

Part One

Introduction to Pharmacy Practice

This section introduces the practice of pharmacy and the most common practice settings, including community and hospital pharmacies, as well as unique settings, such as Nuclear Pharmacy and Veterinary Pharmacy. It contains a chapter on pharmacy law and an introduction to drug information resources, which applies to all pharmacy practice settings.



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Chapter 1

Introduction to Pharmacy

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Learning Outcomes

After completing this chapter, you will be able to

- Compare and contrast the responsibilities of pharmacy technicians and pharmacists.
- Outline the differences among licensure, certification, and registration.
- Describe the advantages of formal training for pharmacy technicians.
- Describe the differences between the ambulatory and institutional pharmacy practice settings.
- List two specific examples each of ambulatory and institutional pharmacy practice settings.
- Describe at least six characteristics of a professional.
- List five tasks that pharmacy technicians perform in various pharmacy settings.
- Describe the concept of pharmaceutical care.
- Define medication therapy management.
- Explain why the use of outpatient pharmacy and medical services is increasing.

Key Terms

- accreditation** The process of granting recognition or vouching for compliance with established criteria (usually in reference to recognition of an institution or program).
- certification** A voluntary process by which a nongovernmental agency or association grants recognition to an individual who has met certain predetermined qualifications specified by that agency or association. This recognition demonstrates that the certified individual has achieved a certain level of knowledge, skill, or experience.

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**health-system
pharmacy** The practice of pharmacy in a practice setting that is part of a health-system. A health-system is two or more health care practice settings (e.g., hospital, home care, ambulatory clinic) that have a working relationship with each other and are managed or owned by the same business entity. Health-systems provide complete health care-related services to the patients they serve.

**home health
care** Physician-ordered health care services provided to a patient in the home or other setting in which the patient lives.

licensure The process by which an agency of the government grants permission to an individual to engage in a given occupation upon finding that the applicant has attained a degree of competency necessary to ensure that public health, safety, and welfare will be protected.

**medication
therapy
management
(MTM)** A service or group of services that optimize therapeutic outcomes for a patient. Such services include: assessment of a patient's health status; formulation of a medication treatment plan; selection, initiation, modification, or administration of medication therapy; monitoring of a patient's response to therapy; review of medications for medication-related problems; documentation and communication of care; provision of patient education and information to increase patient understanding and appropriate use of medications; and coordination and integration of MTM services into the broader health care services provided to the patient.

**pharmaceutical
care** Direct, responsible provision of medication-related care that achieves outcomes that improve a patient's quality of life. Pharmaceutical care involves cooperation between the pharmacist, the patient, and other health care professionals in designing, implementing, and monitoring a therapeutic medication plan. Such a plan serves to identify potential and actual drug-related problems, resolve actual drug-related problems, and prevent potential drug-related problems.

pharmacist A health care professional licensed by the state to engage in the practice of pharmacy. Pharmacists have advanced training in the pharmaceutical sciences, such as pharmacology (the study of drugs and their actions in the body), pharmacokinetics (the process by which drugs are absorbed, distributed, metabolized, and eliminated in the body), and pharmaceutics (the science of preparing and dispensing drugs).

**pharmacy
technician** A pharmacy technician assists pharmacists by performing routine, day-to-day functions of the practice of pharmacy that do not require the judgment of a pharmacist.

registration The process of making a list or being enrolled in an existing list. A pharmacy technician may be required to be registered with the state board of pharmacy before being legally able to carry out some pharmacy functions.

The pharmacy profession has roots dating back thousands of years and is based on the sciences of mathematics, chemistry, and medicine. Knowledge from these sciences is applied to the development and study of drugs and their actions (pharmacology); the understanding of how drugs are absorbed, distributed, metabolized, and eliminated by the body (pharmacokinetics); and the preparation and dispensing of drugs (pharmaceutics).

The primary responsibility of any employee in the pharmacy profession is to ensure that patients receive optimal drug therapy to maintain or restore their health. To achieve this goal, pharmacy personnel in hospitals, community pharmacies, and other health care settings perform a variety of duties designed to deliver the correct drug in the correct amount to the right patient at all times and in a timely manner. These duties include ordering medications from suppliers, evaluating the appropriateness of each medication based on patient-specific information, distributing medications to patients, and monitoring patients while they are taking medications. Pharmacists are assisted by pharmacy technicians in several capacities to fulfill these obligations.

Pharmacists and pharmacy technicians must be honest and ethical and protect the rights and privacy of patients. To establish and maintain a profession consistent with these goals, state boards of pharmacy enforce pharmacy laws and regulations and require pharmacists to meet minimum education and experience standards. Most state boards of pharmacy also require that pharmacy technicians be registered or certified.

The purpose of this chapter is to describe pharmacy training and education, licensure and certification, aspects of professionalism, various settings in which pharmacy technicians practice, and how technician responsibilities are expanding. It emphasizes the differences between the duties and responsibilities of pharmacy technicians and pharmacists and introduces pharmacy technician competency expectations.

Pharmacy Training and Education

A profession is an occupation or vocation that requires advanced training in a liberal art or science. Pharmacy is a profession in which pharmacists are trained in the pharmaceutical sciences. Technicians are individuals who are skilled in the practical or mechanical aspects of a profession. **Pharmacy technicians** assist pharmacists by performing the routine, day-to-day functions that do not require the judgment of a pharmacist. Al-

though technicians may be capable of functioning efficiently and safely without supervision, pharmacists are ultimately responsible for the technicians' activities and performance. The assistance of pharmacy technicians allows pharmacists more time to engage in activities that require professional judgment. Such assistance includes activities such as repackaging medications and maintaining medication inventory. Educating patients about their medications and suggesting medication alternatives to physicians require a pharmacist's judgment

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and are not to be performed by pharmacy technicians. Legally, pharmacists are held liable for the performance of technicians and must oversee and approve the technicians' work.

- ✓ Pharmacists are ultimately responsible for the technicians' activities and performance and are legally held liable for the technicians' work.

Pharmacy Technicians

Pharmacy technicians assist pharmacists by completing tasks that do not require the professional judgment of a pharmacist and that can be reviewed for accuracy by a pharmacist. In this way, pharmacy technicians give pharmacists more time to concentrate on clinical services, such as patient consultation and education, physician collaboration, disease and medication management, and other clinical activities.

