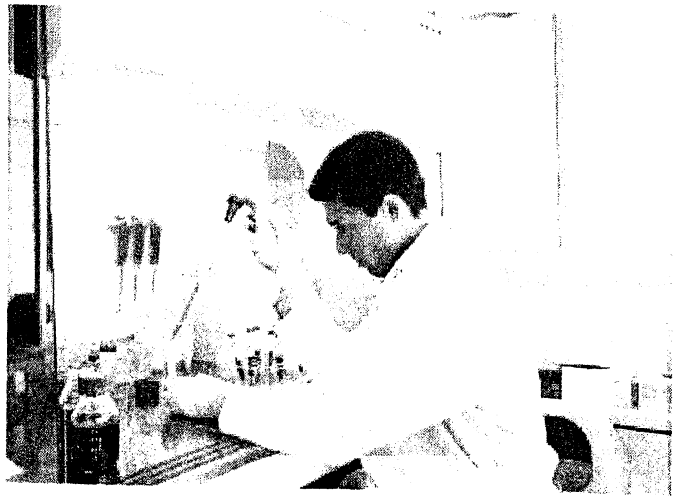
U.S. Bureau of Labor Statistics

Medical and Clinical Laboratory Technologists and Technicians

Summary



Clinical laboratory personnel examine and test body fluids and cells.

Quick Facts: Medical and Clinical Laboratory Technologists and Technicians	
2015 Median Pay	$50,550 per year $24.30 per hour
Typical Entry-Level Education	See How to Become One
Work Experience in a Related Occupation	None
On-the-job Training	None
Number of Jobs, 2014	328,200
Job Outlook, 2014-24	16% (Much faster than average)
Employment Change, 2014-24	52,100

What Medical and Clinical Laboratory Technologists and Technicians Do

Medical laboratory technologists (commonly known as *medical laboratory scientists*) and medical laboratory technicians collect samples and perform tests to analyze body fluids, tissue, and other substances.

Work Environment

About half of all medical laboratory technologists and technicians were employed in hospitals in 2014. Others worked in doctors' offices or diagnostic laboratories.

How to Become a Medical and Clinical Laboratory Technologist or Technician

Medical laboratory technologists typically need a bachelor's degree. Technicians usually need an associate's degree or a postsecondary certificate. Some states require technologists and technicians to be licensed.

Pay

Job Outlook

Employment of medical laboratory technologists and technicians is projected to grow 16 percent from 2014 to 2024, much faster than the average for all occupations. An increase in the aging population is expected to lead to a greater need to diagnose medical conditions, such as cancer or type 2 diabetes, through laboratory procedures.

State & Area Data

Explore resources for employment and wages by state and area for medical and clinical laboratory technologists and technicians.

Similar Occupations

Compare the job duties, education, job growth, and pay of medical and clinical laboratory technologists and technicians with similar occupations.

More Information, Including Links to O*NET

Learn more about medical and clinical laboratory technologists and technicians by visiting additional resources, including O*NET, a source on key characteristics of workers and occupations.

What Medical and Clinical Laboratory Technologists and Technicians Do

Laboratory personnel wear protective masks, gloves, and goggles to ensure their safety.

Medical laboratory technologists (commonly known as *medical laboratory scientists*) and medical laboratory technicians collect samples and perform tests to analyze body fluids, tissue, and other substances.

Duties

Medical laboratory technologists and technicians typically do the following:

- Analyze body fluids, such as blood, urine, and tissue samples, and record normal or abnormal findings
- Study blood samples for use in transfusions by identifying the number of cells, the cell morphology or the blood group, blood type, and compatibility with other blood types
- Operate sophisticated laboratory equipment, such as microscopes and cell counters
- Use automated equipment and computerized instruments capable of performing a number of tests at the same time
- Log data from medical tests and enter results into a patient's medical record
- Discuss results and findings of laboratory tests and procedures with physicians

- Supervise or train medical laboratory technicians

Both technicians and technologists perform tests and procedures that physicians and surgeons or other healthcare personnel order. However, technologists perform more complex tests and laboratory procedures than technicians do. For example, technologists may prepare specimens and perform detailed manual tests, whereas technicians perform routine tests that may be more automated. Medical laboratory technicians usually work under the general supervision of medical laboratory technologists or laboratory managers.

