You have just completed your educational degree requirements and earned your PharmD degree a few short weeks ago. You are currently working 8 hours per day at WeCare Pharmacy to fulfill your internship requirements, and your appointment to take the board exam the next week is quickly approaching. You have your head buried in books and notes one Wednesday evening before retiring, when suddenly it hits you: “Gosh, if I pass the NAPLEX and jurisprudence examinations, I’ll be a registered pharmacist before the end of next month!”

That weekend you make the trip back home to visit with your family for the first time since moving 5 hours away to take the job at WeCare. Your Mom lovingly fires a series of questions your way: “Well, what’s it like almost being a pharmacist? Is it what you thought it would be? Have you met any other pharmacists? How do they treat you at your new job? What do you do there, anyway?”

You begin to answer your Mom, one question at a time, but then become puzzled that you are not sure exactly how to answer her. In fact, you had not really thought about these things. What is pharmacy all about anyway? Do you have a “pharmacist’s mentality,” or does such a thing exist? Did you make the right career and organizational choice? How do you meet other pharmacists in the area? How do you stay apprised of what is going on in the worlds of pharmacy and health care?
LEARNING OBJECTIVES

Upon completion of this chapter, the student shall be able to:

• Identify three eras in pharmacy practice and education during the 20th century. Describe the principal forces that shaped the profession.
• Define “pharmaceutical care.” Discuss pharmaceutical care as the mission of contemporary pharmacy practice. Identify barriers to this mission and describe where the profession stands in its implementation.
• Discuss the difference between licensure and certification. Discuss opportunities for pharmacists to obtain certification. Identify other postgraduate educational opportunities for pharmacists.
• Describe roles played by professional pharmacy organizations. Identify benefits for pharmacists who join professional pharmacy organizations. Describe the mission and goals of several key professional pharmacy organizations.
• Describe the roles and functions of pharmacy technicians. Discuss the trend toward technician certification and explain what it means to pharmacy.
• Describe how the Internet has affected pharmacy practice. Discuss advantages of and possible threats to patient safety from Internet pharmacy practice. Identify other technologies affecting contemporary pharmacy practice.
• Discuss the implications of the pharmacist workforce for practice and education. Describe factors that affect the pharmacist labor supply. Discuss estimates of the pharmacy workforce for the coming decades.

CHAPTER QUESTIONS

1. How have pharmacists’ education and training and the roles they play in society evolved throughout the 20th century?
2. What is “pharmaceutical care”? What are its goals? Why did the pharmacy profession embrace it as a mission? Where does the profession stand in implementing pharmaceutical care? Which barriers might prevent pharmacists from providing pharmaceutical care and how might these be overcome?
3. What are the subdisciplines that constitute pharmacy education and practice? What are some of the postgraduate educational and career options in these areas?
4. What is the difference between certification and licensure? What are some areas in which pharmacists may obtain board certification?
5. What purposes do professional pharmacy organizations serve? What are some of the key organizations that shape pharmacists’ practice?
6. What are some trends concerning the roles of pharmacy technicians in practice?
7. What are the advantages and disadvantages of using Internet pharmacies from a patient’s perspective? What are some of the public health concerns regarding the proliferation of Internet pharmacies? What steps are government agencies and the pharmacy profession taking to ensure the public’s safety?
8. Why is the pharmacy workforce such a critical issue to the profession? What do estimates of pharmacists’ labor supply suggest?
INTRODUCTION

Chapter 2 introduced the concepts of professionalism and interdisciplinary care while briefly describing the training, expertise, and professional roles of pharmacists and some of the many health care professionals with whom pharmacists interact with on a regular basis. This chapter examines in greater detail those same aspects of the pharmacy profession, its pharmacist members, and pharmacy education; it is divided into seven major sections.

The first section is an abridged history of the profession and the evolution of current medication use systems. This appropriately leads into the second section, a discussion of pharmacy’s mission and philosophy of practice, termed pharmaceutical care. The third section discusses current and expected future trends in practice, emphasizing pharmacist specialization and examining the various settings in which pharmacists practice. A multitude of professional organizations represent pharmacists in each of these settings, as discussed in the fourth section. The fifth section describes the roles of pharmacy technicians, now pharmacists’ most important adjuncts in providing pharmaceutical care.

The sixth section examines a phenomenon pervading the delivery of medical care called “cyberpharmacy,” or the application of e-commerce to modern medication use systems. Other trends affecting the future of our practice are examined as well, including the projected increase in the number of prescriptions written and dispensed in the United States in the coming decades. This provides a nice segue into the seventh, very critical section of this chapter—the discussion of workforce issues. The labor supply has important implications for the future of pharmacy, including pharmacist education and training; pharmacy laws, rules, and regulations; policy regarding the use of ancillary personnel; pharmacist salaries; and, most importantly, the therapeutic outcomes of patients.

EVOLUTION OF THE PROFESSION AND MEDICATION USE SYSTEMS

Historians of pharmacy have used a variety of methods to categorize the evolution of pharmacy within the context of either “waves” or shifts in educational and industrial forces (Hepler, 1987), stages of professional identity (Hepler and Strand, 1990), or political shifts in the promulgation of our health care delivery system (Broeseker and Janke, 1998). Fortunately, there are a number of commonalities in their descriptions of the forces that have shaped our current method of practice and management of medication use systems. The approach taken here is simply to describe pharmacy practice, pharmacy education, and medication use within three distinct periods of the American 20th century.
Before the 1940s

Pharmacy practice in the United States dates back to shortly after the country’s founding. However, aside from the formation of professional associations and the first colleges of pharmacy during the 1800s, the predominant forces shaping pharmacy and medication use today took effect largely during the 20th century. Before this time, pharmacy was primarily an occupation for which its practitioners were trained via apprenticeship, much like participants in other trades. Pharmacy was considered an art that did not require theoretical knowledge and could best be learned “by daily handling and preparing the remedies in common use” (Sonnedecker, 1963, p. 204).

Without any credible standards or enforceable laws regarding the safety of therapeutic agents, the use of patent medicines was the norm. Pharmacists, or “apothecaries,” often were engaged in the wholesale manufacture and distribution of such products. The public had to rely on them to ensure that the compounds they sold were pure and unadulterated. Pharmacists came under considerable scrutiny, especially from physicians, when their increasingly profitable trade bred unscrupulous and unknowledgeable practitioners. Many of the patent medicines sold at the time were inefficacious, mislabeled, and even unsafe for consumption.

The first major piece of legislation to affect medication use in the 20th century was the Pure Food and Drug Act of 1906. Because the food and drug product industries were considered to be engaging in interstate commerce, the federal government passed this law to enable authorities to enforce penalties for certain types of misbranding and adulteration. The original statute was not particularly comprehensive or well written, however, so manufacturers, prescribers, and dispensers found many loopholes through which they could evade prosecution. Moreover, the Pure Food and Drug Act of 1906 did little to address the issue of efficacy in drug products.

Pressure continued to mount on the federal government to strengthen the food and drug laws, but, unfortunately, it took a tragedy before more comprehensive measures were taken. During 1937, at least 73 deaths were attributed to ingestion of the toxic “Elixir Sulfanilamide” (Sonnedecker, 1963, p. 200). This scandal provided the necessary impetus for passage of the Food, Drug, and Cosmetic Act of 1938. This act afforded greater authority to the Food and Drug Administration (FDA), the federal agency charged with enforcing it, and with approving new drugs and new indications of drugs before they could be marketed in the United States. The statutes within the act and subsequent regulations issued by the FDA make it easier to enforce standards of safety and efficacy of drug products.

During the early part of this century, pharmacists continued to engage in their roles as drug curators and dispensers. Interestingly, no formal legislation addressed the categorization of drugs into nonprescription and...
prescription products. Persons typically did not have to visit a physician if they desired a remedy for an ailment. Without such formal restrictions on dispensing, it could be argued that the pharmacist indirectly had some prescribing authority. Additionally, the pharmacist was relied on to provide advice to consumers on compounds he or she prescribed and dispensed (Hepler, 1987). Anecdotally, since pharmacists were—and still are—very accessible and visited frequently by customers, they were often the first source of entry into the health care system, particularly in rural areas that may have been underserved by physicians. They continued to fill this role despite a report published in 1910 by Abraham Flexner, who was appointed to study medical education, in which he contended that pharmacy was not a profession because its only responsibility was to carry out orders given by physicians. In response to this and other reports questioning the standing of pharmacy among other occupations, the American Association of Colleges of Pharmacy (AACP) commissioned a study directed by W.W. Charters. The study ultimately served as the basis for the AACP to require a 4-year baccalaureate degree program to be established by all colleges of pharmacy (Hepler, 1987).