The Pharmacy Technician Certification Board (PTCB) is a national certification program that administers a nationally accredited pharmacy technician certification examination. The PTCB defines pharmacy technicians as

individuals working in a pharmacy, who, under the supervision of a licensed pharmacist, assist in pharmacy activities not requiring the professional judgment of a pharmacist. The pharmacy technician is accountable to the supervising pharmacist, who is legally responsible by virtue of state licensure for the care and safety of patients served by the pharmacy. The pharmacy technician performs activities as the result of having certain knowledge and skills.¹

Training prerequisites for pharmacy technicians vary from state to state and from employer to employer, but most employers require pharmacy technicians to have at least a high school diploma. As the level of responsibility for pharmacy technicians increases, so does the amount of required training or experience. Many employers have established criteria to classify technicians on the basis of their training or experience. For example, a hospital pharmacy technician 1 (PT-1) may be a newly hired technician responsible only for filling automated medication dispensing cabinets (e.g., Pyxis[®] MedStation[™] medication management systems). A pharmacy technician 2 (PT-2) in that same hospital may have five years' job experience and be able to fill automated medication dispensing cabinets, as well as charge and credit patient accounts, compound (mix) intravenous (IV) solutions, and inventory narcotics.

Similar classifications may exist in community pharmacies. There, a PT-1 might receive prescriptions as patients leave them to be filled and check out patients at the cash register when they are ready to pay, whereas a PT-2 may be able to enter data in computerized patient profiles, fill and label prescriptions, and review patient insurance information.

- ✓ Training prerequisites for pharmacy technicians vary from state to state and from employer to employer.

The work that pharmacy technicians perform is becoming more and more demanding. Some states allow technicians to check the work of other technicians (tech-check-tech) under the supervision of a pharmacist. Because most pharmacy practice settings rely heavily on computers and automated technology, technicians frequently are responsible for the day-to-day operations and upkeep of these systems. Computerized narcotic inventory control is one example of a technology that requires a high degree of computer skill, and the preparation and compounding of IV and sterile products is an example of a technician duty that demands a high level of proficiency and competence.

Patient safety is a top priority for all pharmacists and pharmacy technicians. Technicians often perform the first step in dispensing medication to patients. As such, they must be sure that they choose the right drug in the right dose to give to the right patient by the right route at the right time. Technicians may be responsible for preparation of drugs that must be reconstituted, mixed, or otherwise prepared before administration, and they must be sure that no errors occur in this process. Technicians often enter patient information into a computer profile for later verification by a pharmacist. Errors made in any of the steps to get the correct medication to the correct patient can carry through and cause potentially fatal errors. Technicians play a key role in minimizing the risk of such errors happening.



Patient safety is a top priority for pharmacists and pharmacy technicians. Technicians must be sure to choose the right drug, the right dose, and the right route and must check to make sure that no errors have been made in the drug preparation. Check your work!

Technicians may be trained on the job or by completing a formal program, such as a certificate of completion

or associate degree program at a community or technical college.

On-the-Job Training. In some states, employers offer on-the-job training to technicians. Technicians are trained to perform tasks that are specific to the job or position for which they were hired. Usually, technicians are taught only those skills needed to perform the particular job. For example, a technician may be trained on the job to fill prescriptions or automated medication dispensing cabinets, compound IV solutions or medications, or enter prescription information into a computer database. When this type of training is very informal, a pharmacist or technician who is familiar with the job often instructs the trainee. In more structured training situations, the trainee participates in a training course developed by the employer.

Some practice sites offer training courses that consist of classroom teaching combined with hands-on experience that may last from a week to six months. In addition to covering general pharmacy topics, such as aseptic (sterile) technique, pharmaceutical calculations, technician responsibilities, and pharmacy rules and regulations, these courses may cover job-related issues such as patient confidentiality, organizational policies and procedures, and employee responsibilities.

Formal Programs. Community and technical college programs are broader in scope than on-the-job training. These programs are more rigorous and take from six to twenty-four months to complete. They cover the technical duties related to pharmacy, as well as such topics as medical terminology, pharmaceutical calculations, drug distribution systems, IV admixture procedures, and medication packaging techniques. In these programs, student technicians gain skills, knowledge, and experience by attending classes and completing clerkships (educational training in actual practice settings such as local hospitals or community pharmacies). After completion of many of these programs, students earn associate degrees or pharmacy technician certificates. Most programs offer full-time, part-time, and night classes, as well as financial assistance to those individuals who qualify. Some are available as online distance learning programs.

Pharmacists

Pharmacists are professionals who have had advanced training in the pharmaceutical sciences.

When filling prescriptions or medication orders, pharmacists depend on their education, experience, and

professional judgment to determine whether the prescription is appropriate for each patient. Often, answers are not black and white, so they rely on their education, experience, and judgment to make the best decision. They are obliged to verify that the medication is appropriate for a patient's condition, that the dosage is correct, that the patient is not allergic to the drug, and that the prescribed medication will not interact with other medications the patient is taking. They must also educate the patient on how to take the medication properly and alert the patient to possible side effects of the drug. Pharmacists perform these functions every time a prescription or medication order is filled.

In all states, pharmacists must be licensed by the state's board of pharmacy before they can practice pharmacy and must follow the board of pharmacy regulations as they practice. Licensed pharmacists supervise the activities of technicians and are held accountable for the technicians' performance.

Pharmacists are required to earn a college or university degree in pharmacy to take the licensing examination offered by their state boards of pharmacy. To be qualified for enrollment in a college pharmacy degree program, students must have completed a minimum of two years of college course work that includes prerequisite classes for pharmacy school. While earning a pharmacy degree, would-be pharmacists learn how to use medical information to evaluate health care-related situations safely and effectively.

The first professional college degree that pharmacists graduating today usually earn is a doctor of pharmacy (PharmD), although some older pharmacists may hold a bachelor of science (BS) in pharmacy. Some schools of pharmacy have also developed "external PharmD" programs for pharmacists with BS degrees who wish to earn a PharmD. Using advanced communication technology such as videoconferencing and the Internet, pharmacists can take classes from a school of pharmacy located any distance away, continue to work a full-time job, and maintain their family lives while fulfilling the requirements of a PharmD degree. Pharmacists who choose this option are often those who have several years of experience working as pharmacists and desire to advance their education but have other obligations that make it impractical for them to return to college full-time.

