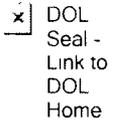
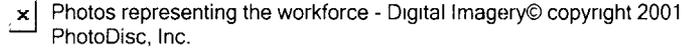


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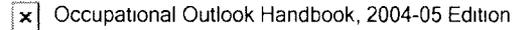
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 Occupational Outlook Handbook, 2004-05 Edition

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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 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.

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Nature of the Work

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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 also monitor the health and progress of patients in response to drug therapy to ensure safe and effective use of medication.

Pharmacists must understand the use, clinical effects,

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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 a small part of a pharmacist's practice, because most medicines are produced by pharmaceutical companies in a standard dosage and drug delivery form. Traditionally, most pharmacists work in a community setting, such as a retail drugstore, or in a healthcare facility, such as a hospital, nursing home, mental health institution, or neighborhood health clinic.

Pharmacists in community and retail pharmacies counsel patients and answer questions about prescription drugs, including questions regarding possible side effects or interactions among various drugs. They provide information about over-the-counter drugs and make recommendations after talking with the patient. They also may give advice about diet, exercise, or stress management, or 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 non-health-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. Some community pharmacists are also certified to administer vaccinations.

Pharmacists in healthcare facilities 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.

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

Most pharmacists keep confidential computerized records of patients' drug therapies to ensure that harmful drug interactions do not occur. 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 in the dispensing process. Thus, the pharmacist may delegate prescription-filling and administrative tasks and supervise their completion. They also frequently oversee pharmacy students serving as interns in preparation for graduation and licensure.

Increasingly, pharmacists pursue nontraditional pharmacy work. Some are involved in research for pharmaceutical manufacturers, developing new drugs and therapies and testing their effects on people. Others work in marketing or sales, providing expertise to clients on a drug's use, effectiveness, and possible side effects. Some pharmacists also work for health insurance companies, developing pharmacy benefit packages and carrying out cost-benefit analyses on certain drugs. Other pharmacists work for the government and pharmacy associations. Finally, some pharmacists are employed full time or part time as college faculty, teaching classes and performing research in a wide range of areas.

**Working
Conditions**

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Pharmacists 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 patients' drug therapy.

About 19 percent of pharmacists worked part time in 2002. 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 [\[About this section\]](#) [Back to Top](#)

Pharmacists held about 230,000 jobs in 2002. About 62 percent work in community pharmacies that are either independently owned or part of a drugstore chain, grocery store, department store, or mass merchandiser. Most community pharmacists are salaried employees, but some are self-employed owners. About 22 percent of salaried pharmacists work in hospitals, and others work in clinics, mail-order pharmacies, pharmaceutical wholesalers, home healthcare agencies, or the Federal Government.

Training, Other Qualifications, and Advancement [\[About this section\]](#) [Back to Top](#)

A license to practice pharmacy is required in all States, the District of Columbia, and U.S. territories. To obtain a license, one must graduate from a college of pharmacy accredited by the American Council on Pharmaceutical Education (ACPE) and pass an examination. All States except California require the North American Pharmacist Licensure Exam (NAPLEX) and the Multistate Pharmacy Jurisprudence Exam (MPJE), both administered by the National Association of Boards of Pharmacy. California has its own pharmacist licensure exam. In addition to the NAPLEX and MPJE, some States require additional exams unique to their State. All States except California currently grant a license without extensive re-examination to qualified pharmacists already licensed by another State. In

Florida, reexamination is not required if a pharmacist passed the NAPLEX and MPJE within 12 years of his or her application for license transfer. Many pharmacists are licensed to practice in more than one State. States may require continuing education for license renewal. Persons interested in a career as a pharmacist should check with State boards of pharmacy for details on examination requirements and license transfer procedures.

In 2002, 85 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. Courses offered at colleges of pharmacy are designed to teach students how to dispense prescriptions and communicate with patients and other health care providers about drug information and patient care. Students also learn professional ethics. In addition to classroom study, students in the Pharm.D. program are provided in-depth exposure to and active participation in a variety of pharmacy practice settings under the supervision of licensed pharmacists. The Pharm.D. degree has replaced the Bachelor of Pharmacy (B.Pharm.) degree, which is no longer offered to new students and will cease to be awarded after 2005.

The Pharm.D. is a 4-year program that requires at least 2 years of college study prior to admittance, although most applicants have 3 years prior to entering the program. Entry requirements usually include courses in mathematics and natural sciences, such as chemistry, biology, and physics, as well as courses in the humanities and social sciences. Approximately half of all colleges require the applicant to take the Pharmacy College Admissions Test (PCAT).

