

Introduction to Phlebotomy

1

Chapter Outline

- 1-1 Introduction (pg. 2)
- 1-2 History of Phlebotomy (pg. 2)
- 1-3 Roles and Responsibilities of the Phlebotomist (pg. 3)
- 1-4 Where Do Phlebotomists Work? (pg. 10)
- 1-5 Regulatory Agencies (pg. 12)
- 1-6 Safety and Infection Control (pg. 14)
- 1-7 HIPAA, Ethics, and Law (pg. 21)

Learning Outcomes

Upon completion of this chapter, you should be able to:

- Describe the evolution of phlebotomy.
- Describe the roles and responsibilities of the phlebotomist.
- Discuss professionalism, public image, and customer service as they relate to the phlebotomist.
- Identify the various settings where phlebotomists are employed.
- List the regulating agencies for phlebotomy.
- Identify safety and infection control practices related to phlebotomy.
- Describe HIPAA, law, and ethics related to phlebotomy.

Key Terms

aseptic	hematology
capillary	hepatitis
Centers for Disease Control and Prevention (CDC)	histology
chain of infection	human immunodeficiency virus (HIV)
chemistry	immunology
Clinical Laboratory Improvement Amendment (CLIA'88)	isolation precautions
Clinical and Laboratory Standards Institute (CLSI)	microbiology
confidentiality	microcollection
dermal puncture	microsurgery
ethics	microtechnique
Health Insurance Portability and Accountability Act (HIPAA)	negligence
	nosocomial infection
	Occupational Safety and Health Administration (OSHA)

Patient's Bill of Rights	reference laboratory
personal protective equipment (PPE)	serology
phlebotomist	Standard Precautions
phlebotomy	toxicology
point-of-care testing (POCT)	urinalysis
professionalism	venipuncture

1-1 Introduction

Phlebotomy simply means to cut into a vein. The term comes from *phlebos*, Greek for “vein” and *tome*, “to cut.” This invasive procedure (procedure that invades the body through cutting or puncture) is performed by professionals known as phlebotomists. Phlebotomists must demonstrate mastery of the principles and techniques established by the **Clinical and Laboratory Standards Institute (CLSI)**, formerly known as the National Committee for Clinical Laboratory Standards (NCCLS).

The primary role of a **phlebotomist** is to obtain blood specimens for diagnostic testing, either by **venipuncture** (puncturing the vein) or **dermal puncture** (puncturing the skin). Another role of the phlebotomist is to remove blood from donors for blood transfusions, or from patients with a condition called polycythemia (overproduction of red blood cells), in which blood must be removed to decrease the viscosity (thickness) of the blood. Phlebotomists are also responsible for collecting and properly packaging urine specimens, accepting incoming specimens (blood and body fluids, etc.), and routing specimens to the proper departments to be tested and analyzed.

Checkpoint Question 1-1

1. Name at least two functions of a phlebotomist.

1-2 History of Phlebotomy

The process of removing blood from the veins is believed to date back as far as 1400 B.C., where an Egyptian tomb painting shows a leech being applied to the skin of a sick person. In the early 1800s leeches were in demand for the procedure known as bloodletting. Leech farms were unable to keep up with the demands for medicinal leeches because bloodletting procedures were so popular.

Bloodletting was thought to rid the body of impurities and evil spirits or, as in the time of Hippocrates, simply to return the body to a balanced state. During the 1800s anyone claiming medical training could perform bloodletting, and barbers most typically performed this procedure. A loss of approximately 10 milliliters (about two teaspoons) was standard. However,

it was not uncommon for an excessive amount of blood to be withdrawn during these procedures. In fact, the untimely death of the first United States president, George Washington, was thought to be the result of excessive bloodletting in an attempt to treat a throat infection. Interestingly, the use of leeches has resurfaced with a new purpose: to remove blood that has collected at newly transplanted tissue sites, in order to decrease the swelling following **microsurgery**. Microsurgery involves reconstruction of small tissue structures.

Bloodletting also used a process called “venesection,” in which the vein was pierced with a sharp object to drain blood. The lancet, a very sharp instrument used for cutting the vein, was the most popular medical instrument of that time. This method was used because it was thought to have removed or eliminated any unwanted diseases from the body, and it was also used as a way to reduce a fever. It is important to note that **aseptic**, or microorganism-free, practices were unknown during that time, so the same lancet was used on several patients without any cleansing. Another method used for bloodletting at that same time was called “cupping.” This method produced a vacuum effect by pulling blood to the capillaries under a heated glass cup, which was placed on the patient’s back to allow the blood to flow more. Then a spring-loaded box containing multiple blades made slices or piercings into the skin to produce bleeding. The procedure typically produced scar tissue.

During the late 1980s and early 1990s, the phlebotomy profession emerged as a result of technology and expansions of laboratory function. Initially, only medical technologists and medical technicians were responsible for collecting blood specimens, but as technology and the health care industry underwent rapid changes in the past few decades, specimen collection was delegated to other groups of trained professionals, including the phlebotomist.

 **Checkpoint
Question
1-2**

1. Name various reasons bloodletting (early phlebotomy) was performed?



Answer the question above and complete the *History of Phlebotomy* activity on the Student CD under Chapter 1 before you continue to the next section.

1-3 Roles and Responsibilities of the Phlebotomist

The phlebotomist is a valuable member of the health care team and is responsible for the collection, processing, and transport of blood specimens to the laboratory. Entry into phlebotomy training programs usually requires

TABLE 1-1 Duties and Responsibilities of the Phlebotomist

- Demonstrate professional attire, attitude, and communications
- Know facility's policies and procedures
- Properly identify patients
- Collect both venous and capillary blood specimens
- Select the appropriate and accurate specimen container for the specified tests
- Properly label, handle, and transport specimens following departmental policies
- Sort specimens received and process specimens for delivery to laboratory departments
- Perform computer operations and/or update log sheets where required
- Perform point-of-care testing and quality control check
- Observe all safety regulations

a high school diploma or its equivalent. Training programs are typically offered at hospitals, technical and private schools, and community colleges, or through continuing education courses. The course can vary from a few weeks to a few months in length, depending on the program. Several members of the health care team may be trained to perform phlebotomy, such as physicians, nurses, medical assistants, paramedics, and patient care assistants. Just as the role of these health care team members may include phlebotomy, a phlebotomist may be responsible for performing a variety of other duties. These may include transporting other specimens—such as arterial blood, urine, sputum, and tissue—to the laboratory for testing. The phlebotomist may also be responsible for performing **point-of-care testing (POCT)**, such as blood glucose monitoring. Point-of-care testing is performed at the patient's bedside or a work area using portable instruments. In addition, phlebotomists perform quality control testing and various clinical and clerical duties. Table 1-1 above summarizes the essential duties and responsibilities of the phlebotomist.

