)	15–20
School-aged child (5–12 years)	15–25
Preschooler (3–5 years)	20–34
Toddler (1–3 years)	20–40
Infant (0–1 year)	30–60

[a]The respiration rate is always measured for a full minute in children younger than 12 years.

Normally, the chest should rise and fall evenly, in a regular rhythm. Breathing should be quiet and easy. Labored or difficult respirations are termed **dyspnea** (recall that *dys-* means "bad" or "difficult"). Other notable respiratory patterns are **hyperventilation** (increased rate and depth of breathing) and **hypoventilation** (decreased rate and depth of breathing).

Tell the Nurse!

Changes in a person's respiratory rate, respiratory rhythm, or depth of respirations can be a sign that something is wrong. Be sure to report the following observations to the nurse immediately:

- The person's respiratory rate is greater than 24 breaths per minute
- The person's respiratory rate is less than 10 breaths per minute
- The person's respiratory rhythm is irregular
- The person's breaths are either very deep or very shallow
- The person's breathing is difficult or painful
- The person's chest does not rise equally on both sides
- The person's respirations are noisy with wheezing sounds or congestion

BLOOD PRESSURE

The force of the blood pushing against the arterial walls is known as the **blood pressure**. There are two pressure levels that are measured when taking a person's blood pressure measurement. The first, known as the **systolic pressure**, is the pressure that is caused by the blood when the heart muscle contracts, sending a wave of blood through the artery. The second, known as the **diastolic pressure**, occurs when the heart muscle relaxes. Although the heart is relaxed, there is still pressure as the blood flows through the arteries.

Blood pressure is measured in *millimeters of mercury* (mm Hg) and is recorded as a fraction. The systolic pressure, which is higher, is recorded first, followed by the diastolic pressure, which is lower. For instance, if a person's systolic measurement is 110 mm Hg and the diastolic measurement is 72 mm Hg, then the blood pressure would be recorded as 110/72 mm Hg. The difference between the systolic and diastolic pressures is known as the **pulse pressure**, which in this case would be 38 mm Hg (110 – 72 = 38).

Blood pressure is considered a vital sign because it gives us important information about a person's health and risk for disease. Adequate blood pressure is necessary to keep blood flow constant to all of the tissues of the body. A blood pressure that is too low is a bad sign because it means the tissues of the body may not be receiving enough oxygen and nutrients. On the other hand, a blood pressure that is too high forces the heart to do extra work, which, over time, damages the heart. High blood pressure also places stress on the kidneys, which can lead to kidney failure, and the blood vessels, which can lead to stroke. Blood pressure measurements allow health care workers to monitor existing problems and possibly prevent future ones.

Factors Affecting Blood Pressure

The pressure that the blood puts on the arterial walls is controlled by three factors:

- **Cardiac output.** The cardiac output is the amount of blood that the heart is able to pump in a minute. If the heart is able to pump more blood into the blood vessels with each beat, then blood flow increases, leading to an increase in blood pressure. On the other hand, if the cardiac output is lower, then blood flow decreases, leading to a decrease in blood pressure.
- **Blood volume.** The amount of blood in the vessels at any given time influences the blood pressure. If the blood volume is low, for example, as a result of hemorrhage (see Chapter 16), then the blood pressure will decrease. Similarly, an increase in blood volume leads to an increase in blood pressure. In some people, a salty meal is enough to increase blood pressure because the salt causes the body to store water, which increases the blood volume.
- **Resistance to blood flow.** Resistance is how hard it is for the blood to flow through the vessels. If the vessels are narrowed (for example, as a result of arteriosclerosis ["hardening of the arteries"]), then the resistance will be high and so will the blood pressure. Resistance is also increased when the blood is thick, for example, if a person is dehydrated.

Blood pressure is also influenced by certain factors that we cannot do anything about, such as age, sex, and race:

- **Age.** Young people tend to have lower blood pressures than older people. Aging causes a decrease in the elasticity of the blood vessels (that is, the blood vessels' ability to stretch and bounce back as the blood pulses through). Decreased elasticity results in increased resistance and a higher blood pressure.
- **Sex.** Females tend to have lower blood pressures than males. However, females who take oral contraceptives ("birth control pills") may have a slightly increased blood pressure.
- **Race.** People of certain races (for example, African Americans) tend to have higher blood pressures than people of other races.

Measuring Blood Pressure

Measuring and recording a person's blood pressure is a routine task for nursing assistants. There are many ways to measure a person's blood pressure.

Manually Operated Sphygmomanometers

The most common method of measuring blood pressure is by using a manually operated **sphygmomanometer** and a stethoscope. *Sphygmo-* is from the Greek word for "pulse," and *-manometer* means "a flat instrument used to measure pressure." A manual sphygmomanometer consists of:

- A cuff (a flat, cloth-covered inflatable pouch)
- A bulb, which is squeezed or pumped to fill the cuff with air
- A manometer (the device that measures the air pressure in the inflatable pouch)

Cuffs come in various sizes and may be disposable or reusable. The cuff must fit the person properly, or the blood pressure measurement will not be accurate.

TABLE 20-4 Blood Pressure Cuff Sizes

ARM MEASUREMENT (cm)	NAME OF CUFF TO USE
13–20	Child
24–32	Adult
32–42	Large adult
42–50	Thigh

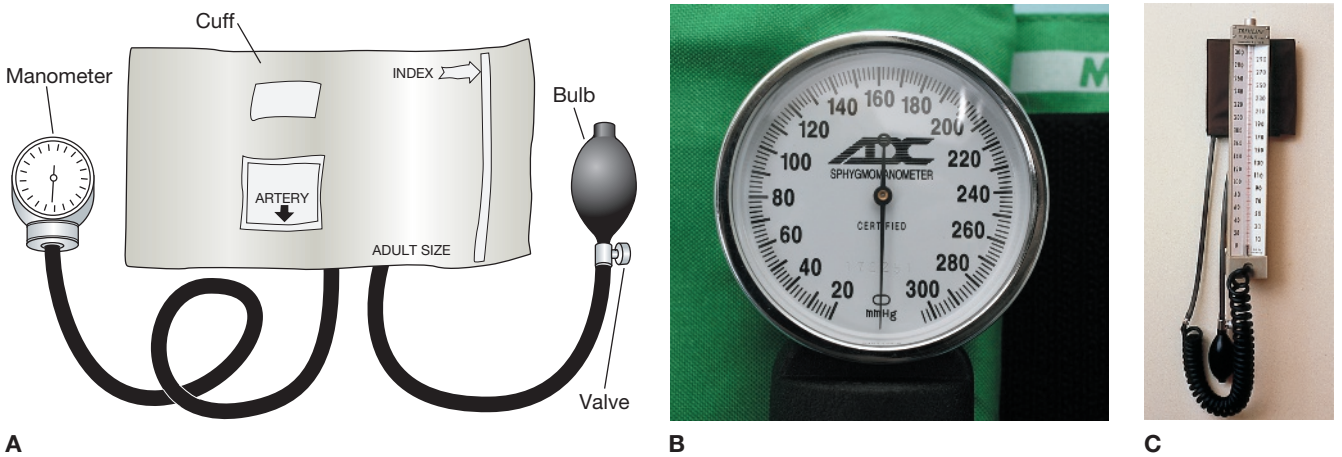
To find the right size to use, measure around the person's upper arm, halfway between the elbow and shoulder. Cuff sizes are given in Table 20-4.