Technologists in small laboratories perform many types of tests; in large laboratories, they sometimes specialize. The following are examples of types of specialized medical laboratory technologists:

Blood bank technologists, or ***immunohematology technologists***, collect blood, classify it by type, and prepare blood and its components for transfusions.

Clinical chemistry technologists prepare specimens and analyze the chemical and hormonal contents of body fluids.

Cytotechnologists prepare slides of body cells and examine these cells with a microscope for abnormalities that may signal the beginning of a cancerous growth.

Immunology technologists examine elements of the human immune system and its response to foreign bodies.

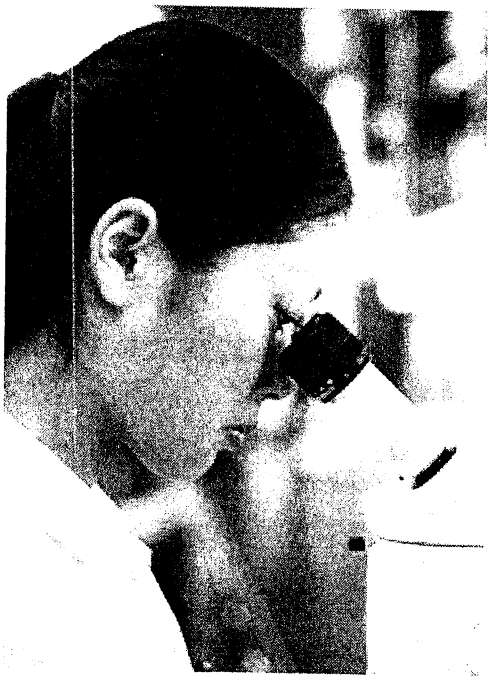
Microbiology technologists examine and identify bacteria and other microorganisms.

Molecular biology technologists perform complex protein and nucleic acid tests on cell samples.

Like technologists, medical laboratory technicians may work in several areas of the laboratory or specialize in one particular area. For example, histotechnicians cut and stain tissue specimens for pathologists, who are doctors who study the cause and development of diseases at a microscopic level.

Technologists and technicians often specialize after they have worked in a particular area for a long time or have received advanced education or training in that area.

Work Environment



Medical laboratory technologists operate sophisticated laboratory equipment, such as microscopes and cell counters.

Medical laboratory technologists held about 164,800 jobs in 2014. The industries that employed the most medical laboratory technologists in 2014 were as follows:

Hospitals; state, local, and private	58%
Medical and diagnostic laboratories	17
Offices of physicians	8
Colleges, universities, and professional schools; state, local, and private	5

Medical laboratory technicians held about 163,400 jobs in 2014. The industries that employed the most medical laboratory technicians in 2014 were as follows:

Hospitals; state, local, and private	44%
Medical and diagnostic laboratories	19
Offices of physicians	12
Colleges, universities, and professional schools; state, local, and private	5

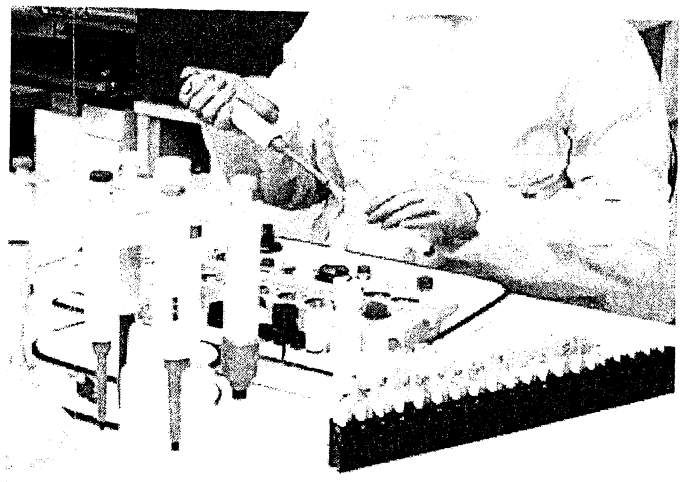
Medical laboratory personnel are trained to work with infectious specimens or with materials that are caustic or produce fumes. When they follow proper methods to control infection and sterilize equipment, the risk decreases. They wear protective masks, gloves, and goggles for their safety.