Patient Identification

Prior to any patient procedure, proper identification of the patient is a crucial aspect of patient safety and a top priority. The National Patient Safety Goals established by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) recommends the use of at least two patient identifiers, not including the room number, before blood samples are obtained. As discussed later in this chapter, JCAHO is the organization that sets standards for patient care in health care facilities. To follow the National Patient Safety Goals and thus prevent an error, the phlebotomist must carefully identify every patient.

Upon entering the patient area, the phlebotomist must check the patient identification. In acute care settings, patients will have an armband or identification label bearing the patient's first and last name, hospital number, date of birth, and physician's name.

Proper identification of the patient is a three-step process (see Figure 1-1). First ask the patient to state his or her name and date of birth. (See Figure 1-2.) Be sure that you do not call the patient by name prior to this, because patients with altered mental states may simply repeat the name they hear. Next, compare the name on the test requisition form/slip to the

Figure 1-1 Follow a three-step process for correct patient identification.

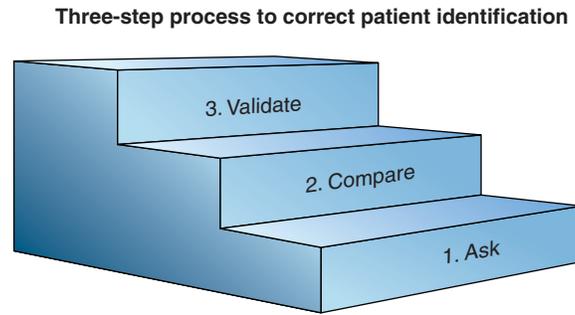


Figure 1-2 Have the patient identify himself by stating his full name and date of birth.



patient's response (see Figure 1-3). Finally, validate patient identification by checking the medical record number, patient armband, or some other form of identification such as a driver's license.

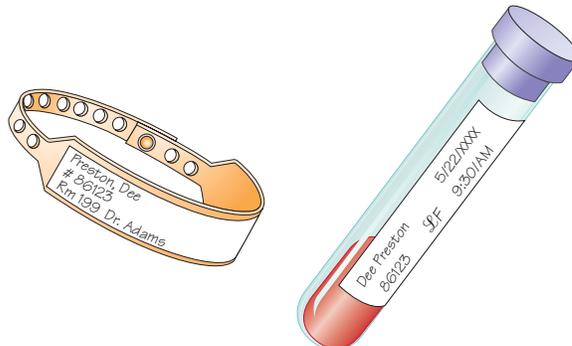
If this three-step process is followed, correct patient identification can be established, thereby eliminating errors. The presence of doubt at any point during the three-step check calls for further investigation of the patient's identity. If the patient is unable to state his or her name, find another source such as the nurse or a family member, depending on the setting, to state the name for you. In a hospital setting, all patients must wear an identification bracelet. Most hospital policies require that a patient have an armband in order for any procedure to be done, including phlebotomy. All laboratory specimens require a physician's order; therefore a requisition form will be available for specimens you are to collect. Remember that all specimens require proper collection, handling, labeling, and transportation to the laboratory for testing.

Specimen Collection and Handling

Physician orders for laboratory specimens will indicate the type of specimen and time of collection. Some specimens are ordered as "stat," which means they must be collected and transported immediately. Other specimens may be referred to as routine, and collection times are determined by the facility. Special laboratory tests require specific times for collection, and these are referred to as timed tests, which will be discussed in Chapter 6.

Figure 1-3 Compare the information from the laboratory requisition slip with the patient identifiers.

HARBOR HOSPITAL Department of Laboratory Medicine			DATE REQUESTED <u>5/22/XXXX</u>	TIME REQUESTED <u>9:15/AM</u>	
TEST REQUEST SLIP	TEST	RESULT	PERFORMED BY	DATE COLLECTED _____	TIME COLLECTED _____
	CBC			NAME <u>Dee Preston</u>	
				ADDRESS <u>99 College Blvd.</u> <u>Happy, VA</u>	
				PATIENT ROOM NO. <u>199</u>	BED NO. <u>3</u>
				AGE <u>35</u>	SEX <u>M</u>
				HOSPITAL I.D. NO. <u>86123</u>	
				PHYSICIAN <u>Dr. Adams</u>	
				TODAY <input type="checkbox"/>	ROUTINE <input checked="" type="checkbox"/>
				EMERGENCY <input type="checkbox"/>	SIGNED _____



Blood specimens provide important information that assists with the diagnosing, monitoring, and treatment of patients. The two most commonly used methods today for the collection of blood specimens are venipuncture and dermal puncture (also called a **microtechnique** or **microcollection**; see Table 1-2). Venipuncture involves the insertion of a sharp object (typically a sterile hollow core needle) into a vein to allow blood to flow into a syringe or vacuum tube. Dermal puncture requires the use of a lancet or other puncture device to prick the skin, usually the finger, for the removal of a much smaller specimen of **capillary** blood. Other sites for dermal puncture include the heel (used for infants) and earlobe. The phlebotomist must perform these tasks with confidence and expertise to ensure patient comfort. Skill is required and must be obtained through practice and experience.

HIPAA, Law & Ethics

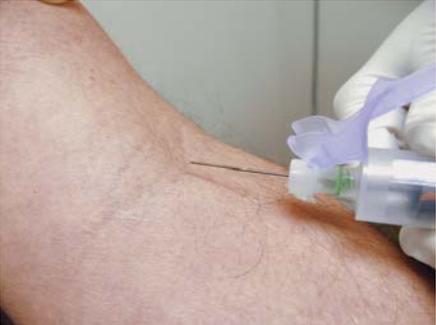
Patient Identification

In addition to asking the patient to state his or her name and birth date, the phlebotomist is required to check the armband and/or other qualifying documents, such as the requisition form, prior to drawing the patient's blood. Obtaining blood from the wrong patient constitutes an act of **negligence** (error or wrongdoing) and can result in disciplinary action.

Professionalism

Most people do not like having their blood drawn because of the potential discomfort, so **professionalism** and good interpersonal skills are critical attributes. Having a well-groomed and professional appearance demonstrates to others a sense of pride in oneself, the workplace, and one's overall profession.

TABLE 1-2 Two Common Collection Methods

Venipuncture	Insertion of needle into a vein to allow blood flow into a vacuum tube or syringe	
Dermal puncture	Use of a lancet or puncture device to prick the skin to remove small specimen of capillary blood	

Becoming certified or licensed as a phlebotomist can also send an important message to the patient and in turn the patient will have more confidence in your abilities. The patient will also perceive that you are an expert in your field. Membership in a professional organization will enhance the phlebotomist's professionalism by encouraging participation in continuing education activities such as workshops and seminars, and providing access to journals containing information regarding new developments in the field, as well as new regulations at the state and national levels.