Two tubes are attached to the pouch within the cuff—one is attached to the bulb used to inflate the pouch, and the other is attached to the manometer. The manometer may be either aneroid or mercury (Fig. 20-10). An aneroid manometer is a small, round dial with a needle that indicates the pressure. A mercury manometer is a column of mercury that may be mounted on a wall or placed on a table. The manometer measures the pressure of the air in the cuff in millimeters of mercury (mm Hg). Long dashes mark increments of 10 mm Hg and the short dashes in between mark increments of 2 mm Hg.

The most common place to measure a person's blood pressure is in the brachial artery of the upper arm. However, the popliteal artery (which can be felt at the back of the person's knee) can be used as well. Measuring a blood pressure is quite simple, once you have had some practice. The cuff is wrapped around the person's upper arm where the brachial artery is located. You can feel the brachial artery pulse in the antecubital space (the inner bend of the elbow) by straightening the person's arm and placing your fingers across the inside of the joint. After positioning the cuff, place the diaphragm of your stethoscope directly over where you felt the brachial artery in the antecubital space, and close the valve on the pumping bulb by turning it clockwise. Do not close the valve too tightly, or it will be difficult to release the air when you are ready. As you pump the bulb, air will enter the pouch in the cuff and you will see the needle (on an aneroid manometer) or the column of mercury (on a mercury manometer) move, indicating that the pressure of the air in the cuff is increasing.

Remember that you have two pressures that are measured within an artery, the systolic pressure (when the heart pumps) and the diastolic pressure (when the heart relaxes). When the pressure within the cuff becomes higher than the systolic pressure in the artery, it will essentially cut off the circulation and not allow any blood to flow through the brachial artery past the cuff. Continue pumping the bulb until the pressure in the cuff is 30 mm Hg higher than the systolic pressure. There are two ways to do this:

- Place the stethoscope over the brachial artery, and inflate the cuff slowly. After you have inflated the cuff a bit, you will start to hear the pulse through your stethoscope. Continue inflating the cuff until you hear the pulse stop (this is the person's systolic pressure) and continue inflating the cuff 30 mm Hg more.
- Or, with your fingers on the person's brachial or radial pulse, you can inflate the cuff until you no longer can feel the pulse. The reading on the manometer will indicate the person's systolic pressure. Continue inflating the cuff 30 mm Hg more.



A B C

Figure 20-10 **A.** A manual sphygmomanometer consists of a cuff, a bulb, and a manometer. The manometer may be either aneroid or mercury. Do you know which type of manometer is shown here? The tubes attach the inflatable pouch inside the cuff to the bulb and to the manometer. **B.** An aneroid manometer. **C.** A mercury manometer.

Box 20-1 Korotkoff Sounds

In some people, you will only be able to hear the beginning and ending sounds while auscultating the blood pressure, but in others, all of these sounds will be distinct.

Phase I: Faint but clear tapping sounds that gradually become louder. The first tapping sound is the systolic pressure.

Phase II: Muffled or swishing sounds that may actually disappear if a person has significant hypertension.

Phase III: Distinct, loud tapping sounds as the blood begins to flow more freely through the artery.

Phase IV: The sound may abruptly become muffled and soft. Keep listening.[a]

Phase V: The last sound heard before a period of continuous silence. This is the diastolic pressure.

[a]Occasionally, the tapping sounds of the pulse will be heard all the way down to zero. In this case, listening for the abrupt softening of phase IV will give you an approximate diastolic reading.

When the pressure in the cuff is 30 mm Hg higher than the systolic pressure, place the diaphragm of your stethoscope over the brachial artery and open the valve slightly (by turning it counter clockwise). Opening the valve slightly allows the slow release of air from the cuff, which lowers the pressure in the cuff. Under normal conditions, you may not be able to hear the brachial pulse, but under pressure, you will be able to hear the pulse through the stethoscope. As the pressure in the cuff falls (as indicated by the needle on the aneroid dial or the column of mercury) you listen for sounds, called **Korotkoff sounds** (Box 20-1), through the stethoscope. When the pressure in the cuff is equal to or slightly lower than the systolic pressure in the artery, blood will suddenly begin to flow through the brachial artery, and you will start hearing the pulse. When you hear the first sound of the pulse, note the reading on the manometer. This is your systolic pressure. Now continue to listen to the pulse. When the pressure inside the cuff is less than the lowest arterial pressure, or diastolic pressure, the sound of the pulse will stop, because the artery is no longer under pressure. The last sound that you hear is the diastolic pressure and is shown by the reading on the manometer.

Procedure 20-9 summarizes how to take a blood pressure. Guidelines for taking a blood pressure are given in Guidelines Box 20-1. Learning to take blood pressures takes time and practice. At first, you will need to concentrate on how to operate the equipment and control the rate at which the air leaves the cuff. Next, you will need to become familiar with the sounds that you hear as the cuff deflates, and learn to recognize the beginning and ending sounds. Each person's blood pressure will sound slightly different. In some people, the blood pressure is easy to measure. In others, measuring the blood pressure will challenge even the most experienced nursing assistant. A good rule of thumb is if a person's brachial or radial pulse feels stronger in one arm over the other, you will have an easier time taking the blood pressure in the arm with the stronger pulse. Do not get discouraged if taking blood pressures is difficult at first. The more you practice, the more competent and confident you will become. As with any skill you will learn, if you have difficulty taking a person's blood pressure or if you are unsure of a reading you get, always ask for a second opinion or help from another nursing assistant or a nurse. Your responsibility to the people you care for takes priority over your pride.

Automated Sphygmomanometers and Other Means of Measuring Blood Pressure

Your facility may use automated (electronic) sphygmomanometers instead of manual ones. Some automated models feature automatic inflation and deflation of the cuff while others require the cuff to be manually inflated but will deflate it automatically. The blood pressure is displayed digitally (Fig. 20-11). If a person has an irregular heart rate, tremors, or

Figure 20-11 Automatic blood pressure machine being used showing digital display of the person's blood pressure.

Guidelines Box 20-1 Guidelines for Taking a Person's Blood Pressure

WHAT YOU DO	WHY YOU DO IT
Allow the person time to relax for at least 5 minutes prior to taking the blood pressure.	Recent exercise and emotions (such as fear or anxiety) can cause a blood pressure reading to be falsely elevated.
Make sure the manometer is properly calibrated (that is, it reads "0" when there is no air in the cuff).	A manometer that is not properly calibrated will not give an accurate pressure reading.
Use a cuff that is properly sized for the patient or resident.	A cuff that does not fit will not allow you to accurately measure the person's blood pressure. A cuff that is too small will result in a high reading while a cuff that is too large will result in a low reading.
Make sure the cuff fits snugly around the person's arm before inflating it.	A cuff that is too loose can cause the skin to "pinch" under the cuff when the cuff is inflated, damaging the skin.
Do not place the cuff over a person's clothing.	Clothing will distort the Korotkoff sounds.
Have the patient or resident assume a comfortable lying or sitting position with the forearm supported at the level of the heart and the palm of the hand facing upward.	If the upper arm is positioned below the level of the heart, the blood pressure measurement will read too high. If the upper arm is above the level of the heart, the measurement will read too low.
Do not take a blood pressure on an arm where an intravenous (IV) line is placed, or on an arm that is injured or in a cast.	Inflating the cuff can cause pain and swelling, and it may dislodge an IV line if one is present.
In a person who has had a mastectomy, do not take a blood pressure on the arm that is on the same side of the body as the breast that was removed.	Some people who have mastectomies also have the lymph nodes in the armpit removed, which disrupts fluid flow from the tissues in the hand and lower arm. This can lead to an inaccurate blood pressure reading.
Do not take a blood pressure on an arm that is used for hemodialysis access.	Pressure from the blood pressure cuff can cause the fistula or shunt used for dialysis to clot or be damaged.
Do not partially deflate the cuff and then reinflate it while taking a blood pressure measurement. If you make a mistake, release all of the air from the cuff and wait at least 1 minute before trying again.	Partially deflating and then reinflating the cuff is uncomfortable for the patient or resident, and it will result in an inaccurate reading.
If you are unable to hear the Korotkoff sounds, make sure the room is quiet and check your equipment: ● Make sure the diaphragm of the stethoscope is active by gently tapping on it. ● Make sure the diaphragm of the stethoscope is placed directly over the brachial pulse. ● Make sure the earpieces of the stethoscope are seated properly in your ears.	Most difficulties with measuring blood pressure result from operator error. However, if you have checked your equipment and you still cannot hear the Korotkoff sounds, notify the nurse immediately. The person may have severe hypotension.