Technologists and technicians can be on their feet for long periods, and they may need to lift or turn disabled patients to collect samples.

Work Schedules

Most medical laboratory technologists and technicians work full time. Technologists and technicians who work in facilities that operate around the clock, such as hospitals and some independent laboratories, may work evening, weekend, or overnight hours.

How to Become a Medical and Clinical Laboratory Technologist or Technician



Medical laboratory technologists typically need a bachelor's degree.

Medical laboratory technologists typically need a bachelor's degree. Technicians usually need an associate's degree or a postsecondary certificate. Some states require technologists and technicians to be licensed.

Education

An entry-level job for technologists usually requires a bachelor's degree in medical technology or life sciences.

A bachelor's degree program in medical laboratory technology, also known as a medical laboratory scientist degree, includes courses in chemistry, biology, microbiology, math, and statistics. Coursework emphasizes laboratory skills, including safety procedures and lab management.

The courses may be offered through a university or hospital-based program that students attend during their senior year of college. College graduates who major in other sciences and meet a program's prerequisites, such as having completed required courses in biology and chemistry or maintaining a certain GPA, also may apply to a medical laboratory science program.

Medical laboratory technicians often complete an associate's degree program in clinical laboratory science. A limited number of 1-year certificate programs are available from hospitals, and admission requirements vary. The Armed Forces and vocational or technical schools also may offer certificate programs for medical laboratory technicians. Technician coursework addresses the theoretical and practical aspects of each of the major laboratory disciplines.

High school students who are interested in pursuing a career in the medical laboratory sciences should take classes in chemistry, biology, and math.

Licenses, Certifications, and Registrations

Some states require laboratory personnel to be licensed. Requirements vary by state and specialty. For specific requirements, contact state departments of health, state boards of occupational licensing, or visit The American Society for Clinical Laboratory Science .

Certification of medical laboratory technologists and technicians is required for licensure in some states. Although certification is not required to enter the occupation in all cases, employers typically prefer to hire certified technologists and technicians.

Medical laboratory technologists and technicians can obtain a general certification as a medical laboratory technologist or technician, respectively, or a certification in a specialty, such as cytotechnology or medical biology. Most credentialing institutions require that technologists complete an accredited education program in order to qualify to sit for an exam. For more credentialing information, visit the National Accrediting Agency for Clinical Laboratory Sciences .

Important Qualities

Ability to use technology. Medical laboratory technologists and technicians must understand how to operate complex machinery.

Detail oriented. Medical laboratory technologists and technicians must follow exact instructions in order to perform tests or procedures correctly.