Many pharmacists have also completed one- or two-year postgraduate training programs called residencies. Residencies provide the opportunity to gain clinical experience, usually in hospital, ambulatory, or

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community settings, after earning a degree. Fellowships, usually two to three years long, also provide postgraduate training but focus on pharmacy research rather than clinical pharmacy practice.

Licensure and Certification

Before learning about licensure and certification for pharmacy technicians and pharmacists, it is important to know some key terminology. The American Society of Health-System Pharmacists (ASHP) Task Force on Technical Personnel in Pharmacy has provided these definitions:

- **Accreditation**—The process of granting recognition or vouching for conformance with established criteria (usually refers to recognition of an *institution*).²
- **Certification**—A voluntary process by which a nongovernmental agency or association grants recognition to an *individual* who has met certain predetermined qualifications specified by that agency or association. This recognition demonstrates to the public that the certified individual has achieved a certain level of knowledge, skill, or experience.²
- **Credentialing**—The process by which an organization or institution obtains, verifies, and assesses a pharmacist's qualifications to provide patient care.^{2,3}
- **Licensure**—The process by which an agency of government grants permission to an individual to engage in a given occupation upon finding that the applicant has attained the minimal degree of competency necessary to ensure that the public health, safety, and welfare will be reasonably well protected.²
- **Registration**—The process of making a list or being enrolled in an existing list. Registration of pharmacy technicians by state boards may be required to legally carry out some functions.⁴

Pharmacy Technicians

Successful completion of an accredited pharmacy technician program or certification examination helps assure pharmacy employers and patients that pharmacy technicians have met a predefined set of standards and possess an established set of skills and knowledge. Some states and employers may require one or the other, but even if they don't, pharmacy technicians who are certified or who have completed an accredited training program may have an advantage in terms of job responsibilities, salary,

and seniority over technicians who are not certified or who have not completed such a program.

Pharmacy Technician Certification. In 1994, several professional organizations, including the ASHP, the American Pharmaceutical Association (APhA, now known as the American Pharmacists Association), the American Association of Colleges of Pharmacy (AACCP), and the National Association of Boards of Pharmacy (NABP), completed a joint endeavor named the Scope of Pharmacy Practice Project. The objective of the project was to perform a validated task analysis of the functions, responsibilities, and tasks of pharmacists and technicians. This analysis documented what pharmacy technicians actually do and what knowledge they need to effectively perform those tasks.

Participants in the Scope of Pharmacy Practice Project identified the need for a national technician recognition program to replace the various state programs that then existed. In 1995, APhA, ASHP, the Illinois Council of Hospital Pharmacists (ICHP, now known as the Illinois Council of Health System Pharmacists), and the Michigan Pharmacists Association (MPA) established the Pharmacy Technician Certification Board (PTCB). The PTCB was created to develop a voluntary national pharmacy technician certification program.⁵

Some states require registration of pharmacy technicians, whereas other states require certification; still others are considering the matter. There is no national requirement for certification at this time. However, a 2007 consumer survey conducted by the PTCB revealed that 73% of the public believes that "pharmacy technicians are required by law to be trained and certified before they can help prepare prescriptions." Most consumers (91%) felt that employers should hire only certified pharmacy technicians.⁶ Given this strong public opinion, it may be only a matter of time before certification is mandated by law.

✓ Most consumers believe that all pharmacy technicians have been trained and certified before they are allowed to prepare prescriptions.

Technicians who wish to become certified may take the national Pharmacy Technician Certification Examination (PTCE) offered by the PTCB. The first such examination was held in 1995. To take the examination, candidates must have earned a high school diploma or a graduate equivalency diploma (GED or foreign diploma) and submit the appropriate application form, fee,

and supporting documents. Candidates are not eligible if they have been convicted of a drug- or pharmacy-related felony, or have had any felony convictions any time during the five years before applying for the PTCE.

The PTCE is a two-hour, closed-book, computer-based examination consisting of eighty multiple-choice questions plus an additional ten non-scored questions. The non-scored questions are pretest questions and are not used in calculating the candidate's score, but provide information for possible use on future examinations. Each question has four possible answers from which to choose, with only one being the best, or correct, answer. The score is based on the number of correctly answered questions.

The questions are written to assess the knowledge and skills that are deemed necessary to perform the work of pharmacy technicians. The exam divides these activities into three function areas:

- I. *Assisting the pharmacist in serving patients*, including activities related to dispensing prescriptions, distributing medications, and collecting and organizing information
- II. *Maintaining medication and inventory control systems* pertaining to activities related to purchasing medications and supplies, controlling inventory, and storing, preparing, and distributing medications according to policies and procedures
- III. *Participating in the administration and management of pharmacy practice*, including administrative activities that deal with such issues as operations, human resources, facilities and equipment, and information systems

Of the scored questions on the examination, 66% of the examination tests the candidate on topics in function area I, 22% on topics in function area II, and the remaining 12% on topics in function area III. Candidates who pass the exam may use the designation *CPhT* (certified pharmacy technician) after their names.

To maintain the certification, technicians must recertify every two years by completing at least twenty hours of continuing education. A maximum of ten hours may be earned at the technician's workplace under the direct supervision of a pharmacist. These hours must be special assignments or training; regular work hours do not apply. At least one hour of continuing education must be related to pharmacy law. Several references are available to assist candidates preparing for the examination. Refer to the PTCB Web site to verify current eligibility requirements and test specifics (www.ptcb.org).

In 2005, the Institute for the Certification of Pharmacy Technicians (ICPT) also began offering a national certification examination, called the Exam for the Certification of Pharmacy Technicians (ExCPT). It is offered in an on-demand, computer-based format; pharmacy technicians may take the examination at any time at any one of over 600 supervised test centers throughout the United States. After completing the ExCPT, and before leaving the testing center, technicians are immediately given the examination results.

Eligibility requirements to take the ExCPT are similar to those of the PTCE. The ExCPT is a two-hour test with 110 multiple-choice questions (of which 10 are not counted in the score) examination. Questions are categorized into three areas:

1. *Regulations and Technician Duties* (25% of the examination), which includes questions about technician duties and general information, controlled substances, and other laws and regulations
2. *Drugs and Therapy* (23% of the examination), which contains questions about drug classification and most frequently prescribed medications
3. *Dispensing Process* (52% of the examination), which relates to areas such as prescription information, preparing/dispensing prescriptions, calculations, sterile products, and unit dose and repackaging

Pharmacy technicians must recertify every two years by completing twenty hours of continuing education, with at least one hour related to pharmacy law. Refer to the ICPT Web site to verify current eligibility requirements and test specifics (<http://www.nationaltechexam.org/excpto.html>). Check with your state's board of pharmacy to determine which certification examination is required or accepted for pharmacy technicians in your state.