Public Image

First impressions are very important. Your appearance is the first statement sent to those around you. Phlebotomists are expected to be clean, well groomed, and appropriately dressed for the work setting. Lack of good personal hygiene or proper dress can give a negative impression to an already anxious patient. Many institutions require that phlebotomists wear a lab jacket and specified shoes in order to meet **Occupational Safety and Health Administration (OSHA)** guidelines. OSHA is responsible for minimizing the risks and injuries to employees. Compliance with the dress code established by your facility is important for establishing a professional public image. Depending on the setting, the phlebotomist may be the only laboratory contact person a patient encounters, so a positive public image is important not only for the credibility of the individual, but for the laboratory department and institution as well.

Communication and Customer Service

The ability to communicate and provide customer service are important skills for the phlebotomist. Communication can be verbal or nonverbal. *Verbal*

refers to the use of language or words to express ideas. The phlebotomist must be able to communicate using nonmedical terms so patients can understand what is being said to them. Some health professionals will continue to use medical terms in the presence of the patient. For example, using the term “venipuncture” with a patient instead of simply telling the patient that you will be “obtaining some blood” can create a block in communication. The phlebotomist must be capable of explaining procedures to patients of various ages in order to gain their confidence and cooperation. Never give false reassurance to patients by making statements such as, “You won’t even feel it,” because most patients feel some level of discomfort during phlebotomy procedures. Avoid using slang or “street” talk because different words have different meanings to different individuals. Address patients by name, avoiding inappropriate terms such as “honey” or “sweetie.” Excessive talking is also to be avoided because it tends to be annoying to patients wanting and needing rest. It is best to speak using a calm and clear voice with a tone appropriate to patient need (e.g., a louder volume for a patient who is hard of hearing). The health care industry is service oriented, meaning that we want our customers (patients) to be pleased with both the services we provide and the manner in which they are delivered. This is customer service.

Patient Education & Communication



Using Proper Communication

The phlebotomist may be required to obtain blood from patients who are unable to communicate as a result of a stroke or other medical condition. Regardless of the patient’s inability to communicate, the phlebotomist is expected to provide the same greetings, introductions, and explanations. The mere fact that a patient cannot respond does not necessarily mean that he or she cannot hear! Do not talk in the presence of comatose patients as if they cannot hear you.

Patients receive not only the spoken message but also the nonverbal cues sent by the phlebotomist (see Table 1-3). Nonverbal communication begins with attire and includes overall mannerisms or behaviors. Maintaining eye contact during patient interactions is a positive nonverbal response that assists with establishing trust. During the initial greeting, displaying a smile, maintaining erect body posture with relaxed arms, and avoiding the patient’s personal space are usually well received. Personal space refers to the

TABLE 1-3 Nonverbal Communication: Positive versus Negative Gestures

Positive	Negative
<ul style="list-style-type: none"> • Good body posture • Eye contact • Neat, well-groomed appearance • Respecting personal space 	<ul style="list-style-type: none"> • Drooping shoulders with head held low • Looking down or away from patient • Dingy, wrinkled lab coat; too much jewelry • Immediately approaching patient’s space before greeting and explaining procedures

proximity or distance between individuals a person prefers when interacting with others. Many people feel uncomfortable when strangers approach them and enter their personal space. Appropriate distance for personal space or proximity varies based on gender, culture, and personal preference.

To provide positive communication and customer service, upon approaching any patient, the phlebotomist should properly introduce him- or herself, state the purpose of the visit, and request that the patient state his or her full name and date of birth. Patients will generally respond with a verbal or nonverbal gesture such as a nod of the head, indicating acknowledgment of the phlebotomist's presence. Once the initial greeting is established, it is acceptable and necessary to come in closer proximity to the patient's bedside or chair, depending on the workplace setting. In addition to professionalism and positive communication, customer service requires common courtesy. As mentioned earlier, when patients are having blood drawn, they may be anxious and not in the best of moods. They may be concerned about the results or just frightened. You can help their experience by being empathetic to their situation by observing their behavior, listening to their concerns, and addressing any situation promptly and effectively. You should approach any problem with flexibility and the obligation to find a resolution. For one example of proper customer service, see the Troubleshooting Box: Providing Customer Service.

Troubleshooting



Providing Customer Service

The patients you draw blood from are your customers. Having patients is what provides you a job, so your patients/customers should be satisfied with your service. Customer service involves providing customer satisfaction through professionalism, positive communication, and an attitude that promotes resolution to problems when they occur.

Question: You are working alone in a busy laboratory because two other phlebotomists have called in sick. The laboratory waiting area is crowded. You expect another phlebotomist to arrive in about 20 minutes. What could you do to promote positive customer service?

Checkpoint Questions 1-3

1. Name at least three duties and responsibilities of a phlebotomist.

2. A patient is having blood work done during her lunch hour and has waited 25 minutes before being called back for her blood to be drawn. How can you implement customer service in this situation?



Answer the questions above and complete the *Roles and Responsibilities of the Phlebotomist* activity on the Student CD under Chapter 1 before you continue to the next section.

1-4 Where Do Phlebotomists Work?

There are two main categories of health care delivery systems in the United States, inpatient and outpatient services. Phlebotomists are employed in both of these settings as well as in select special settings. Hospitals, nursing homes, and rehabilitation centers are examples of inpatient facilities. Outpatient settings include physician offices, home health care agencies, ambulatory care centers, **reference laboratories** (off-site labs), and blood banks. Other special settings include veterinary offices, health maintenance organizations (HMOs), and the American Red Cross, to name a few.

HIPAA, Law & Ethics



Confidentiality

The phlebotomist may be privy to laboratory results. If you disclose results of any laboratory test, you will have breached patient confidentiality and may be subject to disciplinary or legal action or even a monetary fine.

Inpatient Facilities

Phlebotomists employed at inpatient facilities work directly with several members of the health care team (see Figure 1-4). Most hospitals have their own laboratories, which are referred to as “clinical” laboratories because they perform a wide range of tests in all specialties and subspecialties, such as

- **hematology** (the study of blood and blood-forming tissues)
- **microbiology** (the study of microscopic organisms)
- **chemistry** (the evaluation of the chemical constituents of the human body)
- **immunology** (the study of the body’s resistance to disease and defense to foreign substances)
- **histology** (the study of human body tissues and cells)

Figure 1-4 An inpatient laboratory is known as a clinical laboratory and performs a wide range of laboratory tests.



- **serology** (the identification of antibodies in the blood's serum)
- **urinalysis** (the examination of urine for physical, chemical, and microscopic characteristics)
- **toxicology** (the detection and study of the adverse effects of chemicals on living organisms)
- blood banking

Physicians order specific tests to assist with the evaluation of the patient's condition, and the phlebotomist's role is to collect the blood, properly label the specimen, and transport it to the laboratory. At some inpatient facilities, phlebotomists are also responsible for performing point-of-care testing, such as blood glucose monitoring. Point-of-care testing can assist the physician in making diagnoses more quickly, which often reduces the length of stay for hospitalized patients.