The 1940s to the Early 1970s

The relatively brief period from the 1940s to the early 1970s brought significant changes in how health care was organized, delivered, and financed. This period has previously been described as the “era of expansion” (Relman, 1988, p. 1221). The Hospital Survey and Construction (Hill-Burton) Act of 1946 provided considerable grant monies for the renovation and expansion of existing hospitals as well as the construction of new ones, primarily in underserved inner-city and rural areas (Torrens, 1993; see Chapter 8). Continuously mounting pressure from the growing number of persons who were unable to access the health care system led to the passage in 1965 of the Titles XVIII and XIX amendments to the 1935 Social Security Act, which established the Medicare and Medicaid programs. The result was a significant increase in the number of persons with some type of health coverage and a dramatic rise in the utilization of medical care goods and services. The Medicaid program, in particular, resulted in a dramatic shift in the use of pharmaceuticals and significantly increased the number of prescriptions dispensed (see Chapter 17).

In contrast with the trend of expanding roles for other allied health care professionals during this period, pharmacists began to see their roles in medication use management diminish. Several forces were at play in bringing about these changes. First, large wholesale apothecaries were eventually transformed into large-scale manufacturers of pharmaceutical products. Previously, the majority of products dispensed by pharmacists were the result of their compounding bulk agents. Technological advances in industrial manufacturing and pharmaceutics, coupled with the increasing number of available compounds and societal demand that
medicinals become more uniform in their composition, resulted in the ability of and desire by manufacturers to prefabricate drugs in standardized dosage forms such as elixirs, syrups, tablets, and capsules.

The most influential piece of legislation that affected the medication use process in the United States was passed in 1951. The Durham-Humphrey amendment to the Food, Drug, and Cosmetic Act created the prescription or “legend” drug, whose label was required to carry the warning, “Caution: Federal law prohibits dispensing without a prescription.” The result was an entirely new class of products that pharmacists did not have the ability to dispense without written orders from a licensed prescriber. At the same time, the profession’s code of ethics as derived by the American Pharmaceutical (now Pharmacists) Association stated that “The pharmacist does not discuss the therapeutic effects or composition of a prescription with a patient. When such questions are asked, he suggests that the qualified practitioner is the proper person with whom such matters should be discussed” (Buerki and Vottero, 1994, p. 93). These forces relegated the pharmacist largely to a dispenser of pre-synthesized drug products.

The 1940s to early 1970s period also ushered in tremendous changes in the foci of pharmacy curricula throughout the United States. As part of this reform, many baccalaureate pharmacy programs were expanded to include a fifth year. Many of the extra didactic credit hours in these curricula were devoted to the further inclusion of scientific courses. Hepler (1987) contends that the primary objective of pharmaceutical education was to legitimize faculties, curricula, and ultimately the profession itself. He argues that the pharmaceutical industry encouraged research at pharmacy schools that was oriented toward the drug product. Courses in pharmacognosy gave way to natural products and medicinal chemistry; zoology was transformed into physiology; and Galenical pharmacy evolved into pharmaceutics. In addition, new disciplines, such as pharmacology, biopharmaceutics, and pharmacokinetics, were born from the melding and application of other basic sciences. An argument for inclusion of these courses into curricula is that with the proliferation of new drug discoveries, practitioners required a scientific background to interpret literature and understand the proper use of drug products that would continue to enter the market throughout the pharmacist’s career.

Nevertheless, it was argued that pharmacists became “overeducated and underutilized” during this period (Hepler, 1987, p. 537). Brodie (1967) wondered if the profession had lost the mainstream of its practice. A pioneer in pharmacy, he coined the term “drug use control,” a mantle he suggested pharmacists carry to use their education to promote patient welfare in the form of drug safety. He defined this term as “that system of knowledge, understanding, judgments, procedures, skills, controls and ethics that assures optimal safety in the distribution and use of medication” (Brodie, 1967, p. 65).
The Early 1970s to the Present

The 1970s ushered in considerable concern over skyrocketing health care costs that were consuming an increasingly larger portion of the U.S. gross national product (GNP). The previous era in health care had resulted in the rapid perfusion of expensive new medications and technologies, professionalization and specialization of health care occupations, and proliferation of medical diagnoses for conditions not previously linked to biomedical origins (“medicalization”), such as alcoholism. Moreover, the orientation of most insurance plans in the form of indemnity rather than service benefits provided incentives for medical care providers and patients to overuse health care services, often resulting in duplication and a loss of continuity in the care provided.

In recent years, several measures have been taken to counter these trends. Although they had existed before that time, the Health Maintenance Organization (HMO) Act of 1973 paved the way for managed care organizations to garner a larger share of the health insurance market. Perhaps even more critical was the implementation of a prospective payment system of diagnosis-related groups (DRGs) by the Health Care Financing Administration (HCFA; now the Centers for Medicare and Medicaid Services) for Medicare patients (Pink, 1991). A DRG is essentially a taxonomy of disease states and conditions for which patients may be admitted into a hospital. Reimbursement to hospitals for treating Medicare patients was set prospectively according to their diagnosis, regardless of the length and intensity of care. This system provided an incentive for hospitals to discharge patients “quicker and sicker” into other less intensive and expensive health care settings.

This period for pharmacy began with two reports that raised concerns among the entire profession. First, the Dichter Institute Study commissioned by the American Pharmaceutical Association (APhA) found that more respondents saw pharmacists as businessmen than as health care providers (Maine and Penna, 1996). With the rapid expansion of large, full-service chain pharmacies that sold many products besides medicines, along with a lack of knowledge of pharmacists’ training and expertise, study respondents viewed pharmacists more as extensions of pharmaceutical manufacturers and wholesalers. The blame for patients’ lack of awareness of the services that pharmacists could provide rested squarely on the shoulders of the profession and pharmacy academia.

The second study that generated some alarm was the Millis Commission’s Report in 1975, *Pharmacists for the Future: The Report of the Study Commission on Pharmacy* (Millis, 1975). This report suggested that pharmacists found themselves inadequately prepared in systems analysis and management skills and had particular deficiencies in communicating with patients, physicians, and other health care professionals. A subsequent report suggested inculcating more of the behavioral
and social sciences into pharmacy curricula and encouraged more faculty participation and research in real problems of practice (Millis, 1976).

Before the release of these reports, the American Society of Hospital (now Health-Systems) Pharmacists had published *Mirror to Hospital Pharmacy*, which stated bluntly that pharmacy had lost its way in producing professionals, while noting that the frustration and dissatisfaction of practitioners were beginning to affect students (Hepler, 1987). The clinical pharmacy movement was created to capture the essence of the drug use control concept put forth by Brodie and to promote the pharmacist’s role as therapeutic advisor. This movement brought about changes in pharmacy education and practice.

In the late 1960s, the 6-year PharmD degree was introduced, with the additional year being devoted mostly to therapeutics or “disease-oriented” courses and experiential education. Throughout the 1970s, 1980s, and into the early 1990s, an increasing number of colleges of pharmacy began offering the PharmD degree, but primarily as a post-baccalaureate program. Pharmacists who completed such programs secured jobs as “clinical pharmacists,” primarily in hospitals where they performed fewer dispensing functions and provided more services such as pharmacokinetic dosing, therapeutic monitoring, and drug information. Eventually, colleges of pharmacy began phasing out their baccalaureate programs. In 1995, the Argus Commission of the AACP recommended the 6-year PharmD as the entry-level degree into the profession. (American Association of Colleges of Pharmacy, 1996).

**PHARMACEUTICAL CARE**

### Initial Conceptualization

Despite the strides made by the profession during the 1970s and 1980s, questions existed about pharmacy’s place in society—that is, performing services just for service’s sake, without actually serving the welfare of the patient, was by no means a societal mandate and did not necessarily constitute a professional role (Penna, 1990). It was argued that clinical pharmacy, in itself, maintained its focus on products and services and not on the patient. It was also becoming increasingly apparent that medicalization and the proliferated use of drugs had repercussions in addition to benefits. Studies indicating dramatic rises in adverse drug reactions, hospitalizations, and even deaths from “drug misadventuring” grew more common (Manasse, 1989a, p. 936; 1989b, p. 1148). Evidence also demonstrated the pervasiveness of patient noncompliance with drug therapy (Boyd, Covington, Stanaszek, and Coussons, 1974) and its ramifications (Col, Fanale, and Kronholm, 1990).
Linda Strand and her colleagues identified eight categories of problems that could arise and result in poorer health outcomes and drug-related morbidity and mortality of patients: (1) untreated indications; (2) improper drug selection; (3) subtherapeutic dosage; (4) failure to receive drugs; (5) overdosage; (6) adverse drug reactions; (7) drug interactions; and (8) drug use without indications (Strand, Cippole, Morley, Ramsey, and Lamsam, 1990). Hepler and Strand then recognized that many of these problems could be reduced or averted by pharmacists—that pharmacy’s raison d’etre should be to serve society by maximizing the benefits and minimizing the untoward effects of drug therapy for patients (Hepler and Strand, 1990). They contended that pharmacy had to change its entire mission and philosophy of practice to promote societal welfare in this fashion and to focus on the patient rather than the product because “drugs don’t have doses—people have doses” (Cippole, 1986, p. 881).