is unable to remain still, an electronic blood pressure device may not be able to be used. If the device detects the extra movement or pulse irregularities, it will continue to repeatedly inflate and deflate without recording a measurement. This may cause the person to experience pain and discomfort from the cuff.

A person's blood pressure can also be measured directly, by inserting a catheter into an artery, or possibly even the heart. Because this procedure is invasive (that is, something is inserted into a normally enclosed part of the person's body), it carries some risk for the person. This method of assessing blood

pressure might be used when continuous blood pressure monitoring is required, such as during a surgical procedure or when a patient is critically ill.

Normal and Abnormal Findings

Normally, a person's blood pressure moves up and down within the range of normal during the course of a day. For example:

- Blood pressure readings are usually lowest in the morning and can increase by as much as 10 mm Hg later in the day.
- Blood pressure is generally slightly higher when a person is lying down, as compared to sitting or standing.
- Blood pressure readings are usually slightly higher after a meal. Wait for at least an hour after mealtime to take a routine blood pressure.
- Exercise will temporarily increase the systolic blood pressure.
- Stress, anxiety, fear, and pain will also temporarily raise a person's blood pressure.

Much medical research has been done related to blood pressure and its effects on health. Studies have shown that for any individual, there is a wide range of blood pressure readings that can be considered "normal." When you are taking a person's blood pressure, it is important to allow that person time to relax or rest for a bit so that the blood pressure reading reflects the person's normal pressure and not the changes that can occur from exertion or being emotionally upset. Also, as a nursing assistant, you must learn to recognize the range of blood pressure measurements that can be considered "normal" for each of your patients or residents, so that you will be able to recognize any changes. A person's blood pressure could rise or fall 20 to 30 mm Hg and still be within the range of what is considered normal for that person. However, a large change in a person's blood pressure should be recognized and reported immediately to the nurse. Table 20-5 lists normal blood pressure measurements for adults and children.

Tell the Nurse!

Changes in a person's blood pressure can be a sign that something is wrong. Be sure to report the following observations to the nurse immediately:

- The person's blood pressure is higher than normal
- The person's blood pressure is lower than normal
- You have difficulty measuring the person's blood pressure

TABLE 20-5 Normal Blood Pressure Measurements

AGE OF PERSON	BLOOD PRESSURE (mm Hg)
Adult	120/80
Adolescent (12–20 years)	102/80
School-aged child (5–12 years)	100/62
Preschooler (3–5 years)	95/75
Toddler (1–3 years)	90/55
Infant (0–1 year)	73/55

Accepted normal adult ranges for the systolic pressure are between 90 and 120 mm Hg, and for the diastolic pressure, between 60 and 80 mm Hg. If a person has a blood pressure that is consistently higher than 140 mm Hg (systolic) and/or 90 mm Hg (diastolic), then that person is said to have **hypertension** (high blood pressure). To diagnose a person with hypertension and start treatment for this condition, the person's blood pressure measurements must be taken and recorded over a period of time to show a pattern of constant elevation. Medications that are taken for hypertension should be taken as ordered. If the person stops taking the medication or does not take it according to the prescribed schedule, the person's hypertension will usually return. Too often, a patient or resident will tell you that "I used to take medicine for my blood pressure, but the medicine brought my pressure back to normal, so I don't need to take it anymore." Measuring that person's blood pressure will usually tell a completely different story! Hypertension is often called the "silent killer" because a person with this condition does not feel ill, yet is at great risk for complications (and possibly even death) as a result of it.

A person who has a blood pressure that is consistently lower than 90 mm Hg (systolic) and/or 60 mm Hg (diastolic) is said to have **hypotension** (low blood pressure). Some people may have **orthostatic hypotension**, which is a sudden decrease in blood pressure that occurs when a person stands up from a sitting or lying position. When a person is sitting or lying down, the heart does not need to work as hard to pump blood throughout the body and the blood vessels are relaxed, so resistance is low. However, when the person stands up, the body needs to make up for the change in position. The heart pumps harder and the vessels constrict to bring the blood pressure back up to a normal level.

Until the body manages to make up for the sudden change in position, the person may feel lightheaded and faint. Some medications and aging can increase the time the body needs to adjust. The lack of blood

flow to the brain can cause the person to feel dizzy. This is why, when you are assisting a person to "dangle" (see Chapter 15), you must give the person a minute to adjust before proceeding. Always remind your patients or residents to first sit for a moment before standing up, to allow time for the body to adjust. Helping a person who experiences orthostatic hypotension to remember to take those extra few moments for the body to adjust can help prevent a fall.

For some patients or residents, you may be asked to take a sequence of blood pressures—usually first with the person lying down, then sitting, then standing. This is done to evaluate how well the person's body adapts to changes in position. Facility policy will state the order of the blood pressure measurements when a sequence of measurements is needed.

Concerns for Long-Term Care

Normal ranges for vital signs vary somewhat in healthy older adults. In older persons who have chronic health conditions or take multiple medications, vital sign measurements may vary significantly from person to person. Older adults also have an increased tendency for their pulse rates and blood pressure measurements to fluctuate in response to postural changes (moving from supine to sitting or standing) and other factors, such as physical exertion or illness.

Normal pulse rates for healthy older adults are slightly lower than for younger adults, but older adults are more likely to have irregular rhythms. Blood pressure is likely to increase, especially if the older person has arteriosclerosis. Respiratory changes in the older adult can increase the respiratory rate, especially with mild exertion or exercise. If the person has a history of cigarette smoking, their resting respiratory rate may be significantly higher.

HEIGHT AND WEIGHT

Although height and weight are not technically vital signs, these measurements are taken periodically while a person is receiving care. The relationship of a person's weight to their height can provide insight into the person's overall health and nutritional status. In addition, a person's weight is often used to calculate medication dosages. In some cases, a change in a person's weight might indicate that the person's condition is getting worse or better. For all of these reasons, it is useful to obtain a "baseline" height and weight for each patient or resident and to measure the person's weight periodically thereafter.

A person's height is measured only on admission. A person's weight is measured on admission and on transfer, or discharge. It may also be necessary to measure a person's weight at regular intervals throughout the person's stay. A person's weight is rechecked periodically for various reasons:

- Weight is an indicator of nutritional status.
- Weight is an indicator of heart and kidney function. If the heart or kidneys are not functioning well, the person may retain fluid, which will cause an increase in weight.
- Changes in weight can be a sign of disease. For example, one of the signs of some types of cancer is major, unexplained weight loss.
- Many medications are prescribed according to body weight. If a person gains or loses a great deal of weight, it may be necessary to adjust the person's medication dosages.