Being a member of the health care team may require that the phlebotomist assume other responsibilities such as basic patient care services at inpatient facilities. Some of these may include delivering meal trays and assisting with the transportation of patients from one department to another. Professional conduct must be exhibited at all times.

Outpatient Facilities

The fastest-growing outpatient settings are ambulatory care centers. These sites are walk-in facilities that patients can come to after business hours and on weekends. Lab tests are ordered to assist with the diagnosis and treatment of minor conditions. Outpatient laboratories usually perform tests involving chemistry, hematology, urinalysis, serology, and microbiology. Phlebotomists in these settings may also be responsible for performing other basic patient care duties such as obtaining vital signs and transporting patients for other procedures such as X rays.

Physician offices are also outpatient facilities. Phlebotomists or medical assistants certified in phlebotomy are usually responsible for collecting and

Figure 1-5 A physician office laboratory performs “waived” tests or ones that carry fewer risks to the patient.



labeling a variety of specimens in the physician’s office that are then transported to a reference laboratory for testing. In order for a physician’s office laboratory to perform basic lab tests in their office, it must have “waived status” granted by the Clinical Laboratory Improvement Act (CLIA). A waived test is granted according to the difficulty in performing the test. Waived tests present much less risk to the patient because they performed on small amounts of blood or other specimens that are easier to obtain such as urine. The number of waived tests has increased. (See Figure 1-5.) Now tests such as nasal smears, for the presence of eosinophils to determine if infection is present, and cholesterol levels are approved in-office tests. So depending on the facility of employment, a phlebotomist may be required to perform some of these tests, as well as quality control checks on any test he or she performs.

Other outpatient facilities such as blood banks and the American Red Cross employ phlebotomists to collect blood. The blood collected will become a donor unit that might be used for a blood transfusion. Phlebotomists working for agencies are often hired to go into patient homes to collect blood specimens. As health care delivery systems continue to change, more care is being provided to patients in nursing homes and in their own residences. Some medical centers are now providing mobile venipuncture, where the phlebotomist goes to the patient’s home to obtain blood specimens. Additionally, phlebotomists are hired by insurance agencies to perform in-home phlebotomy as a way of determining overall health before an insurance policy is written. Regardless of the work setting, proper collection, labeling, and handling of all specimens are critical to ensure accurate results and to prevent the need for having to repeat the test unnecessarily.

Checkpoint Questions
1-4

1. What is meant by a waived test and where would a waived test most likely be performed?

2. List and describe the common departments of a hospital laboratory.



Answer the questions above and complete the *Where Do Phlebotomists Work?* activity on the Student CD under Chapter 1 before you continue to the next section.

1-5 Regulatory Agencies

Regulatory agencies routinely visit and inspect laboratories and medical offices to evaluate quality control and assurance. Laboratory facilities must have quality assurance programs in place to ensure that tests are effective and accurate. Quality assurance will be discussed in more detail in Chapter 7.

The 1988 **Clinical Laboratory Improvement Amendment (CLIA'88)**, a revision of CLIA'67, was established to ensure that all laboratories receiving federal funds, regardless of size, type, or location, would meet the same standards and be certified by the federal government. This legislation, which became effective in 1992, serves as the main regulatory body for all laboratories, as well as establishing qualifications for phlebotomists. Classifications of laboratories are based on the complexity of testing performed and the associated patient risks if the tests are not performed properly. Some laboratories are categorized as “waived,” and are not subject to inspections because they perform only simple tests that have minimal associated patient risks, such as dipstick urine testing. Other laboratories are classified as “moderately complex” or “highly complex,” and both undergo inspections. Inspections are stricter for higher complexity laboratories. Personnel qualifications are specified for various levels of test complexity, which are outlined in the CLIA'88 regulations. Failure of any institution to comply with these regulations may result in termination of Medicare and Medicaid reimbursements, as well as loss of privilege to perform the procedure.

Hospital laboratories and physician office laboratories are governed by regulations that provide rules and guidelines for quality patient care. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the College of American Pathologists (CAP) are two accrediting agencies that help ensure a high standard of care for patients. The main accrediting agency for hospitals is the JCAHO. Physician offices must keep records for quality control, temperature readings, and equipment maintenance logs.

In addition to the federal government, other agencies responsible for overseeing aspects of the phlebotomy role include the **Centers for Disease Control and Prevention (CDC)**, the Occupational Safety and Health Administration (OSHA), the Clinical and Laboratory Standards Institute

(CLSI), Healthcare Finance Administration (HCFA), and the Department of Health and Human Services (DHHS). Additional information about the role of regulatory agencies, certification, and accreditation is discussed in Chapter 7, Practicing Phlebotomy.

✓ Checkpoint Questions 1-5

1. What was established to ensure the standards of laboratories?

2. What is the main accrediting agency for hospitals?



Answer the questions above and complete the *Regulatory Agencies* activity on the Student CD under Chapter 1 before you continue to the next section.

1-6 Safety and Infection Control

Safety and infection control are two very important elements for protecting both you and the patient when you are providing any aspect of phlebotomy. The Centers for Disease Control and Prevention has set standards that prevent **nosocomial infections** (infections acquired in a hospital or other

Figure 1-6



Handwashing.



Alcohol-based hand rub.

medical setting). Nosocomial infections are responsible for about 20,000 deaths in the United States per year. Approximately 10% of American hospital patients (about two million every year) acquire a clinically significant nosocomial infection. Phlebotomists come in contact with many patients throughout the day, which makes performing correct hand hygiene critical (see Figure 1-6 and Table 1-4).

TABLE 1-4 Hand Hygiene Procedure Related to Phlebotomy

Recommended Practices
<ul style="list-style-type: none"> • Wash your hands with soap and water whenever they are visibly contaminated with blood or other body fluids. • If hands are not visibly contaminated, an alcohol-based hand rub can be used.
Indications for Hand Hygiene
<ul style="list-style-type: none"> • Before and after putting on gloves • Between patient contacts; between different procedures on same patient • After touching blood, body fluids, secretions, excretions, and contaminated objects • After handling specimen containers or tubes • After restroom visits, eating, combing hair, handling money, and any other time your hands get contaminated
Basic Steps for Handwashing
<ul style="list-style-type: none"> • Remove all rings and jewelry. • Turn on water and adjust temperature to warm. • Wet hands liberally without leaning your body against sink area. • Apply soap and work up a good lather. • Use circular motions while applying friction, being sure to interlace fingers to clean between them for 2 minutes at the start of your work day, 10–15 seconds in between patients, and 1–2 minutes when hands are really soiled. • Rinse each hand, allowing water to run from wrist toward fingertips, keeping fingers pointing downward. Contamination under fingernails should be removed with a tool designed for that purpose, such as an orange stick. • Repeat above steps if hands are very soiled. • Dry hands thoroughly with paper towels and discard them into waste receptacle. • Turn off water with a clean, dry paper towel, if indicated.* • Clean area using dry paper towels only if indicated.*
Basic Steps for Alcohol-Based Hand Cleanser
<ul style="list-style-type: none"> • Make sure there is no visible dirt or contamination. • Apply ½ to 1 teaspoon of alcohol cleanser to one hand. Check the manufacturer’s directions for proper amount. • Rub your hands together vigorously, making sure all surfaces are covered. • Continue rubbing until your hands are dry.