This recognition operationally defined pharmacy’s mandate for the 21st century: pharmaceutical care as “the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life. These outcomes are (1) cure of a disease, (2) elimination or reduction of a patient’s symptomatology, (3) arresting or slowing of a disease process, or (4) preventing a disease or symptomatology” (Hepler and Strand, 1990, p. 539). Hepler and Strand further delineated this concept to describe it as a process in which the pharmacist establishes a covenantal relationship with the patient in a mutually beneficial exchange. He or she cooperates with the patient and other professionals in designing, implementing, and monitoring a therapeutic plan that will produce specific outcomes, thereby performing three basic functions: (1) identifying potential and actual drug-related problems, (2) resolving actual drug-related problems, and (3) preventing potential drug-related problems (Hepler and Strand, 1990).

Implementation

The concept of pharmaceutical care set the profession, teachers, and researchers in motion as probably nothing had ever done before. One question that had to be answered, however, was how to put this mission into practice and what specific services pharmacists were to render in providing pharmaceutical care. Figure 3–1 presents a set of steps that today’s pharmacist is to follow in providing pharmaceutical care for the patient. Pharmacists, in their dispensing roles, have always performed some of these duties, but some of the more critical and novel steps in this process occur in the assessment phase. Whereas software has facilitated the recording of patient information, pharmacists have been notoriously lapse in documenting patient drug therapy problems and any interventions they perform.
The Comprehensive Pharmaceutical Care Process

Start Care
- Patient presents new prescription order.
- Patient inquires about nonprescription or prescription drug, or samples.
- Patient expresses concerns about drug therapy.

Work-Up
- Check prescription order and pharmacy records.
- Interview patient (or surrogate).
- Contact health professionals.
- Measure vital signs and lab values.
- Document patient information.

Assessment
- Research drug and disease information.
- Analyze patient, drug, and disease information.
- Identify potential and current drug therapy problems.
- Document drug therapy problems.

Care Planning
- Prioritize drug therapy problems.
- Set goals and goal criteria.
- Research drug and disease information.

Intervention
- Suggest therapy (drug or nondrug).
- Refer patient to other health care professionals.
- Counsel patient about drug(s).
- Provide educational materials.
- Document interventions.

Follow-Up
- Contact patient at appropriate interval(s).
- Determine outcomes of therapy.
- Document outcomes.
- If goals not met, repeat Comprehensive Pharmaceutical Care process.

Stop Care
- Patient's medical problem is resolved.
- Patient refuses further consultation.
- Patient moves or dies.

*As needed.

Documentation is a necessity for the pharmacist if he or she is to maintain continuity of care for the patient, make adjustments to the patient’s care plan, reassess the care being provided to the patient, receive reimbursement for providing these services, and ultimately prove the worth of pharmaceutical care to society at large (Strand, Cippole, and Morley, 1988).

The concept of care planning is not new in the health care arena. Indeed, care planning forms the basis of nursing care. The caring aspect of pharmaceutical care is probably its most significant component. It is through caring that the pharmacist establishes a relationship with the patient that results in the patient providing to the pharmacist the information needed to improve drug-related outcomes. It is through caring that the patient develops trust in the pharmacist as a concerned member of the health care team. Pharmacists need simply to posit a few open-ended questions to patients to establish this caring attitude. Questions such as “How are you feeling?” and “What can I do for you?”, when asked at the outset of each patient encounter, can help improve patients’ satisfaction with their pharmacy visit. Pharmaceutical care is not merely limited to drug therapy but also incorporates the need for a holistic approach that may involve mental, emotional, and social support (Broeseker and Janke, 1998). Pharmacists would be best served in their endeavor to provide pharmaceutical care by asking the patients other questions. These assessment questions outlined in Exhibit 3-1 provide a plan for the pharmacist to gather the necessary data from patients.

**Early Pharmaceutical Care**

Pharmaceutical care has become the rallying cry for leaders in practice, professional organizations, and academia. One does not have to look further than the nearest community pharmacy, however, to see that despite the many strides taken by the profession since Hepler and Strand’s landmark paper, pharmaceutical care is not the pervasive modus operandi. This is not to say that most pharmacists are inadequate; indeed, the vast majority of pharmacists are well-trained, hard-working, caring, ethical, and competent professionals. But changing the mission and practice philosophy of an entire profession is not easy, particularly when many barriers exist. Some of these barriers include:

1. **Drug product focus**: Pharmacists have historically been preoccupied with dispensing drug products.
2. **Service focus**: Some services provided by pharmacists are distant from the patient and may be performed without regard to the resultant outcomes (e.g., pharmacokinetic dosing calculations).
3. **Other health care professionals**: Physicians, nurses, and other allied health care professionals may view pharmaceutical care as an infringement on their turf.
4. Lack of incentives: The current methods for paying and rewarding pharmacists center on dispensing volume, not on the care provided.

5. Logistical barriers: Many pharmacies are not designed and equipped properly to provide private consultation, disease monitoring, and dissemination of information—all key to the pharmaceutical care process.

Exhibit 3-1  Pharmacist’s Assessment Questions

1. Does the patient need this drug regimen?
   • Does the patient have a medical condition? (Misusing drug unintentionally? Addicted? Using for recreation?)
   • Does this condition call for this drug regimen? (Avoidable adverse drug reaction? Nondrug therapy indicated? Duplicate therapy?)

2. Is this drug/form the most effective and safe?
   • For the medical condition? (Consider condition onset time, potency, acute/chronic use, oral/topical use, potential adverse reactions)
   • For the patient? (Consider age, gender, pregnancy/lactation, race)
   • With other diseases? (Consider patient’s other disease states)
   • With the patient’s history? (Refractory condition? Allergic/intolerant?)
   • Considering the cost?

3. Is this dosage the most effective and safe?
   • Too low? (Consider weight, patient class, disease states)
   • Too high or changing too fast? (Consider weight, patient class, disease states)

4. If side effects are unavoidable, does the patient need additional drug therapy for side effects?

5. Will drug storage/administration impair efficacy or safety?
   • Consider lost potency, timing of doses, incorrect dosage technique

6. Will any drug interactions impair efficacy or safety?
   • Drug–drug interactions? (Consider prescription and nonprescription drugs, samples, social drugs)
   • Drug–food interactions? (Consider foods affecting drug, drug affecting nutrition)
   • Drug–laboratory interactions?

7. Will the patient follow this drug regimen?
   • Is regimen available to patient? (Drug unavailable? Unaffordable?)
   • Is patient physically able to follow regimen? (Cannot swallow/administer drug?)
   • Is patient mentally able/willing to follow regimen? (Cannot remember? Does not know how? Not motivated? Form/dosing disliked?)

8. Does the patient need additional drug regimen?
   • For untreated condition? Synergism? Prophylaxis?

9. Does the patient need any nondrug therapy or information?
   • Consider other products, referral to health professional or support group, information about disease state.

6. Pharmacy ignorance and inertia: “The greatest barrier to pharmaceutical care is ourselves. The success of an idea requires the dedication of people who believe in it and who pledge themselves to its general acceptance and implementation” (Penna, 1990, p. 547).

The last barrier is especially significant because the term “pharmaceutical care” generates ambivalence among many pharmacists. It is difficult to blame individual practitioners for their failure to embrace this notion. For many years, a considerable amount of ambiguity has surrounded the concept. Pharmaceutical care represents an entire philosophy of practice; therefore, identification of the steps involved in preparing and following up on care plans, while useful, is not enough to guide pharmacists in this mission. Pharmacists’ interactions with patients are just one component of implementing an effective practice. Other things must be considered, including adequate human, financial, and technical resources, in addition to management, marketing, and legal issues. Table 3-1 presents a more contemporary view of pharmaceutical care that includes these and other domains. Pharmacists must be competent in each of these areas to maximize their ability to provide effective patient-oriented services.

**Taxonomy and Standardization**

Researchers and leaders in pharmacy, particularly within professional organizations, have long recognized this problem. Entering an era of assessment and accountability, a significant movement in health care delivery and financing has pushed all members of the health care industry toward benchmarking, quality assurance, and standardization via guidelines, best practices, protocols, and critical pathways (Relman, 1988). Pharmacy has had difficulty in forming consensus on many issues because of the diversity in its practice settings and conflicting goals and objectives among its regulatory bodies and professional organizations. Thus success in reaching an accord on the level of care that should be provided to patients has been elusive.