If a person's weight is to be measured on a regular basis, make sure to take the measurement:

- At the same time each day
- With the person wearing the same type of clothing and no shoes
- After the person has emptied their bladder

Measuring Height and Weight

Height is measured in feet (ft) and inches (in) or in centimeters (cm). Weight is measured in pounds (lb) or kilograms (kg).

The type of scale you will use to measure a person's weight will depend on the person's ability to get out of bed and stand. Common types of scales include upright scales, chair scales, and sling scales.

Scales may be mechanical or digital. If you are using a mechanical scale, you must slide weights along a bar by hand until the bar is balanced (Fig. 20-12). If you are using a digital scale, you simply turn the scale on. The digital scale measures the person's weight automatically and displays it on a screen. Digital scales are now used most often in the health care setting.

Measuring Height and Weight Using an Upright Scale

An upright scale is used to obtain height and weight measurements for a person who is able to stand on their own. Procedure 20-10 describes how to use an upright scale to measure a person's height and weight.

Measuring Weight Using a Chair Scale

A chair scale (Fig. 20-13) is used to obtain a weight measurement for a person who cannot stand independently,

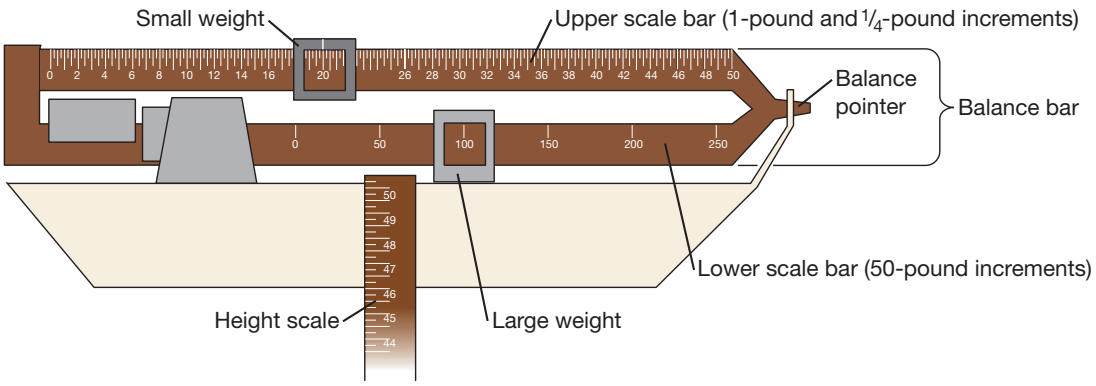


Figure 20-12 A mechanical scale. The *balance bar* has two scale bars and two weights. The *large weight* slides along the *lower scale bar*, which is marked off in 50-lb increments. The *small weight* slides along the *upper scale bar*, which is marked off in quarter-pound and pound increments. The *balance pointer* is centered between the two scale bars when the weight on the scale bars equals the person's weight.

A **B**

Figure 20-13 A chair scale is used to obtain weight measurements for a person who cannot stand up independently but is able to get out of bed. **A.** A chair scale. **B.** A chair scale for use with a wheelchair.

but is able to get out of bed. One type of chair scale is for use with a wheelchair. The wheelchair is first weighed without the person in it to determine its weight. Next, the wheelchair, with the person in it, is rolled onto the scale. The weight of the empty wheelchair is subtracted from the weight of the wheelchair with the person in it to determine the person's weight. The other type of chair scale is simply a chair-like device that allows the person to sit while having their weight measured. Procedure 20-11 describes how to use a chair scale.

Measuring Height and Weight Using a Tape Measure and a Sling Scale

If a person is unable to get out of bed at all, the person will have to be weighed in bed. Some acute care facilities have beds with built-in scales. If this type of bed is not available where you work, then you will have to weigh the person using a sling scale (Fig. 20-14). The person's height is measured using a tape measure. Procedure 20-12 describes how to obtain height and weight measurements using a tape measure and a sling scale. Because sling scales from different manufacturers may vary greatly in their procedures for use, do not attempt to use a sling scale unless you have been trained in its use.

Figure 20-14 A sling scale is used to obtain weight measurements for a person who cannot get out of bed.

SUMMARY

- Vital signs provide essential information about a person's health.
  - Vital signs include body temperature, pulse, respirations, and blood pressure. A person's height and weight also provide insight into a person's overall health.
  - Measuring and recording vital signs is a routine part of a nursing assistant's daily duties.
    - Vital signs must be measured and recorded accurately because many people rely on this information to make decisions about the person's care. In addition, a change in vital signs can be an important early sign that something is wrong.
    - Nursing assistants must be familiar with accepted normal ranges for all of the vital signs, as well as what is "normal" for each of their patients or residents.
    - Learning to take vital signs confidently takes practice.
- Body temperature is a measure of how hot the body is.
  - The body temperature can be measured using a number of devices at a number of sites.
    - Types of thermometers include glass thermometers, electronic thermometers, tympanic thermometers, and temporal artery thermometers.
    - A person's temperature may be measured in the mouth, rectum, ear, armpit, or forehead.
  - An elevated temperature may be a sign of infection. Extreme changes in the environmental temperature can also affect a person's body temperature.
- The pulse reflects the rate, rhythm, and strength of the heartbeat.
  - The pulse can be measured by feeling the radial artery (in the wrist) or by listening to the apical pulse (on the chest) with a stethoscope.
  - Tachycardia is an excessively rapid heartbeat. Bradycardia is an excessively slow heartbeat.

- The respiratory rate, rhythm, and depth are a reflection of how well the person is breathing.
  - The respiratory rate is measured by counting the number of times the person inhales and exhales in 30 seconds (or 1 minute, if the respirations are irregular).
    - The chest rises with each inhalation and falls with each exhalation.
    - One respiration = one inhalation + one exhalation.
  - Dyspnea is labored breathing. Tachypnea is a respiratory rate that is too fast, and bradypnea is a respiratory rate that is too slow.
- The blood pressure reflects the force the blood exerts against the arterial walls. Cardiac output, blood volume, and resistance affect the blood pressure.
  - Blood pressure is most often measured in the brachial artery using a sphygmomanometer and a stethoscope or an electronic blood pressure device.
  - Korotkoff sounds are the sounds the blood makes as it rushes through the artery.
  - Hypertension, or a consistently high blood pressure, can have serious long-term consequences if not treated.
  - Orthostatic hypotension, or low blood pressure on changing positions, affects many people and is the reason people are encouraged to sit for a minute before standing up from a lying position.
- Height and weight are measured when a person enters a health care facility.
  - Weight is measured periodically. Major weight loss or gain can be an early sign of disease. In addition, many medication dosages are calculated according to a person's body weight.
  - A variety of devices, including upright scales, chair scales, and sling scales, can be used to measure a person's weight, depending on the person's situation.