R_x for Success

Whether or not your state requires technician certification, becoming certified and maintaining the certification is advantageous. The knowledge and skills that are tested by either the PTCE or the ExCPT are pertinent to any technician working in any pharmacy practice setting. Becoming certified demonstrates a commitment to your profession and to your career.

The National Pharmacy Technician Association (NPTA) offers further certification in two specialty areas: sterile products and compounding. To obtain these additional certifications, candidates must complete several home-study modules and pass module exams before attending a two-day training institute in Texas. While attending the training institute, candidates get hands-on teaching and experience. Upon completion, a certificate of validated training is awarded to candidates.

Pharmacy Technician Training Program Accreditation. Currently, the ASHP is the only organization that specifically accredits pharmacy technician training programs. Many ASHP-accredited programs are offered by vocational, technical, and community colleges, although some hospitals, chain drug stores, and military branches also have ASHP-accredited programs. Accreditation standardizes the formal training that pharmacy technicians receive; it also provides institutions that offer a technician training program with guidelines on how to train competent pharmacy technicians. Pharmacy technician training programs must meet minimum requirements, or criteria, set by ASHP to earn accreditation.⁴

The goals of ASHP accreditation are to upgrade and standardize technician training, assist and recognize such training programs, provide criteria for technician trainees as they choose a technician training program, provide pharmacies with a yardstick with which to measure the level of competency of pharmacy technicians, and assist in the advancement and professional development of pharmacy technicians. Other organizations also offer guidelines for pharmacy technician training; for example, the APhA offers guidelines for nuclear pharmacy technician training programs.⁷

Pharmacists

After earning a PharmD degree, pharmacy graduates must pass examinations as required by their state's board of pharmacy. These examinations test pharmacy skills, knowledge, and pharmacy law. A board of pharmacy includes pharmacists and members of the public who have been appointed to the board by the state governor or state legislature. The members of a state board of pharmacy are responsible for protecting the citizens of their state. The board does so by passing pharmacy rules and regulations to be followed in addition to the laws enacted by the state legislature. Once candidates have fulfilled their state's board of pharmacy requirements, they become

registered pharmacists (R.Ph.) and are allowed to practice pharmacy in that state.

Some pharmacists also choose to become certified as pharmacotherapy specialists. After passing a certification examination, they earn the title of board-certified pharmacotherapy specialist and may add the initials BCPS to their credentials. These pharmacists must still comply with the requirements of their state's board of pharmacy. There are also certification examinations for nutrition support, nuclear pharmacy, psychiatric pharmacy, oncology, and, most recently, ambulatory care. Other specialty certification examinations are under consideration. Pharmacists who have expertise in a specialty area may submit portfolios that outline their education and experience in the area for review. If the portfolios meet the requirements, these pharmacists may add the term "added qualification" to their credentials. Currently, the approved added qualifications are cardiology and infectious diseases.

Professionalism

As members of the profession of pharmacy, pharmacists and pharmacy technicians are expected to practice and act in a professional manner at all times. Professionalism is actively demonstrating the attitudes, qualities, and behaviors of a person well educated in an area of specialized knowledge. An important aspect of acting professionally is putting the needs of others before one's own. Professionalism also refers to the way in which members of a profession present themselves and communicate with others.

For pharmacy technicians, a good place to start when discussing professionalism is the Code of Ethics for Pharmacy Technicians (box 1–1). This code outlines ten guiding principles that pharmacy technicians are encouraged to follow.⁴ To these ethical principles, ASHP adds ten characteristics of a professional (box 1–2).⁸ These characteristics are equally applicable to pharmacy technicians. Violation of these values and qualities not only is unprofessional but also may be against federal or state law.

Practical examples of professional conduct include respect for patients' privacy and keeping patient information confidential, participation in continuing education courses and seminars, and cultivating an honest, conscientious attitude while performing job-related activities. Asking a sports celebrity for an autograph while he or she is hospitalized is not professional behavior. Neither

Box 1-1. Code of Ethics for Pharmacy Technicians⁴**Preamble**

Pharmacy Technicians are health care professionals who assist pharmacists in providing the best possible care for patients. The principles of this code, which apply to pharmacy technicians working in any and all settings, are based on the application and support of the moral obligations that guide the pharmacy profession in relationships with patients, healthcare professionals, and society.

Principles

- A pharmacy technician's first consideration is to ensure the health and safety of the patient, and to use knowledge and skills to the best of his or her ability in serving patients.
- A pharmacy technician supports and promotes honesty and integrity in the profession, which includes a duty to observe the law, maintain the highest moral and ethical conduct at all times, and uphold the ethical principles of the profession.
- A pharmacy technician assists and supports pharmacists in the safe and efficacious and cost-effective distribution of health services and health care resources.
- A pharmacy technician respects and values the abilities of pharmacists, colleagues, and other healthcare professionals.
- A pharmacy technician maintains competency in his or her practice and continually enhances his or her professional knowledge and expertise.
- A pharmacy technician respects and supports the patient's individuality, dignity, and confidentiality.
- A pharmacy technician respects the confidentiality of a patient's records and discloses pertinent information only with proper authorization.
- A pharmacy technician never assists in dispensing, promoting, or distribution of medication or medical devices that are not of good quality or that do not meet the standards required by law.
- A pharmacy technician does not engage in any activity that will discredit the profession, and will expose, without fear or favor, illegal or unethical conduct of the profession.
- A pharmacy technician associates with and engages in the support of organizations that promote the profession of pharmacy through the utilization and enhancement of pharmacy technicians.

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Box 1-2. Ten Characteristics of a Professional⁸

1. Knowledge and skills of the profession
2. Commitment to self-improvement of skills and knowledge
3. Service orientation
4. Pride in and service to the profession
5. Covenantal relationship with the patient
6. Creativity and innovation
7. Conscience and trustworthiness
8. Accountability for his or her work
9. Ethically sound decision making
10. Leadership

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is adding an extra two weeks to a medication's expiration date in order to "use it all up."