*Many facilities have sensors that turn water on automatically when the hands are lowered to the faucet. Other facilities have a knee or foot device that is used to turn the water on.

Figure 1-7 If one of the links in the chain of infection is broken, infection can be prevented.

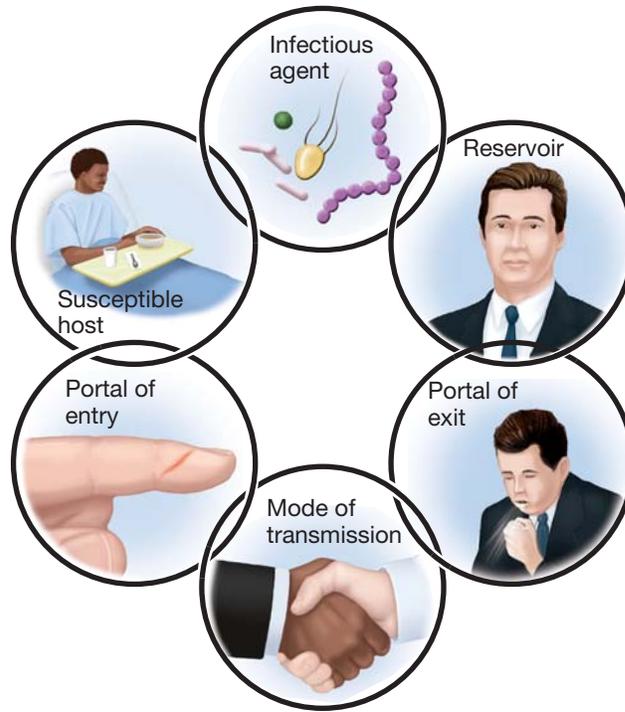


TABLE 1-5 Chain of Infection

Link	Description	How the Phlebotomist Can Break the Links
Infectious agent	Pathogen, or disease-producing microorganism	<ul style="list-style-type: none"> • Perform hand hygiene • Wear gloves when obtaining and handling any specimens • Dispose of contaminated materials properly • Use of personal protective equipment when required, including mask, gown, gloves, eye protection • Perform aseptic technique when required • Follow isolation precautions when required
Reservoir	Site where the organism grows and multiplies	
Portal of exit	The exit port for the pathogen to the host in the human includes skin, respiratory tract, and gastrointestinal tract	
Mode of transmission	How the pathogen travels; most commonly by contact, droplet, or airborne	
Portal of entry	Entry point for pathogen such as break in skin or respiratory system	
Susceptible host	Person at risk for developing an infection from the pathogen	

Nosocomial infections are prevented by hand hygiene and other precautions that break any of the links in the **chain of infection**. The chain of infection is six steps (links) that must take place for an infection to occur. The six links are the infectious agent, reservoir, portal of exit, mode of transmission, portal of entry, and susceptible host. Transmission of an infection can occur at any one of these six links in the chain of infection. Likewise, if the chain is broken at any of the links, an infection will not develop (see Figure 1-7 and Table 1-5).

Contact transmission is the most frequent source of nosocomial infections and can be by either direct or indirect contact. Direct contact requires a physical transfer of pathogens from reservoir to susceptible host (person to person) by something as simple as a touch.

Indirect contact occurs when a contaminated item, such as a soiled dressing, is handled prior to contact with a susceptible host (person to contaminated item to person). Indirect contact most often occurs when health care workers fail to wash their hands and change gloves between patients. Methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile* (C-diff) enteritis are examples of infections spread by contact transmission.

Droplet transmission is a form of contact transmission, but the method of transfer is much different. This form occurs when droplets from an infected person are propelled short distances to the susceptible host through the nasal mucosa, mouth, or conjunctiva. Examples of infections spread by droplet transmission are influenza, mumps, and rubella. Droplets are propelled by coughing, sneezing, breathing, or talking. The droplets are not suspended in the air as they are with airborne transmission.

In airborne transmission, small particles carry the pathogens. These particles can be widely dispersed by air currents before being inhaled by a host. Legionnaires' disease, varicella, and tuberculosis are examples of infections spread by airborne transmission.

Vehicle-borne transmission occurs when a host comes in contact with a contaminated item such as food, linen, or equipment. To prevent this mode of transmission, soiled linen and equipment must be cleaned or disposed of properly. Vector-borne transmission requires an animal or insect as an agent to spread disease, such as the mosquito that carries the West Nile virus.

Preventing Infections

To help prevent nosocomial infections, the CDC in 1994 implemented two levels of precautions. The first level is **Standard Precautions** (formerly Universal Precautions). These precautions combine hand hygiene and the wearing of gloves when health care workers are exposed to blood and body fluids, nonintact skin, or mucous membranes. Standard Precautions include the major features of Universal Precautions, but they apply when workers are exposed to nonintact skin, mucous membranes, and blood and all body fluids, secretions, and excretions except sweat regardless of whether blood is visible. (Universal Precautions apply to blood and any other body fluids *only* if they contain visible blood.) The use of Standard Precautions reduces the risk of transmission of microorganisms from both recognized and unrecognized sources of infection. (See Appendix A: Standard Precautions.) In addition, the CDC advises that health care workers should not wear artificial nails because they are more likely to harbor gram-negative pathogens on their fingertips than workers with natural nails, both before and after hand-washing. Natural nails should be no longer than one-fourth inch.

The CDC's second level of precautions is **isolation precautions** that are based on how the infectious agent is transmitted. These isolation precautions are

- Airborne precautions that require special air handling, ventilation, and additional respiratory protection (HEPA or N95 respirators)

- Droplet precautions that require mucous membrane protection (goggles and masks)
- Contact precautions that require gloves and gowns during direct skin-to-skin contact or contact with contaminated linen, equipment, and so on

You should follow Standard Precautions with every patient when performing phlebotomy. Isolation precautions are used less often and only with patients who have specific infections. When isolation precautions are mandated for a patient receiving phlebotomy, you will be required to follow the specific guidelines for the type of precautions implemented (see Appendix B: Transmission-Based Precautions).