Procedure 20-1

Measuring an Oral Temperature (Glass or Electronic Thermometer)

WHY YOU DO IT A change in a person's normal temperature may be a sign of illness. Taking an oral temperature is fast and causes the patient or resident minimal discomfort.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

If using a glass thermometer:

- paper towels
- tissues
- thermometer sheath
- oral glass thermometer

If using an electronic thermometer:

- probe sheath
- electronic thermometer with oral (blue) probe

Procedure

2. Ask the person if they have eaten, consumed a beverage, chewed gum, or smoked within the last 15 minutes. If so, wait 15 to 30 minutes before proceeding (or follow facility policy).
3. Prepare the thermometer.
   a. **Glass thermometer:** Run cool water over the thermometer to rinse away the disinfectant. Dry the thermometer with a paper towel and inspect it for cracks or chips. Carefully shake down the glass thermometer so that the indicator material is below the 94° mark (if using a Fahrenheit thermometer) or the 34° mark (if using a Celsius thermometer). Cover the end of the glass thermometer with the thermometer sheath.
   b. **Electronic thermometer:** Cover the electronic probe with the probe sheath. Turn the thermometer on and wait until the "ready" sign appears on the display screen.
4. Ask the person to open their mouth. Slowly and carefully insert the thermometer, placing the tip under the person's tongue and to one side.
5. Ask the person to gently close their mouth around the thermometer without biting down. If necessary, hold the thermometer in place. Ask the person to breathe through their nose.

STEP 5 The person breathes through the nose while holding the thermometer in their mouth.

6. Leave the thermometer in place for the specified amount of time:
   a. **Glass thermometer:** 3 to 5 minutes (or follow facility policy)
   b. **Electronic thermometer:** until the instrument blinks or beeps (usually just a few seconds)
7. Ask the person to open their mouth. Remove the thermometer from the person's mouth.
8. Read the temperature measurement.
   a. **Glass thermometer:** Using a tissue, remove the thermometer sheath from the glass thermometer, being careful not to touch the bulb end of the thermometer. Dispose of the tissue and the thermometer sheath in a facility-approved waste container. Hold the thermometer horizontally by the stem at eye level while facing a light source. Rotate the thermometer until you can see the level of the indicator material. Read the temperature.

(*continued*)

b. Electronic thermometer: Read the temperature on the electronic thermometer's display screen. Remove the probe sheath from the probe by pushing the button on the top of the probe. Direct the probe sheath into a facility-approved waste container.

9. Prepare the thermometer for its next use.

a. Glass thermometer: Shake down the glass thermometer, clean it according to facility policy, and return it to its case.

b. Electronic thermometer: Replace the probe into the electronic thermometer. (Always read the temperature before placing the probe in the instrument because this action clears the display screen.) Turn the instrument off if it does not automatically turn itself off. Place the thermometer in its charger.

Finishing Up

10. Complete the "Finishing Up" steps.

What You Document

- The time and date
- The person's temperature
- The method—"O" for oral

Report an abnormal temperature to the nurse immediately.

Procedure 20-2

Measuring a Rectal Temperature (Glass or Electronic Thermometer)

WHY YOU DO IT A change in a person's normal temperature may be a sign of illness. The rectal temperature measurement is a very accurate measurement of the body's temperature.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- gloves
- paper towels
- tissues
- lubricant jelly

If using a glass thermometer:

- thermometer sheath
- rectal glass thermometer

If using an electronic thermometer:

- probe sheath
- electronic thermometer with rectal (red) probe

Procedure

2. Make sure that the bed is positioned at a comfortable working height (to promote good body mechanics) and that the wheels are locked.

3. Prepare the thermometer.

a. Glass thermometer: Run cool water over the thermometer to rinse away the disinfectant. Dry the thermometer with a paper towel and inspect it for cracks or chips. Carefully shake down the glass thermometer so that the indicator material is below the 94° mark (if using a Fahrenheit thermometer) or the 34° mark (if using a Celsius thermometer). Cover the end of the glass thermometer with the thermometer sheath.

b. Electronic thermometer: Cover the electronic probe with the probe sheath. Turn the thermometer on and wait until the "ready" sign appears on the display screen.

4. Place the thermometer on a clean paper towel on the over-bed table. Open the lubricant package and squeeze a small amount of lubricant onto the paper towel. Lubricate the tip of the thermometer to ease insertion.

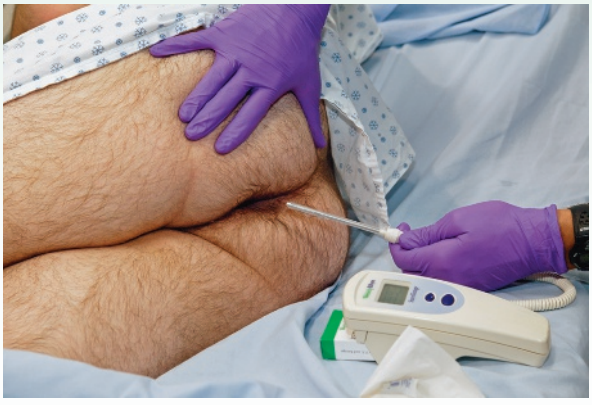
5. If the side rails are in use, lower the side rail on the working side of the bed. The side rail on the opposite side of the bed should remain up. Lower the head of the bed so that the bed is flat (as tolerated).

6. Ask the person to lie on their side, facing away from you, in Sims' position. Help the person into this position, if necessary.

7. Fanfold the top linens to below the person's buttocks. Adjust the person's hospital gown or pajama bottoms as necessary to expose the person's buttocks.

8. Perform hand hygiene and put on the gloves.

9. With one hand, raise the person's upper buttock to expose the anus. Suggest that the person take a deep breath and slowly exhale as the thermometer is inserted. Using your other hand, gently and carefully insert the lubricated end of the thermometer into the person's rectum (not more than 1 inch for adults, or ½ inch for children). Never force the thermometer into the rectum. If you are unable to insert the thermometer, stop and call the nurse.



STEP 9 Gently and carefully insert the lubricated end of the thermometer into the person's rectum.

10. Hold the thermometer in place for the specified amount of time:
    a. **Glass thermometer:** 3 to 5 minutes (or follow facility policy)
    b. **Electronic thermometer:** until the instrument blinks or beeps (usually just a few seconds)
11. Remove the thermometer from the person's rectum. Wipe the person's anal area with a tissue to remove the lubricant, and adjust the person's hospital gown or pajama bottoms as necessary to cover the buttocks.
12. Read the temperature measurement.
    a. **Glass thermometer:** Using a tissue, remove the thermometer sheath from the glass thermometer, being careful not to touch the bulb end of the thermometer. Dispose of the tissue and the thermometer sheath in a facility-approved waste container. Hold the thermometer horizontally by the stem at eye level while facing a light source. Rotate the thermometer until you can see the level of the indicator material. Read the temperature.
    b. **Electronic thermometer:** Read the temperature on the electronic thermometer's display screen. Remove the probe sheath from the probe by pushing the button on the top of the probe. Direct the probe sheath into a facility-approved waste container.
13. Remove your gloves and dispose of them according to facility policy. Perform hand hygiene.
14. Help the person back into a comfortable position, straighten the bottom linens, and draw the top linens over the person. Raise the head of the bed, as the person requests.
15. Make sure that the bed is lowered to its lowest position and that the wheels are locked. If the side rails are in use, return the side rails to the raised position.
16. Prepare the thermometer for its next use.
    a. **Glass thermometer:** Shake down the glass thermometer, clean it according to facility policy, and return it to its case.
    b. **Electronic thermometer:** Replace the probe into the electronic thermometer. (Always read the temperature before placing the probe in the instrument because this action clears the display screen.) Turn the instrument off if it does not automatically turn itself off. Place the thermometer in its charger.

Finishing Up

17. Complete the "Finishing Up" steps.

What You Document

- The time and date
- The person's temperature
- The method—"R" for rectal

Report an abnormal temperature to the nurse immediately.