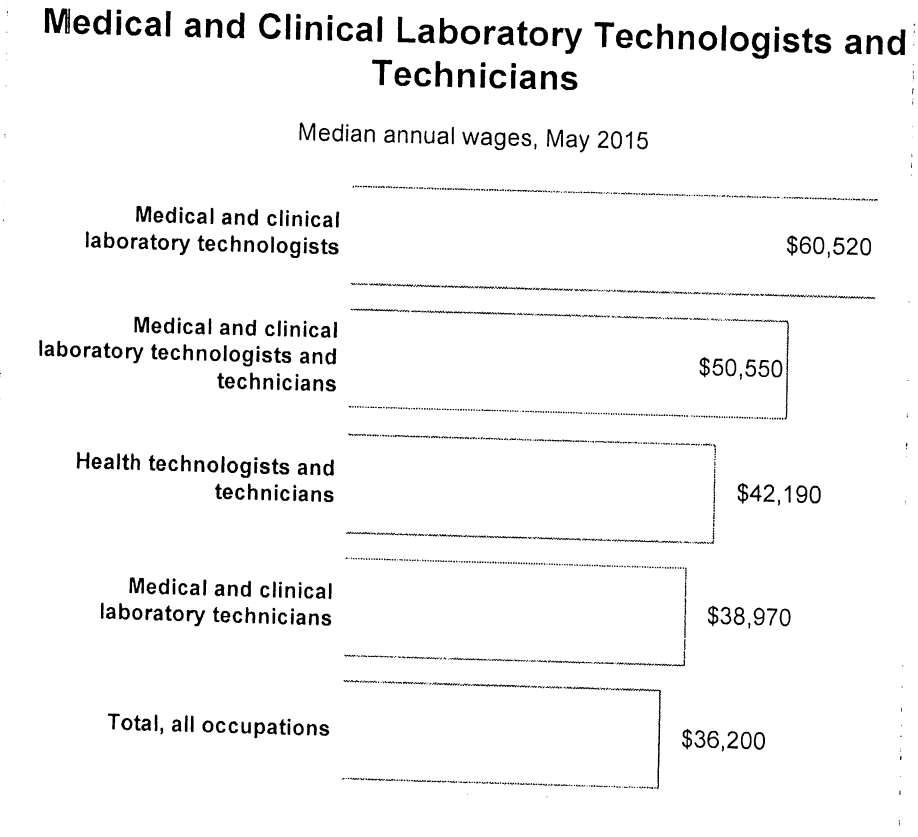
Dexterity. Medical laboratory technologists and technicians need to be skilled with their hands. They work closely with needles and precise laboratory instruments and must handle these tools effectively.

Physical stamina. Medical laboratory technologists and technicians may work on their feet for long periods while collecting samples. They may need to lift or turn disabled patients to collect samples for testing.

Advancement

After additional education, work experience, or certification, technologists and technicians may specialize in one of many areas of laboratory science, such as immunology, histotechnology, or clinical chemistry. Some medical laboratory technicians advance to technologist positions after gaining experience and additional education.

Pay



Note: All Occupations includes all occupations in the U.S. Economy.
Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics

The median annual wage for medical and clinical laboratory technologists was $60,520 in May 2015. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than $41,510, and the highest 10 percent earned more than $84,300.

The median annual wage for medical and clinical laboratory technicians was $38,970 in May 2015. The lowest 10 percent earned less than $25,890, and the highest 10 percent earned more than $60,810.

In May 2015, the median annual wages for medical laboratory technologists in the top industries in which they worked were as follows:

