

## Pharmacists

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### Significant Points

- Pharmacists are becoming more involved in drug therapy decisionmaking and patient counseling.
- A license is required; one must serve an internship under a licensed pharmacist, graduate from an accredited college of pharmacy, and pass a State examination.
- Very good employment opportunities are expected.
- Earnings are very high, but some pharmacists work long hours, nights, weekends, and holidays.

### Nature of the Work

Pharmacists dispense drugs prescribed by physicians and other health practitioners and provide information to patients about medications and their use. They advise physicians and other health practitioners on the selection, dosages, interactions, and side effects of medications. Pharmacists must understand the use; clinical effects; and composition of drugs, including their chemical, biological, and physical properties. Compounding—the actual mixing of ingredients to form powders, tablets, capsules, ointments, and solutions—is only a small part of a pharmacist's practice, because most medicines are produced by pharmaceutical companies in a standard dosage and drug delivery form. Most pharmacists work either in a community setting, such as a retail drug store, or in a hospital or clinic.

Pharmacists in community or retail pharmacies counsel patients and answer questions about prescription drugs, such as those about possible adverse reactions or interactions. They provide information about over-the-counter drugs and make recommendations after asking a series of health questions, such as whether the customer is taking any other medications. They also give advice about durable medical equipment and home healthcare supplies. They also may complete third-party insurance forms and other paperwork. Those who own or manage community pharmacies may sell nonhealth-related merchandise, hire and supervise personnel, and oversee the general operation of the pharmacy. Some community pharmacists provide specialized services to help patients manage conditions such as diabetes, asthma, smoking cessation, or high blood pressure.



*Pharmacists are trained to understand the effects of medications.*

Pharmacists in hospitals and clinics dispense medications and advise the medical staff on the selection and effects of drugs. They may make sterile solutions and buy medical supplies. They also assess, plan, and monitor drug programs or regimens. They counsel patients on the use of drugs while in the hospital, and on their use at home when the patients are discharged. Pharmacists also may evaluate drug use patterns and outcomes for patients in hospitals or managed care organizations.

Pharmacists who work in home healthcare monitor drug therapy and prepare infusions—solutions that are injected into patients—and other medications for use in the home.

Most pharmacists keep confidential computerized records of patients' drug therapies to ensure that harmful drug interactions do not occur. They frequently teach pharmacy students serving as interns in preparation for graduation and licensure.

Some pharmacists specialize in specific drug therapy areas, such as intravenous nutrition support, oncology (cancer), nuclear pharmacy (used for chemotherapy), and pharmacotherapy (the treatment of mental disorders with drugs).

Pharmacists are responsible for the accuracy of every prescription that is filled, but they often rely upon pharmacy technicians and pharmacy aides to assist them. Thus, the pharmacist may delegate prescription-filling and administrative tasks and supervise their completion.

### Working Conditions

Pharmacists usually work in clean, well-lighted, and well-ventilated areas. Many pharmacists spend most of their workday on their feet. When working with sterile or potentially dangerous pharmaceutical products, pharmacists wear gloves and masks and work with other special protective equipment. Many community and hospital pharmacies are open for extended hours or around the clock, so pharmacists may work evenings, nights, weekends, and holidays. Consultant pharmacists may travel to nursing homes or other facilities to monitor patient's drug therapy.

About 1 out of 7 pharmacists worked part time in 2000. Most full-time salaried pharmacists worked about 40 hours a week. Some, including many self-employed pharmacists, worked more than 50 hours a week.

### Employment

Pharmacists held about 217,000 jobs in 2000. About 6 out of 10 worked in community pharmacies, either independently owned or part of a drug store chain, grocery store, department store, or mass merchandiser. Most community pharmacists were salaried employees, but some were self-employed owners. About 21 percent of salaried pharmacists worked in hospitals, and others worked in clinics, mail-order pharmacies, pharmaceutical wholesalers, home healthcare agencies, or the Federal Government.

### Training, Other Qualifications, and Advancement

A license to practice pharmacy is required in all States, the District of Columbia, and U.S. territories. To obtain a license, one must serve an internship under a licensed pharmacist, graduate from an accredited college of pharmacy, and pass a State examination. All States, except California and Florida, currently grant a license without extensive re-examination to qualified pharmacists already licensed by another State; one should check with State boards of pharmacy for details. Many pharmacists are licensed to practice in more than one State. States may require continuing education for license renewal.

In 2000, 82 colleges of pharmacy were accredited to confer degrees by the American Council on Pharmaceutical Education. Pharmacy programs grant the degree of Doctor of Pharmacy (Pharm.D.),

which requires at least 6 years of postsecondary study and the passing of the licensure examination of a State board of pharmacy. The Pharm.D. is a 4-year program that requires at least 2 years of college study prior to admittance. This degree has replaced the Bachelor of Science (B.S.) degree, which will cease to be awarded after 2005.