Pharmacy technicians must remember that "patients are people first" and treat them with courtesy and respect. Depending on the practice setting, a pharmacy technician may be the first person with whom a patient has contact, and it is important that the technician interact with the patient in a competent and professional manner. As in any profession, good customer (patient) service is the mark of a professional and provides the patient with a sense of confidence in the service that the technician, and other health care providers, offer.

Communicating and interacting in a professional manner is equally important among coworkers. Maintaining self-control and a professional attitude when solving work problems creates a more professional and

efficient work environment (see Chapter 8, Communication and Teamwork).

Personal appearance communicates a message as well. It is important for pharmacy technicians, whether wearing scrubs or a lab coat, to project a professional image. Neatness in appearance is an easy way to build professional behavior. A professional appearance conveys a serious attitude about the work.

Another way that a pharmacy technician can become more professional is to join a membership organization such as the NPTA or the American Association of Pharmacy Technicians (AAPT). These types of organizations offer members benefits and services that support pharmacy technician professionalism. These services include continuing education opportunities, job placement services, subscriptions to pharmacy technician journals and newsletters, and online discussion groups and networks. Many national and state pharmacist organizations also offer membership to technicians or sponsor technician sections within their organizations.

R_x for Success

Become an active member of your local pharmacy technician organization; regularly read pharmacy technician-related publications, such as newsletters and journals; and find opportunities for continuing education.

Pharmacy Practice Settings

The profession of pharmacy is practiced in many environments, which are commonly divided into *ambulatory care* and *institutional* settings. Ambulatory care, or outpatient, settings serve patients living in their own homes or similar situations and include community (ambulatory) clinics, home care, and mail order. Institutional or inpatient settings are those in which patients reside in a facility where they receive long- or short-term care from health professionals. The two primary institutional settings are long-term care and hospitals. Other examples of pharmacy practice settings include pharmacy benefit managers and managed care, hospice care, research facilities, educational centers, and the pharmaceutical industry.

Often, two or more of these practice settings—for example, a hospital, an outpatient surgery center, home care services, and an ambulatory clinic—may have a

working relationship with each other and may even be managed or owned by the same business entity. These settings may then be “packaged” together as a **health-system**. Health systems are intended to provide complete health care–related services to the patients they serve. Although the specific pharmacy activities of practice settings may vary, the primary goal of each remains the same: to ensure that patients receive optimal drug therapy to maintain or restore their health.

Community Pharmacy

The community pharmacy is the corner drugstore or the local retail or grocery store pharmacy. Community pharmacies can be members of a chain of pharmacies or can be independently owned. Usually, patients are customers who are treated as outpatients by doctors and who come into the store with prescriptions. Generally, these patients live in their own homes, under their own care.

Technicians in community settings often prepare prescription labels for checking by a pharmacist, order and maintain drug inventory, process insurance claims, and operate a cash register. In some states, pharmacy technicians may fill prescriptions to be later checked by a pharmacist. Pharmacy technicians must be familiar with brand and generic names, dosage forms, and therapeutic uses of common prescription and over-the-counter medications. Good communication skills, including telephone etiquette and the ability to interpret nonverbal body language, are critical for community pharmacy technicians, because they have a lot of direct patient interaction.

Additional information about community and ambulatory care pharmacy practice is found in Chapter 3.

Mail-Order Pharmacy

Pharmacists and technicians also work in mail-order facilities, through which patients have their prescriptions filled and refilled through the mail. The major difference between mail-order and community pharmacies is the lack of face-to-face contact with patients. Technicians’ duties in a mail-order pharmacy are similar to those in the community setting and require the same amount of competence. Mail-order pharmacists must use their professional judgment, just as in community and institutional settings.

Pharmacy Benefit Managers and Managed Care

A pharmacy benefit manager (PBM) oversees prescription medication programs and processes and pays prescription medication insurance claims. A PBM also

develops and maintains a medication formulary, or list of approved prescription medications, from which physicians may prescribe for the PBM's patient members. Because a PBM has a large number of members, it can negotiate with drug manufacturers for medication discounts and rebates and may contract with pharmacies for their services. By doing so, a PBM is able to offer prescription medications at lower prices to its members. Pharmacists and pharmacy technicians who work in a PBM environment usually do not have direct patient contact but instead manage drug therapy on a global scale by collecting information from patients' computerized medication profiles and pooling it into a large database. Prescription drug use and physician prescribing patterns are analyzed for trends that indicate optimal or suboptimal medication therapy. Pharmacists subsequently try to minimize drug costs and improve patient outcomes or results through the development of medication formularies and disease-specific medication therapy guidelines. Pharmacy technicians who work for a PBM may collect data, research information, and assist pharmacists in writing reports.

A managed care program is a type of health insurance program that allows patients to pay a blanket fee for their health care services rather than by the traditional fee-for-service system. Managed care programs attempt to improve the quality of health care delivery and patient outcomes. One definition of a managed care prescription program is "the application of management principles to achieve maximum health outcomes at the lowest cost."⁹ Managed care programs often operate ambulatory clinics and hospitals from which their patient members obtain their health care.

Hospital Pharmacy

Patients are admitted to hospitals for short-term, supervised medical care by health care professionals in a structured, formal manner. Pharmacists are directly involved with patient care and have daily interactions with physicians, nurses, and other caregivers. They develop plans of pharmaceutical care and medication management and, with the other caregivers, monitor the patients' drug therapy. Depending on the size of the hospital, some pharmacists provide specialized services in areas such as pediatrics, oncology, infectious diseases, nutrition support, and drug information.

In addition to providing direct patient care, pharmacists evaluate trends in medication use and physician prescribing, develop guidelines for medication use, educate patients and health care professionals, and implement and maintain drug distribution systems. They

also work with nurses, physicians, and other members of hospital committees and workgroups, both within and outside the pharmacy department.¹⁰

Pharmacy technicians in hospitals work with pharmacists to accomplish many of the pharmacy's goals. Generally, technicians may enter physician medication orders into the pharmacy computer system, prepare IV drug admixtures, repackage and label unit dose medications, restock automated dispensing cabinets, deliver medications, and complete paperwork for quality assurance or billing purposes. In some hospitals, pharmacy technicians may dispense medications from a preapproved list or even administer some types of medications.