The process of blood collection is an invasive procedure, and whenever blood or body fluid from one person comes in contact with another person, there is a major risk of exposure to bloodborne pathogens such as human immunodeficiency virus (HIV), hepatitis C virus (HCV), and hepatitis B virus (HBV). OSHA requires that health care facilities provide annual training on preventing exposure to bloodborne pathogens as well as the necessary **personal protective equipment (PPE)** for employee use, such as gloves, gowns, masks, and protective eyewear. (OSHA is the federal body charged with preventing or minimizing employee exposure to bloodborne pathogens, as outlined in the Occupational Exposure to Bloodborne Pathogens Standard.) See Figure 1-8 and Table 1-6 for more information about personal protective equipment and its applications.

In general when using PPE you should:

- Don before contact with the patient, generally before entering the room
- Use carefully—don't spread contamination
- Remove and discard carefully, either at the doorway or immediately outside patient room; remove respirator outside room
- Immediately perform hand hygiene

Figure 1-8 Removing gloves properly.



(a) Grasp the outside edge near the wrist. Peel away from the hand, turning the glove inside out. Hold the glove in opposite gloved hand.



(b) Hold the contaminated glove in the gloved hand while removing the second glove.



(c) Slide the ungloved finger under the wrist of the remaining glove. Peel off from inside, creating a bag for both gloves, and then discard.

TABLE 1-6 Personal Protective Equipment

Type	When Used	Rules for Use
Gloves	For hand contact with blood, mucous membranes, other potentially infectious materials, or when non-intact skin is anticipated, when performing vascular access procedures, or when handling contaminated items or surfaces	<ul style="list-style-type: none"> • Does not replace handwashing • Perform hand hygiene before applying and after removing gloves • When removing gloves do not touch the outside (contaminated) area of the gloves (see Figure 1-8) • Keep gloved hands away from the face • Avoid touching or adjusting other PPE • Remove if torn and perform hand hygiene before putting on new gloves • Limit surfaces and items touched • Extend gloves over isolation gown cuffs
Gown	During procedures and patient care activities when contact of clothing/exposed skin with blood/body fluids, secretions, or excretions is anticipated	<ul style="list-style-type: none"> • To put on gown <ul style="list-style-type: none"> • Opening is in the back • Secure at neck and waist • To remove gown <ul style="list-style-type: none"> • Unfasten ties • Peel gown away from neck and shoulder—do not touch outside • Turn contaminated outside toward the inside • Fold or roll into a bundle • Discard
Mask	During patient care activities likely to generate splashes or sprays of blood, body fluids, secretions, or excretions	<ul style="list-style-type: none"> • Must fully cover nose and mouth • Respirator masks such as N95, N99, and N100 must be used for airborne precautions • To put on mask <ul style="list-style-type: none"> • Place over nose, mouth, and chin • Fit flexible nosepiece over nose bridge • Secure on head with ties or elastic • Adjust to fit • To remove mask <ul style="list-style-type: none"> • Untie the bottom, then top tie • Remove from face—do not touch the outside • Discard
Eye protection	During patient care activities likely to generate splashes or sprays of blood, body fluids, secretions, or excretions	<ul style="list-style-type: none"> • Goggles should fit snugly over and around the eyes • Personal glasses are not an acceptable substitute • Can use a face shield that protects face, nose, mouth, and eyes • Face shield should cover forehead, extend below chin, and wrap around side of face • Position goggles over eyes and secure to the head using the earpieces or headband • Position face shield over face and secure on brow with headband • Remove goggles or face shield <ul style="list-style-type: none"> • Grasp ear or head pieces with ungloved hands • Lift away from face—do not touch outside • Place in designated receptacle for reprocessing or disposal

- Apply in correct sequence; gown, mask or respirator, goggles or face shield, then gloves
- Remove in correct sequence; gloves, face shield or goggles, gown, then mask or respirator

Employees at increased risk of exposure are to receive, free of charge, the HBV (hepatitis B virus) vaccination. Each health care facility is also required to have an occupational exposure plan, which is a protocol to be followed in the event an employee is exposed to bloodborne pathogens. The ultimate objective is to protect patients, peers, and oneself from coming in contact with potentially harmful materials such as contaminated needles and syringes. Proper disposal of venipuncture equipment greatly decreases the incidence of accidental needlestick injuries and exposure.

Safety and Infection Control



Isolation Precaution Equipment

Follow the guidelines for isolation precautions when entering a patient's room. If you are not certain what personal protective equipment (PPE) to wear, such as gowns, gloves, or mask, consult with the licensed practitioner caring for the patient, such as a nurse. *Never* take a tray of phlebotomy equipment into an isolation room. Take only the equipment needed for the particular draw. If you need additional equipment, you must remove all PPE before leaving the room, collect the needed supplies, then don new PPE before re-entering the room. Only the equipment to be used should be taken in, and only the tubes and the phlebotomist should leave the room. Any unused equipment or supplies must be left in the room.

Needlestick Injuries

The National Institute for Occupational Safety and Health (NIOSH) estimates that between 600,000 and 800,000 needlestick injuries occur annually, exposing health care workers to bloodborne pathogens. A needlestick has both financial and emotional consequences. Follow-up for a high-risk exposure is approximately \$500 to \$1000 per needlestick even if no infection develops. However, the emotional impact and health consequences can be severe and can continue for a long time, especially if the exposure is to HIV. Needlestick injuries are preventable with proper education, safer equipment, and elimination of the need for needles whenever possible.

Through the recommendation of NIOSH and the efforts of OSHA, the Needlestick Safety and Prevention Act was passed into law in 2001. The intent of the law and the implementation regulation is to mandate the use of safety devices that reduce needlestick injuries in the clinical setting. The introduction of needleless equipment and protected needles has significantly reduced the risk of needlestick injuries. All devices selected for phlebotomy should be equipped with needlestick prevention features. These devices will be discussed in more detail in Chapter 3, Equipment for Specimen Collection.

**Checkpoint
Questions
1-6**

1. Name three things you can do to prevent infection.

2. In what order should you apply and remove PPE?



Answer the questions above and complete the *Safety and Infection Control* activity on the Student CD under Chapter 1 before you continue to the next section.

1-7 HIPAA, Ethics, and Law

In 1996, the **Health Insurance Portability and Accountability Act (HIPAA)** was established in response to information that was being transferred electronically for medical transactions. In 2003, a federal law was passed that establishes a national standard for electronic health care transactions and protects the privacy and **confidentiality** of patient information. Among other provisions, HIPAA states that information about a patient must not be discussed with individuals other than the patient unless the patient has given written or verbal permission for you to do so. A patient's information cannot be shared among health care professionals unless it is for the patient's treatment. The following is a list of other guidelines from HIPAA that could apply to the care of patients during phlebotomy.