In 2003, the American Association of Colleges of Pharmacy (AACCP) launched the Pharmacy College Application Service, known as PharmCAS, for students interested in applying to schools and colleges of pharmacy. This centralized service allows applicants to use a single Web-based application and one set of transcripts to apply to multiple Pharm.D. degree programs. A total of 43 pharmacy programs

participated in 2003.

In the 2002-03 academic year, 66 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. degree holders do 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, and usually require the completion of a research study. 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 pharmaceutics 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. In independent pharmacies, after they gain experience and secure the necessary capital, some become owners or part owners of pharmacies. Pharmacists in chain drugstores 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**[[About this section](#)]****[Back to Top](#)**

Very good employment opportunities are expected for pharmacists over the 2002-12 period because the number of degrees granted in pharmacy is expected to be less than the number of job openings created by employment growth and the need to replace pharmacists who retire or otherwise leave the occupation. Recently, enrollments in pharmacy programs are rising as more students are attracted by high salaries and good job prospects. Despite this increase in enrollments, pharmacist jobs should still be more numerous than those seeking employment.

Employment of pharmacists is expected to grow faster than the average for all occupations through the year 2012, due to the increased pharmaceutical needs of a growing elderly population and increased use of medications. 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 employment 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, increasingly sophisticated consumers seeking more information about drugs, and coverage of prescription drugs by a greater number of health insurance plans and by Medicare.

Community pharmacies are taking steps to manage increasing prescription volume. Automation of drug dispensing and greater employment of pharmacy technicians and pharmacy aides will help these establishments to dispense more prescriptions.

With its emphasis on cost control, managed care encourages the use of lower cost prescription drug distributors, such as mail-order firms and online pharmacies, for purchases of certain medications. Prescriptions ordered through the mail via the Internet are filled in a central location and shipped to the patient at a lower cost. Mail-order and online pharmacies typically use automated technology to

dispense medication and employ fewer pharmacists. If the utilization of mail-order pharmacies increases rapidly, job growth among pharmacists could be limited.

Employment of pharmacists will not grow as fast in hospitals as in other industries, as hospitals reduce inpatient stays, downsize, and consolidate departments. The increase in outpatient surgeries means more patients are discharged and purchase medications through retail, supermarket, or mail-order pharmacies, rather than through the hospital. An aging population means more pharmacy services are required in nursing homes, assisted living facilities, and home care settings, where the most rapid job growth among pharmacists is expected.

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 pharmacoconomics—determining the costs and benefits of different drug therapies. Pharmacists also will have opportunities to work in research and development as well as sales and marketing for pharmaceutical manufacturing firms. New breakthroughs in biotechnology will increase the potential for drugs to treat diseases and expand the opportunities for pharmacists to conduct research and sell medications.

Job opportunities for pharmacists in patient care will arise as cost-conscious insurers and health systems continue to emphasize the role of pharmacists in primary and preventive health services. Health insurance companies realize that the expense of using medication to treat diseases and various health 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

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Median annual wage and salary earnings of pharmacists in 2002 were \$77,050. The middle 50 percent earned between \$66,210 and \$87,250 a year. The lowest 10 percent earned less than \$54,110, and the highest 10 percent earned more than \$94,570 a year. Median annual earnings in the industries employing the largest numbers of pharmacists in 2002 were as follows:

Grocery stores	\$78,270
Health and personal care stores	76,800
General medical and surgical hospitals	76,620

Related Occupations

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[Pharmacy technicians](#) and [pharmacy aides](#) also work in pharmacies. Persons in other professions who may work with pharmaceutical compounds include [biological scientists](#), [medical scientists](#), and [chemists and materials scientists](#). Increasingly, pharmacists are involved in patient care and therapy, work that they have in common with [physicians](#) and [surgeons](#).

Sources of Additional Information

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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/>

General information on careers in pharmacy is available from:

- American Society of Health-System Pharmacists, 7272 Wisconsin Ave., Bethesda, MD 20814. Internet: <http://www.ashp.org/>
- National Association of Chain Drug Stores, 413 N. Lee St., P.O. Box 1417-D49, Alexandria, VA 22313-1480. Internet: <http://www.nacds.org/>

Information on the North American Pharmacist Licensure Exam (NAPLEX) and the Multistate Pharmacy Jurisprudence Exam (MPJE) is available from:

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

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.

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