Additional information about hospital pharmacy practice is found in Chapter 4.

Home Health Care

Home health care is defined as "physician ordered services provided to patients at their residences, be it their own homes or any other setting in which the patients live."¹¹ Such services may include personal care, hospice and respite care, shopping assistance, drug and infusion therapy, and speech, physical, and occupational therapy.^{11,12} Home care pharmacists assess the patient for the appropriateness of home medication administration and develop a medication management plan to educate and monitor the patient. Medications administered in the home setting may be as simple as oral tablets or capsules or as complex as continuous infusions of pain medications or total parenteral nutrition (TPN).

Technician duties in a home care setting may include preparing sterile injectable products, maintaining computerized patient profiles, and delivering medications and supplies to a patient's home.

Additional information about home care pharmacy practice is found in Chapter 5.

Long-Term Care

Long-term care facilities are those institutions where patients stay for extended periods. They include nursing homes, psychiatric or behavioral health institutions, intermediate care facilities for mentally disabled patients, and skilled nursing facilities. Patients in these settings require professional care, but not to the same degree as hospitalized patients. Most of these facilities do not have pharmacies on site but contract with local community pharmacies for pharmacy services; pharmacists and pharmacy technicians thus do not have direct patient interaction. However, pharmacists and technicians in

long-term care practices perform many of the same functions as those in other settings.

Hospice care is care that is given to those patients with incurable diseases who are generally not expected to live more than six months. Hospice care may be offered in long-term care settings, hospitals, or patients' own homes. The aim of hospice care is not to cure the disease, but to provide dying patients with the best possible quality of life for the remainder of their lives. Pharmacist and pharmacy technician activities in hospice settings focus on the relief of symptoms (e.g., pain, nausea, vomiting, anxiety) rather than on treating disease.

Specialty Pharmacy Services

Some areas of pharmacy practice, such as nuclear pharmacy and veterinary pharmacy, require very specific knowledge and expertise. Just as pharmacists may choose to specialize in an area of pharmacy (e.g., ambulatory care, cardiology, infectious diseases, nutrition, oncology, organ transplantation, or pediatrics), so may technicians. Technicians may specialize in areas such as inventory purchasing and management, sterile product preparation, surgical pharmacy, nuclear pharmacy, veterinary pharmacy, and nonsterile (extemporaneous) compounding.

Additional information about specialty pharmacy practice is found in Chapter 6.

Expansion of Technician Responsibilities

R_x for Success

To perform duties in a competent manner, technicians must develop the ability to determine the best course of action in a specific situation. Applying critical thinking skills allows pharmacy technicians to prioritize, problem-solve, and troubleshoot issues that arise that may not require the judgment of a pharmacist but that still call for careful attention.

Table 1–1 lists some of the functions that pharmacy technicians perform in community and institutional pharmacy settings.¹³ Some of the listed functions are not routinely performed by all technicians in all inpatient or outpatient pharmacies. Most pharmacy technicians perform

routine activities such as answering telephone calls, obtaining patient information, and updating patient profiles. Technicians with advanced skills and knowledge may perform more sophisticated functions, such as checking the work of another technician, dispensing medications from an approved list, or even administering medications.^{14–18}

As the demand for cost-effective health care increases, pharmacy technicians with well-developed critical thinking skills may find themselves assuming responsibilities previously assigned to pharmacists. In some situations, after gaining the right experience and expertise, some technicians may even assume managerial duties and be promoted to supervisory positions once held by pharmacists. The role of pharmacy technicians will continue to change and develop as the profession of pharmacy evolves to meet the changing health care needs of the public.

R_x for Success

Demonstrating an eagerness to learn and take on more responsibilities can help advance your career.

Trends in Pharmacy Practice

The profession of pharmacy involves much more than counting tablets and filling prescriptions. Pharmacists and pharmacy technicians are important members of a patient's health care team. They contribute specialized medication knowledge and expertise to the team. Integration of the technicians' knowledge with that of other team members (e.g., pharmacists, nurses, physicians, social workers, etc.) may be described by concepts known as pharmaceutical care and medication therapy management.

Pharmaceutical Care and Medication Therapy Management

The concept of pharmaceutical care was introduced in the early 1990s. **Pharmaceutical care** is defined as "the direct, responsible provision of medication-related care for the purpose of achieving definite outcomes that improve a patient's quality of life."¹⁹

Pharmaceutical care involves cooperation between a pharmacist, patient, and other health care professionals

Table 1-1. Tasks Typically Performed by Certified Pharmacy Technicians (as allowed by individual state law)¹³

This list is based on the results of a survey conducted in 2005 of 4,000 certified pharmacy technicians wherein survey respondents were asked to rate elements of their job functions, responsibilities, and knowledge.

Ambulatory Care Pharmacies	<ul style="list-style-type: none">■ Accept electronic refill authorizations from prescribers■ Assist the pharmacist in obtaining patient information such as diagnosis, desired therapeutic outcome, disease state, and medication history■ Assess prescription or medication order for completeness, accuracy, authenticity, legality, and reimbursement eligibility■ Update the medical record or patient profile■ Assist the patient in choosing the best payment assistance plan■ Select the appropriate product for dispensing (e.g., brand names; generic substitutes)■ Assemble patient information materials■ Check for accuracy during processing of the prescription or medication order■ Provide medication and supplemental information to the patient■ Communicate with third-party payers to determine or verify coverage and to obtain prior authorizations■ Communicate with third-party payers and patients or to rectify rejected third-party claims■ Identify and resolve problems with rejected claims■ Direct patient or patient's representative to pharmacist for counseling■ Maintain required inventories and records■ Update and maintain patient information■ Perform billing and accounting functions for products and services
Institutional Pharmacies	<ul style="list-style-type: none">■ Package finished dosage forms■ Assemble equipment and supplies necessary for compounding prescriptions or medication orders■ Perform calculations required for preparation of compounded IV admixtures■ Compound medications for dispensing according to prescription and compounding guidelines■ Prepare sterile products■ Record medication preparation and ingredients■ Place medications in dispensing system■ Deliver medications to patient care unit■ Record distribution of controlled substances■ Receive pharmaceuticals, medical equipment, devices, and supplies, and verify against purchase orders■ Place pharmaceuticals, medical equipment, devices, and supplies in inventory under proper storage conditions while incorporating error-prevention strategies■ Perform non-patient-specific preparation, distribution, and maintenance of pharmaceuticals, medical equipment, devices, and supplies while incorporating error-prevention strategies■ Maintain required inventories and records■ Repackage finished dosage forms for dispensing■ Perform and record routine sanitation, maintenance, and calibration of equipment
Ambulatory and Institutional Pharmacies	<ul style="list-style-type: none">■ Affix labels and auxiliary labels to containers■ Prepare prescriptions and medication orders for final check by pharmacist