Procedure 20-3

Measuring an Axillary Temperature (Glass or Electronic Thermometer)

WHY YOU DO IT A change in a person's normal temperature may be a sign of illness. The axillary method is used when other methods cannot be used.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- paper towels
- tissues

If using a glass thermometer:

- thermometer sheath
- oral glass thermometer

If using an electronic thermometer:

- probe sheath
- electronic thermometer with oral (blue) probe

Procedure

2. Ask the person if they have bathed or applied deodorant or antiperspirant within the last 15 minutes. If so, wait 15 to 30 minutes before proceeding (or follow facility policy).
3. Prepare the thermometer.
   a. **Glass thermometer:** Run cool water over the thermometer to rinse away the disinfectant. Dry the thermometer with a paper towel and inspect it for cracks or chips. Carefully shake down the glass thermometer so that the indicator material is below the 94° mark (if using a Fahrenheit thermometer) or the 34° mark (if using a Celsius thermometer). Cover the end of the glass thermometer with the thermometer sheath.
   b. **Electronic thermometer:** Cover the electronic probe with the probe sheath. Turn the thermometer on and wait until the "ready" sign appears on the display screen.
4. Assist the person with removing their arm from the sleeve of their hospital gown or pajama top in order to expose the axilla. The thermometer must be placed directly in contact with the skin.
5. Pat the axilla (underarm area) gently with a paper towel.
6. Ask the person to lift their arm slightly. Position the tip of the thermometer in the center of the axilla and ask the person to hold the thermometer in place by holding the arm close to the body (or by grasping the arm with the opposite hand).

STEP 6 The person holds the thermometer in place by grasping the arm with the opposite hand.

7. Leave the thermometer in place for the specified amount of time:
   a. **Glass thermometer:** 10 minutes (or follow facility policy)
   b. **Electronic thermometer:** until the instrument blinks or beeps (usually just a few seconds)
8. Ask the person to lift their arm slightly. Remove the thermometer.
9. Read the temperature measurement.
   a. **Glass thermometer:** Using a tissue, remove the thermometer sheath from the glass thermometer, being careful not to touch the bulb end of the thermometer. Dispose of the tissue and the thermometer sheath in a facility-approved waste container. Hold the thermometer horizontally by the stem at eye level while facing a light source. Rotate the thermometer until you can see the level of the indicator material. Read the temperature.
   b. **Electronic thermometer:** Read the temperature on the electronic thermometer's display screen. Remove the probe sheath from the probe by pushing the button on the top of the probe. Direct the probe sheath into a facility-approved waste container.

10. Help the person back into their hospital gown or pajama top.
11. Prepare the thermometer for its next use:
    a. **Glass thermometer:** Shake down the glass thermometer, clean it according to facility policy, and return it to its case.
    b. **Electronic thermometer:** Replace the probe into the electronic thermometer. (Always read the temperature before placing the probe in the instrument because this action clears the display screen.) Turn the instrument off, if it does not automatically turn itself off. Place the thermometer in its charger.

Finishing Up

12. Complete the "Finishing Up" steps.

What You Document

- The time and date
- The person's temperature
- The method—"A" for axillary

Report an abnormal temperature to the nurse immediately.

Procedure 20-4

Measuring a Tympanic Temperature (Tympanic Thermometer)

WHY YOU DO IT A change in a person's normal temperature may be a sign of illness. Taking a tympanic temperature is fast and causes the patient or resident minimal discomfort.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- tympanic probe sheath (cover)
- tympanic thermometer

Procedure

2. If the person wears a hearing aid, remove it carefully and wait 2 minutes before taking the person's temperature. If the person has been sleeping or lying on their side with their ear against the pillow, use the ear that was not against the pillow for the temperature.
3. Inspect the ear canal for excessive cerumen (earwax). If you see excessive wax build-up in the ear canal, gently wipe the ear canal with a warm, moist washcloth.
4. Cover the cone-shaped end of the thermometer with the probe sheath. Turn the thermometer on and wait until the "ready" sign appears on the display screen.
5. Stand slightly to the front of, and facing, the person. To straighten the ear canal (which will ease insertion of the thermometer), grasp the top portion of the person's ear and gently pull:
    a. Up and back (in an adult)
    b. Straight back (in a child)

STEP 5a In an adult, grasp the top portion of the person's ear and gently pull up and back to insert the thermometer.

6. Insert the covered probe into the person's ear canal, pointing the probe down and toward the front of the ear canal (pretend that you are aiming for the person's nose). This will seal off the ear canal by seating the probe properly, leading to a more accurate temperature reading.
7. To take the temperature, press the button on the instrument. Keep the button depressed and the probe in place until the instrument blinks or beeps (usually 1 second).
8. Remove the probe and read the temperature on the display screen.

(*continued*)

9. Remove the probe sheath from the probe by pushing the button on the side of the instrument. Direct the probe sheath into a facility-approved waste container.
10. If your facility requires a tympanic temperature to be taken in both ears, repeat the procedure, using a clean probe cover for the other ear.
11. Turn the instrument off if it does not automatically turn itself off. Place the thermometer in its charger.

Finishing Up

12. Complete the "Finishing Up" steps.

What You Document

- The time and date
- The person's temperature
- The method—"T" for tympanic

Report an abnormal temperature to the nurse immediately.

Procedure 20-5

Measuring a Temporal Artery Temperature

WHY YOU DO IT A change in a person's normal temperature may be a sign of illness. Taking a temporal artery temperature is fast and accurate, and causes the patient or resident minimal discomfort.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- temporal artery thermometer
- probe cover (if needed)

Procedure

2. Brush the person's hair aside if it is covering the temporal artery area. Anything covering the area, such as hair, a wig, a hat, bandages, or where the person's head was resting against the pillow can result in a false high reading.
3. Apply the probe cover (if needed).
4. Hold the thermometer like a remote control device, with your thumb on the red "ON" button. Place the probe on the center of the forehead and hold the body of the thermometer sideways.

STEP 4

5. Press the ON button and keep it pressed throughout the measurement.
6. Slowly slide the thermometer straight across the forehead, midline, to the hairline. The thermometer will make a clicking noise.

STEP 6

7. With the ON button still pressed, lift the thermometer up from the forehead and touch it to the neck, just behind the ear lobe in the little depression. This is a double check for the thermometer.

STEP 7

8. Release the ON button and read the temperature measurement.

9. Remove the probe cover (if used) by holding the thermometer over a facility-approved waste container and gently push the probe cover with your thumb.
10. Turn the thermometer off if it does not automatically turn itself off.

Finishing Up

11. Complete the "Finishing Up" steps.

What You Document

- The time and date
- The person's temperature
- The method—temporal artery

Report an abnormal temperature to the nurse immediately.

Procedure 20-6

Taking a Radial Pulse

WHY YOU DO IT A change in a person's normal pulse rate, rhythm, or amplitude may be a sign of illness. Taking the pulse at the radial artery is easiest for the patient or resident.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- watch with second hand

Procedure

2. Rest the person's arm on the over-bed table or on the bed. Locate the radial pulse in the person's wrist using your middle two or three fingers. (TIP: The radial pulse will be on the person's "thumb" side.)

STEP 2 Locate the radial pulse in the person's wrist using your middle two or three fingers.

3. Note the strength and regularity of the pulse. Look at your watch and wait until the second hand gets to the "12" or "6." When the second hand reaches the "12" or the "6," begin counting the pulse.
   a. If the pulse rhythm is regular, count the number of pulses that occur in 30 seconds and multiply the result by 2 to arrive at the pulse rate.
   b. If the pulse rhythm is irregular, count the number of pulses that occur in 60 seconds. Counting each pulse that occurs over the course of 1 full minute is the only way to obtain a truly accurate pulse rate when the pulse is irregular.