The APhA has taken on two initiatives to advance quality standards in pharmacy in hopes of expediting pharmaceutical care’s widespread implementation. In 1995, it released its *Principles of Practice for Pharmaceutical Care* (American Pharmaceutical Association, 1995), comprising a preamble detailing pharmaceutical care’s goals and specific information about how the pharmacist could achieve these goals. The APhA undertook an extensive effort to codify each job responsibility and activity of pharmacists (Kaminsky and Basgall, 1997). The significance of this achievement is that the taxonomy can be used as a basis to establish more specific standards of practice, a tool to help pharmacists manage their practices, a guide to develop performance evaluations of pharmacists, and a simpler means to document activities so that pharmacists can be reimbursed for providing their services. Researchers have
# Table 3-1 Pharmaceutical Care Practice Domains

I. **Risk Management**
- Devise system of data collection
- Perform prospective drug utilization review
- Document therapeutic interventions and activities
- Obtain over-the-counter medication history
- Calculate dosages for drugs with a narrow therapeutic index
- Report adverse drug events to FDA
- Triage patients’ needs for proper referral
- Remain abreast of newly uncovered adverse effects and drug-drug interactions

II. **Patient Advocacy**
- Serve as patient advocate with respect to social, economic, and psychological barriers to drug therapy
- Attempt to change patients’ medication orders when barriers to compliance exist
- Counsel patients on new and refill medications as necessary
- Promote patient wellness
- Maintain caring, friendly relationship with patients
- Telephone patients to obtain medication orders called in and not picked up

III. **Disease Management**
- Provide information to patients on how to manage their disease state/condition
- Monitor patients’ progress resulting from pharmacotherapy
- Carry inventory of products necessary for patients to execute a therapeutic plan (e.g., inhalers, nebulizers, glucose monitors)
- Supply patients with information on support and educational groups (e.g., American Diabetes Association, Multiple Sclerosis Society)

IV. **Pharmaceutical Care Services Marketing**
- Meet prominent prescribers in the local area of practice
- Be an active member of professional associations that support the concept of pharmaceutical care
- Make available an area for private consultation services for patients as necessary
- Identify software that facilitates pharmacists’ patient care-related activities

V. **Business Management**
- Utilize technicians and other staff to free up the pharmacist’s time
- Ensure adequate work flow for efficiency in operations

also conducted studies using sophisticated focus group (Desselle, 1997) and psychometric (Pitterle, Bond, and Raehl, 1990; Odedina and Segall, 1996) techniques to describe standards or indices of pharmaceutical care practice.

Reimbursement Issues

The profession is making significant strides to address other barriers to the implementation of pharmaceutical care, particularly those concerning pharmacists’ recognition as providers and the ability to be reimbursed for providing disease management services. Pharmacists have long had opportunities to become certified as experts in pharmacotherapy, but recognition of those achievements outside the pharmacy profession has been problematic. In the 1990s and early 21st century, state governments aided this quest by beginning to pass legislation expanding pharmacists’ scope of practice to include broader pharmacotherapeutic decision making, implementation of home health care services, and provision of immunizations.

Many leaders in pharmacy hailed the passage of the Medicare Prescription Drug Improvement and Modernization Act (MMA) of 2003. While many of its provisions are of concern to pharmacists—particularly in regard to formulary issues, methods used to calculate payment to providers, and the concentration of market power to health plans—the MMA is the most comprehensive federal legislation to date that recognizes the need for medication therapy management services in ambulatory care. The MMA does not strictly govern face-to-face encounters and does not mandate that such services be provided by a pharmacist, but its language does position pharmacy as an obvious choice to fulfill a role in reducing drug-related morbidity and educating older adults on the proper pharmacologic and nonpharmacologic management of comorbid diseases. Of course, providing coverage for prescription medicines for many older adults who previously lacked such insurance also may serve to increase prescription volume and potentially boost profits for pharmacies, which could then invest additional monies into reengineering their practices to provide more patient-oriented services.

Significant breakthroughs are also being realized in the private sector. The Asheville project featured a long-term effort supported by employers to reimburse pharmacists for providing diabetes management services to their employees. The results suggested that pharmacists could help patients in improving both short-term (Cranor and Christensen, 2003) and long-term (Cranor, Bunting, and Christensen, 2003) outcomes, while saving employers money from averted medical costs. Large national chain pharmacies are becoming more frequently involved in providing appropriate resources for their pharmacists to engage in pharmaceutical care services (Tice and Phillips, 2002). Finally, it appears as though some
patients may be willing to pay for pharmacists’ services out of pocket if necessary (MacKinnon and Mahrous, 2002).

**PHARMACY PRACTICE TODAY AND TOMORROW**

One might be tempted to ask, “Well, just where are we now and where are we going?” That question may not be easy to answer, but a few trends are worth noting.

First, the PharmD has replaced the baccalaureate (BS) degree as the entry-level degree in the pharmacy field. Another trend in pharmacy education is the continued efforts by colleges of pharmacy to incorporate more of the social and administrative sciences into their curricula. Colleges of pharmacy were initially slow to respond to the changes proposed in the Millis Commission. The AACP refocused its efforts to encourage a more liberal education for pharmacy students in the 1990s with its Commission to Implement Change in Pharmaceutical Education (1993; American Association of Colleges of Pharmacy, 1996). Among the issues addressed by the commission were the incorporation of specific courses and concepts related to health policy organization, communication, economic analysis, and the understanding of cultural diversity throughout the curriculum. The commission also addressed how courses should be taught, stressing multidisciplinary, problem- or service-based approaches to delivering course content to encourage problem-solving and critical thinking skills in future practitioners.

Other trends related to pharmacy practice concern the proliferation of new and exciting areas of practice, the effects of e-commerce on the profession and the emergence of virtual pharmacies, the use of automated technology and technicians for dispensing functions, and shifts in the pharmacist labor supply.

**Licensure Requirements**

Pharmacy continues to be one of the more rewarding professions with respect to the starting salaries of its members following completion of the entry-level degree and licensure. In addition to completing the PharmD degree, prospective pharmacists must log a certain number of hours as an intern practicing under the supervision of a licensed preceptor pharmacist; the number of hours required varies across states. The graduate must also successfully complete the North American Pharmacist Licensure Examination (NAPLEX) and his or her respective state’s jurisprudence examinations. When the requirements for licensure within a state have been completed, the candidate is qualified to become a registered pharmacist (RPh) who is licensed to practice in that particular state only.
Postgraduate Educational Opportunities

A choice of exciting careers awaits the pharmacy graduate. Some career paths, however, require the student to pursue postgraduate education. Master’s and doctoral degree programs are offered at many colleges of pharmacy in the general areas of medicinal chemistry, pharmaceutics, pharmacology/toxicology, and social and administrative sciences, with each college tailoring its specific programs in each of these areas to student needs and faculty interests and backgrounds. Pursuing one of these degrees is ideal for the student who is interested in a career in academia, the pharmaceutical industry, government, or another setting requiring research expertise. Individuals who are interested in advancing their careers in the practice arena may seek one of any number of residencies and fellowships offered through universities, hospitals, and other health care providers throughout the United States.

Specialization through Certification

Other opportunities are available to pharmacists through the process of certification. Certification is recognition by a nongovernment association or agency that an individual has completed predetermined qualifications in a field of specialized knowledge. Pharmacists may become board certified in any of five specialties through programs administered by the Board of Pharmaceutical Specialties (BPS):

Oncology pharmacy. Addresses the pharmaceutical care of patients with cancer. Specialists are closely involved in recognition, management, and prevention of unique morbidities associated with cancer and cancer treatment and recognition of the balance between improved survival and quality of life as primary outcome indicators.

Psychiatric pharmacy. Addresses the pharmaceutical care of patients with psychiatric disorders. The specialist is responsible for optimizing drug treatment and patient care by conducting patient assessments, recommending treatment plans, monitoring patient response, and recognizing drug-induced problems.

Nutrition support pharmacy. Addresses the care of patients who receive specialized nutrition support, including parenteral and enteral nutrition. The specialist has responsibility for promoting maintenance and/or restoration of optimal nutritional status and designing and modifying treatment needs. He or she often functions as a member of a multidisciplinary nutrition support team.

Nuclear pharmacy. Seeks to improve and promote public health through the safe and effective use of radioactive drugs for diagnosis and therapy. A nuclear pharmacist specializes in procurement, compounding, quality assurance, dispensing, distribution, and development of radiopharmaceuticals.
Pharmacotherapy. Assumes responsibility for ensuring the safe, appropriate, and economical use of drugs in patient care. The specialist often has responsibility for direct patient care, may conduct clinical research, and serves as a primary source of drug information for other health care professionals (BPS, 2000).

