



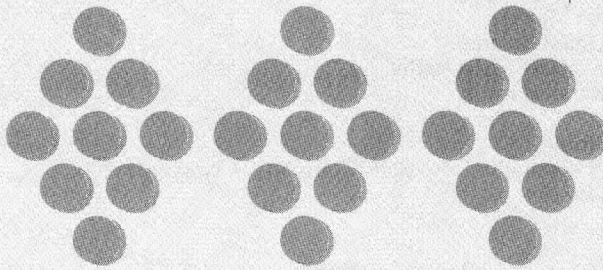
Ruth E. McCall
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PHLEBOTOMY

ESSENTIALS

Second Edition

LIPPINCOTT WILLIAMS & WILKINS



Phlebotomy Essentials

SECOND EDITION

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Some drugs and medical devices presented in this publication have Food and Drug Administration (FDA) clearance for limited use in restricted research settings. It is the responsibility of the health care provider to ascertain the FDA status of each drug or device planned for use in their clinical practice.

Phlebotomy Essentials

To my husband John, my sons Chris and Scott, and my parents Charles and Marie Ruppert for their encouragement, patience, and support of this effort.

Ruth E. McCall

To my husband, Tank, who is always there with an encouraging word and two very special friends, Julie and Brigitte, for their continuous, unwavering support.

Cathee M. Tankersley

Preface

The goal of *Phlebotomy Essentials, 2nd edition* is to provide accurate, up-to-date, practical information and instruction in phlebotomy procedures and techniques, along with a comprehensive background in theory and principles. This book can be used as an instructional text in phlebotomy basics for students with no prior experience in the subject (including health care workers being cross-trained in phlebotomy), and as a current technique reference for practicing phlebotomists and other health care workers who wish to update their skills or pass a national phlebotomy certification exam.

The chapter format of the first edition has been maintained, including the list of key terms and objectives at the beginning of each chapter plus study questions and suggested laboratory activities at the end of each chapter. Color has been added to highlight these features and to enhance the art program for this new edition.

Outstanding features of the second edition include:

- An expanded chapter on phlebotomy equipment with lots of photos, including many examples of the latest safety devices
- A new section on pediatric venipuncture techniques
- The latest safety procedures, including the new Standard Precautions and Transmission-Based Precautions recommended jointly by the Hospital Infection Control Practices Advisory Committee (HICPAC) and Centers for Disease Control and Prevention (CDC)
- A section on point-of-care testing designed to address the expanding role of the phlebotomist, as well as meet the needs of the multiskilled health care worker

The content of the book is designed to fulfill competencies for phlebotomy training developed by the National Accrediting Agency for Clinical Laboratory Science (NAACLS). All procedures have been written to conform to Occupational Safety and Health Administration (OSHA) rules and regulations, and standards developed by the National Committee for Clinical Laboratory Standards (NCCLS) when applicable.

The authors wish to express their gratitude to Christopher and John McCall for their photography skills, and to all others who assisted and supported this effort.

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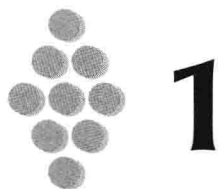
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Phlebotomy: Past and Present

KEY TERMS

AAAHP	continuing education units	NCCLS
accreditation	(CEUs)	negligence
AMT	essentials	A Patient's Bill of Rights
approval	expressed consent	phlebotomy
ASCLS	fraud	professionalism
ASCP	implied consent	reciprocity
ASPT	informed consent	respondeat superior
assault	invasion of privacy	risk management
battery	licensure	standard of care
breach of confidentiality	malpractice	statute of limitations
certification	NAACLS	tort
civil law	NCA	vicarious liability

OBJECTIVES

Upon successful completion of this chapter, the reader would be able to:

1. Describe the evolution of phlebotomy to the present day.
2. List the duties of the phlebotomist.
3. Describe the traits that form the professional image.
4. Contrast certification, licensure, and accreditation.
5. Identify national organizations that support phlebotomy as a profession.
6. Describe the phlebotomist's role in public relations for the health care facility and list the important points in A Patient's Bill of Rights.
7. Define legal terminology associated with the health care setting, and describe how a phlebotomist can avoid litigation.

AN HISTORICAL PERSPECTIVE ON PHLEBOTOMY

Since very early times, man has been fascinated by blood and has believed in some connection between the blood racing through his veins and his well-being. From this belief, certain medical principles and procedures dealing with blood evolved, some surviving to the present day.