Colleges of pharmacy require at least 2 years of college-level prepharmacy education. Entry requirements usually include mathematics and natural sciences, such as chemistry, biology, and physics, as well as courses in the humanities and social sciences. Some colleges require the applicant to take the Pharmacy College Admissions Test.

All colleges of pharmacy offer courses in pharmacy practice, designed to teach students to dispense prescriptions and to communicate with patients and other health professionals. Such courses also strengthen students' understanding of professional ethics and allow them to practice management responsibilities. Pharmacists' training increasingly emphasizes direct patient care, as well as consultative services to other health professionals.

In the 2000-01 academic year, 64 colleges of pharmacy awarded the master of science degree or the Ph.D. degree. Both the master's and Ph.D. degrees are awarded after completion of a Pharm.D. degree. These degrees are designed for those who want more laboratory and research experience. Many master's and Ph.D. holders work in research for a drug company or teach at a university. Other options for pharmacy graduates who are interested in further training include 1- or 2-year residency programs or fellowships. Pharmacy residencies are postgraduate training programs in pharmacy practice. Pharmacy fellowships are highly individualized programs designed to prepare participants to work in research laboratories. Some pharmacists who run their own pharmacy obtain a master's degree in business administration (MBA).

Areas of graduate study include pharmaceuticals and pharmaceutical chemistry (physical and chemical properties of drugs and dosage forms), pharmacology (effects of drugs on the body), and pharmacy administration.

Prospective pharmacists should have scientific aptitude, good communication skills, and a desire to help others. They also must be conscientious and pay close attention to detail, because the decisions they make affect human lives.

In community pharmacies, pharmacists usually begin at the staff level. After they gain experience and secure the necessary capital, some become owners or part owners of pharmacies. Pharmacists in chain drug stores may be promoted to pharmacy supervisor or manager at the store level, then to manager at the district or regional level, and later to an executive position within the chain's headquarters.

Hospital pharmacists may advance to supervisory or administrative positions. Pharmacists in the pharmaceutical industry may advance in marketing, sales, research, quality control, production, packaging, or other areas.

### Job Outlook

Very good employment opportunities are expected for pharmacists over the 2000-10 period because the number of degrees granted in pharmacy are not expected to be as numerous as the number of job openings created by employment growth and the need to replace pharmacists who retire or otherwise leave the occupation.

Employment of pharmacists is expected to grow faster than the average for all occupations through the year 2010, due to the increased pharmaceutical needs of a larger and older population and greater use of medication. The growing numbers of middle-aged and elderly people—who, on average, use more prescription drugs than do younger people—will continue to spur demand for pharmacists in all practice settings. Other factors likely to increase the demand for pharmacists include scientific advances that will make

more drug products available, new developments in genome research and medication distribution systems, and increasingly sophisticated consumers seeking more information about drugs.

Retail pharmacies are taking steps to increase their prescription volume to make up for declining dispensing fees. Automation of drug dispensing and greater use of pharmacy technicians and pharmacy aides will help them to dispense more prescriptions. The number of community pharmacists needed in the future will depend on the rate of expansion of chain drug stores and the willingness of insurers to reimburse pharmacists for providing clinical services to patients taking prescription medications. With its emphasis on cost control, managed care encourages growth of lower cost prescription drug distributors, such as mail-order firms, for certain medications. Faster than average employment growth is expected in retail pharmacies.

Employment in hospitals is expected to grow about as fast as average, as hospitals reduce inpatient stays, downsize, and consolidate departments. Pharmacy services are shifting to long-term, ambulatory, and home care settings, where opportunities for pharmacists will be best. New opportunities are emerging for pharmacists in managed-care organizations, where they may analyze trends and patterns in medication use for their populations of patients, and for pharmacists trained in research, disease management, and pharmacoeconomics—determining the costs and benefits of different drug therapies.

Cost-conscious insurers and health systems may continue to emphasize the role of pharmacists in primary and preventive health services. They realize that the expense of using medication to treat diseases and conditions often is considerably less than the potential costs for patients whose conditions go untreated. Pharmacists also can reduce the expenses resulting from unexpected complications due to allergic reactions or medication interactions.

### Earnings

Median annual earnings of pharmacists in 2000 were \$70,950. The middle 50 percent earned between \$61,860 and \$81,690 a year. The lowest 10 percent earned less than \$51,570, and the highest 10 percent, more than \$89,010 a year. Median annual earnings in the industries employing the largest numbers of pharmacists in 2000 were as follows:

Department stores .....	\$73,730
Grocery stores .....	72,440
Drug stores and proprietary stores .....	72,110
Hospitals .....	68,760

According to a survey by *Drug Topics* magazine, published by Medical Economics Co., average starting base salaries of full-time, salaried pharmacists were \$67,824 in 2000. Pharmacists working in chain drug stores had an average annual base salary of \$71,486 while pharmacists working in independent drug stores averaged \$62,040 and hospital pharmacists averaged \$61,250. Many pharmacists also receive compensation in the form of bonuses, overtime, and profit-sharing.