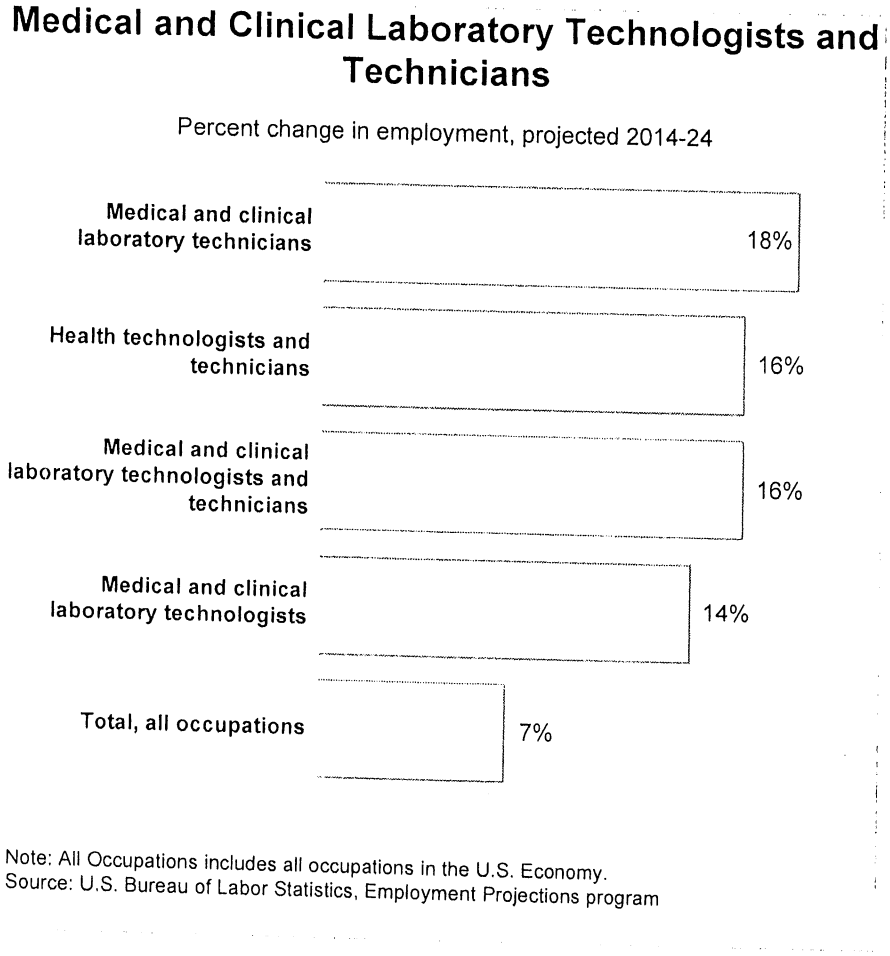
Hospitals; state, local, and private	$61,300
Medical and diagnostic laboratories	61,010
Offices of physicians	57,550
Colleges, universities, and professional schools; state, local, and private	54,420

In May 2015, the median annual wages for medical laboratory technicians in the top industries in which they worked were as follows:

Colleges, universities, and professional schools; state, local, and private	$40,290
Hospitals; state, local, and private	39,890
Offices of physicians	39,320
Medical and diagnostic laboratories	37,410

Most medical laboratory technologists and technicians work full time. Technologists and technicians who work in facilities that are always open, such as hospitals and some independent laboratories, may work evening, weekend, or overnight hours.

Job Outlook



Note: All Occupations includes all occupations in the U.S. Economy.
Source: U.S. Bureau of Labor Statistics, Employment Projections program

Employment of medical laboratory technologists is projected to grow 14 percent from 2014 to 2024, much faster the average for all occupations. Employment of medical laboratory technicians is projected to grow 18 percent from 2014 to 2024, much faster than the average for all occupations.

An increase in the aging population is expected to lead to a greater need to diagnose medical conditions, such as cancer or type 2 diabetes, through laboratory procedures. Prenatal testing for various types of genetic conditions also is increasingly common. Medical laboratory technologists and technicians will be in demand to use and maintain the equipment needed for diagnosis and treatment.

The number of individuals who have access to health insurance is expected to continue to increase because of federal health insurance reform. As a result, demand for the services of laboratory personnel may grow as more patients who were previously uninsured, or found treatment to be cost-prohibitive, seek laboratory tests.

Job Prospects

Job prospects will be best for medical and clinical laboratory technologists and technicians who complete an accredited education program and earn professional certification.

Employment projections data for medical and clinical laboratory technologists and technicians, 2014-24

Occupational Title	SOC Code	Employment, 2014	Projected Employment, 2024	Change, 2014-24		Employment by Industry
				Percent	Numeric	
Clinical laboratory technologists and technicians	29-2010	328,200	380,300	16	52,100	[XLSX]
Medical and clinical laboratory technologists	29-2011	164,800	187,900	14	23,100	[XLSX]
Medical and clinical laboratory technicians	29-2012	163,400	192,400	18	29,000	[XLSX]
SOURCE: U.S. Bureau of Labor Statistics, Employment Projections program						

State & Area Data

Occupational Employment Statistics (OES)

The Occupational Employment Statistics (OES) program produces employment and wage estimates annually for over 800 occupations. These estimates are available for the nation as a whole, for individual states, and for metropolitan and nonmetropolitan areas. The link(s) below go to OES data maps for employment and wages by state and area.