An early medical theory developed by Hippocrates (460–377 BC) stated that disease was the result of excess substance, such as blood, phlegm, black bile, and yellow bile, within the body. It was thought that removal of the excess would restore balance. The process of removal and extraction became the treatment and could be done either by expelling disease materials through the use of drugs or by direct removal during surgery. One important surgical technique was **phlebotomy**—the process of blood-letting. Bloodletting involved cutting into a vein with a sharp instrument and releasing blood in an effort to rid the body of evil spirits, cleanse the body of impurities, or, as in Hippocrates' time, bring the body into proper balance. Literal translation of the word phlebotomy comes from the Greek words *phlebos*, meaning veins, and *tome*, meaning incision.

Some authorities believe phlebotomy dates back to the last period of the Stone Age, when crude tools were used to puncture vessels to allow excess blood to drain out of the body. Bloodletting in Egypt around 1400 BC is evidenced by a painting in a tomb showing the application of a leech to a patient. Early in the Middle Ages, barber-surgeons flourished. By 1210, the Guild of Barber-Surgeons was formed and divided the surgeons into Surgeons of the Long Robe and Surgeons of the Short Robe. Soon the Short Robe surgeons were forbidden by law to do any surgery except bloodletting, wound surgery, cupping, leeching, shaving, extraction of teeth, and administering of enemas.

To distinguish his profession from that of the Long Robe surgeon, the barber-surgeon placed a striped pole from which a bleeding bowl (Fig. 1-1) was suspended outside his door. The pole represented the rod squeezed by the patient to promote bleeding and the white stripe on the pole corresponded to the bandages, which were also used as tourniquets. Soon, handsomely decorated ceramic bleeding bowls came into fashion and were passed down from one generation to the next. These bowls, which often doubled as shaving bowls, usually had a circular indentation on one side to facilitate placing the bowl under the chin.



Figure 1-1 Early phlebotomy equipment (left to right): bleeding bowl, leech jar, and 19th century cupping glass and evacuating pump. (Courtesy Robert Kravetz, MD, FACP, FACG, Phoenix, AZ.)

During the 17th and early 18th centuries, phlebotomy was considered a major therapeutic (treatment) process and anyone willing to claim medical training could perform phlebotomy. In the late 18th and early 19th centuries, nonprofessional barbers and women were discouraged from bloodletting by well-known surgeons because of the dangers posed by the untutored. The lancet, a tool used for cutting the vein during a procedure called venesection, was perhaps the most prevalent medical instrument of the times. Antisepsis was unknown as lancets were often passed from patient to patient without cleansing. The usual amount of blood withdrawn was approximately 10 mL, but excessive phlebotomy was common. In fact, it was thought to have contributed to George Washington's death in 1799, when he was diagnosed with a throat infection and the physician bled him four times in 2 days. It was because of Washington's request to be allowed to die without further medical intervention that he was not completely exsanguinated.

During this same period, phlebotomy was also accomplished by cupping and leeching. The art of cupping required a great deal of practice to maintain the high degree of dexterity necessary so as not to appear clumsy and frighten the patient away. Cupping involved the application of a heated suction apparatus, called the "cup," to the skin to draw the blood to the surface before severing the capillaries in that area by making a series of parallel incisions with a lancet or fleam (Fig. 1-2). Around 1800, cups began to appear with brass syringes attached to remove air from the cup (see Fig. 1-1), eliminating the need to heat the cup in order to tumefy the area before cutting. This process was called dry cupping when performed prior to cutting the skin, and wet cupping if performed after cutting the skin.

Another procedure, called "leeching," involved enticing the *Hirudo medicinalis*, a European medicinal leech, to the spot needing bloodletting with a drop of milk or blood on the patient's skin. Once the leech was engorged with blood, which took about an hour, it was allowed to drop off by itself. Leechers, although not as high in status as professional cuppers, practiced in many large cities. In fact, in the early 1800s, leech farms were unable to meet the leech demand, making the little animals scarce and expensive.

With the popularity of bloodletting, improvement of the tools was inevitable. Two bloodletting instruments developed during this period were the schnepper and the

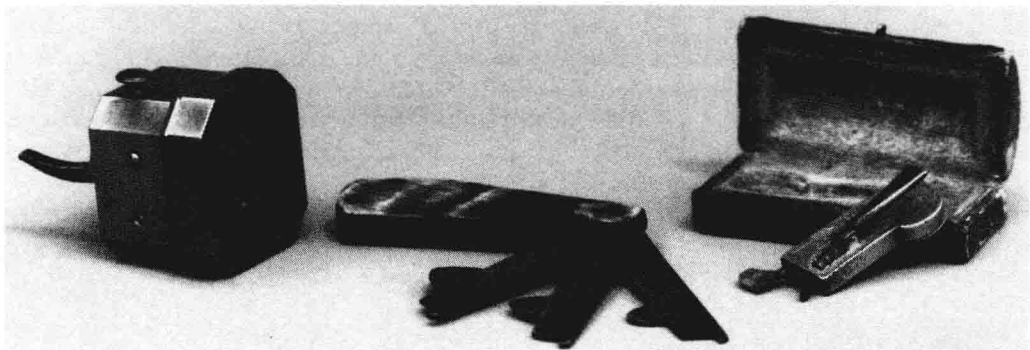


Figure 1-2 Octagonal multiple scarificator, set of fleams (lancets), and schnepper with leather-covered wooden case. (Courtesy Robert Kravetz, MD, FACP, FACG, Phoenix, AZ.)