### Related Occupations

Pharmacy technicians and pharmacy aides also work in pharmacies. Persons in other professions who may work with pharmaceutical compounds include biological and medical scientists and chemists and materials scientists.

### Sources of Additional Information

For information on pharmacy as a career, preprofessional and professional requirements, programs offered by colleges of pharmacy, and student financial aid, contact:

➤ American Association of Colleges of Pharmacy, 1426 Prince St., Alexandria, VA 22314. Internet: <http://www.aacp.org>

➤ National Association of Boards of Pharmacy, 700 Busse Highway, Park Ridge, IL 60068. Internet: <http://www.nabp.net>

General information on careers in pharmacy is available from:

➤ National Association of Chain Drug Stores, 413 N. Lee St., P.O. Box 1417-D49, Alexandria, VA 22313-1480. Internet: <http://www.nacds.org>

State licensure requirements are available from each State's Board of Pharmacy.

Information on specific college entrance requirements, curriculums, and financial aid is available from any college of pharmacy.

## Physical Therapists

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### Significant Points

- Employment is expected to increase faster than the average, as rapid growth in the number of middle-aged and elderly individuals increases the demand for therapeutic services.
- After graduating from an accredited physical therapist educational program, therapists must pass a licensure exam before they can practice.

### Nature of the Work

Physical therapists (PTs) provide services that help restore function, improve mobility, relieve pain, and prevent or limit permanent physical disabilities of patients suffering from injuries or disease. They restore, maintain, and promote overall fitness and health. Their patients include accident victims and individuals with disabling conditions such as low back pain, arthritis, heart disease, fractures, head injuries, and cerebral palsy.

Therapists examine patients' medical histories, then test and measure their strength, range of motion, balance and coordination, posture, muscle performance, respiration, and motor function. They also determine patients' ability to be independent and reintegrate into the community or workplace after injury or illness. Next, they develop treatment plans describing a treatment strategy, its purpose, and anticipated outcome. Physical therapist assistants, under the direction and supervision of a physical therapist, may be involved in implementing treatment plans with patients. Physical therapist aides perform routine support tasks, as directed by the therapist. (Physical therapist assistants and aides are discussed elsewhere in the *Handbook*.)

Treatment often includes exercise for patients who have been immobilized and lack flexibility, strength, or endurance. They encourage patients to use their own muscles to further increase flexibility and range of motion before finally advancing to other exercises improving strength, balance, coordination, and endurance. Their goal is to improve how an individual functions at work and home.

Physical therapists also use electrical stimulation, hot packs or cold compresses, and ultrasound to relieve pain and reduce swelling. They may use traction or deep-tissue massage to relieve pain. Therapists also teach patients to use assistive and adaptive devices such as crutches, prostheses, and wheelchairs. They also may show patients exercises to do at home to expedite their recovery.

As treatment continues, physical therapists document progress, conduct periodic examinations, and modify treatments when necessary. Such documentation is used to track the patient's progress, and identify areas requiring more or less attention.



*A patient, under the care of a physical therapist, works to regain mobility.*

Physical therapists often consult and practice with a variety of other professionals, such as physicians, dentists, nurses, educators, social workers, occupational therapists, speech-language pathologists, and audiologists.

Some physical therapists treat a wide range of ailments; others specialize in areas such as pediatrics, geriatrics, orthopedics, sports medicine, neurology, and cardiopulmonary physical therapy.

### Working Conditions

Physical therapists practice in hospitals, clinics, and private offices that have specially equipped facilities, or they treat patients in hospital rooms, homes, or schools.

Most full-time physical therapists work a 40-hour week, which may include some evenings and weekends. The job can be physically demanding because therapists often have to stoop, kneel, crouch, lift, and stand for long periods. In addition, physical therapists move heavy equipment and lift patients or help them turn, stand, or walk.

### Employment

Physical therapists held about 132,000 jobs in 2000; about 1 in 4 worked part time. The number of jobs is greater than the number of practicing physical therapists because some physical therapists hold two or more jobs. For example, some may work in a private practice, but also work part time in another health facility.

About two-thirds of physical therapists were employed in either hospitals or offices of physical therapists. Other jobs were in home health agencies, outpatient rehabilitation centers, offices and clinics of physicians, and nursing homes. Some physical therapists are self-employed in private practices. They may provide services to individual patients or contract to provide services in hospitals, rehabilitation centers, nursing homes, home health agencies, adult daycare programs, and schools. They may be in solo practice or be part of a consulting group. Physical therapists also teach in academic institutions and conduct research.

### Training, Other Qualifications, and Advancement

All States require physical therapists to pass a licensure exam before they can practice, after graduating from an accredited physical therapist educational program.

According to the American Physical Therapy Association, there were 199 accredited physical therapist programs in 2001. Of the accredited programs, 165 offered master's degrees, and 33 offered doctoral degrees. By 2002, all physical therapist programs seeking accreditation are required to offer degrees at the master's degree