These programs are rigorous and require extensive work and study. Pharmacists may also complete other certification programs in a wide variety of areas—most notably in the management of certain disease states/conditions, such as diabetes, hypertension, and pain management. Other potential areas of focus include geriatrics, pediatrics, managed care, and management/marketing. These programs are administered by professional or health organizations, such as the American Diabetes Association, and they are often approved by the American Council on Pharmaceutical Education (ACPE), though they do not indicate board certification.

Unlike licensure, certification does not give the recipient any legal privileges. It does offer the recipient many advantages, however. Aside from the implicit value of the knowledge and expertise gained, some job descriptions posted by medical care institutions require certification. In addition, third-party payers may be more likely to reimburse a board-certified specialist or reimburse such a professional for the same services at a higher rate. Board certification also represents a marketing tool that specialists can use to advocate their services. As of 2006, more than 5,000 pharmacists had become certified through BPS alone, with more than half of those certifications in pharmacotherapy (BPS, 2006).

PROFESSIONAL PHARMACY ORGANIZATIONS

A Brief History

The diversity of pharmacists’ practice settings is reflected in the large number of professional pharmacy organizations. The first professional pharmacy organization, the APhA, was founded in 1852 for the purpose of establishing national standards of quality for drugs and chemicals. Its founding came in response to criticism of the pharmacy trade by physicians who threatened to regulate the profession. Shortly thereafter, the APhA developed a code of ethics for its member practitioners. During the 1900s, other professional associations developed. Some of them were offshoots from within various sections of the APhA. The number of professional organizations continues to grow as the interests and work environments of pharmacists expand.

The Purpose and Functions of Pharmacy Organizations

Professional pharmacy organizations represent a few of literally tens of thousands of national associations in the United States, not including
state and local associations. The primary reason that these organizations exist is to serve the interests of their members. They publish position papers and lobby governments, other professional organizations, and private businesses on behalf of their members. Examples of issues targeted for lobbying efforts include the crafting of specific language beneficial to pharmacists in regulations proposed by federal agencies, reimbursement for cognitive services, and expansion of the scope of pharmacy practice.

Specific benefits and services that professional pharmacy organizations provide include the following:

**Information dissemination.** Publishing of journals and newsletters to disseminate the results of pertinent studies and updates on professional practice and legal issues. Recently, associations have also initiated weekly e-mail services and regular updates on their Web sites.

**Maintenance of practitioners’ competency.** Codes of ethics, standards of practice, free continuing education, and professional meetings.

**Career planning assistance.** Posting of jobs in related fields, placement of advertisements in journals by employers, and sponsorship of workshops for career advancement.

**Financial benefits.** Discount rates on items such as resource materials, credit cards, and insurance policies.

**Participation in governance.** Members help create and revise organization policies at professional meetings and serve on committees.

**Professional Organizations with Pharmacist Membership**

Individual pharmacists may enroll as members of some of the organizations that directly or indirectly serve the profession.

The **American Pharmacists Association** (APhA, www.aphanet.org) recently changed its name from the American Pharmaceutical Association to more accurately reflect the importance of its primary constituents: pharmacists. Arguably the most diverse pharmacy-related organization in terms of its membership, the APhA serves pharmacists in all practice settings. Headquartered in Washington, D.C., it is actively involved in lobbying the government on pharmacists’ behalf. Its student organization, the Academy of Student Pharmacists (ASP), has more student members than any other professional association. The APhA publishes numerous journals and newsletters including *Pharmacy Today*, to help students and practitioners keep abreast of current issues, and *Journal of the American Pharmacists Association* (JAPhA), which features research in the administrative, basic, and clinical pharmaceutical sciences. It also publishes monographs, such as those describing the MMA 2003, which are very helpful to pharmacists.
Formerly the American Society of Hospital Pharmacists, the *American Society of Health-Systems Pharmacists* (ASHP, www.ashp.org) changed its name to reflect the evolution of hospitals into integrated delivery networks. The ASHP is a national accrediting organization for pharmacy residency and pharmacy technician training programs. It publishes numerous educational materials and handbooks, including *American Hospital Formulary System Drug Information (AHFS DI)*. It also publishes *American Journal of Health-Systems Pharmacy (AJHP)* and produces *International Pharmaceutical Abstracts (IPA)*, a bimonthly abstracting and indexing service. The ASHP promotes guidelines, standards, and best practices in a number of pharmacy practice arenas. Its annual clinical meeting is the largest gathering of pharmacists worldwide.

Founded as the National Association of Retail Druggists, the mission of the *National Community Pharmacists Association* (NCPA, www.ncpanet.org) is to keep the business of pharmacy viable. The NCPA is the voice for America’s independent community pharmacists. It provides continuing education through its publication *America’s Pharmacist*. The NCPA’s Management Institute serves as a clearinghouse for up-to-date management information. The organization also affords to its members the opportunity to join ValuRite, a professional services administration organization, which provides greater purchasing power to community pharmacy owners. The NCPA administers the National Institute for Pharmacist Care Outcomes (NIPCO) program and sponsors the NCPA Foundation, which awards grants intended to promote the profession and pharmacy care outcomes. The NCPA also publishes *NCPA-Pfizer Digest*, which allows independent community pharmacies to assess and compare their financial and clinical performance with indicators for other pharmacies of similar size.

The *Academy of Managed Care Pharmacy* (AMCP, www.amcp.org) serves patients and the public through the promotion of wellness and rational drug therapy by the application of managed care principles. Part of its mission is the advancement of pharmacy practice in managed health care systems. The AMCP publishes *Journal of Managed Care Pharmacy (JMCP)*, which highlights research on administrative issues and on the rational use of drug therapies, including cost-effectiveness and outcomes studies. This organization has been a leader in efforts to standardize formulary submissions and to improve the quality of formulary decisions made by insurers and institutions. It also provides weekly e-mail and fax-on-demand services that keep its members informed about drug therapy and legislative issues from around the United States.

Membership in the *American College of Apothecaries* (ACA, www.acainfo.org) is open to pharmacists who own or hold shares in a pharmacy, primarily apothecary-style pharmacies with low levels of front-end merchandise. Among its publications are *Guidelines for Improving*
Communication in Pharmacy Practice and Guidelines for Marketing Your Community Pharmacy Practice.

Founded to strengthen pharmacy’s role in long-term care, the American Society of Consultant Pharmacists (ASCP, www.ascp.com) publishes the journal Consultant Pharmacist, which features articles on the results of drug utilization reviews and clinical studies, drug information, and managerial aspects of consultant pharmacy. Among its other publications is Drug Regimen Review: A Process Guide for Pharmacists.

Founded to advance the practice of clinical pharmacy, the American College of Clinical Pharmacy (ACCP, www.accp.com) promotes clinical research, rational drug therapy, and fellowship training. It also publishes educational materials related to pharmacoeconomics and outcomes research. Many faculty members in departments of pharmacy practice are members of the ACCP.

The National Pharmaceutical Association (NPhA, www.nphanet.org) is dedicated to representing the views and ideas of minority pharmacists on critical issues affecting health care and pharmacy as well as advancing the standards of pharmaceutical care among all practitioners.

The National Council on Patient Information and Education (NCPIE, www.talkaboutrx.org) is dedicated to improving communication between health care professionals and patients. It also makes available the “Talking about Prescriptions Planning Kit” and “Educate Before You Medicate” promotional materials.

Organizations with Corporate Membership

Pharmacists may also be affected by or interact with other organizations of which they are not members. The members of these organizations are corporations, rather than individuals.

Formerly the National Wholesale Druggists Association, the Healthcare Distribution Management Association (HDMA, www.healthcaredistribution.org) is the national association of full-service drug wholesalers. This organization’s mission is to strengthen relations between wholesalers, their suppliers, and customers, and to sponsor and disseminate research and information on new technology and management practices for wholesalers. Full-service drug wholesalers are typically large companies involved in myriad aspects of drug distribution, including automated dispensing technologies and storage of specialty compounds.

The Institute for Safe Medication Practices (ISMP, www.ismp.org) is the United States’ only nonprofit organization devoted entirely to medication error prevention and safe medication use. It oversees a voluntary medication error-reporting system and promotes error reduction strategies to the health care community, policy makers, and the public.
The voice of the chain drug store industry, the National Association of Chain Drug Stores (NACDS, www.nacds.org) is involved in numerous professional activities, including sponsoring student recruitment programs in high schools, conducting visitation programs for faculty and students to chain store headquarters operations, and awarding grant support for studies in management and administration. It posts positions for pharmacists in chain drug stores throughout the United States on its Web site and, along with organizations such as the NCPA, supports the SureScripts Electronic Prescribing Network to allow for the electronic exchange of information between prescribers and pharmacies.