Table 1-1. Tasks Typically Performed by Certified Pharmacy Technicians (as allowed by individual state law)¹³ (continued)

	<ul style="list-style-type: none"> ■ Store medication prior to distribution ■ Remove from inventory expired, discontinued, slow-moving, overstocked, and recalled pharmaceuticals, medical equipment, devices, and supplies ■ Coordinate written, electronic, and oral communications throughout the practice setting (e.g., route telephone calls, faxes, and oral and written refill authorizations; disseminate policy and procedure changes) ■ Update, maintain, and use job-related manual or electronic information systems ■ Coordinate and participate in staff training and continuing education
Quality Assurance	<ul style="list-style-type: none"> ■ Multiple-point checking ■ Assist pharmacist in monitoring patient outcomes (e.g., collect patient-specific data) ■ Inventory control (e.g., separation of medications; bar code scanning; process verification; system updates) ■ Coordinate written, electronic, and oral medication error communications throughout the practice setting (e.g., unapproved abbreviations; look-alike and sound-alike medications) ■ Education, training, and certification ■ Review discrepancies and billing and fraud errors

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in designing, implementing, and monitoring a therapeutic medication plan. It consists of three major functions:

1. Identification of potential and actual drug-related problems
2. Resolution of actual drug-related problems
3. Prevention of potential drug-related problems

Pharmaceutical care makes the pharmacist directly responsible to the patient for the quality of the patient’s care. The basic goals, processes, and relationships of pharmaceutical care are the same regardless of practice setting.¹⁹


More recently, **medication therapy management (MTM)** has become the pharmacy practice model. In 2003, the Medicare Modernization Act was signed into federal law. Under this act, Medicare prescription drug providers are required to establish MTM programs that improve medication use and reduce adverse events.

Medication therapy management has been defined as “a distinct service or group of services that optimize therapeutic outcomes for individual patients. Medication therapy management services are independent of, but can occur in conjunction with, the provision of a medication product.”²⁰ These services include assessment of a patient’s health status; formulation of a medication treatment plan; selection, initiation, modification, or administration of medication therapy; monitoring of the patient’s response to therapy; review of medications for medication-related problems; documentation and communication of care;

provision of patient education and information to increase patient understanding and appropriate use of medications; and coordination and integration of MTM services into the broader health care services provided to the patient.²⁰

Increasing Impact of Technology

Technical advances are changing the practice of pharmacy. Computers, bar coding, and robotic systems have been developed to dispense medications and monitor medication use more accurately, timely, and cost-effectively. Because advanced computer systems collect and store patient information, information is more accurate and easier to access. Checks and balances (e.g., checks for drug interactions, patient allergies, and duplicate therapy) are built into computer systems and result in fewer errors. Automation of these checks and balances and other traditional functions allows pharmacists more time for activities that require their professional judgment and expertise. In turn, pharmacists are relying more than ever on technicians to operate and maintain these new systems.



TECHNOLOGY TOPICS

Automated dispensing technology is more accurate and faster than manual dispensing.

The major advantage of automated dispensing technology is that it is more accurate and faster than humans and makes the dispensing process safer for patients. However, technology and machines can—and do—fail, so it is still necessary for a human to check the work of a machine. Many medication-related errors occur when pharmacists and pharmacy technicians assume that technology functions correctly 100% of the time. As an example, a bar code label could be damaged so that a bar code scanner either does not read the label or reads it incorrectly, causing the wrong medication to be dispensed to a patient. It is the duty of the pharmacy technician working with the scanner to identify and correct the malfunction and error before the medication even leaves the pharmacy.



Technology and machines can fail or malfunction, so it is still necessary for a human to oversee their use.

Machines are programmed to perform their jobs the exact same way every time. They do not have the ability to use judgment. Pharmacists and pharmacy technicians must still apply judgment when checking the work of a machine. For example, an IV pump may be programmed to allow a certain medication to be infused at a rate no faster than 50 mL/hour. But a certain patient who is critically ill might need the medication infused at 100 mL/hour. A pharmacist must use judgment to determine whether or not to override the IV pump's programming and to allow the medication to infuse at that faster rate.

Increasing Use of Outpatient Services

More and more, patients are cared for and treated as outpatients. This is a result of the need to contain the skyrocketing costs of health care. Patients who would have been admitted to the hospital a day or two before surgery are now admitted on the day of the procedure

and discharged earlier. Many hospitals have established outpatient surgery centers that admit patients for surgery and release them hours later. For many diagnostic tests, patients are no longer admitted to a hospital but are seen as outpatients, and return home shortly after the tests.

The practice of pharmacy is changing to adapt to the new health care environment. Some clinics and outpatient centers have pharmacists and pharmacies available on site. In these settings, pharmacists have less time to gather patient information and thus depend more on technicians to assist them in providing optimal pharmaceutical care.²¹

Summary

Pharmacy technicians are key professionals who may be found in virtually all pharmacy practice settings. They perform their jobs with a high degree of professionalism and are critical to the successful operation of any pharmacy. Pharmacy technicians now commonly review and fill medication orders or prescriptions that are then checked by a pharmacist. Technicians also do most of the IV admixture and sterile compounding. More and more computer-entry functions, such as patient billing and order entry, are also the responsibility of technicians. In some settings, technicians may check each other's work, dispense medications from a preapproved list, or administer medications.

Given the changes occurring in the pharmacy profession, the roles of pharmacy technicians in all settings are expanding, and more is expected from technicians than in the past. Increasingly, technicians are primarily responsible for the mechanical and routine aspects of pharmacy practice; they are also called upon to develop and use critical thinking skills and to prioritize activities, make timely decisions, and solve problems. As a team, pharmacists and pharmacy technicians work to improve patient care, avoid medication errors, and optimize medication use.