scarificator (see Fig. 1-2). The crudely designed schnepper was an automatic or spring-action lancet which allowed the user to inject the blade into a vein without exerting manual pressure. This decorated or embossed tiny instrument was widely adopted for use on humans. The introduction of the scarificator in the 19th century represented a major change in the art of cupping. The scarificator had several crescent-shaped, spring-loaded blades concealed within a box-like case which, when activated, instantaneously created a series of parallel cuts. Like the spring lancet, the scarificator has its modern-day counterpart in the devices used for bleeding time tests.

PHLEBOTOMY TODAY

The practice of phlebotomy continues to this day; however, principles and methods have improved dramatically. Today, the main purpose of phlebotomy is to obtain blood for diagnostic testing. Phlebotomy procedures also are used to remove blood for transfusion purposes. Phlebotomy for therapeutic purposes is still practiced in certain instances, such as for a patient with polycythemia, a disease involving overproduction of red blood cells, or hemochromatosis, a rare disease characterized by excess iron deposits throughout the body. The use of leeches has reemerged with a new purpose: that of reducing hemostatic swelling after microsurgery until reconnected tissue can grow new capillaries and veins to carry deoxygenated blood away, thus improving circulation in the replanted tissue.

Phlebotomy today is primarily accomplished by one of two procedures: (1) venipuncture, which involves collecting blood by penetrating a vein with a needle and syringe or other collection apparatus; and (2) skin puncture, which involves collecting blood after puncturing the skin with a lancet or similar skin puncture device.

THE ROLE OF THE PHLEBOTOMIST IN A CHANGING HEALTH CARE ENVIRONMENT

The term phlebotomist is applied to a person who has been trained to perform phlebotomy procedures. The primary responsibility of a phlebotomist is to collect blood for laboratory analysis, which is necessary for the diagnosis and care of a patient. Manual skills required are those necessary to obtain blood specimens by venipuncture and skin puncture techniques. Mental skills required are the ability to organize efficiently, perform under pressure, and follow written standardized procedures. Thorough knowledge of laboratory test requirements and departmental policies is also necessary.

THE TRADITIONAL DUTIES OF A PHLEBOTOMIST

1. Collect routine skin puncture and venous specimens for testing as required.
2. Prepare specimens for transport to ensure stability of sample.
3. Transport specimens to the laboratory.

THE TRADITIONAL DUTIES OF A PHLEBOTOMIST (Continued)

4. Comply with new and revised procedures instituted in the procedure manual.
5. Promote good public relations with patients and hospital personnel.
6. Assist in collecting and documenting monthly workload and recording data.
7. Maintain safe working conditions.
8. Perform laboratory computer operations.
9. Participate in continuing education programs.

Today, as the nation moves into managed care, the role of the phlebotomist is continually changing as roles and responsibilities for all health care providers undergo change. The development of teams and the sharing of tasks has become necessary as health care organizations attempt to find the balance between cost-effective treatment and quality care. As a result, the duties of health care workers are combined, for example, a respiratory therapist may collect the laboratory specimen or a phlebotomist may take care of the basic needs of a patient at the bedside. The job description for a phlebotomist can vary greatly from one facility to the next based on the needs of that particular organization. With the advent of point-of-care testing (POCT), centralized laboratory services are giving way to decentralized activities, forcing phlebotomists to become multiskilled or lose their jobs.

ADDITIONAL DUTIES OF THE MULTISKILLED PHLEBOTOMIST

1. Collect sample and perform point-of-care testing (POCT) eg, glucose monitoring.
2. Do quality control checks on POCT instruments.
3. Perform skin tests.
4. Do rapid strep and breath alcohol testing.
5. Perform electrocardiography.
6. Process specimens and perform basic laboratory tests.

During this time of transition, the profession of phlebotomy maintains a standardized educational curriculum with a recognized body of knowledge. Structured programs exist in hospitals, colleges, and vocational schools which incorporate classroom instruction and clinical practice to prepare the student for national certification. As the role of the phlebotomist expands, the knowledge base will also. It is expected that basic nursing skills, specimen processing, customer relations, and POCT instruction will become a part of the educational curriculum.