The Pharmaceutical Researchers and Manufacturers of America (PhRMA, www.pharma.org) is a powerful consortium of manufacturers of “brand-name” products that is heavily involved in supporting research and development of new drugs and pharmaceutical delivery systems.

Formerly the Non Prescription Drug Manufacturers Association (NDMA), the Consumer Healthcare Products Association (CHPA, www.chpa-info.org) is concerned with issues relevant to makers of over-the-counter (OTC) medications and encourages responsible self-medication practices by consumers. The CHPA conducts a voluntary labeling review service for members and promotes the readability of OTC product labels.

The Generic Pharmaceutical Industry Association (GPhA, www.gpha-online.org) represents manufacturers and distributors within the generic drug industry. The GPhA is dedicated to the provision of high-quality, cost-effective equivalents to brand-name prescription drugs. It provides lawmakers, government agencies, regulators, prescribers, and pharmacists with information regarding the safety, effectiveness, and therapeutic equivalence of generic medicines.

Educational and Regulatory Organizations

Some organizations provide services to pharmacists (who may or may not be members of those groups) and regulate their practice and educational requirements.

Society grants pharmacy the power of self-regulation as long as society can reap the benefits of having highly competent and moral professionals serving its interests. The National Association of Boards of Pharmacy (NABP, www.nabp.net) assists state boards of pharmacy in protecting the public by developing, implementing, and enforcing uniform standards. The NABP develops and administers the NAPLEX examination and oversees reciprocity of licenses across states.

The Accreditation Council for Pharmacy Education (ACPE, www.acpe-accredit.org) is a national agency that provides for the accreditation of professional degree programs in pharmacy and for the approval of providers of continuing pharmaceutical education. The ACPE is an autono-
mous agency whose board of directors is made up of members of the AACP, APhA, NABP, and American Council on Education (ACE).

The American Association of Colleges of Pharmacy (AACP) is a national organization representing the interests of pharmaceutical educators. The AACP is committed to excellence in pharmaceutical education. Both individual faculty members and schools of pharmacy constitute its membership. It publishes American Journal of Pharmaceutical Education (AJPE), with contributions from pharmacy faculty throughout the United States, to disseminate information on course content, curricula, and innovative teaching strategies.

The mission of the American Foundation for Pharmaceutical Education (AFPE, www.afpenet.org) is to advance and support pharmaceutical sciences education at U.S. schools and colleges of pharmacy by awarding scholarships and grants to pharmacy students and faculty.

PHARMACY TECHNICIANS

As the practice of pharmacy evolves, so do the roles of pharmacy technicians. The number of prescriptions dispensed in the United States has increased rapidly in recent years, as has the diversity of settings in which pharmacists practice. To keep up with the rising demand for pharmaceutical products and services, technicians will play a greater role in support of pharmaceutical care. This section examines pharmacy technicians, their expanding roles and responsibilities, and certification and management issues.

The Choice of Pharmacy Technician as a Career

In 2002, approximately 250,000 pharmacy technicians were practicing in the United States (American Pharmaceutical Association, 2003). A national sample of certified pharmacy technicians reported a mean hourly wage of $12.87 for these employees in 2004 (Desselle, 2005), with their exact earnings depending on their location, practice setting, and experience. Technicians receive their training through formal educational programs at vocational or technical schools and community colleges, formal on-the-job training programs sponsored by employers, or informal on-the-job training. An increasing number of nationally accredited technician training programs exist, with the standard for accreditation by the ASHP calling for 600 hours of contact time, extending over at least 15 weeks (American Society of Hospital Pharmacists, 1993).

The jobs of pharmacy technicians were once geared toward clerical and custodial duties. Indeed, the Scope of Pharmacy Practice Project conducted in the early 1990s revealed that pharmacy technicians spent more than 26% of their time collecting, organizing, and evaluating informa-
tion in assisting pharmacists to serve patients, more than 21% of their time developing and managing medication distribution and control, and a bit less than 7% of their time providing drug information and education (American Society of Hospital Pharmacists, 1994).

Pharmacy Technicians’ Expanding Roles and Responsibilities

Today, pharmacy technicians are involved in far more areas of pharmacy practice. Table 3–2 illustrates the results of a survey of certified pharmacy technicians who indicated their primary areas of work. In addition to assisting with outpatient prescription dispensing, many community pharmacy technicians participate in purchasing/inventory control, billing, and repackaging products. Most hospital pharmacy technicians assist with inpatient medication dispensing, but many also prepare intravenous admixtures and engage in nonsterile compounding, repackaging, purchasing, and billing. A significant minority of the technicians surveyed indicated that they participate in educating and training other technicians.

The Scope of Pharmacy Practice Project report also provided a comprehensive classification of pharmacy technician responsibilities and activities (American Society of Hospital Pharmacists, 1994). It segmented these duties into three main function areas:

<table>
<thead>
<tr>
<th>Table 3-2 Respondents’ Primary Areas of Work</th>
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<tbody>
<tr>
<td>Total (%)</td>
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<tr>
<td>Assisting in outpatient prescription dispensing</td>
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<tr>
<td>Assisting in inpatient medication dispensing</td>
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<tr>
<td>Preparing IV admixtures</td>
</tr>
<tr>
<td>Purchasing/inventory</td>
</tr>
<tr>
<td>Billing</td>
</tr>
<tr>
<td>Nonsterile compounding</td>
</tr>
<tr>
<td>Prepackaging/repacking</td>
</tr>
<tr>
<td>Pharmacy technician educator</td>
</tr>
<tr>
<td>Other</td>
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*aPercentages do not total 100 because multiple responses were permitted.
bIncludes home health care, long-term care, mail service facility, managed health care, educational/vocational training, pharmaceutical industry, and military.

1. **Assist the pharmacist in serving patients.** Receive prescription or medication orders, obtain information from patients and from other health care professionals, collect data, update patient records or profiles, process the medication or prescription order, compound a medication or prescription order, provide medication to the patient, determine and obtain charges for services, communicate with third-party payers, and determine whether counseling by the pharmacist is desired.

2. **Maintain medication and inventory control systems.** Identify drugs, equipment, and supplies to be ordered, place orders, receive goods and verify their receipt against original purchase orders, place received goods into proper storage, perform non-patient-specific distribution of pharmaceuticals (e.g., crash carts and automated dispensing systems), remove expired or recalled products, perform required inventory analyses, perform quality assurance tests on compounded medications, and repackage finished dosage forms for dispensing.

3. **Participate in the administration and management of a pharmacy practice.** Coordinate communications throughout the site, collect productivity information, participate in quality improvement activities, assist with ensuring compliance with regulatory standards, perform routine sanitation and maintenance activities, perform billing and accounting functions, and conduct staff training.

As some work environments shift further toward patient-oriented philosophies, new roles and responsibilities for technicians are emerging:

- Managing an automated pharmacy station (Jackson, Bickham, and Clark, 1998).
- Implementing a prescription assistance program for indigent patients (Mangino, Szajna, Ptachcinski, and Skledar, 1998).
- Triaging patients, processing consults, and managing follow-up appointments in a drug therapy monitoring clinic (Johnson and Yanchick, 1998).
- Conducting pediatric compounding, processing emergency requisitions, emergency operating department setup, and participating in investigational drug studies during the midnight shift at a university hospital (Bedoya, Patel, Bickham, and Clark, 1998).
- Performing duties related to the provision of quality home care services (Ramirez, Jones, and Holmes, 1993).

**Pharmacy Technician Certification**

The trend toward expansion of pharmacy technicians’ roles is reflected in the movement toward voluntary certification of these professionals. A certified pharmacy technician (CPhT) has completed the Pharmacy
Technician Certification Examination (PTCE) developed and administered by the Pharmacy Technician Certification Board (PTCB). This rigorous examination includes questions on communication, organizational and interpersonal skills, pharmacy operations, pharmacy law, and calculations. The PTCB was founded jointly by the APhA, the ASHP, the Illinois Council of Health-System Pharmacists, and the Michigan Pharmacists Association. As of June 2006, more than 240,000 applicants had become certified through the PTCB (PTCB, 2006), up from slightly more than 48,000 in 1998 (Muenzen, Greenberg, and Murer, 1999).

Certification offers advantages to both the technician and the pharmacist. For technicians, certification may result in an increase in pay or a promotion in title. It may also bring greater job security and give the person an edge when seeking a job or changing jobs. It may also result in expanded job functions and responsibilities and—perhaps most importantly—an increased satisfaction on the job. The increased confidence and satisfaction from the technician becoming certified may enhance his or her performance, thereby increasing the pharmacy’s productivity. It may also decrease training time and lower the cost of on-the-job training.