- Medical and clinical laboratory technicians
- Medical and clinical laboratory technologists

Projections Central

Occupational employment projections are developed for all states by Labor Market Information (LMI) or individual state Employment Projections offices. All state projections data are available at www.projectionscentral.com . Information on this site allows projected employment growth for an occupation to be compared among states or to be compared within one state. In addition, states may produce projections for areas; there are links to each state's websites where these data may be retrieved.

Career InfoNet

America's Career InfoNet includes hundreds of occupational profiles with data available by state and metro area. There are links in the left-hand side menu to compare occupational employment by state and occupational wages by local area or metro area. There is also a salary info tool to search for wages by zip code.

Similar Occupations

This table shows a list of occupations with job duties that are similar to those of medical and clinical laboratory technologists and technicians.

	OCCUPATION	JOB DUTIES	ENTRY-LEVEL EDUCATION	2015 MEDIAN PAY
	**Biological Technicians**	Biological technicians help biological and medical scientists conduct laboratory tests and experiments.	Bachelor's degree	$41,650
			Associate's degree	$44,660

	OCCUPATION	JOB DUTIES	ENTRY-LEVEL EDUCATION	2015 MEDIAN PAY
	Chemical Technicians	Chemical technicians use special instruments and techniques to help chemists and chemical engineers research, develop, produce, and test chemical products and processes.		
	Chemists and Materials Scientists	Chemists and materials scientists study substances at the atomic and molecular levels and the ways in which the substances interact with one another. They use their knowledge to develop new and improved products and to test the quality of manufactured goods.	Bachelor's degree	$72,610
	Veterinary Technologists and Technicians	Veterinary technologists and technicians perform medical tests under the supervision of a licensed veterinarian to assist in diagnosing the injuries and illnesses of animals.	Associate's degree	$31,800

Contacts for More Information

For more information about medical laboratory technologists and technicians, visit

The American Society for Clinical Laboratory Science

American Society of Cytopathology

For a list of accredited and approved educational programs for medical laboratory personnel, visit

National Accrediting Agency for Clinical Laboratory Sciences

For information on certification, visit

American Association of Bioanalysts

American Medical Technologists

The Work of A Chaplain
May 11, 2016

1. How would you define a chaplain?
2. What things would you say a chaplain does?
3. If you were going to be a chaplain, what kind of preparation should you have?
4. What subject areas would you want to focus on if you wanted to be a chaplain?
5. Where might you find a chaplain in a hospital? Think of places that you might find me or a person like me.
6. Some important words to consider regarding a chaplain
    a. Confidentiality
    b. Documentation
    c. Calm
    d. Listener
7. Questions?

PHARMACY TECHNICIAN CAREER OVERVIEW

Pharmacy technicians work under the direct supervision of a licensed pharmacist. Technicians perform a majority of the functions in the pharmacy that do not require a pharmacist's judgment.

Duties may include:
Filling prescriptions, drug orders and/or requisitions
Measuring amount of medication for a prescription or drug order
Packaging and labeling medications
Purchasing medicine
Managing inventory of medications and supplies
Enter information into the computer system
Prepare sterile medications for parenteral administration
Answer phones and triage for pharmacist
Clerical duties
Delivery of medications
Interviewing patients to obtain complete and accurate home medication lists
Compound medications
Operate and maintain automated dispensing equipment

Work Conditions
Pharmacy technicians work in community pharmacies, hospital pharmacies, and long-term care pharmacies to name a few. Pharmacy technicians mostly work full time, spend most of their day on their feet, and lift heavy boxes or climb ladders to reach necessary supplies. Pharmacies are generally clean, highly organized environments. Depending on the setting, pharmacy technicians may be required to work irregular hours, which can include evenings, nights, weekends, and holidays.

High School Preparation
Courses in mathematics and sciences and typing skills are essential. A high school diploma or equivalent is generally required to become a pharmacy technician.

