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## Physicians and Surgeons

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### Significant Points

- Many physicians and surgeons work long, irregular hours; more than one-third of full-time physicians worked 60 hours or more a week in 2006.
- Acceptance to medical school is highly competitive.
- Formal education and training requirements are among the most demanding of any occupation, but earnings are among the highest.
- Job opportunities should be very good, particularly in rural and low-income areas.

### Nature of the Work

Physicians and surgeons 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 health care.

There are two types of physicians: M.D.—Doctor of Medicine—and 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. D.O.s are most likely to be primary care specialists although they can be found in all specialties. About half of D.O.s practice general or family medicine, general internal medicine, or general pediatrics.

Physicians work in one or more of several specialties, including, but not limited to, anesthesiology, family and general medicine, general internal medicine, general pediatrics, obstetrics and gynecology, psychiatry, and surgery.

*Anesthesiologists* focus on the care of surgical patients and pain relief. Like other physicians, they evaluate and treat patients and direct the efforts of their staffs. Through continual monitoring and assessment, these critical care specialists are responsible for maintenance of the patient's vital life functions—heart rate, body temperature, blood pressure, breathing—during surgery. They also work outside of the operating room, providing pain relief in the intensive care unit, during labor and delivery, and for those who suffer from chronic pain. Anesthesiologists confer with other physicians and surgeons about appropriate treatments and procedures before, during, and after operations.

*Family and general practitioners* often provide the first point of contact for people seeking health care, by acting as the traditional family doctor. They assess and treat a wide range of conditions, from sinus and respiratory infections to broken bones. Family and general practitioners typically have a base of regular, long-term patients. These doctors refer patients with more serious conditions to specialists or other health care facilities for more intensive care.

*General internists* diagnose and provide nonsurgical treatment for a wide range of problems that affect internal organ systems, such as the stomach, kidneys, liver, and digestive tract. Internists use a variety of diagnostic techniques to treat patients through medication or hospitalization. Like general practitioners, general internists commonly act as primary care specialists. They treat patients referred from other specialists, and, in turn they refer patients to other specialists when more complex care is required.

*General pediatricians* care for the health of infants, children, teenagers, and young adults. They specialize in the diagnosis and treatment of a variety of ailments specific to young people and track patients' growth to adulthood. Like most physicians, pediatricians work with different health care workers, such as nurses and other physicians, to assess and treat children with various ailments. Most of the work of pediatricians involves treating day-to-day illnesses—minor injuries, infectious diseases, and immunizations—that are common to children, much as a general practitioner treats adults. Some pediatricians specialize in pediatric surgery or serious medical conditions, such as autoimmune disorders or serious chronic ailments.

*Obstetricians and gynecologists* (OB/GYNs) specialize in women's health. They are responsible for women's general medical care, and they also provide care related to pregnancy and the reproductive system. Like general practitioners, OB/GYNs attempt to prevent, diagnose, and treat general health problems, but they focus on ailments specific to the female anatomy, such as cancers of the breast or cervix, urinary tract and pelvic disorders, and hormonal disorders. OB/GYNs also specialize in childbirth, treating and counseling women throughout their pregnancy, from giving prenatal diagnoses to assisting with delivery and providing postpartum care.

*Psychiatrists* are the primary caregivers in the area of mental health. They assess and treat mental illnesses through a combination of psychotherapy, psychoanalysis, hospitalization, and medication. Psychotherapy involves regular discussions with patients about their problems; the psychiatrist helps them find solutions through changes in their behavioral patterns, the exploration of their past experiences, or group and family therapy sessions. Psychoanalysis involves long-term psychotherapy and counseling for patients. In many cases, medications are administered to correct chemical imbalances that cause emotional problems. Psychiatrists also may administer electroconvulsive therapy to those of their patients who do not respond to, or who cannot take, medications.

*Surgeons* specialize in the treatment of injury, disease, and deformity through operations. Using a variety of instruments, and with patients under anesthesia, a surgeon corrects physical deformities, repairs bone and tissue after injuries, or performs preventive surgeries on patients with debilitating diseases or disorders. Although 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 musculoskeletal system. Others include neurological surgery (treatment of the brain and nervous system), cardiovascular surgery, otolaryngology (treatment of the ear, nose, and throat), and plastic or reconstructive surgery. Like other physicians, surgeons also examine patients, perform and interpret diagnostic tests, and counsel patients on preventive health care.



*Physicians increasingly practice in groups or health care organizations that provide backup coverage and allow for more time off.*

*Other physicians and surgeons* work in a number of other medical and surgical specialists, including allergists, cardiologists, dermatologists, emergency physicians, gastroenterologists, ophthalmologists, pathologists, and radiologists.

**Work environment.** Many physicians—primarily general and family practitioners, general internists, pediatricians, OB/GYNs, and psychiatrists—work in small private offices or clinics, often assisted by a small staff of nurses and other administrative personnel. Increasingly, physicians are practicing in groups or health care organizations that provide backup coverage and allow for more time off. Physicians in a group practice or health care organization often work as part of a team that coordinates care for a number of patients; they are less independent than the solo practitioners of the past. Surgeons and anesthesiologists usually work in well-lighted, sterile environments while performing surgery and often stand for long periods. Most work in hospitals or in surgical outpatient centers.

Many physicians and surgeons work long, irregular hours. Over one-third of full-time physicians and surgeons worked 60 hours or more a week in 2006. Only 8 percent of all physicians and surgeons worked part-time, compared with 15 percent for all occupations. Physicians and surgeons must travel frequently between office and hospital to care for their patients. While on call, a physician will deal with many patients' concerns over the phone and make emergency visits to hospitals or nursing homes.

### **Training, Other Qualifications, and Advancement**

The common path to practicing as a physician requires 8 years of education beyond high school and 3 to 8 additional years of internship and residency. All States, the District of Columbia, and U.S. territories license physicians.

**Education and training.** Formal education and training requirements for physicians are among the most demanding of any occupation—4 years of undergraduate school, 4 years of medical school, and 3 to 8 years of internship and residency, depending on the specialty selected. A few medical schools offer combined undergraduate and medical school programs that last 6 years rather than the customary 8 years.

Premedical students must complete undergraduate work in physics, biology, mathematics, English, and inorganic and organic chemistry. Students also take courses in the humanities and the social sciences. Some students volunteer at local hospitals or clinics to gain practical experience in the health professions.

The minimum educational requirement for entry into medical school is 3 years of college; most applicants, however, have at least a bachelor's degree, and many have advanced degrees. There are 146 medical schools in the United States—126 teach allopathic medicine and award a Doctor of Medicine (M.D.) degree; 20 teach osteopathic medicine and award the Doctor of Osteopathic Medicine (D.O.) degree.

Acceptance to medical school is highly competitive. Applicants must submit transcripts, scores from the Medical College Admission Test, and letters of recommendation. Schools also consider an applicant's character, personality, leadership qualities, and participation in extracurricular activities. Most schools require an interview with members of the admissions committee.

Students spend most of the first 2 years of medical school in laboratories and classrooms, taking courses such as anatomy, biochemistry, physiology, pharmacology, psychology, microbiology, pathology, medical ethics, and laws governing medicine. They also learn to take medical histories, examine patients, and diagnose illnesses. During their last 2 years, students work with patients under the supervision of experienced physicians in hospitals and clinics, learning acute, chronic, preventive, and rehabilitative care. Through rotations in internal medicine, family practice, obstetrics and gynecology, pediatrics, psychiatry, and surgery, they gain experience in the diagnosis and treatment of illness.

Following medical school, almost all M.D.s enter a residency—graduate medical education in a specialty that takes the form of paid on-the-job training, usually in a hospital. Most D.O.s serve a 12-month rotating internship after graduation and before entering a residency, which may last 2 to 6 years.

A physician's training is costly. According to the Association of American Medical Colleges, in 2004 more than 80 percent of medical school graduates were in debt for educational expenses.

**Licensure and certification.** All States, the District of Columbia, and U.S. territories license physicians. To be licensed, physicians must graduate from an accredited medical school, pass a licensing examination, and complete 1 to 7 years of graduate medical education. Although physicians licensed in one State usually can get a license to practice in another without further examination, some States limit reciprocity. Graduates of foreign medical schools generally can qualify for licensure after passing an examination and completing a U.S. residency.

M.D.s and D.O.s seeking board certification in a specialty may spend up to 7 years in residency training, depending on the specialty. A final examination immediately after residency or after 1 or 2 years of practice also is necessary for certification by a member board of the American Board of Medical Specialists (ABMS) or the American Osteopathic Association (AOA). The ABMS represents 24 boards related to medical specialties ranging from allergy and immunology to urology. The AOA

**Table 1. Percent distribution of active physicians in patient care by specialty, 2005**

	Percent
Total .....	100.0
Primary care .....	40.4
Family medicine and general practice .....	12.3
Internal medicine .....	15.0
Obstetrics & gynecology.....	5.5
Pediatrics.....	7.5
Specialties .....	59.6
Anesthesiology.....	5.2
Psychiatry.....	5.1
Surgical specialties, selected .....	10.8
All other specialties.....	38.5

SOURCE: American Medical Association, Physician Characteristics and Distribution in the US, 2007.

has approved 18 specialty boards, ranging from anesthesiology to surgery. For certification in a subspecialty, physicians usually need another 1 to 2 years of residency.

**Other qualifications.** People who wish to become physicians must have a desire to serve patients, be self-motivated, and be able to survive the pressures and long hours of medical education and practice. Physicians also must have a good bedside manner, emotional stability, and the ability to make decisions in emergencies. Prospective physicians must be willing to study throughout their career to keep up with medical advances.

**Advancement.** Some physicians and surgeons advance by gaining expertise in specialties and subspecialties and by developing a reputation for excellence among their peers and patients. Many physicians and surgeons start their own practice or join a group practice. Others teach residents and other new doctors, and some advance to supervisory and managerial roles in hospitals, clinics, and other settings.

## Employment

Physicians and surgeons held about 633,000 jobs in 2006; approximately 15 percent were self-employed. About half of wage-and-salary physicians and surgeons worked in offices of physicians, and 18 percent were employed by hospitals. Others practiced in Federal, State, and local governments, including colleges, universities, and professional schools; private colleges, universities, and professional schools; and outpatient care centers.

According to 2005 data from the American Medical Association (AMA), about two in five physicians in patient care were in primary care, but not in a subspecialty of primary care. (See table 1.)

A growing number of physicians are partners or wage-and-salary employees of group practices. Organized as clinics or as associations of physicians, medical groups can more easily

afford expensive medical equipment, can share support staff, and benefit from other business advantages.

According to the AMA, the New England and Middle Atlantic States have the highest ratio of physicians to population; the South Central and Mountain States have the lowest. D.O.s are more likely than M.D.s to practice in small cities and towns and in rural areas. M.D.s tend to locate in urban areas, close to hospitals and education centers.

## Job Outlook

Employment of physicians and surgeons is expected to grow faster than the average for all occupations. Job opportunities should be very good, especially for physicians and surgeons willing to practice in specialties—including family practice, internal medicine, and OB/GYN—or in rural and low-income areas where there is a perceived shortage of medical practitioners.

**Employment change.** Employment of physicians and surgeons is projected to grow 14 percent from 2006 to 2016, faster than the average for all occupations. Job growth will occur because of continued expansion of health care related industries. The growing and aging population will drive overall growth in the demand for physician services, as consumers continue to demand high levels of care using the latest technologies, diagnostic tests, and therapies.

Demand for physicians' services is highly sensitive to changes in consumer preferences, health care reimbursement policies, and legislation. For example, if changes to health coverage result in consumers facing higher out-of-pocket costs, they may demand fewer physician services. Patients relying more on other health care providers—such as physician assistants, nurse practitioners, optometrists, and nurse anesthetists—also may temper demand for physician services. In addition, new technologies will increase physician productivity. These technologies include electronic medical records, test and prescription orders, billing, and scheduling.

**Job prospects.** Opportunities for individuals interested in becoming physicians and surgeons are expected to be very good. In addition to job openings from employment growth, numerous openings will result from the need to replace physicians and surgeons who retire over the 2006-16 decade.

Unlike their predecessors, newly trained physicians face radically different choices of where and how to practice. New physicians are much less likely to enter solo practice and more likely to take salaried jobs in group medical practices, clinics, and health networks.

Reports of shortages in some specialties, such as general or family practice, internal medicine, and OB/GYN, or in rural or low-income areas should attract new entrants, encouraging schools to expand programs and hospitals to increase available residency slots. However, because physician training is

## Projections data from the National Employment Matrix

Occupational Title	SOC Code	Employment, 2006	Projected employment, 2016	Change, 2006-2016	
				Number	Percent
Physicians and surgeons.....	29-1060	633,000	723,000	90,000	14

NOTE: Data in this table are rounded. See the discussion of the employment projections table in the *Handbook* introductory chapter on *Occupational Information Included in the Handbook*.

**Table 2. Median compensation for physicians, 2005**

Specialty	Less than two years in specialty	Over one year in specialty
Anesthesiology.....	\$259,948	\$321,686
Surgery: General.....	228,839	282,504
Obstetrics/gynecology: General.....	203,270	247,348
Psychiatry: General.....	173,922	180,000
Internal medicine: General.....	141,912	166,420
Pediatrics: General.....	132,953	161,331
Family practice (without obstetrics) ...	137,119	156,010

SOURCE: Medical Group Management Association, Physician Compensation and Production Report, 2005.

so lengthy, employment change happens gradually. In the short term, to meet increased demand, experienced physicians may work longer hours, delay retirement, or take measures to increase productivity, such as using more support staff to provide services. Opportunities should be particularly good in rural and low-income areas, as some physicians find these areas unattractive because of less control over work hours, isolation from medical colleagues, or other reasons.

### Earnings

Earnings of physicians and surgeons are among the highest of any occupation. The Medical Group Management Association's Physician Compensation and Production Survey, reports that median total compensation for physicians in 2005 varied by specialty, as shown in table 2. Total compensation for physicians reflects the amount reported as direct compensation for tax purposes, plus all voluntary salary reductions. Salary, bonus and incentive payments, research stipends, honoraria, and distribution of profits were included in total compensation.

Self-employed physicians—those who own or are part owners of their medical practice—generally have higher median incomes than salaried physicians. Earnings vary according to number of years in practice, geographic region, hours worked, skill, personality, and professional reputation. Self-employed physicians and surgeons must provide for their own health insurance and retirement.

### Related Occupations

Physicians work to prevent, diagnose, and treat diseases, disorders, and injuries. Other health care practitioners who need similar skills and who exercise critical judgment include chiropractors, dentists, optometrists, physician assistants, podiatrists, registered nurses, and veterinarians.

### Sources of Additional Information

For a list of medical schools and residency programs, as well as general information on premedical education, financial aid, and medicine as a career, contact:

➤ American Association of Colleges of Osteopathic Medicine, 5550 Friendship Blvd., Suite 310, Chevy Chase, MD 20815.

Internet: <http://www.aacom.org>

➤ Association of American Medical Colleges, Section for Student Services, 2450 N St. NW., Washington, DC 20037.

Internet: <http://www.aamc.org/students>

For general information on physicians, contact:

➤ American Medical Association, 515 N. State St., Chicago, IL 60610. Internet: <http://www.ama-assn.org>

➤ American Osteopathic Association, Department of Communications, 142 East Ontario St., Chicago, IL 60611.

Internet: <http://www.osteopathic.org>

For information about various medical specialties, contact:

➤ American Academy of Family Physicians, Resident Student Activities Department, 11400 Tomahawk Creek Pkwy., Leawood, KS 66211. Internet: <http://fmignet.aafp.org>

➤ American Academy of Pediatrics, 141 Northwest Point Blvd., Elk Grove Village, IL 60007. Internet: <http://www.aap.org>

➤ American Board of Medical Specialties, 1007 Church St., Suite 404, Evanston, IL 60201. Internet: <http://www.abms.org>

➤ American College of Obstetricians and Gynecologists, 409 12th St. SW., P.O. Box 96920, Washington, DC 20090.

Internet: <http://www.acog.org>

➤ American College of Physicians, 190 North Independence Mall West, Philadelphia, PA 19106.

Internet: <http://www.acponline.org>

➤ American College of Surgeons, Division of Education, 633 North Saint Clair St., Chicago, IL 60611.

Internet: <http://www.facs.org>

➤ American Psychiatric Association, 1000 Wilson Blvd., Suite 1825, Arlington, VA 22209. Internet: <http://www.psych.org>

➤ American Society of Anesthesiologists, 520 N. Northwest Hwy., Park Ridge, IL 60068.

Internet: <http://www.asahq.org/career/homepage.htm>

Information on Federal scholarships and loans is available from the directors of student financial aid at schools of medicine. Information on licensing is available from State boards of examiners.