Pharmacists have traditionally been reticent to allow technicians to expand their scope of practice, but this reluctance appears to be changing. Today’s pharmacists are more secure in their roles and are beginning to see that certified technicians can reduce their workloads and mitigate their stress levels. One study indicated that hospital pharmacy directors believed that such certification would have positive effects by allowing pharmacists to perform more patient-centered activities (Mott, Vanderpool, and Smeenk, 1998).

In addition to addressing the problem of an acute shortage of pharmacists, technician certification has grown more popular because of the progress made in curricula and in the training of technicians, thanks to the development of the Model Curriculum for Pharmacy Technician Training (American Pharmaceutical Association, 2003). Also, a majority of states have revised their pharmacy practice acts in areas related to technicians, and a number of states have liberalized their pharmacist-to-technician ratios. Finally, a few states have begun making certification a requirement for registration or licensure.

**E-COMMERCE AND INTERNET PHARMACY**

During the latter part of the 1990s, the Internet changed the way that Americans work and play. It has contributed significantly to a booming economy and new heights in productivity never seen before in the United States. As of this writing, it was beginning to leave its mark on the practice of medicine and on the pharmacy profession. It may likely change the landscape of pharmacy care forever, although its precise impact on the industry is unknown.
What Is Internet Pharmacy?

No formal definition exists of “Internet pharmacy,” also known as “online pharmacy,” “cyberpharmacy,” or “e-pharmacy.” There are basically three types of Internet pharmacies. One type provides legend pharmaceuticals pursuant to a valid prescription order; it is essentially a mail-order pharmacy whose business address is in cyberspace. Upon receipt of a prescription from a physician who is not affiliated with the Web site, the pharmacist will fill it, mail the product to the patient, and then either bill the patient directly or bill his or her insurance company. The pioneers in this field expanded rapidly to provide many other services. These sites offer a considerable amount of free product, health, and disease management information. They also offer for sale nearly all OTC medications, sundries, and health and beauty aids that are sold at a typical chain or independent community pharmacy.

A second type of Internet pharmacy includes sites that offer free information and counseling for a fee but without the dispensing component. These businesses can be grouped with many other Web sites that offer health information, with or without a fee, but that are not necessarily pharmacies. While some of these sites are legitimate, such as those operated by various professional groups, others are not.

It is the third type of online pharmacy that has drawn the concern of medical professionals, government, regulatory agencies, and society at large. At these sites, consumers log on and complete a survey or questionnaire about their medical problem or make a direct request for a particular prescription drug product. The consumer may be charged a fee for completing the questionnaire, which may be returned or discounted if the physician does not issue a prescription. At legitimate sites of this kind, a physician reviews the data. Many sites, however, pretend to have licensed prescribers and pharmacists “in-house.” They have obtained the medications illegally and are selling them to consumers at high prices without regard for the purchasers’ safety.

Illegal Pharmacy Operations on the Internet

Illegal pharmacy sites pose a significant health threat to many Americans. One study conducted during 1999 (Armstrong, Schwartz, and Asch, 1999) located 86 sites that offered to deliver sildenafil (Viagra) directly to consumers without a visit to a physician, with 44 of them not requiring an online evaluation. The use of sildenafil as well as many other products in high demand on the Web can be problematic—even lethal—for certain patients who are not under a physician’s direct supervision. Another problem is that drugs acquired from certain Internet sources may be adulterated or perhaps even not contain the supposed active ingredient.
Stopping illegal Internet pharmacy operations has been an arduous task for authorities because it is difficult to find their geographic locations. Few enforceable laws govern these types of businesses. Many of them operate on a “fly-by-night” basis; they stay open for only a short period of time (a few days to several weeks), make their money, and then close before the perpetrators are caught. Many sites that exist only to provide information also pose risks to consumers because much of the information and advice are unsubstantiated and may be harmful if followed.

Issues related to Internet pharmacy include re-importation and diversion of pharmaceuticals. As prescription drugs continue to take up a larger portion of the monies spent on health care, many persons are seeking alternatives to traditional means for purchasing prescription drugs. Some, for example, try to purchase medications from pharmacies in Canada and even Mexico to save money. In fact, some state governments have formed cooperatives to arrange for purchase of medications from Canadian pharmacies for state employees or for Medicaid beneficiaries. This contradicts FDA regulations; to date, the federal government has not strictly enforced those rules. There is considerable debate about the authenticity of medications acquired from Canadian Internet sites. The acquisition of drugs from legitimate Canadian operations poses little, if any threat, beyond that normally accompanying medication use without face-to-face counseling with a health professional; however, many Web-based pharmacy operations use a Canadian name or domain name, but are not legally recognized Canadian pharmacies.

What Is Being Done to Curb Fraudulent Operations on the Web?

The NABP responded to illegal online sales of prescription drugs quickly by unveiling its Verified Internet Pharmacy Practice Site program (VIPPS) in February 1999 (Paulsen, 1999). VIPPS is a voluntary program designed to certify each participating online pharmacy’s ability to dispense pharmaceuticals. Certification involves documenting licensure from the appropriate state board of pharmacy, ensuring that the pharmacy meets a rigorous 19-point set of criteria, and conducting an on-site review of the pharmacy’s written policies and procedures by an NABP-trained inspection team. Certified pharmacies display the VIPPS seal on the home page of their Web site. This seal contains a hyperlink to NABP’s home page, where visitors can view information about the online pharmacy.

On a federal level, in December 1999, the Clinton administration announced a $10 million initiative to protect consumers from the illegal sale of pharmaceuticals over the Internet (Food and Drug Administration, 2000). It established federal requirements for all Internet pharmacies to ensure their compliance with state and federal laws, created new civil penalties for the illegal sale of pharmaceuticals, gave federal agencies such as the FDA and the Federal Trade Commission (FTC)
new authority to swiftly gather the information needed to prosecute offenders, and launched a public education program about the potential dangers of buying drugs online. Unfortunately, the initiative was never acted upon by Congress and was never funded. While the FDA continues to identify and shut down illegal pharmacy sites, large-scale successes remain elusive.

Some states have also taken measures against illegal online prescription sales. For example, the state of Arkansas passed a law that requires any pharmacy shipping prescription drugs to a resident of the state to have at least one pharmacist licensed to practice by Arkansas’s state board (Conlan, 1999). Other states have enacted similar legislation. A few state health departments have successfully identified illegal operations and prosecuted those involved.

Pharmacists should keep abreast of the current events affecting medication distribution systems. In addition to the aforementioned VIPPS program, several organizations have developed voluntary programs through which Web sites may acquire a “seal of approval” based on their compliance with various codes of ethics regarding the reliability and confidentiality of information, including MedCIRCLE (www.medcircle.org), HONcode (www.hon.ch/HONcode), and TRUSTe (www.truste.org).

Perhaps the most effective means to curb patients’ acquisition of medications from spurious sources is to improve access to drug therapy. While not a panacea, the MMA greatly improved many seniors’ ability to obtain necessary medications and will afford them the opportunity to receive expanded medication therapy management services. Reducing the number of indigent persons without prescription drug coverage will undoubtedly reduce the demand for prescription drugs from alternative sources. Pharmacists working in “bricks-and-mortar” operations can do their part by providing quality service to patients. Although Web-based commerce is preferred by—and even mandated by payers for—a certain proportion of the population, pharmacists may counsel patients that anything short of real-time communication can pose risks. One study found that information provided via “ask the pharmacist” services on the Web was less than optimal, even from trusted sources (Holmes, Desselle, Nath, and Markuss, 2005). Yet another found poor readability and incomplete information for certain drugs on the Web sites of national chain pharmacies (Ghoshal and Walji, 2006).

A Few Last Words about Cybertechnology and Pharmacy

It seems fairly certain that the Internet will serve as yet another medium for the burgeoning prescription and OTC medication markets. It is also providing another venue for direct-to-consumer advertising by pharmaceutical manufacturers and makers of health and beauty products.
Other, similar technologies are also drastically changing the shape of pharmacy care. Telemedicine, for example, has become increasingly widespread. At the time of this writing, nearly every state either had already passed or will soon pass legislation allowing for the electronic data interchange (EDI) of prescriptions from prescribers to pharmacies. This technology allows the prescriber to use either a personal computer or a handheld personal digital assistant (PDA) to transmit prescriptions electronically to the pharmacy. The physician can check for compliance with the patient’s insurance formulary and obtain the patient’s drug history for drug utilization evaluation (DUE) messaging, all on the same system, before the prescription is even transmitted. Claims can even be pre-adjudicated before the prescription reaches the pharmacy. In such a case, the prescription will not require manual entry by pharmacy personnel. Under this system, pharmacists will have to deal with fewer phone calls to physicians and fewer claims rejections from payers.

Many other technologies will affect pharmacy and medication use systems that are beyond the scope of this chapter. Pharmacists are encouraged to take advantage of the features offered by the Internet, such as assisting them with drug decision support, marketing their services, and obtaining continuing education credits.