Additional Educational Requirements
Pharmacy technicians typically learn through on-the-job training, or they may complete a postsecondary education program. Certificate programs average nine months to one year in length. In Indiana, pharmacy technicians must hold a pharmacy technician or pharmacy technician-in-training license to work in a pharmacy. There are national certifications that are recognized in the state of Indiana, such as the Pharmacy Technician Certification Board (PTCB) and the National Healthcareer Association who grant the designation Certified Pharmacy Technician (CPhT) to those who pass an examination.

Job Outlook
Pharmacy technician jobs are expected to grow 20% from 2012 to 2022, which is faster than average for all occupations. The increasing aging population may lead to higher rates of chronic diseases and more use of prescription medications. Health-care reform will provide more people with health insurance which will allow them to have better access to prescription medications. Pharmacy technicians will take a greater role as pharmacists become increasingly involved in patient care activities.

Typical salary as of 5/2012:
Median annual wage = $29,320
Range annual wage = $20,580 to $42,400
Wages are typically highest in community pharmacies, then hospital pharmacies, followed by other settings.

Educational Programs

IU Health Pharmacy Technician Program
IU Health Methodist, Health Sciences
Wile Hall, Room 631
P.O. Box 1367
Indianapolis, IN 46206-1367
Phone: (317) 962-5470
mludwick@iuhealth.org
www.iuhealth.org/education/

Ivy Tech Community College
Health Care Support Program
Offered at various campuses
www.ivytech.edu

Vincennes University
Pharmacy Technician Certificate – Mathematics and Sciences Division
1002 North First Street
Vincennes, IN 47591
Phone: (800) 742-9198
www.vinu.edu

Ross Medical Education Center
Pharmacy Technician Program
Offered at various campuses
www.rosseducation.edu

Additional Resources

American Association of Pharmacy Technicians (AAPT)
P.O. Box 1447
Greensboro, NC, 27402
Phone: (877) 368-4771
aapt@pharmacytechnician.com
www.pharmacytechnician.com

Indiana State Board of Pharmacy
402 West Washington Street, Room W 072
Indianapolis, IN 46204
Phone: (317) 234-2067
pla4@pla.in.gov
www.in.gov/pla/pharmacy.htm

Pharmacy Technician Certification Board
2200 C Street NW, Suite 101
Washington, DC 20037
Phone: (800) 363-8012
www.ptcb.org

National Healthcareer Association (NHA)
Pharmacy Technician Certification
www.nhanow.com/pharmacy-technician.aspx

Pharmacy Technician Educators Council
www.rxptec.org

PHARMACIST OVERVIEW

Pharmacists are responsible for the dispensing of medications prescribed by physicians and other health practitioners. They also provide counseling to patients and answer their questions about prescription medications as well as over-the-counter medications, vitamins, and herbal supplements. Pharmacists are trained to know the indication, mechanism of action, dosage, administration, side effects and desired effects of medications. They are also highly trained in the treatment of common disease states according to published guidelines.

Pharmacists monitor patient's responses to drug therapy and ensure the safe and effective use of medications. Other tasks include compounding (mixing of ingredients to make alternative dosages or dosage forms), preparing sterile medications, teaching students, answering questions from other health-care providers and performing various administrative duties.

Types of Pharmacist Careers (not an all-inclusive list):

- Academic Pharmacist
- Community Pharmacist
- Compounding Pharmacist
- Clinical Pharmacist
- Drug-Information Pharmacist
- Home Care Pharmacist
- Hospital Pharmacist
- Industry-based Pharmacist
- Long-term Care Pharmacist
- Military Pharmacist
- Nuclear Pharmacist
- Operating Room Pharmacist
- Pharmacy Manager
- Regulatory Pharmacist
- Specialty Pharmacist Areas:
    - Ambulatory Care
    - Critical Care
    - Infectious Disease
    - Nutrition Support
    - Oncology
    - Pediatrics
    - Psychiatry
    - Veterinary

Work Conditions

Work conditions are highly dependent upon the area of pharmacy in which one works. Pharmacists typically work in a clean and well-lit environment. Some pharmacists are on their feet most of the day, while others spend the day sitting at a desk. There is typically a lot of work at the computer for most pharmacists. Pharmacists in most settings work 40 or more hours a week; however, pharmacy is also a career that allows people to make a decent living working part time. Depending on the setting, pharmacists may be required to work irregular hours, which can include evenings, nights, weekends, and holidays.

