

## Healthcare Practitioners and Technicians

### Pharmacists

**Pharmacists** mix, distribute, and provide information and advice to patients, physicians, and other healthcare professionals about the selection, dosages, interactions and side-effects of medications in order to prevent harmful drug interactions. Some pharmacists work in areas such as clinical research, or public health planning or administration.

Pharmacists typically work in a community (retail drugstore) or healthcare facility. Pharmacists in the community setting act as a mediator between the patient and the physician, advising both about the dosages, interactions, and side effects of medications pertaining to the patient. They often work with insurance companies. Along with providing advice and information to the medical staff, pharmacists who work in healthcare facilities may make intravenous (IV) solutions, monitor drug programs, and advise patients about their medications prior to their discharge from the facility.

Mixing ingredients to make medications, known as compounding, only plays a small role in the pharmacists practice because most medications are distributed by pharmaceutical companies in standard dosages. Pharmacists can specialize in specific drug therapies such as oncology pharmacy for the treatment of cancer, psychiatric pharmacy for the treatment of mental disorders, and nuclear pharmacy which is used for chemotherapy.

Pharmacists may on occasion specialize in treatment of particular populations, such as the elderly (i.e. geriatric pharmacy). Pharmacists sometimes own and operate their own drug stores, work for drug manufactures doing marketing, sales, or research, work for the government, military or public health services, or serve as faculty members at colleges and universities. Public health pharmacists may work as part of teams of healthcare providers or social analysts, in areas such as city planning, or may be involved in relief efforts in third world countries, or areas affected by crises, wars, or disasters.

Pharmacists typically work in well-lighted and ventilated areas and spend most of their workday on their feet. They usually work 40 hours per week, although those working in a hospital or in facilities with extended hours may be required to work nights, weekends, and holidays.

### Education/Training

#### *How to Obtain:*

A Pharm. D. degree (rather than a bachelors degree), is required for this position. Admission to a Pharm.D. program requires two years of specific professional study,

primarily involving courses in mathematics and natural sciences, as well as the humanities and social sciences. The length of study for pharmacy school is 4 years, although there are some schools with accelerated 3 year programs.

Undergraduate college students, who have completed the specific professional study, can apply to a Pharm. D. program, to complete their degree in this area, which typically takes another 4 years to complete, or 6 years total for 2 years of undergraduate coursework, in addition to the Pharm.D. course program. If one receives a bachelors degree prior to attending pharmacy school, the time to complete both degrees is typically 8 years. Applicants must successfully complete the Pharmacy College Admission Test (PCAT) in order to be admitted to a Pharm D. program.

For pharmacists who want to pursue a career in “clinical” pharmacy, meaning pharmaceutical research, an addition one or two year residency program or fellowship is mandatory. Typical requirements for a residency fellowship include completion of a Pharm.D., a residency or similar clinical experience in the chosen field, one original research project, and a minimum of 3,000 hours of fellowship training time devoted to research related activity over a period of no less than two years.

Pharmacists who primarily want to work in a drug store or pharmacy providing direct services will not necessarily pursue this type of advanced training. Pharmacists who want to actually start or operate a pharmacy, often pursue a Masters degree in Business Administration (MBA). Though not mandatory for general practice, pharmacists who want to specialize in an area such as public health or public administration (for instance, working in third world countries, or in city planning), may also pursue a Masters degree in Public Health or Public Administration.

To be a practicing pharmacist in the U.S., a license is required. In addition to having a Pharm D., a prospective pharmacist must complete a specific number of hours of experience in a practice setting, and must complete an exam administered by the National Association of Boards of Pharmacy, the North American Pharmacist Licensure Exam (NAPLEX).

All states require a pharmacy law exam, usually the Multistate Pharmacy Jurisprudence Exam (MPJE), which is offered by the National Association of Boards of Pharmacy. Many states have additional exam requirements at the state level. In the state of New York the NAPLEX, MPJE, and a third written and practical test consisting of compounding, or mixing ingredients to make drugs are required to become licensed. Other requirements for licensure typically include a minimum age, and a criminal background check.

In the state of New York the applicant must:

- graduate from an accredited Pharm.D. program,
- have good moral character,
- be a U.S. citizen or legal alien, and

- be at least 21 years of age.

Although not required to practice, some pharmacists practicing in a particular area will pursue additional professional certification. There are currently six areas a pharmacist can specialize in through the Board of Pharmaceutical Specialties:

- Ambulatory Care
- Nuclear
- Nutrition Support
- Oncology
- Pharmacotherapy
- Psychiatric Pharmacy

To be certified in one of these specialties one must:

- Be a licensed, registered pharmacist,
- Have 2,000 to 4,000 hour working experience,
- Take classes geared toward a specialty,
- Train under a pharmacist in a specialty, and
- Pass a certification exam administered by the Board of Pharmaceutical Specialties.

Additionally, a pharmacist may specialize in Geriatric Pharmacy through the Commission for Certification in Geriatric Pharmacy (CCGP). In order to become certified one must be a currently licensed pharmacist, have two years of experience, pass an exam administered by the CCGP. The certification is valid for five years, and then requires renewal.

*More Information on Licensing and Certification:*

- The Pharmacy College Admission Test (PCAT):  
<http://www.aacp.org/resources/student/pharmacyforyou/admissions/Pages/PCAT.aspx>
- The American College of Clinical Pharmacy, Directory of Residencies, Fellowships & Graduate Programs:  
<http://www.accp.com/resandfel/>
- New York State Pharmacist Licensure Requirements:  
<http://www.op.nysed.gov/prof/pharm/pharmlic.htm>
- National Association of Boards of Pharmacy:  
<http://www.nabp.net/>

- Commission for Certification in Geriatric Pharmacy:  
<http://www.ccgp.org/>
- Board of Pharmaceutical Specialties:  
<http://www.bpsweb.org/>

*Average Costs:*

Tuition and fees for a Pharm.D. degree is approximately \$19,843\* per year. Completion time is generally 4 to 6 years depending on the program.

New York Public School In-state 4-year Pharm.D. Program costs approximately \$16,000\* per year for tuition and fees

Tuition and fees for a master's degree earned at an accredited public university in Business Administration (MBA) costs an average of \$16,000\* per year. Completion time is generally 2 years.

A Masters in Public Health or Administration (MPH or MPA) degree costs an average of \$11,500\* per year for tuition and fees. Completion time is generally 2 years.

North American Pharmacist Licensure Exam NAPLEX: \$460.00, plus the cost of any exam study aids.

Multistate Pharmacy Jurisprudence Exam MPJE: \$185.00, plus the cost of any exam study aids.

Board of Pharmaceutical Specialties Licensure: \$600 plus \$250 for operational costs, plus the cost of any study aids.

The fee for licensure in NY is \$339.

Costs of licenses and license renewal vary by state.

\* Note: This figure does not include federal, state, or university financial aid resources such as grants, fellowships, scholarships or work study. It also does not include vocational rehabilitation or other state resources available specifically to people with disabilities. The out-of-pocket expense may be significantly less.