Self-Assessment Questions

1. Which of the following is true of certification?
 - a. Certification is granted by a governmental agency to an institution in recognition that the institution has met predetermined requirements.
 - b. Certification is a voluntary process whereby a person who has met defined requirements established by a nongovernmental agency or association is recognized by that agency or association as having met those requirements.
 - c. Certification is a mandatory process whereby a person who has met requirements established by a governmental agency is endorsed by that agency as having met established criteria.
 - d. Certification is a process whereby a governmental agency allows a person to perform the duties associated with an occupation after that person has demonstrated the minimum acceptable degree of competency in that occupation.
2. Tekno Technical College has a new pharmacy technician training program. The administration wants to show that the program meets the national standards for pharmacy technician education. Which type of recognition will the program seek?
 - a. Accreditation
 - b. Certification
 - c. Licensure
 - d. Registration
3. From a legal standpoint, who is ultimately responsible for a pharmacy technician's activities and performance?
 - a. The technician who performs the activity
 - b. The patient's physician
 - c. The technician with the most experience and seniority
 - d. The supervising pharmacist
4. How can a pharmacy technician become certified?
 - a. By submitting the proper application and documentation to the state board of pharmacy
 - b. By working as a pharmacy technician for the number of years specified by the state medical board
 - c. By passing a national examination that evaluates the technician's knowledge and skills needed to perform the work of pharmacy technicians
 - d. By passing a test offered by the National Association of Boards of Pharmacy that assesses the technician's knowledge of drug therapy and pharmacokinetics
5. Which of the following activities is a typical pharmacy technician duty?
 - a. Recommending an antibiotic to treat an ear infection in an infant to a physician
 - b. Filling an automated medication dispensing cabinet in a nursing home
 - c. Giving a nurse an order for an alternative medication to morphine for a patient who has had an allergic reaction to morphine in the past
 - d. Filling in for a pharmacist when she is on her lunch break
6. What is medication therapy management?
 - a. Proper storage and handling of medication
 - b. Medication-related advertising that is directed to consumers from drug manufacturers
 - c. Medication-related information provided to physicians and other health care professionals by pharmacists
 - d. A service or group of services that optimize therapeutic outcomes for individual patients
7. A(n) _____ pharmacy practice setting is one in which pharmacists care for patients in their own places of residence.
 - a. Home health care
 - b. Institutional
 - c. Acute care
 - d. Ambulatory
8. Which of the following statements is false?
 - a. Technicians must conduct themselves in a professional manner when performing their job duties.
 - b. Pharmacists are solely responsible for assuring patient medication safety.
 - c. A characteristic of a professional includes pride in his or her chosen profession.

Self-Assessment Questions

- d. Even after completion of a training program, technicians should still participate in continuing education programs.
9. As a pharmacy technician, you may perform all of the following activities except which?
- Entering orders into a computer or patient profile
 - Performing mathematical calculations
 - Checking the work of other technicians
 - Changing the dose of a prescribed medication on the basis of a patient's poor kidney function
10. A pharmacy technician's job duties _____.
- Are the same as a pharmacist's, but the technician's work must be checked by a pharmacist
 - Are the same for each technician position within a practice setting
 - Include routine tasks that require professional judgment
 - May include medication preparation, inventory management, and training of other technicians

**Part
1**

Self-Assessment Answers

1. b. Certification is a *voluntary* process granted by a *nongovernmental* agency to an *individual* and recognizes that the individual has met certain requirements set forth by that agency. Therefore, choices a, c, and d are incorrect.
2. a. Certification is associated with personal achievement of standard criteria, while accreditation is associated with organizational achievement. Licensure is a governmental recognition of the right to perform a specific occupation. Registration is a listing function.
3. d. While the physician may be ultimately responsible for a patient's care, the pharmacist is ultimately responsible for the actions of technicians working under his or her supervision.
4. c. Certification is offered by an independent organization and is not affiliated with either the State Boards of Pharmacy or the National Association of Boards of Pharmacy. Although working as a technician for a number of years might increase the likelihood of passing the certification exam, it is not sufficient to earn certification.
5. b. All the other answers are tasks that must be done by a pharmacist.
6. d. Medication storage and handling, as well as both consumer and professional information, may be parts of medication therapy management, but the more comprehensive definition of a service or group of services that optimize therapeutic outcomes for individual patients is the best answer.
7. a. Home health care pharmacists serve patients in their own homes. Institutional and acute care pharmacists generally work in hospitals or long-term care facilities. Ambulatory pharmacists generally see patients in an outpatient setting but do not serve patients directly in their homes.
8. b. While pharmacists are ultimately responsible for assuring patient medication safety, technicians also play a critical role. The remaining statements are all true.
9. d. The other functions listed are acceptable for technicians to perform, but a pharmacist must do all dose adjustments.
10. d. Pharmacists usually do not have the same job duties as technicians. Technician duties may be the same for each technician position within a practice setting or may vary based on the job assignment and expected activities. Technicians perform routine tasks that do *not* require professional judgment; those that do are carried out by pharmacists.

Resources

More information about the PTCE pharmacy certification examination may be obtained from the Pharmacy Technician Certification Board at 1100 15th Street, NW, Suite 730, Washington, DC, 20005-1707, or at (800) 363-8012 or www.ptcb.org. Specifics about the exam may be found in the *Guidebook to Certification* at www.ptcb.org/AM/Template.cfm?Section=Guidebook_to_Certification&Template=/CM/HTMLDisplay.cfm&ContentID=2952.

More information about the ExCPT pharmacy certification examination may be obtained from the Institute for the Certification of Pharmacy Technicians at 2536 South Old Highway 94, Suite 214, St. Charles, MO, 63303, or at (314) 442-6775 or www.nationaltechexam.org/home.html. Specifics about the exam may be found in the *Candidates' Guide—2008*, at www.nationaltechexam.org/excptinfo.html.

American Association of Pharmacy Technicians:
www.pharmacytechnician.com.

American Society of Health-System Pharmacists (pharmacy technician page): www.ashp.org/technicians.

National Pharmacy Technician Association:
www.pharmacytechnician.org.

Links to each state's board of pharmacy may be found on the National Association of Boards of Pharmacy Web site: www.nabp.net.

Criteria for pharmacy technician training programs for accreditation by the American Society of Health-System Pharmacists may be found on the ASHP Web site: www.ashp.org/s_ashp/docs/files/RTP_TechStandards.pdf.

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