High School Preparation

Students should maintain above average academic scores and take courses in biology, chemistry, anatomy, humanities, physics, and mathematics. Some pharmacy schools may require prospective students to take the Pharmacy College Admission Test (PCAT) to be considered for admission. (see www.pcatweb.info)

Additional Educational Requirements

Pharmacy programs grant the degree Doctor of Pharmacy (Pharm.D.). Students must complete two years of college study (Pre-pharmacy) in order to be admitted to a four year Doctor of Pharmacy program. The pre-pharmacy curriculum does not have to be completed at the same university as the subsequent years of the

program; however, make sure that credits will transfer appropriately to the pharmacy school. The four year program includes didactic and experiential learning. Usually, the final year consists of only experiential learning or externships at various sites. Some schools now offer accelerated Pharm.D. programs that may be completed in less than six years.

In addition to the education, one must pass a national pharmacy board exam and state law examination to obtain a license to practice pharmacy. Pharmacy graduates may also complete a 1-2 year residency program or fellowship. Pharmacy licenses may be transferred from state to state, but often require passing a state-specific law exam.

Job Outlook

Pharmacy jobs are expected to grow 14% from 2012 to 2022, which is consistent with the average for all occupations. The increasing aging population may lead to higher rates of chronic diseases and more use of prescription medications. Health-care reform will provide more people with health insurance which will allow them to have better access to prescription medications. Also, as hospitals focus on ways to decrease the number of patients re-admitted to the hospital within 30 days, pharmacists will likely be key participants in programs to help prevent re-admissions. These will increase the demand for pharmaceutical services.

In response to past shortages of pharmacists, the number of pharmacy schools has grown in recent years. Now there are more pharmacy school graduates and more competition for jobs. Residency training and specialty certification have now become increasingly important for pharmacy graduates to differentiate themselves when applying for jobs.

Typical salary as of 5/2012:

Median annual wage = $116,670
Range annual wage = $89,280 to $145,910

Educational Programs in Indiana

Butler University
College of Pharmacy & Health Sciences
4600 Sunset Avenue
Indianapolis, IN 46208
Phone: (800) 368-6852

Purdue University
College of Pharmacy
575 Stadium Mall Drive
West Lafayette, IN 47907
Phone: (765) 494-1361
www.pharmacy.purdue.edu

Manchester University
College of Pharmacy
10627 Diebold Road
Fort Wayne, IN 46845
Phone: (260) 470-2700
www.manchester.edu/pharmacy/

Some Additional Resources

American Association of Colleges of Pharmacy
1727 King Street
Alexandria, VA 22314
Phone: (703) 739-2330
www.aacp.org

American Pharmacists Association (APhA)
2215 Constitution Avenue, NW
Washington, DC 20037
Phone: (202) 628-4410
www.pharmacist.com

American Society of Health-System Pharmacists (ASHP)
7272 Wisconsin Avenue
Bethesda, MD 20814
Phone: (866) 279-0681
www.ashp.org

Indiana Pharmacists Alliance (IPA)
729 N. Pennsylvania Street
Indianpolis, IN 46204
Phone: (317) 634-4968
www.indianapharmacists.org

National Association of Boards of Pharmacy (NABP)
1600 Feehanville Drive
Mount Prospect, IL 60056
Phone: (847) 391-4406
www.nabp.net

National Community Pharmacists Association (NCPA)
100 Daingerfield Road
Alexandria, VA 22314
Phone: (703) 683-8200
www.ncpanet.org