- Close patients' room doors when caring for them or discussing their health.
- Do not talk about patients in public places.
- Turn computer screens that contain patient information so passersby cannot see the information.
- Log off computers when you are done.
- Do not walk away from patient medical records; close them when leaving.

Following a code of ethics is a principal part of being a phlebotomist. **Ethics** consists of a set of written rules, procedures, or guidelines that examines values, actions, and choices to help determine right from wrong. It is also a moral philosophy that varies by individual, religion, social status, or heritage. Acting morally toward others requires putting yourself in their place. If you were a patient requiring blood tests to rule out a disease or other condition, how would you want to be treated?

There may be instances when the patient or family member will ask the phlebotomist why the blood is being drawn, or what the results of previous

blood tests were. It is the responsibility of the physician to discuss this information with the patient, not that of the phlebotomist. In such cases, the phlebotomist might respond by saying, “You will need to ask your physician about these tests or results. I am not allowed to discuss them with you.” All information concerning the care of patients is strictly confidential and is not to be discussed. Inpatient settings may require the phlebotomist to travel throughout the facility to collect specimens, from the patient’s bedside to other departments such as the emergency room. Information obtained, no matter how small, must remain confidential to protect the patient and the facility.

HIPAA, Law & Ethics



Obtaining a Blood Specimen

With few exceptions, phlebotomists will be required to obtain blood specimens when ordered by the primary practitioner regardless of the patient diagnosis. Patients with infectious diseases such as tuberculosis, hepatitis, and AIDS deserve to have their blood drawn just as other patients would. Some health care personnel attempt to avoid such patients. This is considered discrimination and may result in disciplinary actions and/or legal liability. All patients, regardless of condition, should be treated with respect and dignity. Certain exceptions could occur when a phlebotomist may not be required to draw a specimen, such as when a patient is receiving radiation treatment and the phlebotomist is pregnant, or when an irate patient infected with hepatitis or AIDS does not have the phlebotomist’s safety at hand.

Consent is an important legal aspect of phlebotomy. Prior to performing any blood collection procedure, the phlebotomist must explain to the patient in nonmedical terms what he or she can expect to happen during the procedure. Patients generally sign a consent form for treatment during the initial in-take before entering the hospital or before being treated by a physician in his or her office. Consents take a variety of forms, for example, written agreements, spoken words, implicit actions, or making an appointment for a test. It is important to provide quality patient education and to make sure the patient understands what he or she is agreeing to. Because the phlebotomist will also be instrumental in collecting urine specimens for chain of custody, it is essential to discuss expressed consent whereby the patient not only has to be informed of the procedure and its process, but he or she must also sign a consent form agreeing to have the procedure done. Other procedures that may require written consent would be drug and alcohol screens and HIV testing.

The issue of patient rights is not new, and it has been clearly defined since 1975 by the American Hospital Association in a document called the **Patient’s Bill of Rights**. In addition to the right to refuse care, patients have the right to be treated with respect, to have all records and information classified as confidential, to be informed about the purpose and expected results of treatments, and to have access to their medical records.

On occasion, family members can serve to calm the patient prior to procedures, but there are times when the visitors may interfere with the blood collection process. If there are too many visitors or if they appear to make the patient anxious, politely request that they leave the room for a few minutes. It is rare that visitors will resent such a request when asked politely.



Consent

Consent must always be very clear. If a patient just puts out his or her arm, but does not bother to stop watching TV or otherwise acknowledge the phlebotomist, this is considered implied consent. If the patient doesn't speak English, but notices the tray and automatically puts his or her arm out, that too is considered implied consent. Only if conflicting information is present, or if the patient doesn't understand English and seems confused about what you are there for, must the phlebotomist be very careful to verify the true intent of the patient. Conflicting consent has resulted in several lawsuits. If a minor child or mentally incompetent patient is to have blood drawn, and the parent or guardian is not present, the written consent for treatment the parent signed on admission is considered adequate. There are three instances where a patient can **NOT** refuse to consent. These are in the case of a minor or a patient under the age of 18, a patient with mental incapacitation, or a patient who has been ordered by law to have his or her blood drawn.

Phlebotomists may also be confronted with issues involving team members. Serving as a member of a team is a challenge because all the "players" affect the outcome. The team concept implies working together to achieve common goals. Phlebotomists will work closely with other phlebotomists, physicians, nurses, and other health care members. The ultimate goal is to provide quality care to consumers accessing your health care facility.

All blood specimen tubes must be properly labeled at the patient's bedside. If you find specimen tubes without a label, bring this to the attention of other team members. Do not label specimens that you did not collect. If you label a specimen as requested by a team member, you become accountable for the accuracy of that specimen. Unless you saw your team member obtain the specimen, you cannot be sure that the blood specimen belongs to that patient. Just imagine the potential implications of placing the wrong patient label on a specimen. A patient with a potential abnormal test result may not receive the needed treatment, and a patient not needing that treatment may receive it. Both of these situations could lead to disciplinary actions and compromise patient safety, so never label specimens for which you did not assume responsibility.



Patient Refusal

The phlebotomist may encounter a patient who refuses to have blood drawn. In such instances, it is best to remind the patient that the physician ordered the tests to assist with evaluating the patient's condition. If this explanation fails and the patient still refuses to have his or her blood drawn, politely leave the room and be sure to document a detailed account of the patient interaction. It is also helpful in hospital settings to tell the patient's nurse so the physician can be notified as soon as possible.

As a phlebotomist it is important to protect yourself against harm from blood and body fluid exposure as well as legal issues. If you feel as though there are policies and procedures that will place your safety in jeopardy, you must first alert your supervisor. If there is no resolution, take it to the next

person in charge until your situation has been resolved. Phlebotomists may also purchase liability insurance through several insurance carriers who provide low-cost coverage to health care workers. Be sure to check with your employer to see if they carry liability coverage on you; if so, then there would be no need to purchase liability insurance.

 **Checkpoint Questions**
1-7

1. Name three ways you can follow HIPAA guidelines as a phlebotomist.

2. What should you say to a patient who asks you for the results of a blood test?



Answer the questions above and complete the *HIPAA, Ethics, and Law* activity on the Student CD under Chapter 1 before you continue to the next section.

Chapter Summary

- Phlebotomy has evolved from the use of leeches for blood collection to modern-day certified phlebotomists.
- Phlebotomists are responsible for the collection, processing, and transportation of blood specimens.
- Professionalism includes such things as a positive attitude and appearance plus keeping up with current information in the field. Public image starts with the first impression and is expressed in your behavior and methods of communication. Communication and customer service are necessary to maintain your public image and confidence and cooperation from your supervisor, patients, and co-workers.
- Phlebotomists can be employed at hospitals, rehabilitation centers, nursing homes, clinics, physicians' offices, ambulatory care centers, blood banks, and reference laboratories.
- The regulating agencies for phlebotomy include CLSI, JCAHO, HCFA, DHHS, CDC, and OSHA.
- Infection control and safety practices include hand hygiene, gloving, Standard Precautions, and isolation precautions.
- HIPAA provides protection of health care information. Ethics consists of a set of rules, procedures, or guidelines that helps determine right from wrong. The law includes following your scope of practice, policies, and procedures at your facility and obtaining consent for phlebotomy procedures.