Professionalism

As part of a service-oriented industry, persons performing phlebotomy must practice professionalism. **Professionalism** is defined as the conduct and qualities that characterize a professional person.

The overall impression conveyed by a person creates an image. The professional image is the way in which an occupation or a member of that profession is perceived. This image is formed from several characteristics or traits. The first characteristic deals with the superficial aspects of a person, for example, the way a person dresses or his or her manner of speaking. In fact, general appearance and grooming reflect directly on whether the phlebotomist is perceived as a professional. Conservative clothing, proper personal hygiene, and physical well-being contribute to a professional appearance. Since protective clothing must be provided by the employer, the proper attire for the phlebotomist may be defined by institution guidelines, such as specified lab coats and shoes to conform with OSHA standards.

Professionalism also deals with personal behaviors or characteristics including integrity, compassion, motivation, dependability, and work ethic.

- A phlebotomist may function independently a large percentage of the time, and respecting the rules for collection is essential to the quality of the results. Professional standards of *integrity*, or honesty, require a person to do what is right regardless of the circumstances, especially when unsupervised.
- A phlebotomist may show *compassion* and still remain professional. Compassion simply means being sensitive to a patient's or customer's needs and being willing to offer reassurance in a caring and interested way.
- Phlebotomists with *motivation* find the workplace a challenge no matter what their tasks entail. Motivation is a direct reflection of a person's attitude about life. If phlebotomists have a positive attitude and a willingness to perform at their peak every day, the health care environment will consistently offer adventure and growth, especially during this exciting time of changing roles and responsibilities.
- *Dependability* and *work ethic* go hand-in-hand. An individual who is dependable and who takes personal responsibility for his or her actions is extremely refreshing in today's environment and is a very desirable candidate for job opportunities in the health care setting or anywhere.

Other factors that play a role in forming a professional image stem from public recognition of the education the individual has acquired and the assumption that this education constitutes a standardized curriculum and regulation of the profession. It is through national accrediting and certifying agencies that professions ensure adherence to expected standards. Because there are different philosophies concerning standards for phlebotomy curricula and certification, a number of agencies have evolved, offering the phlebotomist options for professional recognition.

CERTIFICATION

Recognition through **certification** is becoming more popular because of the need in today's climate for health care professionals to show evidence of proficiency in many different areas of practice. Certification is evidence that an individual has mastered fundamental competencies in a particular technical area. Not unlike licensure, certification is a process that indicates the completion of defined academic and training requirements and the attainment of a satisfactory score on an examination, usually from a national agency. This is verified by the awarding of a title, signified by initials which a phlebotomist is allowed to display after his or her name.

The purpose of certification is to protect the public through control of personnel working at a specified level of responsibility. Agencies that certify phlebotomists and the title each awards include the following:

- American Medical Technologists (AMT): Registered Phlebotomy Technician, RPT (AMT)
- American Society of Clinical Pathologists (ASCP): Phlebotomy Technician PBT(ASCP)
- American Society for Phlebotomy Technicians (ASPT): Certified Phlebotomy Technician, CPT(ASPT)
- American Association of Allied Health Professionals, Inc. (AAAHF): Certified Phlebotomy Technician, CPT(AAAHP)
- National Credentialing Agency for Laboratory Personnel, Inc. (NCA): Clinical Laboratory Phlebotomist, CLPIb(NCA)
- National Phlebotomy Association (NPA): Certified Phlebotomy Technician, CPT(NPA)

LICENSURE AND REGISTRATION

A license is a document or permit indicating that permission has been granted for a person to perform a certain service after he or she has met the education and experience requirements and successfully completed an examination. For example, barbers, beauticians, and nurses are licensed by the state in which they practice. A health professional who has successfully passed a national certification examination or a state licensure examination may be put on a list called a registry. This listing is maintained as long as the health professional pays the registration fee annually (*eg*, to the ASCP Board of Registry). Such registries may not reflect the level of the laboratory professional's knowledge since they may not require the registrant to maintain competency to be listed. If a nationally certified phlebotomist should wish to work in a state which has a **licensure** law, he or she could request that the state agency grant the license required in recognition of his or her certification. Such recognition is called **reciprocity**.

PROGRAM ACCREDITATION/APPROVAL

Accreditation, or **approval**, of an educational program for health professionals indicates the quality of the program. The accreditation process involves external peer review of the program, including an on-site survey to determine whether the program meets certain established educational standards referred to as **essentials**. Most medical technology, medical laboratory technician, and histology programs seek accreditation. For phlebotomy programs, approval, rather than accreditation, is offered. The approval process is similar to accreditation; however, programs must meet educational *standards* and *competencies* rather than essentials, and an on-site survey by the agency's approval team is not required. Examples of approval agencies for phlebotomy programs include the following: