

level and above, in accordance with the Commission on Accreditation in Physical Therapy Education.

Physical therapist programs start with basic science courses such as biology, chemistry, and physics, and then introduce specialized courses such as biomechanics, neuroanatomy, human growth and development, manifestations of disease, examination techniques, and therapeutic procedures. Besides classroom and laboratory instruction, students receive supervised clinical experience. Courses useful when applying to physical therapist educational programs include anatomy, biology, chemistry, social science, mathematics, and physics. Before granting admission, many professional education programs require experience as a volunteer in a physical therapy department of a hospital or clinic.

Physical therapists should have strong interpersonal skills to successfully educate patients about their physical therapy treatments. They should also be compassionate and possess a desire to help patients. Similar traits also are needed to interact with the patient's family.

Physical therapists are expected to continue professional development by participating in continuing education courses and workshops. A number of States require continuing education to maintain licensure.

Job Outlook

Employment of physical therapists is expected to grow faster than the average for all occupations through 2010. Federal legislation imposing limits on reimbursement for therapy services may adversely affect the job market for physical therapists in the near term. However, over the long run, the demand for physical therapists should continue to rise as a result of growth in the number of individuals with disabilities or limited function requiring therapy services. The rapidly growing elderly population is particularly vulnerable to chronic and debilitating conditions that require therapeutic services. Also, the baby-boom generation is entering the prime age for heart attacks and strokes, increasing the demand for cardiac and physical rehabilitation. More young people will need physical therapy as technological advances save the lives of a larger proportion of newborns with severe birth defects.

Future medical developments should also permit a higher percentage of trauma victims to survive, creating additional demand for rehabilitative care. Growth also may result from advances in medical technology which permit treatment of more disabling conditions.

Widespread interest in health promotion also should increase demand for physical therapy services. A growing number of employers are using physical therapists to evaluate worksites, develop exercise programs, and teach safe work habits to employees in the hope of reducing injuries.

Earnings

Median annual earnings of physical therapists were \$54,810 in 2000. The middle 50 percent earned between \$46,660 and \$67,390. The lowest 10 percent earned less than \$38,510, and the highest 10 percent earned more than \$83,370. Median annual earnings in the industries employing the largest numbers of physical therapists in 2000 were as follows:

Offices and clinics of medical doctors	\$58,390
Home health care services	57,830
Offices of other health practitioners	55,830
Nursing and personal care facilities	54,740
Hospitals	54,430

Related Occupations

Physical therapists rehabilitate persons with physical disabilities. Others who work in the rehabilitation field include occupational

therapists, recreational therapists, rehabilitation counselors, respiratory therapists, and speech-language pathologists and audiologists.

Sources of Additional Information

Additional information on a career as a physical therapist and a list of accredited educational programs in physical therapy are available from:

- ▶ American Physical Therapy Association, 1111 North Fairfax St., Alexandria, VA 22314-1488. Internet: <http://www.apta.org>

Physician Assistants

(O*NET 29-1071.00)

Significant Points

- The typical physician assistant program lasts about 2 years and usually requires at least 2 years of college and some healthcare experience for admission.
- Earnings are high and job opportunities should be good.

Nature of the Work

Physician assistants (PAs) provide healthcare services under the supervision of physicians. They should not be confused with medical assistants, who perform routine clinical and clerical tasks. (Medical assistants are discussed elsewhere in the *Handbook*.) PAs are formally trained to provide diagnostic, therapeutic, and preventive healthcare services, as delegated by a physician. Working as members of the healthcare team, they take medical histories, examine and treat patients, order and interpret laboratory tests and x rays, make diagnoses, and prescribe medications. They also treat minor injuries by suturing, splinting, and casting. PAs record progress notes, instruct and counsel patients, and order or carry out therapy. In 47 States and the District of Columbia, physician assistants may prescribe medications. PAs also may have managerial duties. Some order medical and laboratory supplies and equipment and may supervise technicians and assistants.

Physician assistants work under the supervision of a physician. However, PAs may be the principal care providers in rural or inner city clinics, where a physician is present for only 1 or 2 days each week. In such cases, the PA confers with the supervising physician and other medical professionals as needed or as required by law. PAs also may make house calls or go to hospitals and nursing homes to check on patients and report back to the physician.



Physician assistants treat all types of patients, young and old.

The duties of physician assistants are determined by the supervising physician and by State law. Aspiring PAs should investigate the laws and regulations in the States in which they wish to practice.

Many PAs work in primary care areas such as general internal medicine, pediatrics, and family medicine. Others work in specialty areas, such as general and thoracic surgery, emergency medicine, orthopedics, and geriatrics. PAs specializing in surgery provide pre- and postoperative care, and may work as first or second assistants during major surgery.

Working Conditions

Although PAs usually work in a comfortable, well-lighted environment, those in surgery often stand for long periods, and others do considerable walking. Schedules vary according to practice setting, and often depend on the hours of the supervising physician. The workweek of PAs in physicians' offices may include weekends, night hours, or early morning hospital rounds to visit patients. These workers also may be on call. PAs in clinics usually work a 40-hour week.

Employment

Physician assistants held about 58,000 jobs in 2000. The number of jobs is greater than the number of practicing PAs because some hold two or more jobs. For example, some PAs work with a supervising physician, but also work in another practice, clinic, or hospital. According to the American Academy of Physician Assistants, there were about 40,469 certified PAs in clinical practice as of January 2000.

Almost 56 percent of jobs for PAs were in the offices and clinics of physicians, dentists, or other health practitioners. About 32 percent were in hospitals. The rest were mostly in public health clinics, temporary help agencies, schools, prisons, home healthcare agencies, and the U.S. Department of Veterans Affairs.

According to the American Academy of Physician Assistants, about one-third of all PAs provide healthcare to communities with fewer than 50,000 residents, in which physicians may be in limited supply.

Training, Other Qualifications, and Advancement

All States require that new PAs complete an accredited, formal education program. As of July 2001, there were 129 accredited or provisionally accredited educational programs for physician assistants; 64 of these programs offered a master's degree. The rest offered either a bachelor's degree or an associate degree. Most PA graduates have at least a bachelor's degree.

Admission requirements vary, but many programs require 2 years of college and some work experience in the healthcare field. Students should take courses in biology, English, chemistry, math, psychology, and social sciences. More than two-thirds of all applicants hold a bachelor's or master's degree. Many applicants are former emergency medical technicians, other allied health professionals, or nurses.

PA programs usually last at least 2 years. Most programs are in schools of allied health, academic health centers, medical schools, or 4-year colleges; a few are in community colleges, the military, or hospitals. Many accredited PA programs have clinical teaching affiliations with medical schools.

PA education includes classroom instruction in biochemistry, pathology, human anatomy, physiology, microbiology, clinical pharmacology, clinical medicine, geriatric and home healthcare, disease prevention, and medical ethics. Students obtain supervised clinical training in several areas, including primary care medicine, inpatient medicine, surgery, obstetrics and gynecology, geriatrics, emergency medicine, psychiatry, and pediatrics. Sometimes, PA students serve one or more of these "rotations" under the supervision of a physician who is seeking to hire a PA. These rotations often lead to permanent employment.

All States and the District of Columbia have legislation governing the qualifications or practice of physician assistants. All jurisdictions require physician assistants to pass the Physician Assistants National Certifying Examination, administered by the National Commission on Certification of Physician Assistants (NCCPA)—open to graduates of accredited PA educational programs. Only those successfully completing the examination may use the credential "Physician Assistant-Certified (PA-C)." In order to remain certified, PAs must complete 100 hours of continuing medical education every 2 years. Every 6 years, they must pass a recertification examination or complete an alternate program combining learning experiences and a take-home examination.

Some PAs pursue additional education in a specialty area such as surgery, neonatology, or emergency medicine. PA postgraduate residency training programs are available in areas such as internal medicine, rural primary care, emergency medicine, surgery, pediatrics, neonatology, and occupational medicine. Candidates must be graduates of an accredited program and be certified by the NCCPA.

Physician assistants need leadership skills, self-confidence, and emotional stability. They must be willing to continue studying throughout their career to keep up with medical advances.

As they attain greater clinical knowledge and experience, PAs can advance to added responsibilities and higher earnings. However, by the very nature of the profession, clinically practicing PAs always are supervised by physicians.

Job Outlook

Employment opportunities are expected to be good for physician assistants, particularly in areas or settings that have difficulty attracting physicians, such as rural and inner city clinics. Employment of PAs is expected to grow much faster than the average for all occupations through the year 2010 due to anticipated expansion of the health services industry and an emphasis on cost containment.

Physicians and institutions are expected to employ more PAs to provide primary care and to assist with medical and surgical procedures because PAs are cost-effective and productive members of the healthcare team. Physician assistants can relieve physicians of routine duties and procedures. Telemedicine—using technology to facilitate interactive consultations between physicians and physician assistants—also will expand the use of physician assistants.

Besides the traditional office-based setting, PAs should find a growing number of jobs in institutional settings such as hospitals, academic medical centers, public clinics, and prisons. Additional PAs may be needed to augment medical staffing in inpatient teaching hospital settings if the number of physician residents is reduced. In addition, State-imposed legal limitations on the numbers of hours worked by physician residents are increasingly common and encourage hospitals to use PAs to supply some physician resident services. Opportunities will be best in States that allow PAs a wider scope of practice.

Earnings

Median annual earnings of physician assistants were \$61,910 in 2000. The middle 50 percent earned between \$47,970 and \$73,890. The lowest 10 percent earned less than \$32,690, and the highest 10 percent earned more than \$88,100. Median annual earnings of physician assistants in 2000 were \$64,430 in offices and clinics of medical doctors and \$61,460 in hospitals.

According to the American Academy of Physician Assistants, median income for physician assistants in full-time clinical practice in 2000 was about \$65,177; median income for first-year graduates was about \$56,977. Income varies by specialty, practice setting, geographical location, and years of experience.