Finishing Up

4. Complete the "Finishing Up" steps.

What You Document

- The time and date
- The pulse rate
- The pulse rhythm
- The pulse amplitude

Report an abnormal pulse rate, rhythm, or amplitude to the nurse immediately.

Procedure 20-7

Taking an Apical Pulse

WHY YOU DO IT An apical pulse is taken when a person has a weak or irregular pulse that may be difficult to feel in the radial artery. An apical pulse may also be used to measure heart rate in infants and in people with known heart disease.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- alcohol wipes
- dual-sided stethoscope
- watch with second hand

Procedure

2. Help the person to a semi-sitting position by raising the head of the bed.
3. Using alcohol wipes, clean the earpieces, the diaphragm, and the bell of the stethoscope. Place the earpieces in your ears.
4. Place the diaphragm (or the bell, if the person is a child or infant) of the stethoscope under the person's clothing, on the apical pulse site (located approximately 2 inches below the person's left nipple). The diaphragm or bell must be placed directly on the person's skin because clothing will distort the sound.
5. Using two fingers, hold the diaphragm or bell firmly against the person's chest. Look at your watch and wait until the second hand gets to the "12" or "6." When the second hand reaches the "12" or the "6," begin counting the heartbeat.

STEP 5 Hold the diaphragm or bell firmly against the person's chest.

6. Count the number of heartbeats that occur in 60 seconds. Each time the heart beats, you will hear two sounds, best described as a "lubb" and a "dupp." Both sounds make up one beat of the heart and should be counted as such.
7. After 60 seconds, remove the diaphragm of the stethoscope from the person's chest. Adjust the person's clothing as necessary and help the person back into a comfortable position. Lower the head of the bed, as the person requests.
8. Using alcohol wipes, clean the earpieces, the diaphragm, and the bell of the stethoscope.

Finishing Up

9. Complete the "Finishing Up" steps.

What You Document

- The time and date
- The pulse rate
- The pulse rhythm
- The pulse amplitude
- The method—"A" for apical

Report an abnormal pulse to the nurse immediately.

Procedure 20-8

Counting Respirations

WHY YOU DO IT A change in a person's normal respiratory rate, rhythm, or depth of breathing may be a sign of illness.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- watch with second hand

Procedure

2. Look at your watch and wait until the second hand gets to the "12" or "6." When the second hand reaches the "12" or the "6," look at the person's chest (or place your hand near the person's collarbone or on their side) and begin counting each rise and fall of the chest as one breath.
   a. If the respiratory rhythm is regular, count the number of breaths that occur in 30 seconds and multiply the result by 2 to arrive at the respiratory rate.
   b. If the respiratory rhythm is irregular, count the number of breaths that occur in 60 seconds. Counting each respiration that occurs over the course of 1 full minute is the only way to obtain a truly accurate respiratory rate when the person's breathing is irregular.

Finishing Up

3. Complete the "Finishing Up" steps.

What You Document

- The time
- The respiratory rate
- The respiratory rhythm
- Any abnormal breath sounds (wheezing, congestion)

Report abnormal respirations to the nurse immediately.

Procedure 20-9

Measuring Blood Pressure

WHY YOU DO IT Blood pressure measurements allow health care workers to monitor existing problems and possibly even prevent future ones.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- alcohol wipes
- sphygmomanometer
- stethoscope

Procedure

2. Assist the person into a sitting or lying position. Position the person's arm so that the forearm is level with the heart and the palm of the hand is facing upward. Assist the person with rolling up their sleeve so that the upper arm is exposed.
3. Using alcohol wipes, clean the earpieces, the diaphragm, and the bell of the stethoscope.
4. Stand no more than 3 feet away from the manometer. If it is not mounted on the wall, stand a mercury manometer upright on a flat surface, at eye level. Lay an aneroid manometer on a flat surface directly in front of you or leave it attached to the blood pressure cuff.
5. Squeeze the cuff to empty it of any remaining air. Turn the valve on the bulb clockwise to close it; this will cause the cuff to inflate when you pump the bulb.

(*continued*)

6. Locate the person's brachial artery in the antecubital space by placing your fingers at the inner aspect of the elbow.

STEP 6 Locate the person's brachial artery in the antecubital space (inner aspect of the elbow).

7. Place the arrow mark on the cuff over the brachial artery. Wrap the cuff around the person's upper arm so that the bottom of the cuff is at least 1 inch above the person's elbow. The cuff must be even and snug.
8. Place the stethoscope earpieces in your ears.
9. Pump the bulb until the pressure in the cuff is 30 mm Hg higher than the systolic pressure. There are two ways to do this:

   Method "A." Hold the bulb in one hand and position the diaphragm of the stethoscope over the brachial artery with the other hand. Inflate the cuff until you hear the pulse stop and then inflate the cuff 30 mm Hg more.

   Method "B." Hold the bulb in one hand and feel for the person's brachial or radial pulse (in the wrist) with the other hand. Inflate the cuff until you are no longer able to feel the radial pulse and then inflate the cuff 30 mm Hg more.

STEP 9 Hold the bulb in one hand and feel for the person's radial pulse (in the wrist) with the other hand.

10. Position the diaphragm of the stethoscope over the brachial artery (or continue to hold it there if you used method "A" to inflate the cuff).
11. Turn the valve on the bulb slightly counterclockwise to allow air to escape from the cuff slowly.
12. Note the reading on the manometer where the first Korotkoff sound is heard. This is the systolic reading.

STEP 12 With the diaphragm of the stethoscope over the person's brachial artery, allow the air to leave the cuff slowly while listening for the beginning and ending sounds of the brachial pulse and watching the manometer.

13. Continue to deflate the cuff. Note the reading on the manometer where the last Korotkoff sound is heard. This is the diastolic reading.
14. Deflate the cuff completely and remove it from the person's arm. Remove the stethoscope from your ears.
15. Return the sphygmomanometer to its case or wall holder.
16. Using alcohol wipes, clean the earpieces, the diaphragm, and the bell of the stethoscope.

Finishing Up

17. Complete the "Finishing Up" steps.

What You Document

- The time and date
- The person's blood pressure

Report an abnormal blood pressure to the nurse immediately.

Procedure 20-10

Measuring Height and Weight Using an Upright Scale

WHY YOU DO IT An upright scale is used to measure the height and weight of a person who can stand independently. A person's weight is often used to calculate medication doses. In some cases, a change in a person's weight might indicate that the person's condition is getting worse or that it is getting better.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- upright scale

Procedure

2. Ask the person to urinate. If necessary, assist the person to the bathroom or offer the bedpan or urinal.
3. Move the weights all the way to the left of the balance bar.
4. Help the person onto the scale platform so that they are facing the balance bar. Once the person is on the scale platform, do not allow them to hold on to you or to the scale.
5. Move the large weight on the lower scale bar to the right to the weight closest to the person's prior weight. For example, if the person weighed 155 pounds the last time you weighed them, you would move the large weight to the "150" mark.
6. Move the small weight on the upper scale bar to the right until the balance pointer is centered between the two scale bars.
7. Read the numbers on the upper and the lower scale bars where each weight has settled and add these two numbers together. This is the person's weight.
8. Have the person carefully turn around to face away from the scale bar. Slide the height scale up so that you can pull out the height rod, which extends from the top of the height scale. Be careful not to hit the person in the head with the height rod.
9. Slide the height rod down so that it lightly touches the top of the person's head. Read the number at the point where the height rod meets the height scale. This is the person's height.