PHARMACY WORKFORCE

Implications of Workforce Size for Pharmacy

The final section of this chapter addresses an issue that is intrinsically tied to many of the concepts discussed throughout this text—namely, the number of pharmacists available in the United States as measured in terms of the number of full-time equivalents (FTEs). Maintaining an adequate supply of pharmacists is critical on several fronts.

First, given that the number of prescriptions dispensed annually is expected to continue to increase, an adequate number of pharmacists must be working in community settings to fulfill society’s demand for cost-effective pharmaceuticals that are dispensed promptly and accurately.

Second, an adequate supply of well-trained pharmacists is essential to the provision of pharmaceutical care. If the number of FTEs of available pharmacists is unable or minimally able to meet society’s need for dispensing, it becomes that much more difficult for the profession to continue along its path of maturation from a product- to a patient-centered focus. One study revealed while the proportion of pharmacies offering any kind of pharmacist care services was increasing, only four services were offered at more than 10% of community pharmacy practices in 2004—specifically, immunizations, smoking cessation, health screening, and diabetes management (Doucette et al, 2006).
Third, an adequate workforce is required to meet the need for public safety. In recent years, medication-related errors and their resultant morbidity and mortality in the hospital setting have come under intense scrutiny. Although pharmacists are not entirely responsible for all of these errors, a number of steps can be taken to mitigate this problem. The lay press has also called attention to the lack of consistency in detecting prescription-related problems in pharmacies across the United States (Knapp, 1999). Part of the problem is that many pharmacies are understaffed or are staffed consistently with “floaters” who do not have a regular site at which to practice.

Pharmacy workforce issues are also important to pharmacy’s role in reforming the health care system (Knapp, 1994). As greater emphasis is placed on preventive care, pharmacists may be increasingly called upon to provide services such as healthy lifestyle counseling, disease management, immunizations, and other public health initiatives. Additionally, the government continues to grapple with shortages of primary care practitioners in inner-city and rural areas. One study showed that the presence of pharmacists in combination with other health care professionals such as nurse practitioners in rural areas suffering from a scarcity of physicians can mitigate the problem of diminished access to health care (Knapp, Paavola, Maine, Sorofman, and Politzer, 1999).

The size of the pharmacy workforce is also a source of concern for state boards of pharmacy and the academic community. State boards of pharmacy enforce regulations that affect the number and use of pharmacy technicians. Some state boards have enacted rules limiting the number of technicians who are allowed to work in direct care settings by specifying a maximum ratio of technicians to pharmacists. As mentioned previously, some boards of pharmacy have had to amend these ratios to respond to labor supply shortages.

For their part, schools of pharmacy have the responsibility for continuing to graduate an adequate number of pharmacists to meet the needs of society while maintaining the quality and integrity of their programs. The AACP, the ACPE, and individual schools must keep abreast of supply trends by region and across the United States.

**Factors Affecting Pharmacist Labor Supply**

As the profession continues to operate within a dynamic health care environment while undergoing comprehensive change, numerous forces appear poised to affect the current and future supply of pharmacists. First, the demographic composition of pharmacists is shifting toward a greater proportion of female practitioners. Whereas the profession was once virtually all male, by 1991 approximately 32% of pharmacists were female. Women accounted for approximately 46% of the pharmacist
The pharmacist labor supply in 2000 and 50% in 2003 (Gershon, Cultice, and Knapp, 2000). This trend has significant implications because child-bearing women will take at least some time off for maternity leave and women are more likely than men to work part-time for childrearing or other reasons.

Another factor affecting the pharmacist labor supply is the transition from the BS to the PharmD degree as a requirement for practice. The PharmD has typically added an extra year of academic study, resulting in a downturn in applications to some schools of pharmacy. The increased emphasis on pharmacotherapeutics and experiential training also requires additional clinical faculty and preceptors.

Yet another factor reducing the pharmacist labor supply is the dwindling number of independent pharmacies, whose owner pharmacists tend to work more hours than employee pharmacists (Knapp, 1994).

The effects of other factors on pharmacist labor supply are less certain. Pharmacist specialization, while increasing pharmacists' competency to provide pharmaceutical care, may result in their propensity to work in nontraditional settings and reduce their supply in distributive settings. An estimated 6.8% to 13.1% of pharmacists will be certified specialists by 2010 (Knapp and Sorby, 1991). The penetration of managed care into health care markets was once expected to reduce the demand for pharmacists, but studies have shown this not to be the case (Knapp, 1999).

Finally, two factors that directly affect the pharmacy labor supply are pharmacy technicians and automation. Certification of technicians can serve to increase their level of competence and allow these individuals to perform roles that had previously been within the pharmacist’s scope of practice only. Automation and other technologies can free up time for pharmacists, allowing them to turn their attention toward patient consultative and disease management activities.

Estimates of the Pharmacist Workforce

Although leaders in the profession agree that workforce issues are important, there has been less consensus on how to measure the labor supply and, therefore, where the profession stands. A variety of methods have been used to quantify the pharmacy labor supply, including worker–population ratios, demand versus supply techniques, the relative income of pharmacists, and the internal rate of return for investing in pharmacy education (Sorkin, 1989). Data on pharmacy manpower are generated primarily from three sources: (1) the Pew Health Professions Commission, (2) the Bureau of Labor Statistics (BLS), and (3) the Bureau of Health Professions.

In 1995, the Pew Health Professions Commission published a report projecting a future surplus of as many as 40,000 pharmacists (Knapp, 1999). Other researchers view this report as inaccurate. Instead, the general con-
sensus forecasts a shortage of pharmacists nationally, with some regions being extremely short of these professionals.

The most comprehensive attempt to measure and predict the future pharmacist labor supply has been the combined effort of professional associations and the BHP in creating the Pharmacy Manpower Project census database (Gershon et al., 2000). This model incorporates the change in the entry-level degree, the opening of new pharmacy schools, the influx of international pharmacy graduates, and separation rates (actuarial estimates of retirement, death, and occupational mobility). It projected a workforce of 196,011 active pharmacists in 2000 and predicts a workforce of 249,086 active pharmacists by 2020. It implies further that the ratio of active pharmacists to the general population will increase by 2020 to a level 76.7 pharmacists per 100,000 population, compared with 68.9 pharmacists per 100,000 population in 1995. The model does not consider FTEs, however, and its primary drawback is that its definition of “active pharmacists” includes a potentially increasing number of practitioners who are working part-time.

Efforts are being made to track the balance of supply and demand forces of pharmacists longitudinally by making survey-based estimates of the amount of difficulty faced by employers in filling open pharmacist positions (Knapp and Livesey, 2002). As of 2001, there was considerable demand in excess of available supply, with the problem being more acute in certain states. This issue is of particular concern as patients experience a number of unmet needs in medication use (e.g., medication counseling and drug therapy monitoring) (Law, Ray, Knapp, and Balesh, 2003) and a sizable portion of pharmacists’ work hours are consumed by activities not directly related to patient care (Schommer, Pedersen, Doucette, Gaither, and Mott, 2002). The projected shortage has encouraged a number of new colleges/schools of pharmacy to open across the United States as a response to the unmet need.

**CONCLUSIONS**

The pharmacy profession has come a long way in a little more than a century. The current pace of change, however, promises more momentous transitions over the next few decades. It is difficult to gauge exactly what pharmacy practice will be like in another century with the profession’s renewed focus on patients, the continued specialization of pharmacists in specific disease states, the growing trend of pharmacy technician certification, the rapid diffusion of technology as a facilitator to the provision of care, and a shift in the composition of its workforce. It remains clear, however, that pharmacy will remain an integral part of our health care delivery system and an exciting career choice for its practitioners.
Chapter 3

The Pharmacist and the Pharmacy Profession

Questions for Further Discussion

1. How will pharmacists’ roles continue to evolve over the next 10 to 20 years? What will be the status of pharmaceutical care delivery in 20 years?
2. Should the focus on pharmacist credentialing be on general pharmacotherapy or on further specialization to create experts in managing specific disease states?
3. Why are proportionately fewer pharmacists active in professional associations at a national level compared to physicians and other health care professionals? How has this hindered us as a profession?
4. What is the contribution of each subdiscipline within pharmacy toward practice, education, and research?
5. Should certification of pharmacy technicians be mandated? Why or why not?
6. Will Internet pharmacies threaten the profitability and existence of traditional “bricks-and-mortar” independent and chain pharmacies?
7. What can be done to ensure an adequate supply of pharmacists for the future?

Key Topics and Terms

- History of pharmacy
- Pharmaceutical care
- Professional pharmacy organizations
- E-commerce
- Pharmacy technicians
- Pharmacy workforce

References

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