Related Occupations

Other health workers who provide direct patient care that requires a similar level of skill and training include occupational therapists, physical therapists, and speech-language pathologists and audiologists.

Sources of Additional Information

For information on a career as a physician assistant, contact:

► American Academy of Physician Assistants Information Center, 950 North Washington St., Alexandria, VA 22314-1552. Internet: <http://www.aapa.org>

For a list of accredited programs and a catalog of individual PA training programs, contact:

► Association of Physician Assistant Programs, 950 North Washington St., Alexandria, VA 22314-1552. Internet: <http://www.apap.org>

For eligibility requirements and a description of the Physician Assistant National Certifying Examination, contact:

► National Commission on Certification of Physician Assistants, Inc., 157 Technology Pkwy., Suite 800, Norcross, GA 30092-2913. Internet: <http://www.nccpa.net>

Physicians and Surgeons

(O*NET 29-1061.00, 29-1062.00, 29-1063.00, 29-1064.00, 29-1065.00, 29-1066.00, 29-1067.00)

Significant Points

- Physicians are much more likely to work as salaried employees of group medical practices, clinics, or integrated healthcare systems than in the past.
- Formal education and training requirements are among the most demanding of any occupation, but earnings are among the highest.

Nature of the Work

Physicians and surgeons serve a fundamental role in our society and have an effect upon all our lives. They diagnose illnesses and prescribe and administer treatment for people suffering from injury or disease. Physicians examine patients, obtain medical histories, and order, perform, and interpret diagnostic tests. They counsel patients on diet, hygiene, and preventive healthcare.

There are two types of physicians: The M.D.—Doctor of Medicine—and the D.O.—Doctor of Osteopathic Medicine. M.D.s also are known as allopathic physicians. While both M.D.s and D.O.s may use all accepted methods of treatment, including drugs and surgery, D.O.s place special emphasis on the body's musculoskeletal system, preventive medicine, and holistic patient care.

About a third of M.D.s—and more than half of D.O.s—are primary care physicians. They practice general and family medicine, general internal medicine, or general pediatrics and usually are the first health professionals patients consult. Primary care physicians tend to see the same patients on a regular basis for preventive care and to treat a variety of ailments. General and family practitioners emphasize comprehensive healthcare for patients of all ages and for the family as a group. Those in general internal medicine provide care mainly for adults who may have problems associated with the body's organs. General pediatricians focus on the whole range of children's health issues. When appropriate, primary care physicians refer patients to specialists, who are experts in medical fields such as obstetrics and gynecology, cardiology, psychiatry, or surgery (table 1).

D.O.s are more likely to be primary care providers than M.D.s, although they can be found in all specialties. Over half of D.O.s practice general or family medicine, general internal medicine, or general pediatrics. Common specialties for D.O.s include

Table 1. Percent distribution of M.D.s by specialty, 1999

	<i>Percent</i>
Total	100.0
<i>Primary care</i>	
Internal medicine	16.1
General and family practice	10.7
Pediatrics	7.5
<i>Medical specialties</i>	
Allergy	0.5
Cardiovascular diseases	2.5
Dermatology	1.2
Gastroenterology	1.3
Obstetrics and gynecology	4.9
Pediatric cardiology	0.2
Pulmonary diseases	1.0
<i>Surgical specialties</i>	
Colon and rectal surgery	0.1
General surgery	4.9
Neurological surgery	0.6
Ophthalmology	2.2
Orthopedic surgery	2.7
Otolaryngology	1.1
Plastic surgery	0.7
Thoracic surgery	0.1
Urological surgery	1.3
<i>Other specialties</i>	
Aerospace medicine	0.1
Anesthesiology	4.4
Child psychiatry	0.7
Diagnostic radiology	2.6
Emergency medicine	2.8
Forensic pathology	0.1
General preventive medicine	0.4
Neurology	1.5
Nuclear medicine	0.2
Occupational medicine	0.4
Pathology	2.3
Physical medicine and rehabilitation	0.8
Psychiatry	4.9
Public health	0.2
Radiology	1.0
Radiation oncology	0.5
Other specialty	0.7
Unspecified/unknown/inactive	16.0

SOURCE: American Medical Association

emergency medicine, anesthesiology, obstetrics and gynecology, psychiatry, and surgery.

Surgeons are physicians who specialize in the treatment of injury, disease, and deformity through operations. With patients under general or local anesthesia, a surgeon operates using a variety of instruments to correct physical deformities, repair bone and tissue after injuries, or perform preventive surgeries on patients with debilitating diseases or disorders. Though a large number perform general surgery, many surgeons choose to specialize in a specific area. One of the most prevalent specialties is orthopedic surgery, the treatment of the skeletal system and associated organs. Others include ophthalmology (treatment of the eye), neurological surgery (treatment of the brain and nervous system), and plastic or reconstructive surgery. Surgeons, like primary care and other specialist physicians, also examine patients, perform, and interpret diagnostic tests, and counsel patients on preventive healthcare.