STEP 9 Slide the height rod down so that it lightly touches the top of the person's head.

10. Hold the height rod in your hand, and help the person step down from the scale.
11. Assist the person back to their room.

Finishing Up

12. Complete the "Finishing Up" steps.

What You Document

- The time and date
- The person's weight
- The person's height

Report a change in the person's weight to the nurse.

Procedure 20-11

Measuring Weight Using a Chair Scale

WHY YOU DO IT A chair scale is used to measure the weight of a person who cannot stand independently but is able to get out of bed. A person's weight is often used to calculate medication doses. In some cases, a change in a person's weight might indicate that the person's condition is getting worse or that it is getting better.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- transfer belt
- wheelchair[a]

Procedure

2. Ask the person to urinate. If necessary, assist the person to the bathroom or offer the bedpan or urinal.
3. Assist or wheel the person to the scale, using a transfer belt, a wheelchair, or both.
4. Reset the scale to "0" by turning it on.
5. Help the person onto the scale.
   a. If a regular chair scale is being used, help the person to sit in the chair on the scale. Make sure the person is seated properly, with their buttocks against the back of the chair and feet on the footrests.
   b. If a wheelchair scale is being used, roll the occupied wheelchair onto the platform and lock the wheels.
6. Read the weight on the display screen. If a wheelchair scale is being used, you must subtract the weight of the unoccupied wheelchair from this figure to determine the person's weight.

STEP 6 Read the weight on the display screen.

7. Help the person off the scale.
   a. If a regular chair scale is being used, assist the person out of the chair and back into a wheelchair if one was used for the transfer.
   b. If a wheelchair scale is being used, unlock the wheels and roll the wheelchair off the platform.
8. Assist the person back to their room.

Finishing Up

9. Complete the "Finishing Up" steps.

What You Document

- The date and time
- The person's weight

Report a change in the person's weight to the nurse.

[a] If you will be using a wheelchair scale to weigh the person, take the empty wheelchair to the wheelchair scale and weigh it before taking it to the person's room. Be sure to write down the weight of the empty wheelchair.

Procedure 20-12

Measuring Height and Weight Using a Tape Measure and a Sling Scale

WHY YOU DO IT A tape measure and a sling scale are used to obtain a person's height and weight when the person cannot get out of bed at all. A person's weight is often used to calculate medication doses. In some cases, change in a person's weight might indicate that the person's condition is getting worse or that it is getting better.

Getting Ready

1. Complete the "Getting Ready" steps.

Supplies

- sling scale
- tape measure

Procedure

2. Ask the person to urinate. If necessary, assist the person to the bathroom or offer the bedpan or urinal.
3. Position the sling scale next to the bed. Make sure that the bed is positioned at a comfortable working height (to promote good body mechanics) and that the wheels are locked. If the side rails are in use, lower the side rail on the working side of the bed. The side rail on the opposite side of the bed should remain up.
4. Fanfold the top linens to the foot of the bed.
5. Center the sling under the person. (To get the sling under the person, move the person as if you were making an occupied bed. See Procedure 19-2.)
6. Position the person in the supine position, or according to the manufacturer's instructions.
7. Move the release valve on the sling scale to the closed position.
8. Raise the sling scale so that it can be positioned over the person.
9. Spread the legs of the sling scale to provide a solid base of support. The legs must be locked in this position, or the scale could tip over, injuring you, the person you are trying to weigh, or both.
10. Move the scale into position over the person.
11. Fasten the sling to the straps or chains of the scale. Make sure the hooks face away from the person.
12. Cross the person's arms over their chest.
13. Slowly raise the sling until the person is clear of the bed.
14. Read the weight on the display screen.
15. Gently lower the person to the bed and remove the sling by gently rolling the person first to one side, then the other.
16. Position the person in the supine position, with their arms by their sides and their legs straight.
17. Using a pencil, make a small mark on the bottom sheet at the top of the person's head. Make another small mark at their heels.

STEP 17 Using a pencil, mark the bottom sheet at the top of the person's head and at their heels.

(*continued*)

18. Using the tape measure, measure the distance between the pencil marks. This is the person's height.
19. Make sure that the bed is lowered to its lowest position and that the wheels are locked. If the side rails are in use, return the side rails to the raised position.

Finishing Up 

20. Complete the "Finishing Up" steps.

What You Document

- The date and time
- The person's weight
- The person's height

Report a change in a person's weight to the nurse.

WHAT DID YOU LEARN?

Multiple Choice

Select the single best answer for each of the following questions.

1. A stethoscope is used to determine the:
a. Brachial pulse rate
b. Carotid pulse rate
c. Apical pulse rate
d. Popliteal pulse rate

2. Which one of the following is the pressure exerted by the blood flowing through the arteries when the heart muscle relaxes?
a. Diastolic pressure
b. Pulse pressure
c. Pulse deficit
d. Systolic pressure

3. The most common site for counting the pulse is the:
a. Brachial artery
b. Radial artery
c. Carotid artery
d. Apex of the heart

4. When counting respirations, you should:
a. Have the person exercise first to get a true reading
b. Count five respirations and then check your watch
c. Count respirations for a full minute if they are irregular
d. Have the person count respirations while you take their pulse

5. You are using a glass Fahrenheit thermometer. When you shake it down, the liquid indicator should be below the:
a. 98.6°F mark
b. Arrow
c. 100°F mark
d. 94°F mark

6. Which of the following can cause an inaccurate oral temperature reading?
a. The person exercised vigorously 15 minutes prior to having their temperature taken
b. The nursing assistant failed to shake down the mercury thermometer
c. The person drank a cup of hot coffee 15 minutes prior to having their temperature taken
d. All of the above

7. One of your patients, Ms. Jones, has a temperature of 98.8°F, a pulse rate of 80 beats per minute, and a respiratory rate of 30 breaths per minute. Which finding should be reported to the nurse immediately?
a. Ms. Jones' respiratory rate
b. Ms. Jones' pulse rate
c. Ms. Jones' temperature
d. None of these findings needs to be reported to the nurse

8. Which one of the following could cause a decreased pulse rate?
a. Pain
b. Anger
c. Certain medications
d. Fever

9. What should you observe when taking a person's pulse?
a. The rhythm and regularity of the pulse
b. The number of beats per minute
c. The strength of the pulse
d. All of the above

10. If you notice a significant change in a person's vital signs, what should you do?
a. Record the change with a special notation to indicate that the reading was different
b. Mention the change to the nurse at the end of your shift
c. Tell the patient or resident about the change
d. Report the change to a nurse immediately

11. Which instrument is used to measure blood pressure?
a. A temporal artery thermometer
b. A sphygmomanometer
c. An upright scale
d. A watch with a second hand

12. Which one of the following conditions would prevent you from taking an oral temperature?
a. The person has diarrhea
b. The person has just had a mastectomy
c. The person is unconscious
d. The person is a 10-year-old child

STOP and THINK!

- You are assigned to take vital signs on all the residents in the north hall of your facility. Mrs. Tito, in room 102, has a cast on her left arm and an intravenous (IV) line in her right. How are you going to take Mrs. Tito's blood pressure?
- Vital sign measurements are routinely taken once weekly at the long-term care facility where you work. Today, as you take Mr. Hayes' pulse, you notice that it does not feel as strong as usual, and although his rate is about what it always is, the rhythm is irregular. What should you do?