Chapter Review

Multiple Choice

Choose the best answer for each question.

1. The term *phlebotomy* comes from Greek words that translate to mean:
 - a. Draw blood
 - b. Cut a vein
 - c. Drain blood
 - d. Dermal cut
2. Phlebotomy may be used to help treat which of the following medical conditions?
 - a. Polycythemia
 - b. Diabetes
 - c. Hypertension
 - d. Anemia
3. The main duty of a phlebotomist is to:
 - a. Interpret laboratory values
 - b. Evaluate blood specimens
 - c. Process blood specimens
 - d. Collect blood specimens
4. If a phlebotomist failed to properly identify a patient and blood was drawn on the wrong patient, this would be considered an act of:
 - a. Malpractice
 - b. Assault and battery
 - c. Negligence
 - d. Consent
5. CLIA classifies laboratories based on:
 - a. Number of employees
 - b. Size of the laboratory
 - c. Number of tests performed
 - d. Complexity of tests performed
6. Which of the following is the current CDC guideline for infection control?
 - a. Universal Precautions
 - b. Standard Precautions
 - c. Body Substance Isolation
 - d. Waived Precautions

7. A phlebotomist must obtain _____ before he or she draws a patient's blood.
 - a. a license
 - b. hepatitis B vaccination
 - c. certification
 - d. consent
8. If your hands are visibly soiled, you can:
 - a. Use an alcohol-based hand rub
 - b. Perform handwashing
 - c. Wear gloves
 - d. Perform phlebotomy
9. Customer service would least likely include the following:
 - a. Flexibility
 - b. Professionalism
 - c. Common courtesy
 - d. Complexity
10. Which of the following is the most frequent source of nosocomial infections?
 - a. Direct or indirect contact
 - b. HIV
 - c. Airborne particles
 - d. Droplet particles

Fill in the Blanks

Write the word(s) or statement needed to answer the following questions.

11. List two negative verbal and nonverbal communication skills that must be avoided.

Verbal

Nonverbal

12. List three settings in which a phlebotomist may gain employment.

13. What term describes tests that are performed at the patient's bedside?

True or False

Write T or F on the line provided to indicate whether you think each statement is true or false. Correct the false statements to make them true.

- _____ 14. Entry into phlebotomy programs usually requires a high school diploma or its equivalent.

- _____ 15. Phlebotomists are the only health care personnel allowed to collect blood specimens.
-
- _____ 16. Venipuncture requires the use of a skin puncture device to remove a small amount of capillary blood.
-
- _____ 17. Blood specimens assist in the diagnosing and monitoring of patients.
-
- _____ 18. All specimens require proper collection, handling, labeling, and transporting.
-
- _____ 19. A HEPA mask is used for airborne precautions.
-
- _____ 20. Dermal puncture is used for larger blood samples.
-

Matching

Match each agency, legislature, or committee abbreviation with the correct description by writing the appropriate letter in the space provided.

- | | |
|-----------------|---------------------------------------------------------------------------------|
| _____ 21. JCAHO | a. Federal agency responsible for monitoring and reporting diseases. |
| _____ 22. CLIA | b. Nonprofit organization that sets standards for phlebotomy training programs. |
| _____ 23. CDC | c. Federal body responsible for preventing or minimizing work-related injuries. |
| _____ 24. CLSI | d. Main accrediting agency for hospitals. |
| _____ 25. OSHA | e. Legislation responsible for regulating all laboratories and phlebotomists. |

What Should You Do? *Critical Thinking Application*

Use your critical thinking skills to respond to the following situations.

26. A phlebotomist has been asked to obtain a blood specimen from a hospitalized patient. The phlebotomist enters the patient's room and gives the appropriate greeting, only to discover that the patient speaks only Spanish, a language the phlebotomist is unfamiliar with. Should the phlebotomist proceed with the blood collection? What are the phlebotomist's next steps? Give information to support your answer such as legal/ethical implications and also consider the patient's rights.

27. While explaining the purpose of a visit to a patient, the phlebotomist notices five visitors entering the room. The patient greets the visitors pleasantly, and one of the visitors asks the phlebotomist what blood tests have been ordered. How should the phlebotomist handle this situation and why?

28. The phlebotomist is scheduled to obtain a blood specimen from a patient in a patient's home. The phlebotomist enters the home and makes the appropriate greetings. The patient is very agitated and states, "I'm just sick and tired of you people drawing my blood. It's not helping me to get any better, so get out! I refuse to be a pincushion for you medical jerks!" What would be a good response for the phlebotomist to make? How should the phlebotomist handle this situation?

29. A phlebotomist employed at the outpatient clinic of a large acute-care hospital begins her shift to find the waiting room full of patients. Two of the scheduled phlebotomists have called in sick, and it will be at least 20 minutes before any additional phlebotomists can arrive. The phlebotomist begins to call patients back and listens while each patient voices his or her frustration, saying only what is required to collect the specimen and letting the patients leave. Did the phlebotomist make any error? What could he or she have done differently?

30. You notice a co-worker carrying a tray of phlebotomy equipment out of the room of a patient who is in airborne precautions. What should you do?

Get Connected *Internet Activity*

Visit the McGraw-Hill Higher Education Online Learning Center *Phlebotomy for Healthcare Personnel* Website at www.mhhe.com/healthcareskills to complete the following activities.

The History of Bloodletting To find out more about the history of bloodletting and the equipment used, search the Internet and find at least one image to share with the class:

- UCLA Biomedical Library has graphics of bloodletting devices and historical data
- Museum of Questionable Medical Devices by Graham Ford presents an overview of ancient bloodletting practices

Phlebotomy Regulating Agencies To find out more about phlebotomy, visit any of these sites:

- American Society for Clinical Pathology
- American Society of Phlebotomy Technicians
- National Credentialing Agency
- National Phlebotomy Association
- American Medical Technologists
- Centers for Disease Control and Prevention
- Occupational Safety and Health Administration
- Joint Commission on Accreditation of Healthcare Organizations
- College of American Pathologists
- National Healthcareer Association
- National Center for Competency Testing

Research one site and determine its mission and relationship to the practice of phlebotomy. Share your findings with your class.



Using the Student CD

Now that you have completed the material in the chapter text, return to the Student CD and complete any chapter activities you have not yet done. Practice your terminology with the “Key Term Concentration” game. Review the chapter material with the “Spin the Wheel” game. Take the final chapter test and complete the troubleshooting question. E-mail or print your results to document your proficiency for this chapter.